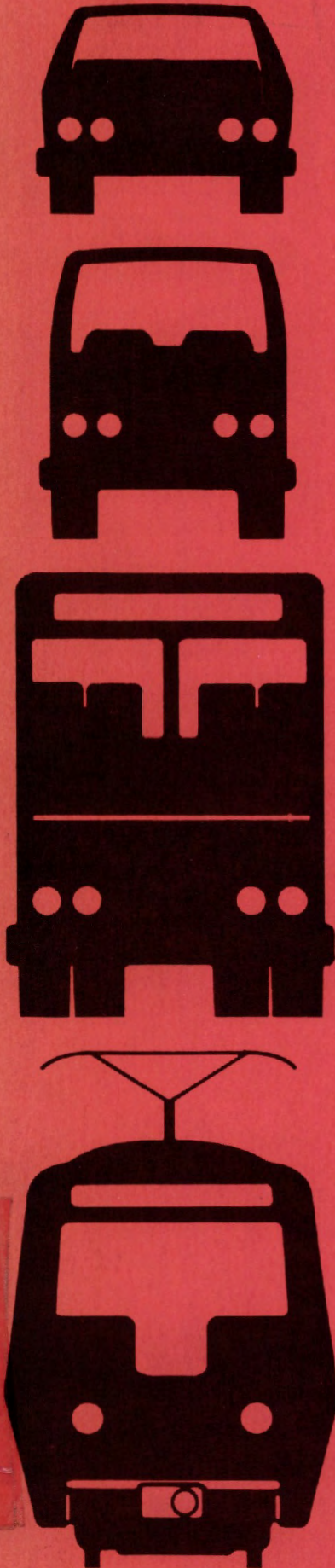


Urban Transportation Abstracts

Summer 1982
Volume 1 Number 1

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FOREWORD

This volume, which contains 1034 abstracts of journal articles, research reports, and other information sources, along with 156 summaries of ongoing research activities, covers material accessioned by the Urban Mass Transportation Research Information Service (UMTRIS) between October 1981 and April 1982.

Urban Transportation Abstracts, published semiannually, contains material added to the UMTRIS magnetic-tape file during a 6-month interval prior to its publication. All issues of *Abstracts* should be retained since each contains only newly acquired abstract citations; certain of the ongoing research summaries are republished because they continue to be reported until the research projects they describe have been completed or terminated.

UMTRIS was developed within the National Research Council, Transportation Research Board (TRB), under contract to the Urban Mass Transportation Administration (UMTA), U.S. Department of Transportation. The UMTRIS computerized data system incorporates information on planning, designing, maintaining, operating, managing, and financing of all modes of public transit, including bus, trolley bus, light and heavy rail transit, commuter rail, advanced guideway systems, taxi and vanpool services, ferries, and local air services. The information is selected because it is seen as useful to operators, designers, researchers, planners, and government agencies at all levels. Sources are worldwide, although the majority of citations are of U.S. origin.

The concepts used by UMTRIS are similar to those of the other TRB modal operations—Highway Research Information Service, Railroad Research Information Service, Maritime Research Information Service, and Air Transport Research Information Service. Collectively, these operations plus UMTRIS are designated the Transportation Research Information Services (TRIS).

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Using Urban Transportation Abstracts

This volume is divided into three major sections:

- Abstracts of documents,
- Summaries of ongoing research,
- Indexes by source, author, and subject.

If you are interested in reviewing reports of completed research and other published documents, turn to the section, Abstracts of Reports and Journal Articles, beginning on page 1. The material in this section is arranged in the UMTRIS categories (i.e., Rail Vehicle Technology, Fares and Pricing,

Paratransit, Land Use). The category designation and its identifying number are listed in the Contents and appear at the top of each page of the pertinent section.

If you are interested in ongoing research projects, turn to the section, Summaries of Ongoing Research, beginning on page 177. It is important to remember that there are often no reports available; only in the case of a note reading References with one or more citations after it is there a possibility of getting some published results from an ongoing research activity. The summaries are arranged by UMTRIS category, and the designation and appropriate number appear at the top of each page. An A after the numerical designation serves to identify the ongoing projects.

If you can identify your interest by a very specific subject term (i.e., Trolley Bus, New Austrian Tunneling Method, Automatic Fare Collection, Handicapped Persons), turn to the Subject Term Index starting on page 240. Each term in this index is followed by one or more document record numbers, each of which consists of the two-digit category designation and the six-digit TRIS accession number that identifies the individual document record within that category. An A after the category designation again indicates that the item is a summary of ongoing research. In either the Abstracts or Summaries section, the citations are arranged in order of ascending accession numbers within any category.

If you are looking for abstracts of articles or reports produced by a specific author or summaries of projects being conducted by a particular investigator, turn to the Author and Investigator Index, page 229, and look for the individual's surname in the alphabetized listing. Again the document record number is used to find the citation in the Abstracts or Summaries section.

If you are interested in abstracts of articles or reports that appeared in a particular publication or were the work of a specific publisher, or if you are interested in summaries of research projects being conducted or funded by a specific organization, turn to the Source Index, page 215. Again, use the document record number to find the appropriate citation in the Abstracts or Summaries section.

Although the Subject Term Index gives a general idea of the scope of the UMTRIS indexing system, information is available on many other terms that do not appear in this specific edition. A complete subject term listing is planned for future publication.

UMTRIS File Searches

The UMTRIS file is maintained on magnetic tape and is available for literature searches of information related to specific inquiries. The key to searching is UMTRIS categories, appropriate subject terms, dates, performing agencies, or other data elements. The search is performed batch mode by computer. Output may include abstracts of articles and reports, descriptions of computer programs, and summaries

of ongoing research. The output is computer printed and similar in format to citations that appear in this publication.

The fee schedule for UMTRIS title searches reflects the primary support for the service from UMTA and the non-profit nature of all National Research Council information services. The charge for computer retrieval from the UMTRIS file is \$50 per request plus \$0.25 per citation after screening by UMTRIS. A written authorization or purchase order is required before the retrieval is made. Contact UMTRIS manager, 2101 Constitution Avenue N.W., Washington, DC 20418 (telephone 202-334-3256).

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An availability statement is included with each abstract. Because a large number of documents are available from a few major sources, space and printing costs have been reduced by abbreviating these and not indicating an address in the abstract. The standard abbreviations used by UMTRIS for availability statements are shown below, along with the complete name and address of each organization. In all other cases the organization from which a document may be ordered and its complete address are given in the availability statement. Copies of reports and articles listed in this publication are not available from UMTRIS. When ordering from any source, give full information about the document

desired. When ordering from the National Technical Information Service, be sure to give the NTIS accession number as well as title and other information. A loan and photocopy service for many of the articles and papers cited is operated by six transportation libraries as explained on page xx. Documents published outside the United States are usually written in the language of the country of origin as indicated at the end of the abstract. If a translation is desired, consult the National Translations Center listed below, which maintains a registry of translations. If the document has never been translated, contact translation services listed in the yellow pages of the telephone book in metropolitan areas.

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(For technical reports identified by a report number such as R-253)
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Technical Center
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Chicago, IL 60616
Telephone 312-939-0770

AIAA

American Institute of Aeronautics and
Astronautics
Technical Information Service
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New York, NY 10104
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AREA

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New York, NY 10017
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ASME

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New York, NY 10017
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RTAC Roads and Transportation Association of Canada 875 Carling Avenue Ottawa, Ontario K1S 5A4 Canada Telephone 613-521-4052	TRRL Transport and Road Research Laboratory Crowthorne, Berkshire RG11 6AU England Telephone Crowthorne 3131	UMI University Microfilms International 300 North Zeeb Road Ann Arbor, MI 48106 Telephone 313-761-4700
SAE Society of Automotive Engineers 400 Commonwealth Drive Warrendale, PA 15096 Telephone 412-776-4841	TSC Transportation Systems Center Kendall Square Cambridge, MA 02142 Telephone 617-494-2306	UMTA Urban Mass Transportation Administration 400 Seventh Street, S.W. Washington, DC 20590 Telephone 202-426-4043
SNAME Society of Naval Architects and Marine Engineers One World Trade Center New York, NY 10048 Telephone 212-432-0310	UIC International Union of Railways, BD 14-16 Rue Jean-Rey 75015 Paris France Telephone 273-01-20	

ABBREVIATIONS

AAR	Association of American Railroads	NAE	National Academy of Engineering
AIAA	American Institute of Aeronautics and Astronautics	NAS	National Academy of Sciences
AREA	American Railway Engineering Association	NHTSA	National Highway Traffic Safety Administration,
ASCE	American Society of Civil Engineers	NRC	National Research Council
CIGGT	Canadian Institute of Guided Ground Transport	NTIS	National Technical Information Service
CNR	Canadian National Railways	NUTL	Northwestern University Transportation Library
DOT	U.S. Department of Transportation	OECD	Organization for Economic Cooperation and Development
DOTL	U.S. Department of Transportation Library, Washington, D.C.	OST	Office of the Secretary of Transportation
ECMT	European Conference of Ministers of Transport	PB	Prefix identifying an NTIS accession number
EI	Engineering Index	Phot	Photographs
ESL	Engineering Societies Library	Ref	References
FHWA	Federal Highway Administration,	Repr PC	Paper copy of original document
Fig	Figures	RP	Repository (DOTL)
FRA	Federal Railroad Administration	RPI	Railway Progress Institute
FY	Fiscal Year	Rpt	Report
GMRL	General Motors Research Laboratories	RTAC	Roads and Transportation Association of Canada
GPO	U.S. Government Printing Office	SAE	Society of Automotive Engineers
HRIS	Highway Research Information Service, Transportation Research Board	Shaw	Shaw Publishing Company, Ltd.
HSRI	Highway Safety Research Institute	SNAME	Society of Naval Architects and Marine Engineers
HUD	U.S. Department of Housing and Urban Development	SRIS	Safety Research Information Service, National Safety Council
IEEE	Institute of Electrical and Electronics Engineers	Tab	Tables
IPC	IPC Transport Press, Ltd.	TRB	Transportation Research Board
IRCA	International Railway Congress Association	TRRL	Transport and Road Research Laboratory
IRF	International Road Federation	TSC	Transportation Systems Center
IRRD	International Road Research Documentation	UIC	International Union of Railways
ITS	Institute of Transportation Studies	UITP	International Union of Public Transport
JC	Journal Collection (DOTL)	UMI	University Microfilms International
L	British Pound Sterling	UMTA	Urban Mass Transportation Administration

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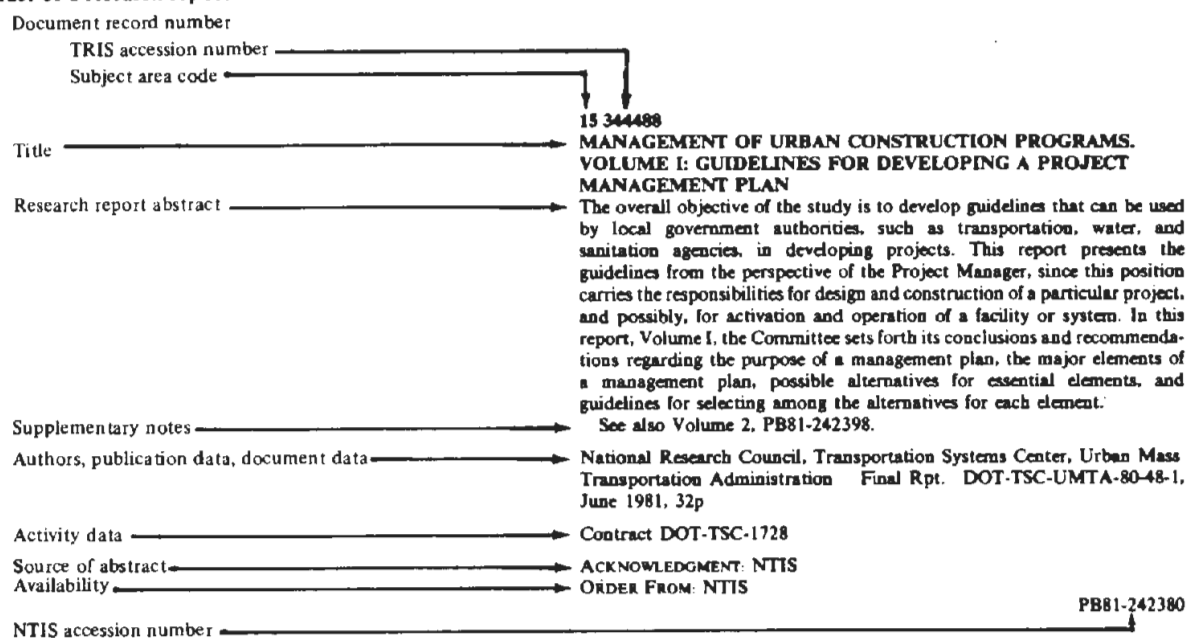
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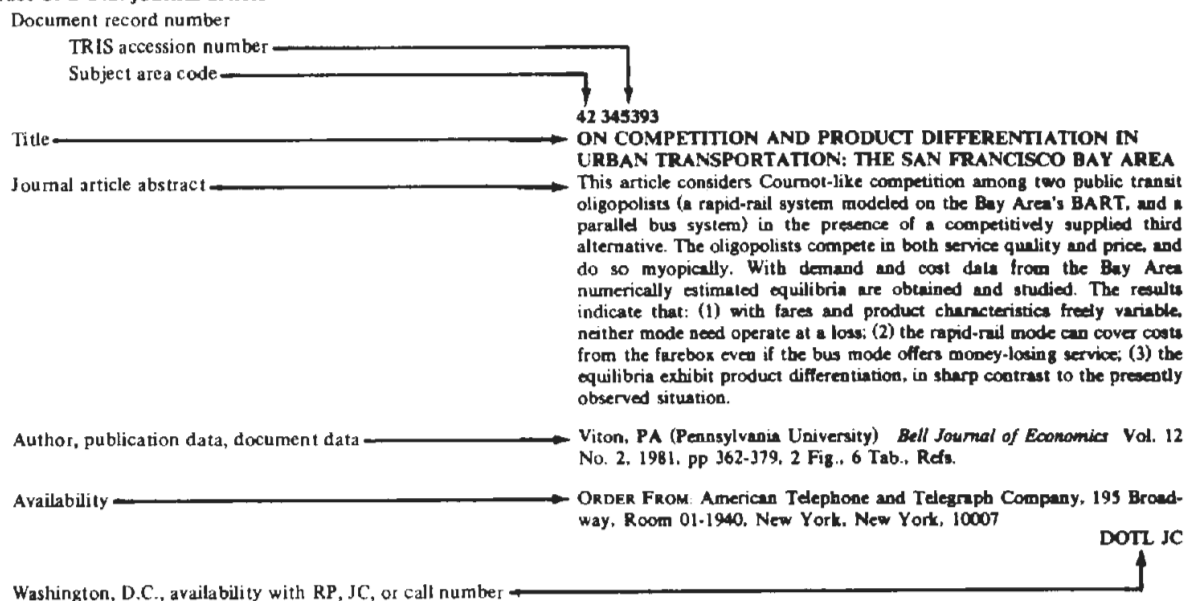
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search Summaries. Within each category the citations are published in rising accession number order, although these numbers usually will not be consecutive. Examples of a research report abstract and journal article abstracts from U.S. and non-U.S. sources are illustrated, along with a summary of an ongoing research project. In each case the important data elements are indicated.

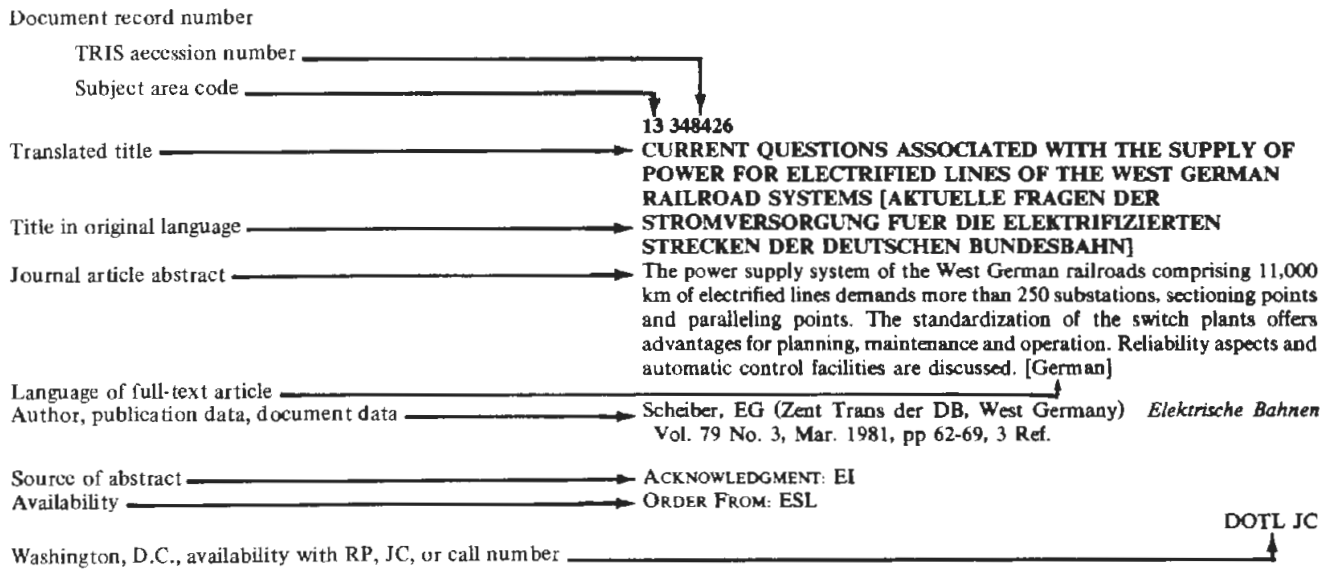
Abstract of a research report



Abstract of a U.S. journal article



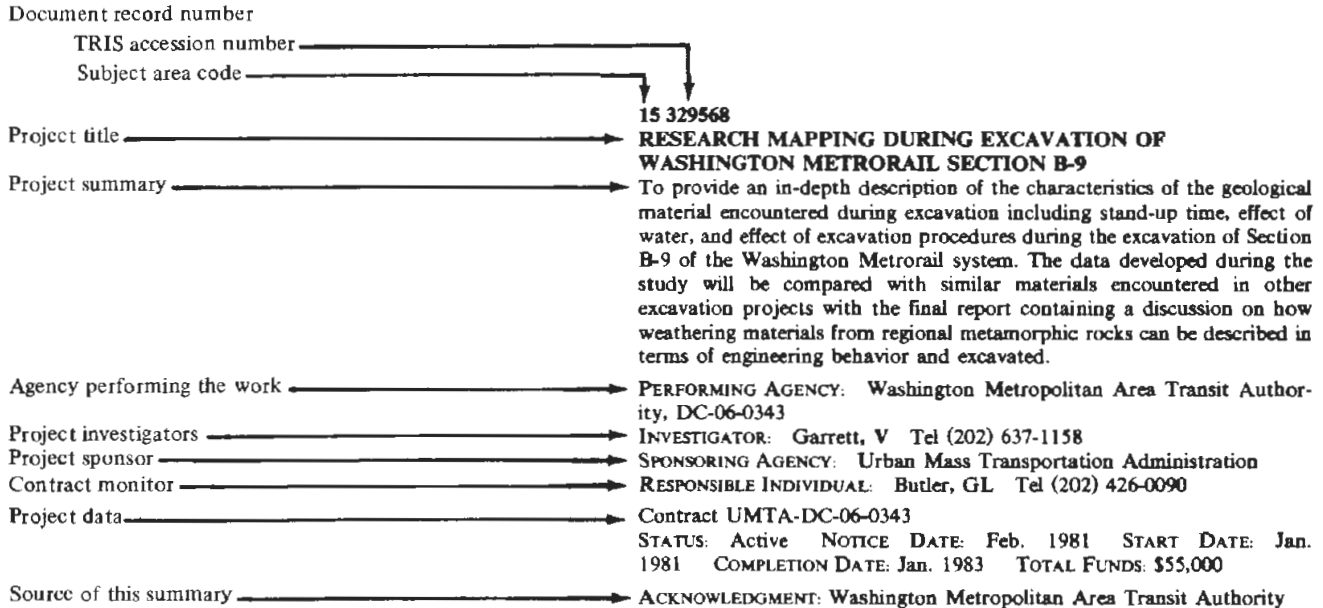
Abstract of a non-U.S. journal article



The summaries of ongoing research describe research activities currently in progress or recently completed. Each summary indicates who is performing the project, who is funding it, and how the research goal is to be attained. A summary is not a document surrogate; that is, there may not

be a full report published on the project. The summaries are in the format shown below, although each one may not contain all the elements given in this sample. The document record numbers and the order listing are the same for both summaries and abstracts.

Summary of ongoing research



Abstracts of Reports and Journal Articles

11 323386

THE NEW ARTICULATED SWISS TROLLEYBUS: THE STANDARDIZED UST TROLLEYBUS [Les nouveaux trolleybus articulés suisses: Les trolleybus unifiés UST]

In 1970 most urban transport firms in Switzerland were faced with the need of renewing or extending their fleet of trolleybuses. The association of Swiss public transport operators asked the main manufacturers in Switzerland to study a new, simple, robust, reliable, comfortable and economical trolleybus which would be easy to drive. The standardized UST trolleybus has just been created. This article analyzes its technical characteristics (bodywork, electrical equipment, braking, emergency running system), pneumatic equipment (compressors, brakes) and special driving aspects. (TRRL) [French]

Tappy, P Dunand, M (Transports Publics Genevois (Tpg)) *UITP Revue* Vol. 26 No. 2, Apr. 1977, pp 145-149, 5 Fig., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 109204)

ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

DOTL JC

11 324569

TRANSMISSION FOR RESTORING BRAKING ENERGY IN BUSES [Antriebe zur bremsenergie-rueckgewinnung bei omnibussen]

Braking energy restoration was effected with two different systems in urban buses. The gyrobus uses a mechanical energy store (flywheel) and the hydrobus a bladder store which uses oil as a working medium. The advantages of both systems are, together with a saving in fuel of up to 25 percent compared with the standard bus, reduced environmental pollution by exhaust fumes and improved output. The recently developed transmission are hydrostatic drives with mechanical power branching. The results of trials are expected this year. (TRRL) [German]

Hagin, F Merker, P *ATZ - Automobil Technische Zeitschrift* Vol. 81 No. 7/8, 1979, pp 327-330, 3 Fig., 1 Tab., 2 Phot., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 311613), Federal Institute of Road Research, West Germany

ORDER FROM: ESL

11 324647

DUAL-FUEL VOLVO BUS FOR CITY SERVICE

A development by Volvo of a bus for city service is designed to reduce fuel consumption and also to meet environmental requirements. The vehicle comprises a bus with attached trailer carrying a 140 hp diesel engine and a 330 kg regenerative flywheel. Also developed is a hydrostatic transmission system which powers the driven wheels. The flywheel is designed to absorb a large amount of energy during braking, this energy being used when the bus has to accelerate. The bus can be driven with the diesel engine switched off for approximately 1200 M in city traffic conditions powered only by the flywheel energy system. Volvo estimates a fuel saving of 15-25% depending on driving conditions. (TRRL)

Parke, J *Buses* Vol. 32 No. 304, July 1980, pp 12-13, 2 Fig., 3 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 248852)

ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

11 324656

ELECTRIC VEHICLE DEVELOPMENT GROUP THIRD INTERNATIONAL CONFERENCE ON RESOURCES FOR ELECTRIC VEHICLES AND THEIR INFRASTRUCTURE, LONDON, NOVEMBER 1979

Four sessions were held, at which the following papers were presented. Session 1: "Planned use of resources" includes: Some aspects of materials and energy in relation to electric powered transport; The availability of future fuels. Part 1: Hydrocarbon liquids from fossil sources; The availability of future fuels. Part 2: Electricity; Possible effects of economic changes upon future transport systems; City development and planning as aids to transport system design and energy conservation. Session 2: "Transport systems--range and recharging infrastructure" comprises: Operation of a modern trolley bus system: Part 1; Operation of a modern trolley bus system: Part 2; Operational requirements and technical development of an integrated transport system utilizing tramways, railway and metro; quick recharging or exchange of batteries: Technical and economic survey of the cost-price of energy; recharging infrastructure for electric vehicles. Session 3: "Comparative efficiency of transport systems" includes: Development of a hybrid electric vehicle using high vehicles-prospective fuels, technology and total efficiency; electronic controls for battery electric vehicles; designing purpose built electric vehicles--the total energy required for manufacture and use; electric vehicles, how do they compare with synthetic liquid fuels? Session 4: Investing and planning for the future includes; production costs changes arising from series production of electric vehicles; investing and planning for the transition to electric urban transportation; electric vehicles in a large city--future constraints and opportunities; the view of an elected member of the GLC. Discussions are appended to each session.

Frame, AG Cluer, A Wright, JK Posner, M Musgrove, J Longmore, J Stutz, C Deutz, C Baggs, JA Pornin, M Black, IG Oxley, PR Lee, GA Corbett, AE Oejevors, L McGeehin, P Dell, RM Karen, T Goodson, E Guenter, H Foley, KW Bayliss, D Foulkes, M Sandford, HH Peregrinus (Peter) Limited Monograph PPL16, 1980, 152p, Figs., Tabs., Photos., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 249272)

ORDER FROM: Peregrinus (Peter) Limited, P.O. Box 26, Hitchin, Herts SG5 1SA, England

11 324982

ELECTRIC VEHICLES WITH MINUTES OF EVIDENCE

The report is divided as follows: Part 1-The enquiry; Part 2-Electric vehicles-the energy case; Part 3-Electric vehicles-present technology (fuel advantages, low whole life costs, quietness, reduced exhaust emission, mechanical simplicity, performance and range, rate of recharge, initial cost, urban delivery vehicles, wider vehicle market); Part 4-Rail, buses and trams; Part 5-Advanced batteries; Part 6-Nybrid vehicles; Part 7-Motors, controllers and chargers (motors, controllers, chargers, drive systems, vehicle chassis); Part 8-Funding of research, development and demonstration; Part 9-Overseas activities; Part 10- Opinion of the committee. (TRRL)

House of Lords Session 1979-80 1st Report (352) of the Select Committee on Science and Technology.

Her Majesty's Stationery Office Monograph July 1980, 199p, Tabs., 54 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 249845)

ORDER FROM: Her Majesty's Stationery Office, Atlantic Ho, Holborn Viaduct, London EC1P 1BN, England

11 325121

VOLVO VANGUARD-NEW ANGLO-SWEDISH CITY BUS

A single-deck city bus developed by Wadham Stringer and Volvo is described. A feature of the design is the use of the bus version of the Volvo B58 chassis which offers a lower floor height than other under-floor-engine chassis designs. This provides lower entrance heights and an almost flat floor. The bus is powered by the Volvo THD 100D horizontal engine derated to 185 bhp for longer life and quieter operation. The transmission used is a 5-speed Wilson-type gearbox with electro-pneumatic control. An air-over-leaf suspension system is used with a recirculating ball power steering system and dual circuit air brakes. The soundproofing incorporated in the vehicle is said to offer a very quiet and comfortable ride. (TRRL)

Buses Vol. 32 No. 305, Aug. 1980, pp 54-55, 1 Fig., 5 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 249276)

ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

11 325685

ECONOMIC EVALUATION OF ELECTRIC TWO-MODE VEHICLE. THE CASE OF A NEW TOWN [EVALUATION ECONOMIQUE DU BI-MODE ELECTRIQUE. LE CAS D'UNE VILLE NOUVELLE]

The concept of the two-mode bus emerged in the 1970's. The new town of Evry has adopted this solution for internal public transport services. First studies stressed the technical and economic difficulties which could arise in the development of such a system. A cost benefit study was conducted for the town of Evry and four different technologies were considered. This report gives data on predicted journeys and studies the various alternatives: buses, trolley buses, two-mode vehicles and tramways. (TRRL) [French]

Fradin, JF Jacob, C Moise, P Rajchman, M *Cahiers IAURIF* No. 46, June 1977, 48p, Figs., Tabs., Photos.

ACKNOWLEDGMENT: TRRL (IRRD 105925), Institute of Transport Research

ORDER FROM: IAURIF, 21-23 rue Miollis, 75732 Paris Cedex 5, France

11 329090

COMPUTER SIMULATION OF AN ELECTRIC TROLLEY BUS

This report describes a computer model developed at the Transportation Systems Center (TSC) to simulate power/pulsion characteristics of an urban trolley bus. The work conducted in this area is sponsored by the Urban Mass Transportation Administration as part of a larger effort concerned with the demonstration and test evaluation of advanced bus propulsion concepts. The computer models developed by TSC provide a means of rapidly evaluating bus performance and of comparing simulated bus performance with results obtained from engineering tests. They also provide a means of developing comparative information of the performance characteristics and component sizing requirements of various bus propulsion systems. The results of the computer analyses will be incorporated into the Annual Technological Assessment Report for future reference and evaluation. This present report includes a description of the application of the trolley bus model to a typical urban bus drive cycle. The requested mission profile is given as input to the bus model while the actual mission profile determined by the limitation of the bus propulsion system appears as output. The output data file also lists the electrical drive characteristics, including component power losses, at successive intervals of drive time. The report describes the computer simulation of an electric trolley bus as it traverses an arbitrary mission profile of specified acceleration, roadway grade, and headwind. The models for the different bus components are examined and the impact of cam-control on trolley bus performance is reviewed. The simulation model is used to generate power-propulsion characteristics for a trolley bus operating over different urban drive cycles. Program listings, including a CALCOMP subroutine for graphic display, are presented in the Appendix.

Stickler, JJ

Transportation Systems Center, (UMTA-MA-06-0093) Final Rpt. DOT-TSC-UMTA-79-32, UMTA-MA-06-0093-80-1, Dec. 1979, 68p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-165276

11 329664

GIRLING SKIDCHECK GX: A HIGHLY DEVELOPED ANTI-LOCK BRAKING SYSTEM FOR COMMERCIAL VEHICLES

Sophisticated digitised control anti-lock braking systems have tended to be designed for individual vehicles. The Skidcheck GX system developed by Lucas Girling is designed to be adaptable in terms of vehicle fitting and is said to offer a high level of performance for almost any lorry or bus braking system. The control system uses wheel rather than prop-shaft sensing for accurate road-speed measurement and slip detection. It is also possible to apply anti-lock control to vehicles fitted with an electrically-actuated retarder. Benefits consist of minimising wheel slip, particularly in maximising lateral adhesion to optimise vehicle stability. (TRRL)

Automotive Engineer Vol. 5 No. 4, Aug. 1980, pp 27-29, 6 Fig., 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 250358)

ORDER FROM: ESL

DOTL JC

11 330141

BODY CORROSION IN TRANSIT BUSES

Corrosion of body components on transit buses has been considered a major problem throughout the United States. Since the basic objective of this study was to help establish a new Advanced Design Bus (ADB) price adjustment for a corrosion-resistant body, it was necessary to investigate the experience of transit operators with body corrosion on buses produced prior to the ADB (a bus body constructed almost entirely of stainless steel with skin panels of plastic). This report examines the extent and magnitude of body corrosion problems in existing bus fleets. Body corrosion appears to be severe in two general areas of the country: areas where salt is heavily used on streets in the winter, and areas with high humidity along southern seacoasts. A telephone survey of 21 operating properties was conducted regarding the bus body corrosion problem. The results of these interviews are summarized herein. In addition, seven operating properties were visited to ascertain the magnitude of the body corrosion problem including: Miami, Florida; Houston, Texas; Harlingen, Texas; Brownsville, Texas; Buffalo, New York; and Detroit Michigan. This study concludes that: 1) there are distinct types of bus body corrosion that occur only in certain areas; 2) corrosion is generally a cosmetic problem and does not create safety hazards or cause bus deterioration structurally; 3) with some exceptions, bus corrosion is limited to vehicles over ten years old; and 4) corrosion costs are relatively low. (UMTA)

Booz-Allen and Hamilton, Incorporated, Urban Mass Transportation Administration, (BP-80-001) Final Rpt. UMTA-MD-06-0024-81-1, Nov. 1980, 69p

Contract DOT-UT-70032

ORDER FROM: NTIS

PB81-151342

11 330345

INNOVATIONS BY DAIMLER-BENZ. BUSES FOR ALL CASES-THE MOST ADAPTABLE SHORT RANGE TRANSPORT SYSTEM [INNOVATION VON DAIMLER-BENZ. BUSSE FUER ALLE FAELLE- ANPASSUNGSFAEHIGSTES NAHVERKEHRSSYSTEM]

Short range transport, which has to deal with 90% of all passenger transport, is the most pressing problem for the transport planner. Daimler-Benz considers the bus as the most adaptable means of transport and is engaged in the development of suitable bus systems. The capabilities of buses can be increased if they are given their own traffic lanes, which can also take articulated or other large size vehicles. The development of rail bound buses (duo-buses) is being sponsored by the Federal Research Ministry. A further step forward for bus transport is the antilocking system being developed by Daimler-Benz in conjunction with Bosch, which is being marketed for s-class vehicles. It improves braking safety and prevents rapid tyre wear. It reduces the maximum braking pressure automatically as soon as a wheel begins to lock. The vehicle remains controllable. (TRRL) [German]

Polizei Technik Verkehr Vol. 24 No. 6, 1979, pp 326-327

ACKNOWLEDGMENT: TRRL (IRRD 311919), Federal Institute of Road Research, West Germany

ORDER FROM: Verlagsgesellschaft mbH und Co. KG, Juliusstrasse 2, Postfach 19, 6200 Wiesbaden 1, West Germany

11 330479

THE FLEXI-BUS. AN ENERGY SAVING AND NON-POLLUTANT BUS TECHNOLOGY [FLEXIBUSSEN. EN ENERGISNAAL OCH MILJOEVAENLIG BUSSTEKNIK MED BERAENINGAR FOER STOCKHOLMS INNERSTAD]

The study has been carried out by a flexi bus group at the national board for technical development (stu). The starting-point of the group has been the fact that traffic with electric buses has many advantages over diesel buses. Of the disadvantages higher costs and less flexibility are the major ones. The group claims to have found an unusually successful solution to the problems of the flexi bus technique. The first two chapters are devoted to a comparison between the electric bus and the diesel bus and to a survey of how the electric bus has been and is used in Sweden and abroad. The flexi bus is flexible as to the choice of primary energy source. It is also flexible in its design, ie it can be built with a battery of different size depending on the need for driving without an overhead line. The flexi bus can be looked upon in two ways: (1) a trolley bus having less need for contact lines and expensive rectifier power stations; (2) a battery bus which does not have to visit a special battery charging station. In the last chapter an attempt is made at estimating the cost of flexi bus traffic in Stockholm City. With today's prices it will be somewhat more expensive than traffic with diesel buses. (TRRL) [Swedish]

Kottenhoff, K Reger, M Hultgren, K Maansson, G Styrelsen foer Teknisk Utveckling Monograph STU 177-1980, 1980, 96p, Figs., 10 Tab., Photos., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 251160), National Swedish Road & Traffic Research Institute

ORDER FROM: Styrelsen foer Teknisk Utveckling, P.O. Box 43200, Stockholm, Sweden

11 330717

VOLVO FLYWHEEL BUS

The concept of energy recuperation, based on a hydraulic pressure accumulator system in conjunction with hydrostatic transmission, is being used in a Volvo bus development. Using flywheel energy recuperation, the diesel power unit/flywheel/hydraulics pack supplies a hydraulic motor and conventional transmission and is fitted in a rear-mounted underfloor location on a 12 M bus chassis. The driving modes consist of normal operation using the diesel engine only in an optimised speed range with the flywheel at rest; the second mode uses diesel engine and flywheel for acceleration; the third mode on flywheel energy only enables the vehicle to cover short distances with the diesel engine switched off. The transmission offers smooth acceleration as well as corresponding jerk-free retardation combined with fuel savings of 15-25% and environmental benefits. (TRRL)

Automotive Engineer Vol. 5 No. 4, Aug. 1980, p47, 3 Fig., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 250359)

ORDER FROM: ESL

DOTL JC

11 331088

DESIGN AND BUILD A LOW POLLUTION PARATRANSIT VEHICLE

In March 1975, AMF Advanced Systems Laboratory contracted with UMTA to design, build, demonstrate, and deliver a low pollution paratransit vehicle. The objective of the project was to develop a vehicle well-suited for use in paratransit. The vehicle, whose overall length is 182.8 inches and 72 inches in width, is compact sized and has a spacious, comfortable, easily accessible interior. The completed vehicle which weighed 3355 lbs. was delivered to the Museum of Modern Art in New York City on June 8, 1976. The AMF paratransit vehicle, as delivered, is a front wheel drive design powered by a two-cylinder, 30 cu. in. Carter steam engine. The front and rear suspension, heavy duty springs, brakes, and rack and pinion steering are all from the Audi 100LS with some modifications. The services provided are mixed, with payload ranging from one to five passengers (able-bodied or handicapped) with or without luggage, and trip lengths varying from a few blocks to tens of miles. The vehicle body is fabricated mainly from automotive steel and aluminum in a manner similar to that used in conventional vehicles. This report summarizes all aspects of the AMF paratransit vehicle. It describes the many components of the vehicle, namely: overall vehicle configuration; propulsion; chassis; main frame; body; mechanical system; climate control; and interior. Numerous tables/figures/-drawings illustrate these components in detail. The report also contains FMVSS certification, development vehicle testing, and the acceptance

testing plan. The appendixes are: Appendix A Main Frame Calculations and Appendix B Body Analysis Calculations. (UMTA)

AMF Advanced Systems Laboratory, Urban Mass Transportation Administration, (CA-06-0080) Final Rpt. UMTA-CA-06-0080-78-1, July 1976, 283p

Contract DOT-UT-50020

ORDER FROM: NTIS

11 331410

VOLVO CITY BUS WITH FLYWHEEL STORAGE [VOLVO-STADTBUS MIT SCHWUNGRAD-SPEICHER]

In May 1980 Volvo (Sweden) presented the prototype of a new, energy saving and environmentally acceptable urban bus. In the new propulsion system braking energy is stored in a flywheel and used again in acceleration jointly with the energy from the diesel engine, via hydrostatic propulsion. It is also possible, with the diesel engine switched off, to drive with the flywheel energy alone for a limited distance, with no exhaust fumes and low noise. The report describes the five year development, technical data, mode of operation, advantages of the hydrostatic energy storage in combination with the flywheel (for example freedom of choice with respect to future sources of fuel), the whole propulsion system, and fuel consumption which is 15-20 percent lower than that of conventional buses. (TRRL) [German]

Bahr *Motortechnische Zeitschrift* Vol. 41 No. 9, Sept. 1980, pp 351-352, 2 Fig., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 312414), Federal Institute of Road Research, West Germany

ORDER FROM: ESL

11 331456

UNIQUE TOWN BUS STORES ENERGY [UNIK STADSBUSS-LAGRAR ENERGI]

Volvo's new hybrid bus prototype stores brake energy in a flywheel connected to a diesel engine, of 140 hp as against 230 hp in a conventional bus, by a hydraulic transmission. The bus is expected to save 15-20% diesel fuel annually in a normal town bus. It has a total length of 12M and a weight of 16.5 tonnes. It can be driven in three ways, (1) normal mode with engine and flywheel both connected, (2) engine only when rapid movement of bus is required and the flywheel is stationary, (3) flywheel only. The bus can drive about 1200M purely on flywheel energy, with performance unaffected, and can thus turn off engine at sensitive places and at stops. Maximum driving wheel output is about 225 kw, exhaust emissions are lower, acceleration and deceleration are smooth, sound emission is lower, another door can be installed behind rear axle, brake wear is less as bus normally decelerates hydraulically, engine can be turned off automatically near stops and restarted after leaving to recharge flywheel. Top speed is 80 kph, top acceleration is 1.6 m/s². Above 25-30 kph engine cannot provide sufficient acceleration in relation to other traffic. All functions are computer controlled. (TRRL) [Swedish]

Svensk Lokaltrafik No. 5, 1980, pp 39-41, 1 Fig., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 252737), National Swedish Road & Traffic Research Institute

ORDER FROM: Svensk Lokaltrafikforeningen, Tegnergatan 3, 111 40 Stockholm, Sweden

11 331800

CASE FOR FUEL-CELL-POWERED VEHICLES

The development of the fuel cell is briefly reviewed. Experimental applications of fuel cells in city buses, highway buses and trucks, delivery vans, consumer vehicles, and golf carts are described. For the most part these are hybrid powered vehicles in which storage batteries supply energy during warm-up and acceleration while the fuel cells supply energy at cruising speed and for battery recharge during vehicle stopping times. The economic viability of these configurations is emphasized.

McCormick, JB (Los Alamos Scientific Laboratory); Huff, JR *Technology Review* Vol. 82 No. 8, 1980, pp 54-65, 17 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

11 334050

ADVANCED DESIGN BUS VENTILATION TESTING

This final report is the result of a test program conducted to compare the following Advanced Design Bus (ADB) ventilation systems identified by the Ventilation and Air Conditioning Subcommittee (VACS) of the American Public Transit Association (APTA): power ventilation using components of the air conditioning system; openable windows within the fixed passenger windows; and roof hatches. The two coaches that participated in the testing were the RTS-11 model (manufactured by General Motors Corporation) and the 870 model (manufactured by Grumman-Flexible Corporation). Both coaches featured large unopenable windows and were tested against the discontinued New Look design coach with openable windows. This study recommends that the specifications for ADBs be changed to insure the maintenance of acceptable interior temperature levels for passengers and drivers in the event of an air conditioning failure or for ADBs ordered without air conditioning. The ventilation methods evaluated during the test program were judged to be ineffective. It is recommended that windows with large openings to the coach exterior be provided on ADB coaches and that the window design be the manufacturer's option. As an alternate, the ventilation systems could be modified to have three to four times their present air-handling capability. Both recommended solutions are to be tested for effectiveness prior to inclusion in the ADB specification. (UMTA)

Booz-Allen and Hamilton, Incorporated, Urban Mass Transportation Administration, (BP 81-001) Final Rpt. UMTA-VA-06-0024-81-1, Mar. 1981, 37p

Contract DOT-UT-70032

ORDER FROM: NTIS

PB81-182446

11 334619

THE DUO-BUS (DUAL MODE BUS)-A MODERN ENERGY CONSCIOUS AND ENVIRONMENTALLY ATTRACTIVE PUBLIC TRANSPORT SYSTEM [DER DUO-BUS-EIN MODERNES, ENERGIEBEWUSSTES UND UMWELTFREUNDLICHES NAHVERKEHRSSYSTEM]

The modern, energy conscious and environmentally attractive duo-bus from Daimler-Benz is described. This is a bus which is run in highly trafficked areas by energy from the overhead trolley wire network only, while in other areas it may be operated in two ways: the more expensive, more environmentally attractive option of battery operation (charging during the journey on the trolley wires) or on a diesel motor drive. (TRRL) [German]

Dietrich, E. *Verkehr und Technik* Vol. 32 No. 9, 1979, pp 378-379, 4 Fig., 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 312301), Federal Institute of Road Research, West Germany

ORDER FROM: Schmidt (Erich) Verlag, Herforder Strasse 10, 4800 Bielefeld, West Germany

11 334666

ELECTRONICS PREVENTS THE BUS FROM FOLDING [ELEKTRONIK HINDRAR ATT Bussen VIKER SIG]

A special control system for articulated buses has been developed. The system prevents uncontrolled jack knifing and skidding in abnormal driving situations. It consists of several separate subsystems. The throttle lever is electrically controlled and is connected to an electronics system, which obtains continuous information about the hinge angle. The electronics device automatically regulates the throttle downward when the hinge angle increases. Another electronics system is connected to the drive shaft and prevents the bus from lurching. Acoustic and optical signals warn the driver if the hinge angle gets too big. If the angle becomes bigger than considered safe when backing, the throttle level is automatically shut off and the rear axles of the bus are braked. (TRRL) [Swedish]

Mil Vol. 26 No. 4, 1980, pp 8-9, 1 Fig., 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 252954), National Swedish Road & Traffic Research Institute

ORDER FROM: SAAB-SCANIA, Scaniadivisionens Informationsavdelning, 151 87 Soedertaelje, Sweden

11 334778

TECHNICAL MILESTONES IN TRUCK AND BUS EVOLUTION

The story of milestones and technology related to trucks and buses involves three periods (1) the beginnings, when acceptance of motorized transport

was established; (2) the maturity of the industry, when there was a rapid growth in automobiles, trucks and buses, and new road systems to accommodate them; and (3) the period since World War II when technical advances have been a matter of evolutionary refinement and improvement.

Mazziotti, PJ (Dana Corporation) *Automotive Engineering* Vol. 88 No. 11, Nov. 1980, pp 31-35

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

11 334780

TRUCK AND BUS AERODYNAMICS INVESTIGATED

Large commercial vehicles such as tractor-trailers and buses generally are large bluff bodies which do not have ideal aerodynamic shape. Because of the high replacement cost of these vehicles, various researchers have investigated the effects of add-on devices on the reduction of aerodynamic drag. One such study on buses has shown that drag can be reduced as much as 27% by the addition of a fairing, with fuel consumption reduction of 12%.

Automotive Engineering Vol. 88 No. 11, Nov. 1980, pp 50-57

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

11 335284

URBAN PUBLIC TRANSPORTATION--SYSTEMS AND TECHNOLOGY

This textbook covers engineering aspects of transit systems. The chapters are: History and Role of Transit in Urban Development, Urban Passenger Transport Modes; Vehicle Characteristics and Motion, Highway Transit Modes, Rail Transit Modes, New Concepts and Proposed Modes, Transit System Performance, and Paratransit and Specialized Modes. Theoretical aspects and practical applications are blended to produce a reference for academic use and for professionals in city planning, transit agencies, consulting firms and government agencies.

Vuchic, VR

Prentice-Hall, Incorporated No Date, 673p, 49 Tab., 125 Phot., Apps.

ORDER FROM: Prentice-Hall, Incorporated, Route 9W, Englewood Cliffs, New Jersey, 07632

11 335784

BUS STEPS FLATTEN OUT TO LIFT WHEELCHAIRS

In October 1979, four lift-equipped buses were introduced in James Bay, Vancouver, where thirty percent of the population is over sixty-five. A survey showed, however, that the dial-a-bus transit service was preferred over wheelchair-equipped buses as they are more easily accessible to the elderly and handicapped. (TRRL)

Funke, B. *Civic Public Works Magazine* Vol. 33 No. 2, Feb. 1981, p 36, 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 254193), Roads and Transportation Association of Canada

ORDER FROM: Maclean-Hunter Limited, 481 University Avenue, Toronto, Ontario M5W 1A7, Canada

11 338199

THE TRI-MET QUIET TRANSIT BUS PROJECT: A CASE STUDY

This report details the cooperative activities of a number of agencies at the Federal, State and local levels both to improve downtown transit-bus service and to reduce the noise associated with that service. Starting from a baseline of 80 dBA a reduction of about 4 dBA has been achieved, and the reduction involved only the use of "operationally acceptable" noise treatments. Additional quieting seems attainable with application of advanced technology concepts. "Operationally acceptable" in the context of this study means noise treatments that the management of Tri-Met accepted as not having a detrimental effect on maintenance. For those Portland buses that had 80 dBA noise levels initially, the operationally acceptable noise treatment will give a reduced noise level of 76 dBA.

Greenstone, R. Benson, W

ORI, Incorporated, Environmental Protection Agency Tech Rpt. ORI/TR-1849, Dec. 1980, 122p

Contract EPA-68-91-5040

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-188021

11 341023

THE "CLEAN AIR" BUS. THE FINAL REPORT ON THE OPERATION OF THE COUNTRY'S FIRST LPG POWERED BUS COVERING THE PERIOD OF OPERATION FROM 1ST APRIL 1976 TO 30TH APRIL 1980

The sections of this report deal with the following aspects: operational and mechanical problems, engine, electrical components, gas system, l.p.g. As a fuel for road vehicles, fuel costs and tax, lub oil consumption, lub oil sampling, noise levels, unladen weight, passenger reaction, interested parties, and the future of the bus. Appended schedules give details of: the evaluation of l.p.g. Powered p.s.v. Fuel price charges, l.p.g./derv cost per mile, color gas distribution points, fuelling costs-adjustment made for all rebates/sur-charges, comparative costs per mile, and fuel and lubricating oil consump-tions. (TRRL)

Cotterill, RF
Cleveland Transit Monograph May 1980, n.p., Figs., Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 254035)
ORDER FROM: Cleveland Transit, Parliament Road, Middlesborough, Cleveland, England

11 342510

SAFETY OF WHEELCHAIR-LOADING AND SECUREMENT EQUIPMENT (THE EFFECTS OF PANIC STOPS ON UNSECURED WHEELCHAIRS IN TRANSIT BUSES)

During the conduct of research on the safety of loading and securement hardware for transporting wheelchair users, a question frequently asked was "what are the effects of "panic stops" on an unsecured wheelchair being transported in a large transit bus and held in place only by the wheelchair brakes?" A series of tests were performed at various speeds and deceleration rates which would be expected in normal bus operations. A live subject occupied an unsecured wheelchair positioned both side and forward facing in a 35 foot transit bus. Reactions during normal turning maneuvers were also tested. This report gives the results of the unsecured wheelchair tests.

Reinl, HG
California Department of Transportation, Urban Mass Transportation Administration Intrm Rpt. UMTA-CA-06-0098, Sept. 1979, n.p.

ORDER FROM: NTIS

11 342511

PLANNING FOR THE PHASE-IN OF FIXED ROUTE ACCESSIBLE BUSES: INTERIM REPORT NO. 1: REVIEW OF ACCESSIBLE TRANSIT SERVICES

This report presents the results of six case studies and a literature review of the current status of planning activities for phasing accessible buses into fixed-route transit service. It summarizes the activities undertaken by transit systems currently providing accessible fixed-route service or intending to implement the service in the near future. Six case study systems--those in Champaign-Urbana, Illinois; Los Angeles, California; Milwaukee, Wisconsin; St. Louis, Missouri; Santa Clara County, California; and Washington, D.C.--are discussed in detail in appendices to this report. This is the first interim report to be prepared under a study entitled "Planning for the Phase-In of Fixed-Route Accessible Buses." The study is being conducted to prepare a manual for use by transit operators and Metropolitan Planning Organizations for planning fixed-route accessible bus service.

Booz-Allen and Hamilton, Incorporated, Synergy Consulting Services, Urban Mass Transportation Administration Intrm Rpt. UMTA-IT-09-9010-80-1, Jan. 1980, n.p.

ACKNOWLEDGMENT: Booz-Allen and Hamilton, Incorporated
ORDER FROM: NTIS

11 342512

RAMP DESIGN PARAMETERS FOR LOW FLOOR TRANSIT BUSES

This report recommends accessibility design parameters for transportation handicapped individuals on ramp-equipped Transbus coaches, and documents the research effort conducted to develop the recommendations. The research approach was to use volunteers, who themselves were physically handicapped, to test a full-scale mock-up of a Transbus coach. The

participants had various physical disabilities, although emphasis was placed on using wheelchair-bound individuals as their configuration was believed to present a more difficult accessibility problem. First, the participants' physical capabilities were quantified and then various vehicle dimensional configurations were tested by simulating boarding, coach interior maneuvering, and alighting activities. Evaluation of the various parameters was accomplished by recording times to conduct the maneuvers, recording participants' and bystanders' reactions, and noting any problems encountered during the maneuvers. Dimensional requirements for coach interior and ramp maneuvering were evaluated as well as non-quantifiable requirements such as ramp surface materials, desirability or need for handrails, and safety conditions. The study concludes that accessibility for handicapped people can be achieved with the ramped low-floor Transbus and that by using the design guidelines recommended in this report, it is possible to improve the fit between bus design constraints and the needs of handicapped passengers.

Booz-Allen and Hamilton, Incorporated, Urban Mass Transportation Administration, (BP 79-002) Apr. 1980, 128p

Contract DOT-UT-70032

ORDER FROM: NTIS

11 345253

BUS DEVELOPMENTS

The article considers the possibility of the return of trolleybus vehicles on a trial route in Bradford, West Yorkshire. The trolleybuses will not only draw power from overhead wire but will also incorporate a diesel engine for operation off the wires. Although fixed costs of the trolleybus are higher than a comparable diesel-engined bus, the trolleybus is said to have a longer working life and costs less to maintain. Government support is awaited for the trial route likely to be between 2.75-6.75 miles long depending on the scheme chosen. (TRRL)

Transport Vol. 2 No. 3, May 1981, p 70

ACKNOWLEDGMENT: TRRL (IRRD 256756)
ORDER FROM: City Press, Fairfax House, Colchester, Essex, England

11 345458

AC PROPULSION FOR ELECTRIC TROLLEY COACHES

The desirable attributes of this vehicle, which are compatible with growing requirements for nondependence on petroleum fuel, energy efficiency, and environmental acceptability, appear to overcome the disadvantages of limited route flexibility and the "visual pollution" of overhead wires. The trolley coach for urban transit can now take advantage of recent developments in ac propulsion which have been demonstrated in revenue service in two European cities. The resulting completely brushless trolley coach propulsion system provides a full regenerative braking capability which operates to near zero speed. The improved drive system consumes substantially less energy than the previous drives to further reduce the vehicle operating cost.

Conference Record of the Industry Applications Society Annual Meeting, 15th, Cincinnati, Ohio, September 28-October 3 1980.

Lawson, LJ (AiResearch Manufacturing Company)
Institute of Electrical and Electronics Engineers Conf Paper IEEE 80CH1575-0, 1980, pp 296-300, 3 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

11 345465

MULTIPLEXING: MULTIPLEXING FOR VEHICLE WIRING [LE MULTIPLEXAGE : MULTIPLEXAGE POUR CABLAGE AUTOMOBILE]

This study has demonstrated that multiplexing is technically achievable and that an electric bus would appear to satisfy the constraints of the motor vehicle environment. The design of the system makes it possible to eliminate stray currents and to avoid placing the driver in difficulty in the case of breakdown. From the authors' estimations, the price of the multiplexing system should be 2.5 to 3.5 times that of traditional wiring. Some additional functions could justify, at least partially, this additional cost which could be reduced by complementary development work. Nevertheless, it is obvious that if the vehicles are designed from the beginning with the integration of a multiplexing system in mind, a more economic solution can be obtained. (TRRL) [French]

Massoubre, JR Reverdin, DL (Precision Mecanique Labinal) *Societe des Ingenieurs de l'automobile, Journal de* No. 2, Feb. 1980, pp 39-42, 5 Figs.

ACKNOWLEDGMENT: TRRL (IRRD 110614), Central Laboratory of Bridges & Highways, France, Road Safety Study and Research Fund, Belgium
ORDER FROM: Societe des Ingenieurs de l'Automobile, 3 Avenue du President Wilson, Paris F-75000, France

11 345734

THE PRESENT TECHNOLOGY OF URBAN BUSES [A TECNOLOGIA ATUAL DOS ONIBUS URBANOS]

This work describes the main characteristics of buses and electric buses project, produced in various countries. It also offers a project of a new electric bus, based on the most modern international designs. It presents an appendix which emphasizes the national regulations for bus construction in different countries. (TRRL) [Portuguese]

Vieira, JL
Companhia Municipal de Transportes Coletivos Monograph Aug. 1979, 114p, Figs.

ACKNOWLEDGMENT: TRRL (IRRD 257760)

ORDER FROM: Companhia Municipal de Transportes Coletivos, Rua Treze de Maio, 1376, Sao Paulo, Brazil

11 345737

THE URBAN BUS [O ONIBUS URBANO]

This work presents a collection of seminars about the use of the urban bus. Mechanical parts, structure, safety, comfort, rust prevention and passenger capacity are discussed. Mention is also made of the third generation electric bus. (TRRL) [Portuguese]

Companhia Municipal de Transportes Coletivos Monograph Aug. 1979, 252p, Figs., 8 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 257751)

ORDER FROM: Companhia Municipal de Transportes Coletivos, Rua Treze de Maio, 1376, Sao Paulo, Brazil

11 345926

NEW TRANSMISSION GEARED FOR SUCCESS

An automatic transmission for commercial vehicles, developed by Maxwell Bus Transmissions, offers high overall efficiency, lightweight and ease of

servicing. The compact design offers potential for installation in layouts previously impracticable but now possible for two reasons- it is 33 cm shorter than comparable units and the output is taken from the side of the box allowing improved access for servicing. Installed in a Dennis Dominator bus with a rear-mounted Gardner engine, the automatic transmission unit weighs only 375 kg compared with 520 kg of the standard transmission. (TRRL)

Transport Vol. 2 No. 4, July 1981, pp 60-61, 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 257934)

ORDER FROM: City Press, Fairfax House, Colchester, Essex, England

11 346035

FIXED ROUTE ACCESSIBLE BUS SERVICE IN CONNECTICUT: A CASE STUDY

U.S. Department of Transportation regulations implementing Section 504 of the Rehabilitation Act of 1973, require transit agencies to provide wheelchair accessibility on fixed-route bus service. The study is part of the series which included studies in Seattle, Washington and Washington, DC. The objectives are to report on Connecticut Transit's (Conn Transit) experience with the new service in order to provide information to other systems developing accessible service, and to estimate the costs of providing this service. The document reports on the operating experience of Conn Transit's fleet of 280 Flexible buses equipped with wheelchair lifts. This fleet, purchased in 1979, provides service in the Hartford, New Haven, and Stamford areas. The study analyzes operating data on wheelchair lift boardings and denials; accessible and non-accessible bus schedules; road calls and repairs for all problems and for lifts; lift-related accidents, injuries, and claims; wheelchair lift marketing and promotional activities; service planning and development; and marginal operating and capital costs of accessible service for a three-month period in each of the three operating areas.

Nelson, D Spano, M Shepetin, S
Charles River Associates, Incorporated, Urban Mass Transportation Administration, Transportation Systems Center, (UMTA-MA-06-0049)

Final Rpt. UMTA-MA-06-0049-81-5, July 1981, 148p
Contract DOT-TSC-1757-8

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-105115

12 180625

FULLY AUTOMATED URBAN TRAFFIC SYSTEM

The replacement of the driver with an automatic system which could perform the functions of guiding and routing a vehicle with a human's capability of responding to changing traffic demands was discussed. The problem was divided into four technological areas; guidance, routing, computing, and communications. It was determined that the latter three areas being developed independent of any need for fully automated urban traffic. A guidance system that would meet system requirements was not being developed but was technically feasible.

Sponsored in part by NASA.

Dobrotin, BM Hansen, GR Peng, TKC Rennels, DA
Jet Propulsion Laboratory Final Rpt. NASA-CR-155947, Dec. 1977,
126p

Contract DOT-AS-60067

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

N78-20020/1ST

12 328962

LORAN-C RFI MEASURED IN LOS ANGELES, CALIFORNIA

Radio noise and RFI at and near frequencies employed by Loran-C radio navigation systems were investigated in portions of Los Angeles, California. Emphasis was placed on the definition of the detailed time and frequency domain structure of noise and RFI which might degrade the reception of Loran-C signals in urban, suburban, and industrial areas of Los Angeles. The measurements were directed toward obtaining an understanding of the noise and RFI environment which would be encountered by vehicularly installed Loran-C navigation systems. Measurements were made at and around the 100 kHz band of frequencies employed by Loran-C, and they were made from a mobile van. The noise and RFI instrumentation is described in this report.

Prepared in cooperation with Systems Control, Inc., Palo Alto, CA.

Vincent, WR Sage, G
Gould Information Identification, Incorporated, Transportation Systems
Center, Urban Mass Transportation Administration, (UMTA-MA-
06-0041) Final Rpt. DOT-TSC-UMTA-80-38, Oct. 1980, 238p

Contract DOT-TSC-1237

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-151300

12 330143

DETAILED DESIGN FOR A MIS FOR THE SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

A demonstration of an Automatic Vehicle Monitoring (AVM) system, is being performed at the Southern California Rapid Transit District (SCRTD) in Los Angeles. The AVM will record a large amount of operational data that can later be used for this demonstration. Although the primary purpose of the AVM system is to determine the effectiveness of various on-line control strategies, a large amount is recorded daily and can be used to provide management information. A previous Working Paper (WP-79W00738) detailed the requirements for Management Information Systems (MIS) reporting using AVM data, and a later letter (W24-5026) presented a preliminary design that would provide the required data. The programs required to process the AVM log tape and eventually provide MIS reports are described in this report. This document expands the preliminary design to a detailed design. The latest data flow diagrams are given, and the inputs and processing required by each process are described. The report also discusses the structured approach and conventions of the pseudo-code used to explain the processing. Appendix A alphabetically presents the contents of the files and some of the tables referred to in the report and Appendix B presents the detailed pseudo-code described in the report. The contents of this document include revisions based on discussions with SCRTS personnel of an earlier draft copy. It is anticipated that further refinements will result during the implementation phase of this project. (UMTA)

Ludwick, JS, Jr
Mitre Corporation, Urban Mass Transportation Administration,
(MTR-80W84) UMTA-VA-06-0065-80-1, Oct. 1980, 113p

Contract DOT-UT-90006

ORDER FROM: NTIS

PB81-130809

12 341272

MONITOR--AN AUTOMATIC BUS LOCATION AND COMMUNICATION SYSTEM FOR CHICAGO

Since 1970 the Chicago Transit Authority has had location-equipped vehicles in revenue service. Subsequently, the entire fleet, of over 2400 vehicles has been equipped with two-way voice/data radios with the location feature. The location technique of "broad-field proximity" (high-band VHF signposts) has been utilized, to provide location information. This paper describes the system configuration and operation, including design criteria such as RF coverage areas, channel assignments and loading, and computer polling rates for location and automatic correlation data (bus number versus Garage/Run number). Emphasis will be placed upon the dual computer system (host front-end) which includes: system monitoring by central dispatchers; emergency alarm (with location) monitoring and reporting (equipment fault isolation-through mobile unit diagnostics); MIS capability; and future AVM function monitoring and reporting (start run indicators on board the vehicles, passenger counter, and odometer data acquisition). System reliability and availability levels experienced, as well as maintenance procedures utilized are outlined. System expansion capabilities, and flexibility including the incorporation of routine bus transfers between garages, and the addition/deletion of vehicles in the system on also described.

Proceedings of the 30th Annual IEEE VTS International Conference on Transportation Electronics, September 15-17, 1980.

Wiksten, CL (Chicago Transit Authority); Brown, CP (Collins (Terence J.) Associates, Incorporated) *IEEE Vehicular Technology Society Conference Proc* Proceeding Sept. 1980, 6p, 4 Fig., 2 Tab., 4 Ref.

ORDER FROM: IEEE Service Center, 445 Hoes Lane, Piscataway, New Jersey, 08865

DOTL JC

12 345391

QUEENS VILLAGE RADIO-DATA-LOCATOR SYSTEM

The purpose of the Radio-Data-Locator System is to provide communications and to optimize resource utilization. It helps improve bus schedule adherence and the level of bus service. In 1967, the New York City Transit Authority placed the world's largest civilian radio network in operation by the inauguration of a two-way bus radio voice network system. Automatic vehicle monitoring began in April 1979 with the Radio-Data-Locator system for Queens Village Depot, one of its twelve surface transit lines. Present features and capabilities are described and future aspects are considered.

Proceedings of Convergence 80, 30th Annual Conference of the Institute of Electrical and Electronics Engineers Vehicle Technology Society International Conference on Transportation Electronics, Dearborn, Michigan, September 15-17 1980. Session D-2, Paper 1.

Dornfield, S (New York City Transit Authority)
Institute of Electrical and Electronics Engineers Conf Paper IEEE
80CH1601-4, 1980, 7p

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

12 345397

AUTOMATIC VEHICLE MONITORING: A LIFE SAVER

The subsystems that are inherent in Automatic Vehicle Monitoring (AVM) systems are discussed. Various techniques and characteristics of some existing AVM systems are reported.

Proceedings of Convergence 80, 30th Annual Conference of the Institute of Electrical and Electronics Engineers Vehicle Technology Society International Conference on Transportation Electronics, Dearborn, Michigan, September 15-17 1980. Session D-3, Paper 3.

Carter, DA (Department of Transportation)
Institute of Electrical and Electronics Engineers Conf Paper IEEE
80CH1601-4, 1980, 5p, 10 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

12 345438

TECHNICAL AND ECONOMIC ROLE OF SPACE TECHNOLOGY IN TERRESTRIAL MOBILE COMMUNICATIONS

The last decade's major expansion of mobile communications has prompted investigations by NASA into the potential role of space technology in alleviating spectrum crowding and other constraints resulting from this growth. A critical survey of the status and the technical and economic

conclusions of these investigations are presented including a perspective of the relative role of private and public enterprise.

Castruccio, PA (Ecosystems International Inc, Maryland) *IEEE Transactions on Vehicular Technology* Vol. VT-3 No. 2, May 1981, pp 77-84

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

12 345439

**SATELLITE-AIDED MOBILE COMMUNICATIONS:
EXPERIMENTS, APPLICATIONS, AND PROSPECTS**

NASA's application technology satellites (ATS) were used in a series of communications and position-fixing experiments with automotive vehicles, ships, and aircraft. Applications of the communications were demonstrated and evaluated for public services including law enforcement, search and rescue, medical emergency, and for commercial uses in the land and maritime transportation industries. The technical success of the experiments and the demonstrated potential value of the communication prompted a study which concluded that an operational satellite-aided system would be a valuable augmentation to planned trunking or cellular-type terrestrial mobile radio telephone systems.

Anderson, RE (General Electric Company, New York); Frey, RL Lewis, JR Milton, RT *IEEE Transactions on Vehicular Technology* Vol. VT-3 No. 2, May 1981, pp 54-61

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

12 345736

**INNOVATION IN URBAN TRANSPORT TECHNOLOGY
[PROJETO DE INOVACOES NA TECNOLOGIA DE
TRANSPORTES URBANOS]**

The bus is the transport mode most used by the urban population of Brazil. A description of operational aspects emphasizes the need for improvements to the bus system. Busways, bus lanes and traffic light priority are among recommendations made. The urban bus industry in Brazil is also discussed. (TRRL) [Portuguese]

Empresa Brasileira de Planejamento de Transportes Monograph 1976, 199p, Figs., Tabs., 6 Phot., 13 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257752)

ORDER FROM: Empresa Brasileira de Planejamento de Transportes, Esplanada dos Ministerios-Bloco E - 60 Andar, Brasilia, Brazil

12 345745

WHERE ARE GUIDED BUSES TAKING US?

Although flexibility has always been claimed as the main advantage of the bus over the tramcar, developments in bus design using guideways appear to remove this flexibility. Combining bus and rail technologies in this way offers advantages of mass produced components as shown by the Leyland railcar development. The advanced O-Bahn system described, developed by Mercedes Benz and operating in Essen, uses a 1.3 km track section of a former tram route as a bus guideway, the buses then returning to normal operation off the track. A similar installation is said to be planned for Adelaide. A further development of the O-Bahn system is a 24 M long three-section 'bus-train'. The vehicle is electrically driven with pantograph current collection. Similar guided bus development by Man and Volvo are detailed. (TRRL)

Yearsley, I *Modern Tramway and Light Rail Transit* Vol. 44 No. 523, July 1981, pp 218-223, 1 Fig., 5 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 257533)

ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

13 330203

POSSIBILITIES OF POWER REGENERATION BY UNDERGROUND RAILWAY VEHICLES AND USE OF REVERSIBLE SUB-STATIONS [Posibilidades de recuperacion de energia por vehiculos metropolitanos y utilizacion eventual de subestaciones reversibles]

After stressing the necessity of saving energy, the author studies the possibilities of regenerating electric energy on underground railway vehicles during braking. He describes the principles of chopper equipment operation, during starting and braking, and gives information on the results obtained by several underground railway networks. He studies the advantages and drawbacks of using reversible sub-stations. [Spanish]

Hanocq, R. *AIT-Revista* No. 35, July 1980, pp 47-55, 5 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Asociacion de Investigacion del Transporte, Alberto Alcocer 38, Madrid, Spain

13 330206

LIGHT SUBURBAN UNITS [Unidades ligeras para cercanias]

The author first sets out the ideal characteristics which ought to be manifested by the RENFE's suburban rolling stock in order to fulfill the special requirements of this traffic, and goes on to analyse the results of a computer-simulated study of the running of two theoretical units, one in a light alloy and the other in steel, comparing these with the 440-type unit in service on the RENFE. The study yields characteristic basic data currently being examined by the RENFE and a group of Spanish railway rolling stock manufacturers. [Spanish]

Sanchez, JL. *AIT-Revista* No. 35, July 1980, pp 27-34, 8 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Asociacion de Investigacion del Transporte, Alberto Alcocer 38, Madrid, Spain

13 331500

NEW FAMILY OF HIGH-PERFORMANCE AC AND DC MULTIPLE-UNITS TAKING OVER BR SUBURBAN SERVICES

The paper reports that the GEC-Traction powered trainsets of British Railways design and construction introduced over the last five years have a high-degree of standardisation for operation on 25 kV and 750, 650 V dc lines. A series have been designed for 25 kV/750 V dc with ready potential to link Southern Region services with those north of the Thames.

Rail Engineering International Vol. 9 No. 2, Apr. 1980, pp 55-56

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

13 331544

CONTROL AND POWER CIRCUITS OF A THYRISTOR PULSE CONVERTER FOR THE MODERNIZATION OF T3-TYPE STREETCARS [Regulacni a silove obvody tyristoroveho pulsnioho menice pro modernizaci tramvaji typu T3]

The control and power circuits of modernized type-T3 streetcars equipped with a thyristor pulse converter are described. The circuits were tested starting in 1976 on two prototypes which were used in 1977 for the construction of 10 pieces and in 1978 of a series of 60 pieces. [Czech]

Ryant, J. First, A. *Elektrotechnicky Obzor* Vol. 69 No. 4, Apr. 1980, pp 215-219

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 331546

ALUMINUM/-STEEL CONDUCTOR RAILS IN RAPID TRANSIT AND SUBWAY SYSTEMS [Aluminium-Verbundstromschienen im S- und U-Bahnbetrieb]

Aluminum/steel conductor rails employed for the Hamburg rapid transit and Berlin subway system have been in service since 1978. The rails, made of 4 to 4.5 mm thick steel strip embedded in extruded aluminum sections, are made by a coextrusion process. This results in the electrical resistance between the components being about 1000 times smaller than in other rails. For the same electrical capacity the composite rail is lighter than all the other types of rail. Only light, plastic supports are needed to keep them in position, which makes the installation work easier. Unlike the steel rails, the new rails

can be used not only for direct current but also for two-and three-phase alternating current. [German/French]

Mier, G. *Schweizer Alumin Rundschau/Revue Suisse de Alumin* Vol. 30 No. 1, 1980, pp 9-13, 4 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 331557

REGENERATIVE BRAKING OF ELECTRIC RAIL VEHICLES

The paper discusses the introduction of regenerative braking in electric rail vehicles, particularly in the case of rapid transit vehicles. A detailed description of the regenerative braking techniques applied to d.c. traction motors is given. Also examined are regenerative braking systems for ac traction vehicles.

Wagner, R. *Siemens Power Engineering* Vol. 2 No. 9-10, Sept. 1980, pp 294-298, 5 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 331560

GENERAL CRITERIA FOR VERIFICATION CALCULATIONS OF BOGIES FOR SUBWAY CARS [Criteri generali per il calcolo di verifica delle sale delle carrozze per le ferrovie metropolitane]

The criteria that guided UNIFER draft regulations for bogie calculations are explained. Of particular interest in this regard are the questions connected with the estimation of operating loads, the identification of various standardized service situations and the evaluation of the degree of safety in the different situations. An example drawn from constructional practice and from some comparative evaluations with the present regulations is presented. [Italian]

Paolini, G. (Politecnico di Milano, Italy); Vigliani, U. *Ingegneria Ferroviaria* Vol. 35 No. 4, Apr. 1980, pp 325-330, 16 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

13 331842

AXLE MOTOR AND INVERTER DRIVEN MU FOR BR

This article describes a test vehicle being built by British Railroads to compare traction arrangements and measure electrical noise levels. The axle motors are evaluated in a multiple unit, which is being especially converted for the purpose.

French, PW. *Railway Engineer International* Vol. 5 No. 4, July 1980, pp 35-38, 3 Ref.

ACKNOWLEDGMENT: EI
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DOTL JC

13 331847

EXPERIENCE OF ELECTRONICS ON RAPID TRANSIT STOCK

Over the past 20 years, each new fleet of railroad rolling stock purchased by the London Transport Executive has incorporated more and more electronic equipment. The rationale behind the adoption of this type of equipment, and the experience gained with its use are outlined. Consideration is given to areas of apparent discord between electronic technology and the railroad vehicle industry, together with an indication of how London Transport is dealing with the situation. It is intended that the paper provide various aspects of the industry (manufacturers and users, technical staff and managers) with a better insight into the problems involved with the introduction of a "new technology" into a long established industry.

Harding, MA. *Institution of Electrical Engineers, Proc Part B* Vol. 127 No. 4, July 1980, pp 215-222, 3 Ref.

ACKNOWLEDGMENT: EI
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DOTL JC

13 331854

THREE-PHASE DRIVE TECHNOLOGY FOR RAPID TRANSIT RAILROADS [Drebstromantriebstechnik fuer Nahverkehrsbahnen]

The development of power electronics and inverters has made it possible to use three-phase asynchronous motors as traction motors for electric

railroads. The advantages which result from this technique for tractive units of rapid transit systems are pointed out. It is reported that the German industry has fitted some prototype vehicles with asynchronous motors. Two different inverter methods, the current dc link converter and the pulse width modulation converter, have been used. Three-phase current drive equipment for rapid transit has been constructed, based on experience gained from prototype vehicles. [German]

Wagner, R. *Elektrische Bahnen* Vol. 78 No. 6, June 1980, pp 151-157, 5 Ref.

ACKNOWLEDGMENT: EI
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DOTL JC

13 334185**RIDE-QUALITY MODELS FOR DIVERSE TRANSPORTATION SYSTEMS**

This research was undertaken to develop comfort (ride-quality) models for six specific vehicles and to refine an existing composite ride-quality model. The vehicles were an automated guideway transit vehicle, a short-haul intercity rail vehicle, an urban rapid rail vehicle, a luxury-type charter bus, a compact car, and a subcompact automobile. Experiments on most vehicles were conducted in two phases: model development and model validation. In both phases, physical variables were measured for a series of ride segments, and each segment was rated for comfort level by a group of paid subjects. The important determinants of comfort for most vehicles were roll, pitch, and vertical acceleration. These variables are highly intercorrelated; all load on the same principal component of the motion-correlation matrix. Two composite ride-quality models are presented; one has four variables (roll, pitch, and vertical and longitudinal acceleration) and one has two variables (vertical acceleration and roll). The two-variable comfort model is sufficient for most uses. (Author)

This paper appeared in Transportation Research Record No. 774, Maintenance Management Systems and Transportation Ride Quality.

Richards, LG Jacobson, ID (Virginia University); Pepler, RD (Dunlap and Associates, Incorporated) *Transportation Research Record* No. 774, 1980, pp 39-45, 6 Tab., 22 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

13 334306**CONSTRAINTS APPLICABLE TO COMPONENTS FOR SUBWAY ROLLING STOCK [Les contraintes applicables aux composants dans le matériel roulant du métro]**

Railway rolling stock has to carry a considerable number of persons with maximum safety. At the RATP any trainset rendered inoperative impacts adversely on the entire system. Components have to be designed for great reliability, easy maintainability and a high degree of safety during the lifetime of the vehicles. They have also to meet the climatic and mechanical conditions required of the equipment. To obtain satisfactory quality of service at reasonable cost, the RATP has drawn up special qualifications, developed specific products, established quality levels, installed product testing procedures and a system for following up failures, and refined its maintenance policy. [French]

Boschat, F *Onde Electrique* Vol. 60 No. 8-9, Aug. 1980, pp 52-56

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 334308**NEW ELECTRICAL TRACTION EQUIPMENT FOR THE ROLLING STOCK OF URBAN TRANSPORT**

New Soviet traction motors and control systems for rolling stock of urban transportation are described. Between 1976-1980, the subways in the USSR were to transport more than 17 billion passengers, which is 28% more than in the preceding five-year period. The requirements with regard to the performance of subways, trolleybuses and streetcars are specified. The tasks of new control systems are indicated and some long-term problems are outlined.

Rabinovich, AA *Soviet Electrical Engineering* Vol. 50 No. 2, 1979, pp 27-33

ACKNOWLEDGMENT: EI
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10

13 334320**TRACTION SETS**

Constructional features of traction sets PE2M, OPE2, OPE1A, OPE1B, and PE3T are described. Their parameters are given and the working principles of voltage regulators, of ac-dc and dc-dc types, are shown.

Zholobov, LF Kuz'menko, LA Patsovskii, YV *Soviet Electrical Engineering* Vol. 50 No. 2, 1979, pp 16-22

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 334332**PCC. THE CAR THAT FOUGHT BACK**

This history of the development of the PCC electric street railway car during the 1930s and its refinement into the 1950s contains a significant amount of technical detail. Beginning with the 1930 street railway industry—one in decline and lacking a modern, competitive vehicle, the book traces the market study, research and development efforts, production and application of the vehicle. Operators and suppliers funded the effort through the Electric Railway Presidents Conference Committee which lent some of its initials to the car's PCC designation. All aspects of the development of the streamlined car are covered: body design, trucks and suspension, motors and drive, control systems, standardization, modularization and lightweight to reduce first cost and operating costs. Also described are contemporary efforts to produce a vehicle competitive with the PCC, as well as application of the PCC technology to rapid-transit vehicles. In conclusion the book tells of the export of both PCC cars and PCC technology to other nations where the technology continued to evolve. PCC cars still operate in some North American cities and elsewhere around the world.

Carlson, SP Schneider, FW, III Bromley, JF Jackson, RE *Interurban Press Special* 64, 1980, 250p, Photos., 1 App.

ORDER FROM: Interurban Press, P.O. Box 6444, Glendale, California

13 334432**BUILT TO LAST IN STAINLESS STEEL**

Metro cars ordered by Chicago, Miami and Baltimore represent the first large-scale production of bodies fabricated from low-carbon stainless steel. This material is not only easier to form and has better welding characteristics; it also has a superior finish which is important when cars are not painted. Stainless costs more than other steels which are not corrosion-resistant, but lends itself readily to lightweight forms of construction that can rival aluminium. Another advantage is the high modulus of elasticity which enables a stainless steel car to resist deformation from overloads or impacts while still absorbing energy.

Darrah, JB (Budd Company) *Railway Gazette International* Vol. 137 No. 4, Apr. 1981, pp 286-288, 1 Tab., 6 Phot.

ORDER FROM: ESL

DOTL JC

13 334466**SEPTA WHEEL RESIDUAL STRESS INVESTIGATION**

The residual stress determinations were made in accordance with the procedure given in the AAR Manual of Standards and Recommended Practices, Section G. Little in the way of significant residual stress was found in the critical plate fillets of the five wheels submitted by the Southeastern Pennsylvania Transportation Authority.

Opinsky, AJ

Association of American Railroads Technical Center, Southeastern Pennsylvania Transportation Authority Res Rpt. AAR R-411, Project H-213, Feb. 1980, 19p, 1 Fig., 3 Tab., 2 Ref.

Contract SEPTA P/O 029448

ORDER FROM: Association of American Railroads Technical Center, 3140 South Federal Street, Chicago, Illinois, 60616

DOTL RP

13 334481**COUPLED TORSION BARS IN RAIL VEHICLE SUSPENSIONS**

Explains the theory behind the system of a secondary suspension based on coupled torsion bars, and describes experimental work.

Kebrowski, A *Railway Engineer International* Vol. 5 No. 6, Nov. 1980, pp 57-60, 12 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

DOTL JC

13 334492
TRANSIT CAR PROCUREMENT: BREAKTHROUGH IN BUFFALO

The author describes how Buffalo organised negotiations with prospective suppliers of coaches for its urban and suburban transport network. A comparison with Cleveland and Philadelphia is given.

Ireton, ET *Railway Age* Vol. 182 No. 1, Jan. 1981, pp 23-27, 3 Tab., 1 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

DOTL JC

13 334504
STANDARDIZATION OF ELECTRIC EQUIPMENT IN MOTIVE POWER UNITS FOR SHORT-DISTANCE TRAFFIC
[Vereinheitlichung der elektrischen Ausrüstung von Nahverkehrs-Triebfahrzeugen]

With standardized rolling stock for short distance transport, it is possible to reduce the cost price of motive power units and the number of spares that have to be held in stock. The author shows by examples (BLS trainsets, the Schöthurn-Zollikofen-Bern trainsets, the Zurich Tram 2000) to what extent modular types of construction are adaptable for widespread standardization of sub-systems and components. [German]

Baechler, U *Brown Boveri Review* Vol. 68 No. 1, 1981, pp 12-19, 2 Tab., 8 Phot., 9 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

DOTL JC

13 334511
ELECTRIFICATION OF THE TYNE AND WEAR METRO

Examines the power supply, overhead equipment and the general technical considerations governing the design of the power system & equipment.

Prickett, BR *Institution of Electrical Engineers, Proc Part B* Vol. 128 No. 2, Mar. 1981, 11p, 11 Fig.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

DOTL JC

13 335033
THE COMPLETE BOOK OF ELECTRIC VEHICLES

This book describes in detail commercially built electric cars, trucks, cycles, trains and buses and covers: (1) electric vehicle history; (2) fundamentals of electricity; (3) electric motors; (4) batteries and energy systems; (5) electric vehicle controls; (6) vehicles of the present; (7) home-built electric vehicles; (8) contemporary legislation; and (9) meeting future energy needs. A directory of associations together with a manufacturers' list is appended. (TRRL)

Shacket, SR
Millington Books Monograph 1980, 168p, Figs., Tabs., Photos., 42 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253184)
ORDER FROM: Millington Books, 109 Southampton Row, London, England

13 335263
WORKING ON SOLUTIONS TO INTERMEDIATE TRANSIT PROBLEMS

Canada's Urban Transportation Development Corp. is operating a full-scale test facility at Kingston, Ont., where its Intermediate Capacity Transit System (ICTS) is being tested. Components of ICTS include elevated structures, continuous welded rail secured directly to the concrete decks, an isolated power distribution system with dual contact rails, and 40-ft Advanced Light Rail Transit (ALRT) vehicles propelled by linear motors. The track contains an antenna system which provides automatic control and also functions for low-frequency inductive communication between vehicle and wayside. UTDC is working on revenue applications as downtown people movers.

Quigley, H *Mass Transit* Vol. 8 No. 7, July 1981, p 18, 1 Phot.

ORDER FROM: Mass Transit, 555 National Press Building, Washington, D.C., 20045

DOTL JC

13 341564
STABILITY AND CURVING MECHANICS OF RAIL VEHICLES

This paper presents a unified treatment of stability and curving mechanics of steel wheel/steel rail vehicles utilizing low order, predominantly linear models. The analysis is applicable to both conventional and self-steering radial passenger trucks. A six degree of freedom truck model is utilized to illustrate the various instability modes that can occur. A four degree of freedom steady state curving model is used to investigate the curving performance.

For Meeting held November 16-21, 1980.

Bell, CE (Massachusetts Institute of Technology); Horak, D Hedrick, JK *American Society of Mechanical Engineers Papers* ASME 80-WA/DSC-15, 1980, 12p, 21 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 341584
RAILBUS RIDES TO THE AID OF BRITISH RURAL COMMUTERS

British Railways, confronted with deficits on rural passenger services which are operated with obsolete diesel multiple-unit cars over trackage on which major work cannot be justified, is experimenting with the Leyland LEV, a mass-produced bus body placed on a two-axle railway undercarriage and powered by a standard diesel bus engine. A two-unit version of this railbus is in service on one light-density line where one-man operation, including the selling and collecting of fares, is combined with radio dispatching and minimal spot track maintenance. Direct costs are seen equalling revenues with the government subsidy making up other losses from the operation.

Goldsack, PJ *Mass Transit* Vol. 8 No. 9, Sept. 1981, p 16, Photos.

ORDER FROM: Mass Transit, 555 National Press Building, Washington, D.C., 20045

DOTL JC

13 341721
CHOPPER CONTROL FOR TRAMS

This report is for Transport (planning and research) Act 1974, project vnot 74/5.1. In order to examine performance characteristics, a set of experimental chopper control equipment was purchased, installed in a "z" class tram and subjected to extensive testing. The tram performed reliably in service after some initial modifications. Overall energy savings of the order of 30 per cent were obtained when operating in normal service, while an energy saving of 25 per cent is expected with a fleet of chopper trams. Initial tests demonstrated that special modifications to the chopper control equipment were necessary to provide compatibility with the board's substation feeder system. The acceleration and braking performance was examined to ensure that the board's requirements could be attained. The chopper control equipment has been a useful tool in the examination of chopper technology. The experimental ground work completed in this project has facilitated the incorporation of chopper control equipment into all new trams introduced into service since July 1979 (A).

Melbourne and Metropolitan Tramways Board Monograph July 1980, 119p, Figs., 1 Tab., Photos.

ACKNOWLEDGMENT: TRRL (IRRD 250684), Australian Road Research Board

ORDER FROM: Melbourne and Metropolitan Tramways Board, 616 Little Collins Street, Melbourne, Victoria, Australia

13 341929
WHEEL-RAIL NOISE REDUCTION OF RAIL RAPID TRANSIT

Characteristics of noise and vibration of a wheel are discussed based on experimental and theoretical studies. The noise is caused mainly by transverse vibration of the wheel, and the vibration level is influenced by the condition of rail contact. Vibration can be theoretically derived by a differential equation including shear deformation and rotatory inertia terms for a circular plate with stepped thickness, with the following boundary conditions; the inside circumference is fixed, the outside is free and one point on it is simply supported. Noise can be reduced by decreasing the vibration and the sound radiating area of the wheel. For example, a spoke type wheel

which properly contacts with a rail has 8-10 dB lower noise than a web type wheel.

Proceedings of the International Conference on Noise Control Engineering, Inter-Noise 79, V2, Warsaw, Poland, September 11-13, 1979.

Sato, S (Kyoto University, Japan); Matsuhisa, H
Polish Academy of Sciences 1979, pp 521-526

ACKNOWLEDGMENT: EI

ORDER FROM: Polish Academy of Sciences, Institute of Fundamental Technical Research, Warsaw, Poland

13 341937

LATERAL DYNAMICS OF A RAIL TRANSIT VEHICLE: COMPARISON OF EXPERIMENTAL AND THEORETICAL RESULTS

A subway rail vehicle was tested on tangent and curved track sections to provide dynamics data for validation of theoretical models. Tests were done with three combinations of primary suspension and wheel profiles which were selected using a simplified track stability/curving tradeoff analysis. The test results of one configuration are compared with two lateral dynamic models. Experimental frequency and damping results are compared with the predictions of a linear lateral stability model for a number of vehicle speeds. The measured time histories of vehicle responses on a spiral and a 122 m (400 ft) radius curve are compared with the results obtained from a curve entry dynamics model.

Young, JA (Ontario Ministry of Transportation & Communic, Can);
AppaRao, TA *ASME Journal of Dynamic Systems, Meas and Control*
Vol. 103 No. 1, Mar. 1981, pp 39-48, 20 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

13 343023

VIBRATION LEVEL DATA BRIGHTON-NEW YORK CITY TRANSIT AUTHORITY

This report documents the results of a vibration measurement program conducted on 14-15 August 1980 in the Midwood Section of Brooklyn, New York, next to the tracks of the Brighton Line of the New York City Transit Authority. The test was conducted by the Transportation Systems Center (TSC) for the Urban Mass Transportation Administration. The purpose of this test was to expand the data base being developed by the TSC for the prediction of ground-borne noise and vibration from nearby transit systems. A two-story home of a private citizen at 1546 East 16th Street in Brooklyn, was instrumented with six vibration transducers in several of the rooms and on the outside patio in order to obtain a measure of the ground and structural vibration levels resulting from the passby of rapid transit trains on the nearby tracks. This house was built on the old roadbed of the Long Island Railroad in 1943 and stands approximately 30 feet from the near track of the four-track right-of-way of the Brighton Line.

Rickley, EJ Rice, NE

Transportation Systems Center, Urban Mass Transportation
Administration, (UMTA-MA-06-0099) Final Rpt. DOT-TSC-UM-
TA-81-7, UMTA-MA-06-0099-81-2, Feb. 1981, 54p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-202814

13 343030

PILOT STUDY FOR DEFINITION OF TRACK COMPONENT LOAD ENVIRONMENTS

This report describes the results of an experimental and analytical effort to define the vehicle induced load environment in an at-grade, concrete tie/ballast transit track structure. The experiment was performed on the UMTA transit track oval at the Transportation Test Center in Pueblo, Colorado in order to establish an initial data baseline which could be extended to include data from tests conducted on various transit track structural systems. Standard experimental techniques generally were used to measure the pressures, strains, and applied wheel/rail loads in the various track structure components; however, innovations were effectively introduced for measuring pressures on the bottom of the concrete tie and in the ballast. Track design methods and analytical computer techniques for predicting the load environment in the various track components were evaluated through comparisons with the experimental data. Design conser-

atism in the tie/ballast transit track systems was evaluated from the aspect of stress criteria versus other design factors based on experience and initial capital costs versus maintenance costs for transit systems.

Prepared in cooperation with Kaman Sciences Corp., Colorado Springs, CO., and Thomas K. Dyer, Inc., Lexington, MA.

Stagliano, TR Mente, LJ Gadden, EC, Jr Baxter, BW Hale, WK
Kaman AviDyne, Transportation Systems Center, Urban Mass
Transportation Administration, (UMTA-MA-06-0100) Final Rpt.
DOT-TSC-UMTA-81-8, Feb. 1981, 229p

Contract DOT-TSC-1605

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-203531

13 343661

THE SERVICE-EVALUATED PRODUCTS LIST FOR RAPID TRANSIT CAR SUBSYSTEM COMPONENTS

How a product performs in scheduled revenue service is evidence as to how well that product has been engineered for site-specific applications within the rail transit environment. If the transit industry's search for more reliable, maintainable, and interchangeable equipment is to be advanced, industry-wide visibility of product usage and performance must be established. The Service-Evaluated Products List (SEPL) fulfills that objective. Products within each of 38 subsystem component categories for which adequate maintenance records are kept by North American rapid transit operators are profiled in the SEPL. For acceptance in the SEPL, each product must be a permanent part of rapid transit cars which have been operated in scheduled revenue service for a minimum of 4 million car-miles. The SEPL is arranged in three parts: Part A- Products Usage Data; Part B-Product Performance Profiles; and Part C-Component Performance Summaries. The SEPL should benefit the entire transit community. Operators should benefit by being able to: (1) compare performance data for like and similar products; (2) share preventive maintenance and repair experience; and (3) identify potential alternate sources for products on the cars. Suppliers should benefit because the SEPL offers: (1) unedited user evaluations of their own and their competitors' products and (2) objective, quantifiable data as the basis for establishing marketing, product improvement, and warranty support budgets.

Morris, RE Schaefer, JE Merrill, KS

Decision Group, Incorporated, Urban Mass Transportation Administration
Final Rpt. UMTA-IT-06-0175-81-1, Mar. 1981, 317p

Contract DOT-UT-0175

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-225666

13 344292

DUAL-POWERED GAS TURBINE/ELECTRIC (GT/E) COMMUTER RAIL CARS: TEST, EVALUATION AND ECONOMICS

Dual powered gas turbine/electric (GT/E) multiple-unit trains function as electric-powered multiple-unit (EMU) trains on railroad lines where wayside electric power is provided, and as high performance turbine-powered trains over trackage which is not electrified. This type of train can provide direct, high-speed service between outlying lines having no electrification and downtown terminals such as those in New York where access via tunnels requires use of electric propulsion. The Metropolitan Transportation Authority has purchased eight prototype GT/E cars, four from the General Electric Co. (GE) and four from the Garrett Corp. All eight cars were operated in revenue service on the Long Island Rail Road (LIRR). This report describes the design considerations that lead to the configuration of the GT/E cars and contains a description of the cars as built by GE and Garrett. The last portion of the report compares the costs of using GT/E trains to provide direct service to New York from select non-electrified lines with costs of extending electrification over those lines and operating conventional MU trains. Three rail lines are examined: the LIRR Port Jefferson and Oyster Bay branches, the Conrail's Upper Hudson to Poughkeepsie.

Sponsored in part by New York State Dept. of Transportation, Albany, and AiResearch Mfg. Co., Torrance, CA.

Raskin, D Stark, C Klauder, LT

New York State Metropolitan Transportation Auth, Urban Mass Transportation Administration, New York State Department of Transportation, AiResearch Manufacturing Company Final Rpt. UMTA-NY-06-0005-80-1, Sept. 1980, 52p

Grant UMTA-NY-06-0005

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-211757

13 344402

DUAL DISC/TREAD BRAKING AND REDUCED PRESSURE BRAKING EVALUATION PROGRAMS

This report is the Test Results Report for the Dual Disc/Tread Brake Test. Data logs and records associated with this test are published separately in the Test Events Report Dual Disc/Tread Braking and Reduced Pressure Braking Evaluation Programs, Report No. FRA/ORD-81/21. The Dual Disc/Tread Braking Test was conducted to investigate the benefits of using dual systems on the Amcoach. The test evaluated candidate systems developed by Knorr-Bremse, New York Air Brake and Westinghouse Air Brake Company. The test showed that as presently configured, the Amcoach may often exceed the available adhesion and tend to experience momentary wheel sliding which causes spalling. The test indicated that the dual brake system may help to improve tread life and extend the capacity without over heating either the wheel tread or the disc. In addition to the single car cutaway test of the dual brake system and a normal Amcoach braking system, a special reduced pressure test was performed on the Amcoach. The results showed that reducing the full-service braking pressure may be an alternative way of reducing the adhesion demand at the lower speed to relieve the wheel sliding problem. This approach extends the stopping distance by only a small amount but does not provide a mechanism for maintaining the wheel/tread surface or increasing the overall system capacity as does the dual brake system.

Sponsored in part by AMTRAK, Washington, DC.

Frankowski, D Scofield, R
ENSCO, Incorporated, Federal Railroad Administration Tech Rpt. ENSCO-DOT-FR-80-22, FRA/ORD-81/22, Mar. 1981, 308p

Contract DOT-FR-64113

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-231649

13 345258

POWER SUPPLY NETWORK PLANNING: A MODEL FOR RAPID TRANSIT SYSTEMS

It is a very complex matter to plan the power supply network of an electrically operated transport system such as a light railway or an underground when regenerative braking is involved. The best way to approach this problem is by using simulation techniques; they give the possibility of doing a detailed analysis of train motion. So a model of an electrical network with number, position and size of loads, different at every instant, can be carried out. Taking into account the features of the route and vehicles by simulation it is possible to determine such data as position speed and power flux for each train at every instant. We have an electrical network associated with every simulated traffic situation; consequently it is a very complex task to solve this network, because of its large size and since some components are non linear (e.g. power absorbed by trains is independent of line voltage). A very efficient algorithm has been determined to model the network by small data structures without precision loss. By knowledge of all the electrical quantities the components of the power supply network can be designed (for instance the knowledge of mean square power makes it possible to determine the number and size of rectifier groups in every supply substation). This methodology has been applied to design in the Naples Underground; this paper reports a detailed description of the algorithms involved and some results obtained for this application. (Author/TRRL)

Aligata, L Camurri, F Torielli, F Valcada, A *Journal of the Operational Research Society* Vol. 32 No. 8, Aug. 1981, pp 639-645, 6 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 257064)
ORDER FROM: ESL

DOTL JC

13 345385

EIGENFREQUENCIES OF OVERHEAD-CONTACT CATENARIES [EIGENSCHWINGUNGEN EINES FAHRLEITUNGS-KETTENWERKS]

The eigenfrequencies of wires (strings) may be determined by the methods of Bernoulli (sound spectrum) or d'Alembert (build-up processes). In this paper the first method is used and emphasis is laid on the complete detection of all eigenfrequencies up to a given upper limit which is essential, because completely incorrect results are obtained if only one frequency and its associated eigenfunction are missing. It is characteristic for the sound spectrum of a catenary that the eigenfrequencies are distributed to several narrow frequency bands (passband), which are separated by stop-bands of different width.

Bucksch, R *Wiss Ber Allg Elektricitäts Ges Telefunken* Vol. 53 No. 4-5, 1980, pp 186-199, 3 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

13 345388

NEW ALUMINUM STRUCTURES IN THE CONSTRUCTION OF RAILROAD CARS-SIGNIFICANCE OF MATERIAL AND WELDING TECHNOLOGY [NEUE ALUMINIUMKONSTRUKTIONEN IM SCHIENENFAHRZEUGBAUBEDEUTUNG VON WERKSTOFF UND SCHWEISSTECHNIK]

The article describes the design features of the various types of lightweight cars made of welded aluminum sections and used by the German Federal Railroad and some German subway and suburban transit systems. [German]

Klock, H (VAW Leichtmet, West Germany) *Schweisstechnik* Vol. 35 No. 4, Apr. 1981, pp 57-61, 12 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 345422

PORTLAND LIGHT RAIL: READY TO START BUILDING

Portland, Oregon, has completed planning for its \$147-million, 15-mile Banfield light rail project with construction expected to begin late in 1981. The transit line will be built simultaneously with the widening of the Banfield Freeway from 4 to 6 lanes; funding comes from interstate highway transfer funds, UMTA, and state and local sources. Primarily because of the labor productivity of light rail, as compared with buses, there are expected to be significant operating cost savings. The line will terminate in an 11-block transit mall in center city and will be double-tracked for virtually its entire length, following routes of its interurban railway predecessors. Tri-Met has ordered 26 articulated cars from Canada's Bombardier which are based on a European design. Opening is scheduled for 1984.

Middleton, WD *Railway Age* Vol. 182 No. 15, Aug. 1981, pp 32-36, 1 Fig., 4 Phot.

ORDER FROM: ESL

DOTL JC

13 345424

RAIL TRANSIT TECHNOLOGY 1981

Viability of rail transit research and development in the face of economic restrictions is discussed. Despite funding constraints elsewhere in the world, very advanced concepts are being incorporated in systems under construction. The author describes installations on the mass-transit railways in Hong Kong and Paris. Japan and West Germany continue research on magnetic levitation. A series of short articles then describe the state-of-the-art technology being brought into play in the U.S. These articles: (1) Construction: Heavy Rail Additions and Light Rail Inroads; (2) Equipment: Radial Truck Designs Come on Strong; (3) Signaling and Computerization: Fail-Safe Developments Enhance Safety.

Progressive Railroading Vol. 24 No. 10, Oct. 1981, pp 48-64, 3 Fig., 19 Phot.

ORDER FROM: Murphy-Richter Publishing Company, 20 North Wacker Drive, Chicago, Illinois, 60606

DOTL JC

13 345426

TRANSIT HARDWARE: SHIFT TO RENOVATION

With reductions in federal funding of new rail-transit and people-mover projects, transit authorities (old and new) are looking at renewal and overhaul. Because inflation and new-car problems have made car replacement less practical, emphasis is now on renovation of existing equipment. Parts supply, reliability and cost come in for increasing attention. The plans for renovation of New York City Transit Authority and Southeastern Pennsylvania Transportation Authority equipment are discussed. Washington Metro is acquiring new cars as its system expands but the existing fleet is to have its reliability and performance enhanced by design changes.

Roberts, R. *Modern Railroads/Rail Transit* Vol. 36 No. 10, Oct. 1981, pp 44-47, 2 Phot.

ORDER FROM: ESL

DOTL JC

13 345427

SAN DIEGO'S TROLLEYS ARE READY TO ROLL

San Diego Metropolitan Transit Development Board began regular service over its 16-mile South Bay light rail line between downtown San Diego and the Mexican border on July 26, 1981. Most of the route is a former Southern Pacific freight line which was acquired, upgraded and electrified for the trolley car operation. Details of planning for this project, integration of the rail service into the metropolitan area's transit system, and choice of German-built articulated cars are discussed. New in-street trolley track had to be designed and constructed for the entry into center-city San Diego. Already committed is double tracking of the route, acquisition of additional cars. Planning is under way on a 20-mile extension east from the city. Existing work was accomplished in record time and with a minimum of Federal assistance; the \$86 million project was largely funded by California's transit-aid legislation.

Middleton, WD. *Railway Age* Vol. 182 No. 13, July 1981, pp 42-46, 3 Phot.

ORDER FROM: ESL

DOTL JC

13 345428

CLEVELAND UPGRADES CATENARY

In rehabilitating the Shaker Rapid light-rail lines of Greater Cleveland RTA, it was necessary to upgrade both power supply and catenary for the new high-performance vehicles. Beauty, as well as efficiency, were goals in design of the new catenary which consists of bronze-toned weathering steel poles topped by gracefully-curved supporting members. Contact wire was upgraded from 4/0 AWG to 6/0 AWG with dual feeder cables for each track. Two new substations supplement the original four substations for increased capacity.

Railway Age Vol. 182 No. 13, July 1981, pp 46-47, 2 Phot.

ORDER FROM: ESL

DOTL JC

13 345429

LIGHTRAILS ON A LIGHT BUDGET

San Diego has opened a light-rail system along what was the most heavily traveled bus route serving the area's major employers and those residents most dependent on public transit. The 16-mile line reaches the Mexican border over a rehabilitated single-track railroad which was electrified; the route is now being double-tracked. Access to downtown San Diego is over newly constructed in-street trackage where special steps were taken to exclude automobile traffic. The 14 German-built articulated trolley cars feature barrier-free fare collection with tickets secured from vending machines at stations and on-board checks by roving inspectors, another adoption of European technology. The service is integrated with local and regional bus lines and with Amtrak train service to Los Angeles. Bus routes were realigned to avoid duplicating the trolley route. A 17-mile eastern extension is planned.

Bechtel Briefs Vol. 36 No. 7, Sept. 1981, pp 2-5, 4 Phot.

ORDER FROM: Bechtel Public Relations Department, P.O. Box 3965, San Francisco, California, 94119

13 345437

STRAY EARTH CURRENT CONTROL--WASHINGTON, D.C. METRO SYSTEM

The Washington, D. C. Metro is a heavy rail, direct current powered rapid transit system. This paper reviews the stray current control measures incorporated into the system, describes the tests and results obtained to date, and points out the effectiveness of the stray current control program.

Shaffer, RE (PSC Prof Serv Group Inc, Narberth, Pa); Fitzgerald, JH, III. *Materials Performance* Vol. 20 No. 4, Apr. 1981, pp 9-15

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

13 345444

MODELLING OF TRACTION LOAD DISTORTION IN ELECTRICITY SUPPLY SYSTEMS

A modelling method is described which has been used to study the harmonic and fundamental problems associated with thyristor-and diode-controlled traction loads. The effect of changing system parameters, such as the number of overhead lines fed from a feeder transformer, is shown. Different bridge configurations are demonstrated and, in particular, the use of a commutation reactor in an asymmetrical bridge.

Yacamini, R (Manchester University, England); Hamoud, OA Afacan, O. *Institution of Electrical Engineers, Proc Part B* Vol. 128 No. 3, May 1981, pp 149-156, 11 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

13 345447

B'2'B' URBAN LIGHT RAIL VEHICLES (LRV) FOR CLEVELAND, OHIO, USA

The paper presents a general description of the modern urban light rail vehicles of European design.

Baeggli, H. Strueby, E. Werder, J. *Brown Boveri Review* Vol. 68 No. 1, Jan. 1981, pp 4-11, 6 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

13 345452

COMPATIBILITY OF THYRISTOR CAR PROPULSION AND RATE CODED AUDIO FREQUENCY TRACK CIRCUITS

During the operational testing of thyristor chopper controlled transit cars on a system signalled with conventional rate coded audio frequency track circuits, initial test results indicate that an interaction was occurring between the chopper cars and some of the track circuits. Additional tests and analyses were performed to determine the cause of the interaction and to find methods for minimizing it to an acceptable level. This study presents some of the more interesting findings and suggests means for achieving compatibility.

Conference Record of the Industry Applications Society Annual Meeting, 15th, Cincinnati, Ohio, September 28-October 3 1980.

Heinzerling, EW (General Electric Company, New York); McElhenny, SW

Institute of Electrical and Electronics Engineers Conf Paper IEEE 80CH1575-0, 1980, pp 221-237, 9 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: IEEE

13 345459

COMPUTER EVALUATION OF ELECTRIC RAILWAY CATENARY EQUIPMENT BY THE METHOD OF NORMAL MODES

A method of evaluating electric railway catenary equipment by computer simulation based on the normal modes of vibration of the system is given. This is an alternative to the existing approach based on a finite difference solution of the equations of motion and serves both as a check on the existing method and as an alternative, more analytical, approach.

Heyda, PG (BICC Research & Engineering Limited); Thackray, GJ. *IEEE Transactions on Industry Applications* Vol. IA17 No. 3, May 1981, pp 321-329, 7 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

13 345460
DEVELOPMENT OF AN INDUCTION MACHINE
COMMUTATED THYRISTOR INVERTER FOR TRACTION
DRIVES

A variable-speed thyristor inverter system using a cage-rotor induction motor for natural commutation and as the prime mover has been built. The development has concentrated on the 35 and 150 H.P. machines rather than in the inverter units which are simply 6-device bridge circuits. It is fully anticipated to extend development beyond the 150 H.P. range.

Conference Record of the Industry Applications Society Annual Meeting, 15th, Cincinnati, Ohio, September 28-October 3 1980.

Laithwaite, ER (Imperial College of Science & Technology, England);
Kuznetsov, SB
Institute of Electrical and Electronics Engineers Conf Paper IEEE
80CH1575-0, 1980, pp 580-585, 13 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

13 345729
MASS-TRANSIT RAIL SYSTEMS TAKE TO THE STREETS

As future developments of the Tyne and Wear Metro mass transit system will not be permitted to extend the present lines, network extensions allowing metro trains to operate as trams are being considered. Present metro cars are based on similar vehicles operating on Frankfurt's tram network and are equipped with magnetic track brakes as a back-up system. Operating such vehicles on streets, although reducing their speed, does make them more accessible for passengers. (TRRL)

New Scientist Vol. 90 No. 1257, June 1981, p 692

ACKNOWLEDGMENT: TRRL (IRRD 257141)
ORDER FROM: IPC Transport Press

DOTL JC

13 345972
COACHES OF THE BRUSSELS METRO [LES VOITURES DU
METRO DE BRUXELLES]

After a brief historical background of the design and construction of the Brussels Metro's coaches, the author gives us a technical description of the different parts (tractive unit, body and interior fittings, driver's cab) illustrated with photographs and drawings. This article places special stress on the comfort and safety of drivers and passengers. [French]

Dambly, P *Rail et Traction* No. 132, Dec. 1980, pp 27-37, Figs., Photos.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Belgian National Light Railway, 14 rue de la Science, 1040 Brussels, Belgium

13 345986
STEERING-BOGIE DEVELOPMENTS BEING PURSUED BY
BRITISH RAILWAYS

Requirement to take up an approximate radial position in curves to minimise flange and rail wear and with the need for stiff primary-suspension to overcome hunting, cross-bracing is introduced as a simple arrangement and forming two "A" frames pivoted at the bogie centre. More sophisticated method applied to a "rapid-transit" air-sprung bogie where damping relaxes on entering a curve and so presents a yaw-relaxing condition. A cross-brace alternative will be tested alongside.

Illingworth, R *Rail Engineering International* Vol. 10 No. 2, Apr. 1981, pp 51-52

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

DOTL JC

13 345987
RAILWAY VEHICLE ACTIVE SUSPENSIONS

This paper reviews the state-of-the-art of active suspensions for use on railway vehicles. The primary focus of the paper is on ride quality control, both vertical and lateral, and on lateral stability control. The section on theoretical considerations summarizes the results of a one-degree of freedom

optimization and then investigates analytically the use of active suspensions for lateral ride and stability augmentation. It is shown that separate control structures using different measurements and actuator actions are very effective in controlling both ride quality and stability. A section on a survey of current activities reviews published research on active railway suspension work around the world. Finally a concluding section indicates future trends in active suspension applications.

Hedrick, JK *Vehicle System Dynamics* Vol. 10 No. 4-5, Sept. 1981, pp 267-283

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

DOTL JC

13 345995
STUDY ON VIBRATIONAL PHENOMENA OF POWER
COLLECTING SYSTEM WITH DISTRIBUTED PARAMETER
MODEL

The subject of this paper is the analysis of vibrations of pantograph-overhead contact wire system in the frequency range higher than previously investigated. The practical problems of the phenomena in this range are frequent contact losses observed in high speed operation and corrugated wear generated on the surface of contact wire which produce large harmful effects on fatigue of the system, acoustic noise and jamming of a radio wave. A new method is proposed here in order to analyse the higher frequency phenomena, where a pantograph is treated as a beam structure and an overhead contact wire as an infinite tensed beam. This method can be applicable at least up to 1 kHz.

Manabe, K Morikawa, T *Railway Technical Research Inst, Quarterly Reports* Vol. 22 No. 2, June 1981, pp 63-69

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

DOTL JC

13 345997
ELECTRIC RAILCARS FOR OVERHEAD-LINE AND BATTERY
OPERATION

In battery and power technology it is now possible to design an accumulator railcar equipped with both battery-charger and overhead-line feed equipment. Such a railcar run on electrified lines and also on non-electrified lines over a distance of up to 200 km. The battery charger can operate during train running and also during stops under the overhead line. A part of the traction energy can also be recovered by way of the regenerative brake, so that train operating schedules are largely independent of local charging equipment. With an increase in electrification the conditions will be further improved. [German]

Rappengluck, W Pfister, F *Eisenbahntechnische Rundschau* Vol. 30 No. 9, Sept. 1981, pp 661-670

ACKNOWLEDGMENT: British Railways
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

DOTL JC

13 346032
INITIAL INTERFACE STANDARDS FOR RAPID TRANSIT CAR
SUBSYSTEM COMPONENTS

This report presents the Initial Interface Standards for subsystem components of a typical rapid transit car system. These standards were derived from an interface definition analysis of 128 product-applications on seven of the newest North American rapid transit car system designs. Twenty one major components of a rapid transit car which the carbuilder purchases as shippable items were selected for interface definition. Analysis of the product-specific data which was made available by the original equipment manufacturers provided the basis for either defining the functional and physical interfaces of each major component and the minimal space which must be allocated upon the carbody structure or truck frames to incorporate a major component into the carbody structural design, or determining that a major component does not appear to be amenable to interface standardization. Transit industry adoption of interface standards for car-mounted equipment should result in cars which would cost less to build and own.

Morris, RE Pali, A Urian, C Walker, W
Decision Group, Incorporated, Urban Mass Transportation Administration
Final Rpt. UMTA-IT-06-0175-81-2, June 1981, 182p

Contract DOT-UT-70043
ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-104704

13 346359

RPE-10 COMPOSITE FLYWHEEL. FINAL REPORT

Details of a program to design and fabricate a composite flywheel for vehicle use are presented. Design and analysis details for the fabricated wheels, the test plan to verify the total energy and energy density of the flywheel, and probable production costs of various quantities of such flywheels are given. (ERA citation 06:028933)

Ginsburg, BR
Rockwell International, Rocketdyne Division, Department of Energy
DOE-DP-00789-T14, Oct. 1979, 83p

Contract AC04-76DP00789

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

DE81027578

13 346549

FLYWHEELS: MOBILE APPLICATIONS

The characteristics of modern flywheel energy storage systems uniquely qualify the flywheel for use in a variety of road vehicles, off-road vehicles and rail vehicles. About sixty studies and vehicle demonstration programs in a dozen countries indicate that in the future such flywheel-powered vehicles will have improved performance, reduced energy and fuel consumption and reduced life cycle cost. Flywheel capabilities and mobile applications are reviewed. (ERA citation 06:027347)

Rabenhorst, DW
Lawrence Livermore National Laboratory, Johns Hopkins University,
Laurel UCRL-15363, June 1981, 18p

Contract W-7405-ENG-48

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

DE81026567

13 346689

**METROPOLITAN ATLANTA RAPID TRANSIT AUTHORITY
TRANSIT VEHICLE ENGINEERING TESTS**

This report presents the results of engineering tests conducted on a married pair of rapid transit cars for the Metropolitan Atlanta Rapid Transit Authority (MARTA). The tests were performed at the Transportation Test Center, Pueblo, Colorado, from May 1980 through January 1981. The scope of the test program included evaluation of performance, ride quality, and interior and wayside noise using standardized test procedures; special engineering tests were made to evaluate energy conservation methods, three brake configurations, and three vertical damping configurations. Vehicle curving tests were conducted to investigate the behavior of the vehicle on sharply curved track, to determine the effect of certain modifications to the track, and to derive wheel flange wear indices. The tests showed that the vehicles met the acceleration and time to speed specification requirements. The first two brake configurations evaluated failed to meet requirements in any braking mode. The final brake configuration meets braking rate requirements for friction only and emergency modes but falls short of requirements in the dynamic and blended mode above 40 mi/h. Wheel flange wear indices were developed for variations in axle misalignments and primary suspension longitudinal stiffness.

Mutter, H Simmonds, K Arnold, G Carter, B Irani, F
Metropolitau Atlanta Rapid Transit Authority, Federal Railroad Administration Final Rpt. FRA-TTC-81-05, Aug. 1981, 407p

Contract DTFR-80-C-20016

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-126392

13 346695

**TRANSIT INDUSTRY CORE TECHNICAL SPECIFICATIONS
FOR THE PROCUREMENT OF RAPID RAILCARS**

In 1977, the Urban Mass Transportation Administration initiated and sponsored a transit industry cooperative program to synthesize the most

effective rapid transit car system design practices of North American transit authorities into one document. To ensure the practicality of the operators' recommendations, the carbuilders and suppliers also participated. In 26 working sessions over a four-year period, transit industry representatives reviewed and refined the draftforms of the systems engineering results presented by the standardization contractor. The collective experience of the North American operators, carbuilders, and suppliers in the manufacture, operation, and maintenance of rapid railcars has been translated into these Core Technical Specifications. This document embodies transit industry's best engineering practices balanced against the resources limitations of the operators. The Core Technical Specifications integrate the interdependent functional elements of a rapid railcar into an efficient, coherent car system design. Following operator consensus on car-level performance requirement for a 'baseline' car, performance requirements for each subsystem were derived and specified in language and detail suitable for all future new car procurements. The concept of Core Technical Specifications recognizes that a rapid transit car must reflect the site-specific requirements and constraints of the intended application. To translate these specifications into a procurement document, each operator need only add such completing detail as necessary to ensure compatibility with the purchaser's internal standards, revenue fleet, and physical plant.

Morris, RE Pali, A Urian, C Walker, W
Decision Group, Incorporated, Urban Mass Transportation Administration
Tech Rpt. UMTA-IT-06-0175-81-3, July 1981, 562p

Contract DOT-UT-70043

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-126798

13 348421

**SYNTHETIC FIBERS FIND APPLICATIONS IN
TRANSPORTATION**

The need to replace asbestos has led to screening many fibrous materials. In the area of friction products, for example, major efforts are underway to replace asbestos in brakes for the automotive, truck, and railroad fields. During application of such brakes, bulk temperatures often reach 700 F; surface temperatures may reach levels higher than 1,000 F. In addition, manufacturers are testing asbestos-free materials for clutch facings in manual transmission systems, and as wet-friction paper for use in automatic transmissions. In many applications, synthetic aromatic polyamide fibers can perform at least as well as the asbestos replaced.

Norman, JC (Du Pont de Nemours (EI) and Company, Incorporated)
Industrial Research/Development Vol. 23 No. 7, July 1981, pp 104-108

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 348423

ANTHROPOMETRY STUDY OF SWEDISH ENGINE DRIVERS

The selection of measurements was made with respect to their ergonomic relevance for the design of the cab in the Swedish Rapid type c (Rc) engine. Anthropometric measurements were obtained from 150 engine drivers and 91 driver trainees. The results indicated that, on average, the future engine driver was taller than the present population of engine drivers. The results also showed that engine drivers and driver trainees do not notably differ in stature from other groups of men in Sweden. There were marked differences between the body size of engine drivers and the corresponding dimensions of the cab in the Rc engine. The compartment seemed to be best suited to taller drivers and was too large for smaller drivers.

Hedberg, GE (Nat'l Board of Occup Saf & Health Umea, Sweden);
Bjorksten, TM Ouchterlony-Jonsson, KE Jonsson, B *Ergonomics*
Vol. 24 No. 4, Apr. 1981, pp 257-264, 6 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

13 348425

**NEW MOBILE SUBSTATIONS OF THE WEST GERMAN
RAILROAD SYSTEM [DIE NEUEN FAHRBAREN UNTERWERKE
DER DEUTSCHEN BUNDESBahn]**

A new class of mobile substations (16 2/3 Hz) which are housed on a six-axle low-loader wagon was developed. They consist of a single-phase transformer

110 kv/15 kv with 10 Mva/15 Mva, a 110-kv-power switch, three 15-kv-power switches and the auxiliary power installation. Depending on demand, the installation will put into service for short-term, temporary or long-term operation in order to enhance the supply of electric energy. [German]

Bethge, W (Bundesbahn-Zent, West Germany) *Elektrische Bahnen* Vol. 79 No. 3, Mar. 1981, pp 70-76, 1 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

13 348426
CURRENT QUESTIONS ASSOCIATED WITH THE SUPPLY OF POWER FOR ELECTRIFIED LINES OF THE WEST GERMAN RAILROAD SYSTEMS [AKTUELLE FRAGEN DER STROMVERSORGUNG FUER DIE ELEKTRIFIZIERTEN STRECKEN DER DEUTSCHEN BUNDESBAHN]

The power supply system of the West German railroads comprising 11,000 km of electrified lines demands more than 250 substations, sectioning points and paralleling points. The standardization of the switch plants offers advantages for planning, maintenance and operation. Reliability aspects and automatic control facilities are discussed. [German]

Scheiber, EG (Zent Trans der DB, West Germany) *Elektrische Bahnen* Vol. 79 No. 3, Mar. 1981, pp 62-69, 3 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

13 348427
ELECTRIC OPERATION OF RAILROADS OF THE WEST GERMAN RAILROAD SYSTEM IN 1980 [DER ELEKTRISCHE ZUGBETRIEB DER DEUTSCHEN BUNDESBAHN IM JAHRE 1980]

Outstanding events in the field of electric traction in 1980 are discussed. Various numerical characteristics of electric traction are stated. A survey of electrified lines deals with the dates when they became operational and with the lines actually being equipped. Stock numbers, deliveries and orders of electric motive units are pointed out as well as their lines of structural development. A description is given of the state and further development of the traction power facilities. Participation in national and international associations of electrical engineering is reported. [German]

Harprecht, W Niessen, M *Elektrische Bahnen* Vol. 79 No. 1, Jan. 1981, pp 2-16

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

13 348434
EFFECTS OF VARYING RING PARAMETERS ON THE MODAL DAMPING RATIOS OF RING DAMPED RAILWAY WHEELS

The use of damping rings as a method of reducing the intense squeal noise associated with rail type operations has been receiving increasing attention from many transit operating authorities. However, there has been relatively little data published on the efficacy of the ring and there is still a great deal to learn about its vibratory characteristics. In an attempt to further understand the behavior of ring damped wheels, and to identify the parameters affecting the efficacy of the ring, this paper presents the results of some lab tests conducted for the Toronto Transit Commission. Testing methodology is included in the discussion.

Proceedings of the International Conference of Noise Control Engineering, Noise Control for the 80's, Inter-Noise 80, held December 8-10, 1980 in Miami, Florida.

Strasberg, L (Ontario Ministry of Transportation & Communic, Can); Tiessinga, JP
Institute of Noise Control Engineering Vol. 1 1980, pp 395-398

ACKNOWLEDGMENT: EI
ORDER FROM: Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, New York, 12603

13 348518
HARD ALLOY ALUMINUM IN CONTACT WIRES-AN ENGINEERING FEASIBILITY STUDY

A study prompted by recent advances in wear performance is in progress to evaluate the ramifications of using hard alloy aluminum in contact wires and its effects on the remainder of the catenary system. Physical properties and their effects on system design are discussed. For purposes of comparison, design criteria were selected for a 25 kV, 600 A catenary. Under these conditions, a baseline system, using hard drawn copper contact wire with ACSR messenger was compared to several equivalent aluminum catenaries. An optimization study was done on both systems, which uses a computer program to assess the interaction between span and tension lengths, and to estimate in-place costs for the most economical combination.

Joint American Society of Mechanical Engineers, Institute of Electrical and Electronics Engineers, and Association of American Railroads Railroad Conference 1981, Atlanta, Georgia, April 28-30 1981.

Carlson, LE (Aluminum Company of America); Griggs, GE
Institute of Electrical and Electronics Engineers Conf Paper 81 CH1667-5, 1981, pp 45-52

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

13 348522
CLADDING OF RAIL TRACK MATERIALS AT SWEDISH RAILWAYS

An objective investigation was carried out by Swedish Railways to examine the possibilities of cladding track materials. Investigations were concentrated on developing methods which could be reproduced by the welders under various outdoor climate conditions and without close supervision of the procedure. For cladding stainless materials, methods affording the highest possible welding rate were tested, a degree of martensite formation in the transition zone being acceptable. In developing a method of cladding switch blades, the main requirement was to prevent undesirable effects in the fusion and transition zones, in addition to which the weld metal was required to be impervious to cracking or flaking.

Ljunggren, J (Swedish State Railway) *Svetsaren-English Edition* No. 1-2, 1981, pp 1-5

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

13 348523
ANALYZING FASTENER PERFORMANCE IN CONCRETE TIES

The paper discusses laboratory testing methods, describes various assemblies in use and gives step-by-step descriptions for appropriate laboratory evaluations.

Hanna, AN (Portland Cement Association) *Railway Track and Structures* Vol. 77 No. 8, Aug. 1981, pp 30-34, 3 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

14 053394

PROPAGATION OF RADIO WAVES. REPORT NO. 5: RADIO PROPAGATION IN TUNNELS (NATURAL PROPAGATION)

This report presents the results of experimental work carried out in order to complement published information on how radio propagation is affected in railway tunnels. These results are presented in the form of basic curves and correction factors, intended to simplify the task of the project engineer.

Restrictions on the use of this document are contained in the explanatory material.

International Union of Railways A 133/RP 5, Apr. 1980, 46p, 16 Fig., 3 Tab.

ORDER FROM: UIC

DOTL RP

14 330195

S-BAHN AND METRO TRACK, WITH SPECIAL REFERENCE TO STRUCTURE-BORNE NOISE [Oberbau bei Stadtbahnen und U-Bahnen unter besonderer Beruecksichtigung der Koerperschallemission]

If special measures are taken in relation to track construction technology, it should be possible to control the noise level and reduce the noise caused by underground railways which is disturbing in neighbouring buildings. This can be done by inserting the right kind of flexible lining under the ballast, or by designing the track configuration so as to provide a mass-suspension system with an inherent frequency of 8-14 Hz. [German]

Eisenmann, J *Eisenbahn Technische Praxis* Vol. 32 No. 3, 1980, pp 16-17, 2 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD

ORDER FROM: Gewerkschaft der Eisenbahner Deutschlands, Beethovenstrasse 16-18, 6000 Darmstadt 1, West Germany

14 330205

RADIO-TELEPHONE COMMUNICATIONS WITH TRAINS ON UNDERGROUND RAILWAYS [Comunicacion radiotelefonica con los trenes en los ferrocarriles metropolitanos]

After recalling the difficulties connected with radio-telephone train-ground links in underground networks, due to the close headway of trains running in tunnels, the author describes the equipment and the functioning of the system selected for the Madrid underground. [Spanish]

Canosa, A *AIT-Revista* No. 34, May 1980, pp 23-38, 10 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD

ORDER FROM: Asociacion de Investigacion del Transporte, Alberto Alcocer 38, Madrid, Spain

14 330217

CONTROL-TO-TRAIN TWO-WAY RADIO ON SNCF ELECTRIFIED LINES

Describes the control-to-driver radio link applied to much of the Paris suburban network, and plans to extend the system.

Collard, P *Rail Engineering International* Vol. 9 No. 3, July 1980, pp 77-79, 6 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD

ORDER FROM: ESL

DOTL JC

14 334444

INTERACTIVE HYBRID COMPUTER DESIGN OF A SIGNALING SYSTEM FOR A METRO NETWORK

An interactive hybrid computer technique which facilitates the design of a fixed block signaling system for a metro network is described. The signaling philosophy is the three-aspect three-block cab signal system employed by the majority of metro networks throughout the world. Two constraints are of critical importance for such a signaling philosophy: the stopping distances (which determine minimum block lengths), and the throughput (which indirectly governs maximum block lengths). Taking into account these two constraints, the hybrid computer technique described permits the design engineer to interactively choose the block lengths and locations. The technique may be used to design the signaling for the new Montreal Metro line currently under construction.

Janelle, A (Ecole Polytechnique, Canada); Polis, MP *IEEE Transactions on Systems, Man and Cybernetics* Vol. SMC- No. 9, Sept. 1980, pp 555-565, 5 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

14 334715

LIGHT RAIL TRANSIT SETS BARGAIN PACE

The paper reports on the high speed construction of the San Diego's 16-mile light rail transit line between San Diego and San Ysidro at the Mexican border.

Engineering News-Record Vol. 206 No. 2, Jan. 1981, p 25

ACKNOWLEDGMENT: EI

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DOTL JC

14 335275

TRACK TO TRAIN RADIO SYSTEM

A description is given of the system and equipment which has recently been installed to give radio communication between Kings Cross Signalbox and the trains used for the Great Northern Inner Suburban electric service of British Rail.

Conference on Communications Equipment and Systems, Birmingham, England, April 16-18, 1980.

Giles, LJ (British Rail); Simson, RE *IEE Conference Publication IEE Conf Pub 184*, 1980, pp 206-210, 3 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: Institution of Electrical Engineers, Savoy Place, London WC2R 0BL, England

14 335625

PUTTING INTO OPERATION OF THE SUBWAY LINE U 8/1 IN MUNICH, WEST GERMANY [INBETRIEBNAHME DER U-BAHN-LINIE U 8/1 IN MUENCHEN]

The subway line U 8/1 with a length of 16 route kilometer of the Munich underground system is described. Its operation, the surface bound traffic and the stations will be supervised from a newly constructed central control. It houses the switching station with a duplex computer system for the operation of the traction energy supply. Under normal operational conditions, the electric multiple units will be operated automatically by linear train control. [German]

Schemmel, H *Elektrische Bahnen* Vol. 78 No. 11, Nov. 1980, pp 295-301

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

14 337960

WHEEL/RAIL NOISE CONTROL-A CRITICAL EVALUATION

Noise and vibration are the major sources of environmental impact from urban rail transit operations, and is a concern for both new and existing systems. One of the primary sources of noise on rail transit systems is wheel/rail noise, or, the noise emitted by the wheels and rails as a result of their interaction. The purpose of this report is to carefully review and summarize the available information on each of the known or conceptualized methods for controlling wheel/rail noise and to identify requirements for further research, development, and testing. The report discusses the acoustical performance, costs, potential, or actual problems of these methods and suggestions are made for resolving uncertainties in the available data. This review is also particularly intended to help direct the remaining work to be performed under this project. In addition, a cost-effectiveness analysis is carried out to help in the selection of specific noise control methods for further study. The rationale for selecting each such treatment is presented.

Kurzweil, LG Wittig, LE

Bolt, Beranek and Newman, Incorporated, Transportation Systems Center, Urban Mass Transportation Administration Intrm Rpt. DOT-TSC-UMTA-81-8, Jan. 1981, 162p

Contract DOT-TSC-1768

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-196859

14 337961

EVALUATION OF SQUEAL NOISE FROM THE WMATA TRANSIT CAR DISC BRAKE SYSTEM: A PRELIMINARY INVESTIGATION

The Washington Metropolitan Area Transit Authority (WMATA) rail transit car design adopted the use of disc brakes as the primary friction braking system. Unfortunately, while disc brakes are more efficient than the traditional tread brake designs, they are also prone to generate unpleasant squeal noise. The purpose of this study was to: (1) inspect the WMATA disc brake assembly; (2) assess disc brake squeal noise occurrence on WMATA vehicles and obtain representative A-weighted sound level measurements; (3) identify and evaluate alternative disc brake squeal; and (4) identify future research and development needs relative to disc brake systems appropriate for use on rail transit vehicles. This report states that disc brake squeal is a chronic and pervasive problem on the WMATA rail transit system. It results in a significant increase in operating sound levels during braking (4 dBA) in a large majority of braking operations (92 percent). Although a noise control treatment has been implemented, its effectiveness has not been clearly documented. Conclusions based on the findings of the investigation are presented in this report, and future research and development needs relative to disc brake systems appropriate for use on rail transit vehicles are identified.

Prepared by ORI, Inc., Silver Spring, MD.

Ronk, LA Staiano, MA
Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0049) Final Rpt. DOT-TSC-UMTA-81-10, UMTA-MA-06-0049-81-4, Mar. 1981, 50p

Contract DTRS-57-80-P81005

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-197360

14 343629

ELECTROMAGNETIC INTERFERENCE CHARACTERISTICS OF ADVANCED PROPULSION SYSTEMS FOR URBAN RAIL VEHICLES

Early research and development efforts by the Urban Mass Transportation Administration (UMTA) in the area of urban rail transit were long range programs attempting to apply advanced technology to problems plaguing U.S. transit properties. The programs themselves are known collectively as Subsystem Technology Applications to Rail Systems (STARS). This study of electromagnetic interference (EMI) characteristics of advanced propulsion systems, directed toward resolving total systems problems with EMI, is a part of a larger STARS program. This report describes various track circuit signalling systems and identifies different modes of possible EMI from onboard electrical power subsystems for urban rail vehicles. Chopper controlled ac drives and inverter controlled ac drives are analyzed and characterized as electromagnetic noise sources. Waveforms of currents through various reactors in the drive circuitry are presented. Finally, eleven different chopper circuit configurations are analyzed in detail in Appendix A and the characteristics of multiple-car trains are reviewed in Appendix B.

Nene, VD
Unified Industries, Incorporated, Urban Mass Transportation Administration, (UMTA-VA-06-0075) Final Rpt. UMTA-VA-06-0075-81-1, Feb. 1981, 173p

Contract DTUM60-80-C-72025

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-212730

14 345389

ADVERSE ELECTRICAL PHENOMENA AND INTERFERENCE LEVELS IN RAILWAY TRACTION

This article deals with the methods used to determine the adverse electrical phenomena and the limiting interference levels. The specific methodology for calculation and experimentation presented makes it possible to determine, irrespective of the type of railroad tractive stock, all interference levels influencing the functioning of installations fitted in the track or near to it, for any functional types and parameters of such installations.

Mihalescu, D Pantelimon, M *Rail International* Vol. 12 No. 2, Feb. 1981, pp 57-70, 7 Ref.

ACKNOWLEDGMENT: EI
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DOTL JC

14 345408

OVERVIEW OF A SIGNAL SYSTEMS ANALYSIS FOR THE BUFFALO LIGHT RAIL RAPID TRANSIT SYSTEM

The purpose of this paper is to describe the simulation model that served as the basis for the selection of the system design. This description is preceded by a discussion of the decision process that identified the need for the development of the model. Because of its general nature, it is equally applicable to other locations, and can be used to evaluate bus preemption as well as LRT preemption alternatives. The model has also been applied to the analysis of the effectiveness of alternative transition algorithms for arterial signal control systems.

Proceedings of the Institute of Transportation Engineers Sixth Annual Meeting: Inter-City Transportation and the Urban Scene, held April 22-24, 1981 in Victoria, British Columbia.

Kittelson, WK Tarnoff, PJ
Institute of Transportation Engineers Conf Paper 1981, n.p.

ORDER FROM: ESL

14 345450

SELF-CHECKING MULTIPROCESSOR MODULE FOR TRAIN CONTROL APPLICATIONS

The need for a reliable, and as near as possible fail-safe, multiprocessing system for on-board automatic train operation has resulted in the development of Cyclone I. Time redundancy techniques are used extensively to reduce hardware to a minimum, and to allow no incorrect output conditions arising from transient faults.

Marshall, WG (Loughborough University of Technology, England); Forsythe, W *Electronics Letter* Vol. 17 No. 12, June 1981, pp 408-410, 8 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

14 345454

STRAY CURRENT CONTROL IN DADE COUNTY "METRORAIL" SYSTEM

History of early stray current problems in the transit industry and the events leading up to the current approach of stray current control in the modern transit system are reviewed. The traction power system of the Dade County "METRORAIL" System is briefly described for a clear understanding of stray current sources and their control measures. Particular emphasis is given on planning for future maintenance of rights-of-way and stray current equipment.

Conference Record of the Industry Applications Society Annual Meeting, 15th, Cincinnati, Ohio, September 28-October 3 1980.

Schaffer, RE (Hinchman Company, Pennsylvania); Venugopalan, SI
Institute of Electrical and Electronics Engineers Conf Paper IEEE 80CH1575-0, 1980, pp 285-291

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

14 345722

LIGHT RAPID TRANSIT-TYNE AND WEAR METRO

Data are presented on the geographic and economic situation of the Tyne and Wear County, development and decline of public transport between 1830 and 1970, renaissance of public transport in 1970, and the five alternatives considered for a new public transport system: (1) existing diesel rail service, (2) improved rail system and provision of feeder bus services, (3) express bus system, (4) all-bus system, and (5) light rapid transit system. The light rapid transit system was selected as the best investment. The technical and civil engineering aspects of the system, rolling stock, works locomotive, engineers vehicles, communications and signalling, power supply, trackwork and test facilities are described. Mention is made of the BR- Metro consortium formed by British Railways and Metropolitan Cammel to meet demand for designing, building, equipping, financing and commissioning complete urban light rapid transit systems. This paper was presented at the Sao Paulo Technology Seminar, Sao Paulo Hilton. 27 to 30 November 1979. (TRRL)

Howard, DF
Tyne and Wear Transport Monograph No Date, 39p, 6 Fig., 1 Tab., 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257561)
ORDER FROM: Tyne and Wear Transport, Cuthberts House, All Saints, Newcastle Upon Tyne, England

14 345723
SEOUL: SOUTH KOREA'S METRO

The author describes the development and operation of the Seoul metro system built as an extension of the suburban railway to integrate the two rail networks. To overcome problems of traffic congestion following increasing car ownership, a 133 km rapid transit system of five metro lines and electrification of the suburban lines were planned as an integrated scheme. Details are given of metro line networks and types of Japanese-made Marubeni and Hitachi rolling stock specified. (TRRL)

Lynas, IN *Modern Tramway and Light Rail Transit* Vol. 44 No. 524, Aug. 1981, pp 260-265, 1 Fig., 3 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 257534)
ORDER FROM: ESL

14 345978
NON-DESTRUCTIVE ULTRASONIC TESTING OF RAILS AND POINTS AND CROSSINGS ON THE TRACK--OVERALL VIEW [ZERSTÖRUNGSFREIE PRUEFUNG MIT ULTRASCHALL AN SCHIENEN UND WEICHEN IM GLEIS EIN UEBERBLICK]

The article gives a general review of non-destructive ultrasonic testing of rails and points and crossings on the track, and describes the main defects and possibilities of detecting them. Examples are given of the usual inspection techniques and the test installations are described. The article continues with consideration of the frequency of inspections and the treatment of defects, and refers to the training of inspection and track supervision staff. New regulations on the testing of rails, to be issued shortly, have become necessary for reasons of operating and inspection techniques. [German]

Hogenkamp, F *Eisenbahningenieur* Vol. 32 No. 9, Sept. 1981, pp 375-382, 14 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Tetzlaff-Verlag GmbH, Havelstrasse 9, Postfach 4006, 6100 Darmstadt 1, West Germany

14 345994
SERVICE OPERATION OF DRIVER-SIGNALMAN DISCREET RADIO SPEECH-LINK ON LATEST NORTH LONDON BR SUBURBAN ELECTRIFICATION

Kings Cross and St. Pancras suburban electrification schemes embracing computer-controlled discreet speech-link between driver/signalman so avoiding distraction to others but with emergency call procedure provided. Techniques applied to combat signal strength deterioration in tunnels and cuttings.

Rail Engineering International Vol. 10 No. 3, Aug. 1981, pp 83-86

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

DOTL JC

14 345998
ELECTRONICS ON THE METRO

Over-sophistication, especially in electronics, has caused some metros to have severe start-up problems. Suppliers and operators are still learning how to ensure that electronic equipment is reliable and resistant to the rugged environment of an urban railway, without sacrificing major benefits in terms of low cost and functional flexibility that microprocessors can offer. To get the best results, computers must be used both as a design tool and as a means of checking that components are functioning as intended.

Everitt, R *Railway Gazette International* Vol. 137 No. 11, Nov. 1981, pp 956-958, 1 Fig., 3 Phot.

ORDER FROM: ESL

DOTL JC

14 348424
MICROCOMPUTER AND ITS USE FOR RAILROAD VEHICLES [DER MIKROCOMPUTER UND SEIN EINSATZ AUF BAHNFahrZEUGEN]

The use of microcomputer for the control and operation of West German railroad stock is reported. In 1979, prototypes of an automatic train and braking control on an electric locomotive class 111 of the West German Railroad System were put into operation, along with a vehicle control device using microcomputer technology. A description of these prototypes is given. [German]

Goes, W (Siemens Review, West Germany); Kueller, H *Elektrische Bahnen* Vol. 79 No. 3, Mar. 1981, pp 81-88, 4 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

14 348509
OPTIMAL TRAJECTORIES FOR RAILBOUND RAPID TRANSIT SYSTEMS [OPTIMALE TRAJEKTORIEN IM SPURGEBUNDENEN SCHNELLVERKEHR]

In Part 2, optimal speed control under disturbed operating conditions is considered. [German]

Kraft, KH (Siemens, Braunschweig, West Germany); Schnieder, E *Regelungstechnik* Vol. 29 No. 5, May 1981, pp 152-155

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

15 311842

CONSTRUCTION METHOD FOR TUNNELS BY MEANS OF IMMEDIATE SUPPORT WITH SHOTCRETE AND BOLTING-PROVISIONAL TEXT PROVISOIRE [Présentation de la méthode de construction des tunnels avec soutènement immédiat par béton projeté et boulonnage-Texte provisoire]

The author recalls the development of the "new Austrian method", the most important basic principle of which is not to disturb the soil around the cavity and to derive maximum benefit of the initial mechanical characteristics of the terrain. Details are given of the role of shotcrete, that of bolting, the necessity of adapting the support to the real behaviour of the terrain and conditions, ease and speed of installation. Excavations and support characteristics are given together with the recommended techniques, limits of the latter. Examples are presented of tunnels and underground structures built with final application of shotcrete. (TRRL) [French]

Louis, C. *Tunnels et Ouvrages Souterrains* No. 31, Jan. 1979, pp 13-21, 5 Fig., 1 Tab., 7 Phot., 11 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 108851), Central Laboratory of Bridges & Highways, France

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DOTL JC

15 311893

NEW UNDERGROUND LINING-THE COMPOSITE SEGMENT: CONCRETE/DUCTILE CAST IRON [Un revêtement souterrain de conception nouvelle-le voussoir mixte: béton-fonte ductile]

In connection with studies conducted for the Channel Tunnel, different types of precast lining were compared among them reinforced concrete segments and cast iron segments. Studies led to the development of a composite segment (concrete/ductile cast iron). Its manufacture is described together with its characteristics, functions of the concrete, tests carried out (loading, adhesion of cast iron bars sunk in concrete, etc). The authors propose a design method and describe the various possibilities of use of composite segments, installation tolerances. A comparison is made between the composite segment and the reinforced concrete segment from the economic point of view. (TRRL) [French]

Fauchart, J. Hueber, J. Lacroix, R. *Tunnels et Ouvrages Souterrains* No. 21, May 1977, pp 109-120, 11 Fig., 4 Phot., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 108848), Central Laboratory of Bridges & Highways, France

ORDER FROM: ESL

DOTL JC

15 323035

THE FREEZING METHOD IN TUNNELLING OPERATIONS [La congelación del terreno en los trabajos de tuneles]

The construction of a gallery or a shaft in a highly plastic, saturated ground or water-bearing granular soil can give rise to problems if normal construction methods are used. The freezing of the ground, although costly, can prove to be the adequate solution. After describing different soil freezing processes, the author comments on their application to tunnel drilling and gives a list of structures the construction of which utilized this technique. (TRRL) [Spanish]

Hacar, F. *CIMBRA* Vol. 15 No. 158, Dec. 1978, pp 5-15, 10 Fig., 16 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 109276), Central Laboratory of Bridges & Highways, France, Ministry of Public Works, Spain

ORDER FROM: Revista de Ingenieria Tecnica de obras Publicas, Miguel Angel 16, Madrid 10, Spain

15 328912

SOFTWARE MAINTENANCE OF THE SUBWAY ENVIRONMENT SIMULATION COMPUTER PROGRAM

This document summarizes the software maintenance activities performed to support the Subway Environment Simulation (SES) Computer Program. The SES computer program is a design-oriented analytic tool developed during a recent five-year research project focusing on methods for environmental control in underground rapid transit systems. As discussed in The Subway Environmental Design Handbook, computer simulation was used to overcome the deficiencies of closed-form mathematical modeling, and was validated using scale models and field-testing. The Handbook was developed as a guide and reference for the planning, design, construction, and operation of environmental control systems for underground rapid

transit. Shortly after the publication of the Handbook, SES was released to the rail transit community for the purpose of reducing the environmental problems of existing systems, and to help plan facilities and establish standard procedures for improved environmental control in new systems. This report is published in order to aid users of the program in realizing these goals.

See also report dated October 1975, PB-254790. Portions of this document are not fully legible.

Parsons, Brinckerhoff, Quade and Douglas, Inc. Urban Mass Transportation Administration, (UMTA-MA-06-0100) Final Rpt. DOT-TSC-UMTA-79-31, Dec. 1980, 239p

Contract DOT-TSC-1216

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-149775

15 330284

MULTI-PURPOSE REICHSBRUECKE IS READY TO OPEN ON TIME

This article describes the 864 M long, 26 M wide crossing of the Danube and adjacent flood relief channel. It consists of a prestressed concrete box girder superstructure constructed mainly by balanced cantilevers. Beneath the six-lane highway the bridge's twin concrete boxes house metro tracks and a station. Separate cycle tracks and footpaths are cantilevered from both sides. The construction of the boxed concrete piers for supporting the nine concrete piers is described, and reference is made to the use of bentonite for waterproofing the sheet piling of the cofferdam. (TRRL)

Hayward, D. *New Civil Engineer* No. 411, Sept. 1980, pp 34-35, 2 Fig., 3 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 251102)

ORDER FROM: Institution of Civil Engineers, 1-7 Great George Street, Westminster, London SW1P 3AA, England

15 330665

SITE INVESTIGATION-HOW MUCH SHOULD BE DONE

Although a high level of geological and hydrological information is of benefit to a tunnelling contractor to achieve accurate pricing, methods of assessing the degree of site investigation necessary are discussed in the article. The degree suggested is that sufficient to maximise the benefits and minimise the project costs after having recouped the cost of investigation. TRRL studies have evaluated actual cost data from completed tunnels in an attempt to formulate empirical guidance laws between significant variables influencing cost as a measure of site investigation effectiveness. Methods of index-linking construction costs to allow for inflationary elements are also discussed.

Attewell, PB. Clark, CR. *Tunnels and Tunnelling* Vol. 12 No. 10, Nov. 1980, pp 11-12, 1 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 252109)

ORDER FROM: ESL

DOTL JC

15 330667

CITY RAIL LINK SQUEEZES INTO OLD TUNNEL

The article describes the removal of extensive sections of brick invert along the London city line tunnel between Kings Cross and Farrington to increase clearances for operating British Rail electric services into Moorgate. The extreme caution exercised in the removal of about 200 separate breakouts which were made at six locations is emphasized. A Krupp 200 breaker was used for the work, the brickwork being replaced by reinforced concrete. Reference is made to traffic control during concreting operations. Around 150 cubic metres of pumped ready mixed concrete was moved up to 200 metres each day. A Pact system paver will be used to slipform the concrete track bases.

Winney, M. *New Civil Engineer* No. 413, Nov. 1980, pp 24-25, 2 Fig., 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 251564)

ORDER FROM: Institution of Civil Engineers, 1-7 Great George Street, Westminster, London SW1P 3AA, England

15 331109

TUNNELING RESEARCH FOR US HIGHWAYS AND URBAN RAIL SYSTEMS

Site exploration, ground support systems, construction monitoring and instrumentation, ground control, contracting and management, and tunnel environment were subjects discussed at a recent conference on highways and urban rail systems.

Farquhar, OS *Tunnels and Tunnelling* Vol. 12 No. 11, Dec. 1980, pp 15-18

ACKNOWLEDGMENT: British Railways

ORDER FROM: ESL

DOTL JC

15 331116

A NEW MODE OF TRANSPORT IN HONG KONG: THE UNDERGROUND RAILWAY STATIONS ON THE ISLAND [Un nouveau moyen de transport à Hong Kong: Le métro-les stations de l'île]

The authors describe the construction of the underground railway and 3 stations: Pedder, Chater and Admiralty. The development of the project is outlined together with the principles on which the preliminary plan was based. Details are given of the main constructional problems: safety of the stations vis a vis the water level, construction of the foundations of a future building located north of Pedder. Attention is drawn to the 1.20 M thick slurry trench walls, geotechnical problems during the construction of station Chater in the vicinity of buildings, the hydraulic problem caused by the construction of the stations (dam effect). [French]

Hamon, P Baum, P Drye, H (Dragages et Travaux Publics) *Travaux* No. 537, Nov. 1979, pp 37-45, 10 Fig., 10 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 110257), Central Laboratory of Bridges & Highways, France

ORDER FROM: ESL

15 331121

TUNNELLING EXPERIENCES UNDER THE CENTRE OF OSLO

The design and construction of a 3500 M long tunnel connecting east-and west-bound railway lines through Oslo is described. One part of the tunnel passes through bedrock at a depth of 20-40 M below ground level. The bedrock consists of sedimentary rocks-clayey rocks and shales, calcareous shales and limestones, with occasional shear zones with minor dislocations cutting through the rock. Above and along the tunnel there are a number of clay-filled depressions in the bedrock. Major problems described concern vibrations from blasting and the inflow of groundwater into the tunnels and halls. Drilling and blasting operations were carried out in a conventional manner. As tunnelling operations commenced in built-up areas government restrictions concerning acceptable threshold noise values which are tabulated, had to be adhered to. Problems encountered with extensive leakage through the concrete lining are described. The covering abstract for the proceedings is IRRD abstract no 252594.

Eurotunnel '80, held Basle, Switzerland, 16-19 September, 1980.

Heltzen, AM

Institution of Mining and Metallurgy 1980, pp 1-5, 3 Fig., 2 Tab., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252595)

ORDER FROM: Institution of Mining and Metallurgy, 44 Portland Place, London, England

15 331122

METRO WORKS IN ANTWERP, BELGIUM: USE OF A 6.50 M DIAMETER BENTONITE SHIELD FOR THE TUNNELS AND PIPE-JACKING FOR THE STATIONS

Metro works in Antwerp were started in January, 1970; the first part, carried out by cut and cover methods, caused considerable traffic congestion and generally disturbed the business area. Pressure by the public led the national ministry of transport (which finances the entire works) to accept that the second part should be undertaken by underground methods to avoid any disruption. Previous tenders were withdrawn and a new investigation was ordered. In the revised tender-documents the use of a 6.5 M diameter bentonite shield was specified to avoid compressed-air working and to reduce surface settlement. Details of the shield are presented, together with technical information on the overall project. A method of pipe-jacking for the roof slab of tunnels is described for use where the tunnel is shallow and a shield cannot be used. The covering abstract for the proceedings is IRRD abstract no 252594.

Eurotunnel '80, held Basle, Switzerland, 16-19 September, 1980.

Hoste, GR

Institution of Mining and Metallurgy 1980, pp 28-32, 4 Fig., 5 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 252598)

ORDER FROM: Institution of Mining and Metallurgy, 44 Portland Place, London, England

15 331123

APPLICATION OF THE NEW AUSTRIAN TUNNELLING METHOD FOR METRO CONSTRUCTION IN THE FEDERAL REPUBLIC OF GERMANY

Following the decision of the city of Frankfurt in 1969 to test the New Austrian Tunnelling Method for metro tunnel driving (it had previously been applied only to railway tunnels) eight other towns in the Federal Republic of Germany have applied this economic and widely applicable method of metro tunnel construction. Geological problems, particularly in near-surface Quaternary strata, were dealt with in various ways-by mechanical support, grouting, freezing, etc. The tunnel cross-sections increased from the 34 sq M single-track road tunnel to the 200 sq M three-aisle Schweizer Platz metro station in Frankfurt. The construction of this underground station demonstrates the development over the last ten years of the application of the NATM in metro tunnel construction in Germany. The covering abstract for the proceedings is IRRD abstract no 252594.

Eurotunnel '80, held Basle, Switzerland, 16-19 September, 1980.

Babendererde, S

Institution of Mining and Metallurgy 1980, pp 54-58, 3 Fig., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 252601)

ORDER FROM: Institution of Mining and Metallurgy, 44 Portland Place, London, England

15 331124

PRECAST-CONCRETE TUNNEL LINERS IN THE CONSTRUCTION OF THE BUDAPEST AND PRAGUE METRO BELGRADE RAILWAY TUNNELS

In the field of tunnel construction several attempts have been made to substitute the much more economical reinforced-concrete tunnel liners for cast iron and steel linings. Adequate connexions and problems related to watertightness posed many difficulties, which generally resulted in segments that were too complicated and heavy. A new design of precast-concrete tunnel liners that was developed in Hungary has solved these problems. The development of a deformable hinged tunnel lining system with dowel-type connexion on the one hand, and the decrease of bending moments as a result of the good interaction of the lining and surrounding soil on the other, gave a very small wall thickness. Numerous tests for load-bearing capacity, accuracy and watertightness have shown that the lining withstands the forces that act on it and meets the technological requirements. Detailed information is given on the new precast tunnel lining system and the tests for bearing capacity of the hinges, as well as on precasting of the segments, erection and grouting. Geological and structural details of the use of the system in soft, water-bearing layers, especially in the construction of the Budapest metro, which was awarded the "golden trophy of the europrefab", are also presented. A short account follows on the use of the system in the construction of the Prague metro and the new Belgrade railway tunnel. (a) The covering abstract for the proceedings is IRRD abstract no. 252594.

Eurotunnel '80, held Basle, Switzerland, 16-19 September 1980.

Fogarasi, G Rozsa, L

Institution of Mining and Metallurgy 1980, pp 102-109, 10 Fig., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 252607)

ORDER FROM: Institution of Mining and Metallurgy, 44 Portland Place, London, England

15 331125

GARE DE LYON PROJECT, FRANCE

The article reviews the development of the Paris gare de Lyon project to construct a common interchange between metro and mainline rail services. The interchange or "under-station" common structure is being constructed beneath the existing SNCF installation. For this construction, excavation down to 23 M was carried out, the area being surrounded by a peripheral moulded wall in the upper strata (earth and alluvium) and by an impervious screen, made by surface injection, down to the level of the limestone. The walls were excavated using an experimental machine known as the hydromill which is able to operate without a rock-drill and so eliminate the transmission of shocks and vibrations to nearby buildings. To ensure

stability of the structure on the supposition of ten-year floods, use was made of the decompression shaft system drilled at the excavation stage. All parts of the structure were sheathed with PVC sheeting up to the maximum level of the water table. Details are given of precautions taken to ensure the stability of the foundations of surrounding buildings by underpinning and grouting operations. The covering abstract for the proceedings is IRRD abstract no 252594.

Eurotunnel '80, held Basle, Switzerland, 16-19 September, 1980.

Lezsa, L, (Paris Transport Authority)
Institution of Mining and Metallurgy 1980, pp 110-119, 10 Fig., 9 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 252608)
ORDER FROM: Institution of Mining and Metallurgy, 44 Portland Place, London, England

15 331126
ADAPTATION TO THE SITE OF PLANS FOR UNDERGROUND WORKING IN AN URBAN AREA

It is necessary to take into consideration a number of factors to ensure success when planning underground workings. This is particularly true when tunnels have to be built on an urban site and in poor ground. The predominant factors then are related to the geology, the hydrogeology, the liability of the ground to cave, the congestion of the subsoil, the urban density, the nearness of premises, etc. In addition, the purpose for which the future works are intended obviously has important repercussions. For example, in building an underground railway line the depth to which the stations are constructed is far from being of minor significance. Finally, the disruption caused by the works and, consequently, the working plan have to be taken into consideration. The extension of line 10 of the metro to the adjacent suburb west of Paris provides, in this respect, a good illustration of the need to adapt, as closely as possible, the working methods to the conditions encountered. Work on the Porte d'Auteuil section and implementation of the works in two sections are described. (a) the covering abstract for the proceedings is IRRD abstract no 252594.

Eurotunnel '80, held Basle, Switzerland, 16-19 September, 1980.

Bougard, JF (Paris Transport Authority)
Institution of Mining and Metallurgy 1980, pp 130-134, 3 Fig., 5 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 252610)
ORDER FROM: Institution of Mining and Metallurgy, 44 Portland Place, London, England

15 331232
DESIGNING THE WEST LAKE STATION AREA

This case study report addresses the problems associated with the designing of the MARTA West Lake Station Area. It describes the design and then construction of each MARTA station in terms of 3 stages that relate to track, station, and station area. Basically, the contention at West Lake centered around stage 3 design, which, in turn, impacted on the two prior steps. The West Lake Station Area reflected important elements of the evolving MARTA style of management, namely--that each MARTA station would be community-rooted. Each MARTA station would be different as required by diverse community needs, geography, and so on. This report also discusses the Transit Station Area Development (TSAD) program and states that the TSAD program has provided completed station area plans phased with detailed engineering so that MARTA system plans reflected local government and citizen involvement, preferences, and policies. (UMTA)

Golembiewski, RT
Georgia University, Athens, Urban Mass Transportation Administration, (GA-11-0006) UMTA-GA-11-0006-81-6, July 1979, 36p

ACKNOWLEDGMENT: UMTA
ORDER FROM: NTIS

PB81-154825

15 331488
SUBWAY BUILT 2 FT UNDER STREET

The paper reports how workers plagued by a high water table during subway construction in a densely populated city have overcome the problem by building a tunnel only 2 ft below the surface and sealing the top and bottom of the shallow structure with plastic sheeting.

Engineering News-Record Vol. 205 No. 12, Sept. 1980, pp 66-67

ACKNOWLEDGMENT: EI
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DOTL JC

15 331492
BOSTON'S SOUTHWEST CORRIDOR PROJECT

Drawing on experiences with the Massachusetts Bay Transportation Authority (MBTA) Southwest Corridor Project in Boston, Mass., the initial through final stages of organizing a design team are illustrated as Boston's Southwest Corridor is transformed from a proposed highway to a mass transit/commuter rail facility. The design team is faced with not only a challenging engineering task but also a very demanding political issue. Intense community participation and related social issues are reflected in working relationships and processes. The role of the MBTA affects the organizational structure. The scope of the work is defined as the engineering agreement and subconsultant agreements are negotiated. Estimates are prepared on costs and man hours. Organization for the project is also a prime concern. The Management Information System is also explained as an important aspect of the project's successful completion.

Hall, FX Shumway, LW *ASCE Engineering Issues-J of Prof Activities* Vol. 107 No. 1, Jan. 1981, pp 51-59

ACKNOWLEDGMENT: EI
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DOTL JC

15 331551
EASTERN LINE OF THE AMSTERDAM RAPID TRANSIT SYSTEM [La ligne EST du métro d'Amsterdam]

The paper presents an historical survey of design and construction methods and discusses waterable position, method selection, caisson method, concrete, sidewall cooling and joint squeezing. Construction of the surface section is described. [French]

Hespe, S *Tunnels et Ouvrages Souterrains* No. 40, July 1980, pp 237-244

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

15 331747
ADVANCES IN TUNNELLING TECHNOLOGY AND SUBSURFACE USE

This new journal includes papers encompassing the developments of new uses of underground space and the results of research into improved, more cost-effective methods for the planning, geo-investigation, design, construction, operation and maintenance of underground structures will be published; including up-to-date reports from member countries of the ITA and papers from ITA conferences. Social, legal, political and economic implications will also be covered.

Advances in Tunnelling Tech & Subsurface Use 1981, n.p.

ACKNOWLEDGMENT: Maxwell Scientific International
ORDER FROM: Maxwell Scientific International, Fairview Park, Elmsford, New York, 10523

15 331841
VENTILATING THE HONG KONG METRO

The environmental control system of the Hong Kong Mass Transit Railway tunnel adopted is described. This system was designed while construction was in progress, retaining the existing ventilation shafts in the tunnels but abandoning the curtains at station ends.

Martin, D *Tunnels and Tunnelling* Vol. 12 No. 8, Sept. 1980, pp 54-55

ACKNOWLEDGMENT: EI
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DOTL JC

15 331844
BALTIMORE'S GOT THE SUBWAY EVERYONE LOVES

Some of the innovations of Baltimore's 13.5-mile subway system are explored. The system, on which construction began in 1976, is under budget and on time. The first 7.5-mile section will open in 1982. Innovations on the system include: enlightened contract writing, with minimal use of exculpatory language; extensive use of geotechnical data, including sharing it with contractors; and extensive use of slurry walls, compaction and chemical grouting to cut underpinning costs.

Seltz-Petrash, AE *ASCE Civil Engineering* Vol. 51 No. 1, Jan. 1981, pp 42-45

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

15 331892

THE ADVANCE OF THE AUTOMATIC MOLE

Britain's tunneling technology has been outdistanced by foreign competition, particularly developments by Japanese engineers. Japan constructs more tunnels of all types than any other nation and has refined soft ground tunneling machines to the point where an unmanned Tele-Mole can be controlled from the surface laser targeting and TV monitoring. The result is tunneling cheaper and safer than ever before.

Harding, P *New Scientist* Vol. 89 No. 1243, Mar. 1981, pp 594-597, 6 Phot.

ORDER FROM: IPC Magazines Limited, Commonwealth House, 1-19 New Oxford Street, London WC1A 1NG, England

DOTL JC

15 331894

A DESCRIPTION OF THE MARTA RAPID TRANSIT SYSTEM IN ATLANTA

Metropolitan Atlanta Rapid Transit Authority (MARTA), planned as an 81-km combination of aerial, surface and subway rapid transit, has had 22.1 km under construction since 1975 with initial revenue service starting in 1979. Details of planning, line construction, stations, yards, cars, fare collection, communications, train control and organization are included.

UITP *Revue* Vol. 29 No. 4, 1980, pp 273-277, 1 Tab.

ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

DOTL JC

15 334435

JAPANESE TUNNEL DESIGN: LESSONS FOR THE U. S

The Japanese construction industry has a great deal to offer regarding designs, methods, and procedures that can efficiently overcome the tough physical and environmental constraints encountered when tunneling in dense urban areas. This is particularly true regarding softground tunneling. The following issues are explored: the use of pre-cast concrete liners, slurry-shield tunneling, earth pressure balance shield tunneling, and non-disruptive cut-and-cover tunneling. All have been used successfully by Japanese design-construction firms. In addition, a diagram illustrates an unusual underwater tube tunnel project undertaken in the Port of Tokyo.

Paulson, BC, Jr (Stanford University) *ASCE Civil Engineering* Vol. 51 No. 3, Mar. 1981, pp 51-53

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

15 334437

SELECTION OF TUNNELLING FORMWORK

The article discusses a number of important points to consider before tunneling formwork is designed, including ground conditions, access, concreting limitations, availability of labour and local methods of construction. It advises that full trial assembly of the formwork must take place before equipment is delivered to site. This is not only for the manufacturers' purposes, but also for the contractors' inspection, as any changes or modifications required can be made more satisfactorily at this time rather than on site.

Jeffery, R *Tunnels and Tunnelling* Vol. 12 No. 10, Nov. 1980, pp 15-17

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

15 334495

PROFILE MEASUREMENT IN TUNNEL CONSTRUCTION. SITUATION AND TRENDS CONCERNING THE DEVELOPMENT OF PROCEDURES FOR MEASURING PROFILES OF RAILWAY TUNNELS [Profilmessungen im Tunnelbau. Stand und Entwicklungstendenzen der Verfahren zur profilmessigen Erfassung von Eisenbahntunneln]

Existing methods of measuring railway tunnel profiles and monitoring their condition can no longer be used on the German Federal Railway's very busy main lines unless allowance is made for operating problems, some of which

are highly important. Work has been in progress for some time on the development of new faster methods which provide data without contact, together with automated recording and analysis of profile data. The author describes new developments in this field. [German]

Brandenburg, D *Eisenbahningenieur* Vol. 32 No. 1, Jan. 1981, pp 18-26, 10 Phot., 9 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD

ORDER FROM: Tetzlaff-Verlag GmbH, Havelstrasse 9, Postfach 4006, 6100 Darmstadt 1, West Germany

15 334522

SUBWAY VENTILATION STUDY FOR THE CITY OF PHILADELPHIA

The study under consideration relates to the ventilation of two distinct and separate subway tunnels: the Broad Street Subway and the Market-Frankford tunnel. The Broad Street Subway consists of a four-track tunnel with operation on all four tracks during rush hour, extending from Girard Ave. to north of Susquehanna-Dauphin Station. The tunnel study on this section included 11210 ft. with 35 vent shafts, 5 stations, 50 line sections and 86 nodes. It covered the section from Fairmount Station to the end of platform at North Philadelphia. The second section of Broad Street is a two-track tunnel starting from Snyder platform to the end of Walnut-locust. The simulation covered a length of 9700 ft. with 56 vent shafts and 10 stairs. Three of the five stations covered had mezzanines. The third section covered the Market-Frankford tunnel extending through the city in an east-west direction. The Market Street subway is a double-track tunnel with 5 stations and no vent shafts covering 5900 ft. in length from Second thru 13th Street. Previous studies of the Philadelphia Subway ventilation indicate that responsible agencies have for some time expressed concern of balancing cost of ventilation equipment with the benefits of passenger comfort and safety. In view of impending station rehabilitation the overall problem of subway ventilation is being examined with the aid of recent developments in the field of data processing and environmental simulation programs. Therefore, the objective of this study was to use the computer simulations and verify those with field measurements. Existing cars running on the indicated transit lines were simulated during the summer evening rush hour. (Author)

De Leuw, Cather and Company Dec. 1979, v.p., 5 Ref., Apps.

ORDER FROM: De Leuw, Cather and Company, Suburban Station Building, Philadelphia, Pennsylvania

15 334647

MECHANICAL PRESPLITTING. A NEW PROCESS OF TUNNEL CONSTRUCTION [LE PREDECOUPEME MECANIQUE-UN PROCEDE NOUVEAU POUR LE CREUSEMENT DES TUNNELS]

The authors describe the presplitting technique and outline the various stages of the method distinguishing between hard and soft ground. Chapter 2 deals more specially with presplitting in hard ground, the method used particularly suitable for urban works; the problems arising from the use of explosives in urban zones are outlined. Preliminary tests to the use of the method are described together with the advantages of mechanical presplitting in the case of tunnel construction with use of explosives. Chapter 3 describes applications of presplitting in hard ground. Chapters 4 and 5 concern mechanical presplitting in loose ground and its applications. (TRRL) [French]

Bougard, JF Francois, P Longelin, R *Tunnels et Ouvrages Souterrains* No. 22, July 1977, pp 174-202, Figs., Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 110494), Central Laboratory of Bridges & Highways, France

ORDER FROM: ESL

DOTL JC

15 334648

WEARING OF THE BITS OF FULL-SECTION TUNNELLING MACHINES- ANALYSIS AND COMPARISON [L'USURE DES MOLETTES DES TUNNELIERS PLEINE SECTION-ANALYSE ET COMPARAISON]

Because of the importance of the cost of bits (25% of drilling cost in ordinary ground), the author systematically studies the wearing of bits on different hydraulic equipment sites of the Alpes-Lyon region. He defines the types of wear of loose discs classified according to their diameter, measures material loss and reduction of the radius. An individual study of the discs is conducted with a view to finding possible relations between the different

types of wear and the geometric characteristics of the drilling head and bits. Imprints of two discs from the same bit were taken to observe the evolution in wear and efficiency of the discs. The consumption of tools by different tunnelling machines was examined as a function of the rate of progress and geomechanical characteristics of the ground. Conclusions were reached, which should reduce expenses due to wear and lead to a better understanding of the rock destruction process. (TRRL) [French]

Nizamoglu, S *Tunnels et Ouvrages Souterrains* No. 26, Mar. 1978, pp 67-80, 21 Fig., 15 Tab., 2 Phot., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 110498), Central Laboratory of Bridges & Highways, France
ORDER FROM: ESL

DOTL JC

15 334700
GEOTECHNICAL ASPECTS OF THE UJO TUNNEL CONSTRUCTION USING THE NATM

The article reports on a study of the interaction between the rock mass and the tunnel support obtained during excavation of a single track railway tunnel in Spain constructed using the New Austrian Tunneling Method (NATM), where the initial support has been left as final. Some 700 rock mass quality determinations using the Norwegian Geotechnical Institute method have been performed along the tunnel. Measuring stations were installed at 734 locations to monitor horizontal convergence. Interesting conclusions relating rock mass quality to tunnel support and convergence have been obtained. Some recommendations to improve the rock mass classification systems are proposed.

Leiria, FD Oyanguren, PR *Tunnels and Tunnelling* Vol. 12 No. 9, Oct. 1980, pp 50-52

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

15 334709
LIGHTING DESIGN--THE KEY TO MARTA'S NEW MASS TRANSIT SYSTEM

The MARTA (Metropolitan Atlanta Rapid Transit Authority) mass transportation system consists of two rapid rail lines: an east-west and north-south line. The longer of the two, the north-south, is still under construction. The east-west line is 11.8 miles long with 13 stations. A standardized but flexible lighting design in a "unique" rapid rail transit system helps save construction and maintenance costs without sacrificing individual station design creativity.

Lighting Design and Application Vol. 10 No. 8, Aug. 1980, pp 36-40

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

15 334720
UNDERGROUND EXCAVATIONS IN ROCK

This book deals with the geotechnical aspects of the design of underground openings for mining and civil engineering purposes. It contains a number of worked examples to assist the reader in applying the techniques described to his or her own problems. The data are presented under the following chapter headings: (1) planning considerations; (2) classification of rock masses; (3) geological data collection; (4) graphical presentation of geological data; (5) stresses around underground excavations; (6) strength of rock and rock masses; (7) underground excavation failure mechanisms; (8) underground excavation support design; (9) rockbolts, shotcrete and mesh; (10) blasting in underground excavations; (11) instrumentation. Several appendices deal with: isometric drawing charts, stresses around single openings, two-dimensional boundary element stress analysis, determination of material constants, underground wedge analysis, and conversion factors. A very extensive bibliography is included.

The ISBN of the hardback version of the book is ISBN 0900488 54 9.

Hoek, E Brown, ET
Institution of Mining and Metallurgy Monograph 1980, 527p, Figs., Tabs., Photos., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 253665)
ORDER FROM: Institution of Mining and Metallurgy, 44 Portland Place, London, England

15 334722
THE PARIS UNDERGROUND RAILWAY: THE EXTENSION OF LINE A OF THE REGIONAL EXPRESS NETWORK (RER) AT TORCY [Métro de Paris: le prolongement à Torcy de la ligne A du réseau express régional]

This extension is 9 km long from the present terminus at Noisy-le-Grand Mont and comprises 4 stations, each serving a sector of the new town of Marne-la-Vallée. Along most of the line, the construction of the RER precedes urban development thus benefiting from privileged conditions as regards alignment and ease of construction. To limit nuisances, the railway line is built mainly in cuttings in marl and marl-limestone layers surrounded by the water table. Approximately twenty structures were necessary to link the planned road network, including a 570 m-long viaduct with noise barriers. The whole construction period will last 30 months, the total cost will be 400 million francs. [French]

Taillebois, A *Travaux* No. 545/546, July 1980, pp 48-62, Figs., Photos.

ACKNOWLEDGMENT: TRRL (IRRD 110375), Central Laboratory of Bridges & Highways, France
ORDER FROM: ESL

15 334727
GIANT SIZE SLURRY SHIELD IS A SUCCESS IN TOKYO

The 844 M long double-track Hikawadai tunnel section of the No. 8 line of the Teito Rapid Transit Authority is being driven by a 10 M o/d shield and lined with 9.8 M o/d concrete segments. The line incorporates curves of 800 M and 1500 M radius. The shield passes under the Shakujii river bed with an overburden of 8 M and then passes beneath residential areas where the overburden is 12-18 M. The upper portion of the tunnel lies in a sand and gravel layer known as Tokyo gravel stratum. The sand layer at the crown is loose and liable to collapse. The large-scale slurry shield was chosen for the double-track tunnel excavation to overcome problems of sand instability and drainage. The success of the largest shield used in Japan is said to be due to exhaustive soil investigation, careful design and manufacture of equipment, and close slurry control.

Watanabe, T (Teito Rapid Transit Authority); Yamazaki, H (Tekken Construction) *Tunnels and Tunnelling* Vol. 13 No. 1, Jan. 1981, pp 13-17, 5 Fig., 1 Tab., 5 Phot., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253584)
ORDER FROM: ESL

DOTL JC

15 335026
AN ULTRASONIC VELOCITY BOREHOLE LOGGER FOR USE IN ROCK

An ultrasonic velocity borehole logger has been developed for use in small diameter boreholes drilled in rock for probing ahead of tunnels. The paper gives details of its design and construction and examples of its use in logging boreholes drilled in a laboratory trial and in an underground stone quarry. Two special features of the logging tool are that the transducers are mechanically pressed against the rock in the borehole wall and therefore no liquid is needed in the borehole to provide a coupling for the signal, and that the whole tool has been made compact enough to fit into a 56 mm diameter borehole. The instrument measures the compressional wave velocity of the rock, which may be interpreted to provide a qualitative indication of rock properties. In addition a method of deriving the rock strength from the velocity is suggested and demonstrated for the two test boreholes. Recommendations for developing the prototype into an instrument for routine use are made. (Author/TRRL)

West, G New, BM (Transport and Road Research Laboratory) *Ultrasonics* Vol. 19 No. 2, Mar. 1981, pp 67-71, 3 Fig., 2 Phot., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253167)
ORDER FROM: ESL

DOTL JC

15 335056
MIAMI TRANSIT: ON SCHEDULE, ON BUDGET

Miami Metrorail is approaching the one-third point in its construction of its initial 20.5-mile route, most on aerial structures, with operation scheduled for 1984. Design and erection of the elevated structure, fare collection, power supply, car procurement and administration of the \$870 million project are described.

Middleton, WD *Railway Age* Vol. 182 No. 11, June 1981, pp 18-23, 3 Phot.

ORDER FROM: ESL

DOTL JC

15 335454

EQUIPMENT FOR AN OPEN-CUT TUNNEL CONSTRUCTION SYSTEM USING MOBILE REINFORCEMENT DURING DIGGING [PROHODCESKIJ KOMPLEKS S PEREDVIZNOJ KREP'JU DLJA SOORUZENIJA TONNELEJ OTHRYTYM SPOSOBOM]

Technical description of a new range of type KMO 2x5 tunnel boring equipment (recommended for mass production) for building metro tunnels by the open-cut method. It is designed for the use of mechanical diggers with reinforcement of the side walls, and for covering over the tunnel in cities. [Russian]

Maksimov, BS Semenov, AV *Transportnoye Stroitel'stvo* No. 1, 1981, pp 13-14, 2 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Kamkin Bookstore, 12224 Parklawn Drive, Rockville, Maryland, 20852

15 335555

ROCK-MECHANICS RESEARCH REQUIREMENTS FOR RESOURCE RECOVERY, CONSTRUCTION, AND EARTHQUAKE-HAZARD REDUCTION

Principles of rock mechanics, the science of predicting the behavior of rock masses, are often based on insufficient data with significant disparities between experiment, theory and field experience. The U.S., committed increasingly to major projects involving rock masses, is interested in their economical and safe execution. In this study seven subpanels assessed the current state of knowledge in specific areas, and recommended research that should be undertaken to reduce or eliminate deficiencies. Although the groups endeavored to assess the costs, time, manpower and appropriate funding agencies, these matters were generally beyond their scope since they were charged with making recommendations covering technical areas. The Steering Group then made six observations concerning funding, the need for large-scale laboratory and field testing, and the advantages of combining such investigations with current engineering projects involving rock masses.

Also available from the National Technical Information Service, Springfield, Virginia, 22161, Report No. NRC/AMPS/RM-81-1.

National Academy of Sciences 1981, 222p, Figs., Tabs., Refs., 1 App.

ORDER FROM: National Academy of Sciences, US National Committee for Rock Mechanics, Washington, D.C., 20418

15 335607

FUNDAMENTALS FOR THE DESIGN AND CONSTRUCTION OF TUNNELS LOCATED IN SWELLING ROCK AND THEIR USE DURING CONSTRUCTION OF THE TURNING LOOP OF THE SUBWAY STUTTGART, 1978

The decisive causes for swelling phenomena in connection with tunnel structures, namely the addition of water onto the clay mineral corrensites as well as the transformation of anhydrite into gypsum under addition of water are discussed. A method is described for designing the lining of tunnels in swelling rock. General principles for the dependency of swelling displacements upon the primary stresses, the cross-section shape for the tunnel, and upon the overburden pressure are established. The influence and importance of the quantity of water necessary for the swelling processes are also pointed out.

Publications of the Institute of Foundation Engineering Soil Mechanics and Rock Mechanics, Water Ways Construction, RWTH University of Aachen, West Germany, (English Edition) V6.

Wittke, W

Rheinisch-Westfälische Technische Hochschule 1978, 131p, 9 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: Rheinisch-Westfälische Technische Hochschule, Institute of Foundation Engineering, Templergraben 55, 5100 Aachen, West Germany

15 335617

SPEEDY MUCKING OUT IS KEY TO TBM SUCCESS ON MANHATTAN SUBWAY

In late 1978, a \$186 million contract to construct the last section in Manhattan of the new East 63 Street subway line to Queens was awarded by the Transit Authority. It was decided to drive the tunnel with a Robbins tunnel boring machine and an effective mucking out system was evolved. The article discusses various aspects of the project, with emphasis on the haulage system designed to remove spoil from the tunnel efficiently.

Garrett, RE *Tunnels and Tunnelling* Vol. 12 No. 11, Dec. 1980, pp 45-46

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

15 335620

URBAN SUBWAY FOR THE CITY OF LILLE IN FRANCE [LE METRO DE LA COMMUNAUTE URBAINE DE LILLE]

The author explains the reasoning that has led to the choice of a pneumatic-tired small-gage (2.06-3.25 m) subway which is highly automated as regards running control as well as station design (sliding doors as in lifts). This article covers more particularly the civil engineering and town planning aspects. [French]

Guilleminot, B *Revue Generale des Chemins de Fer* Vol. 100 Jan. 1981, pp 1-14, 1 Fig., 16 Phot.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

15 335621

BALTIMORE REGION RAPID TRANSIT SYSTEM--USE OF PRECAST AND PRESTRESSED CONCRETE

The author presents an overview of Baltimore, Maryland's new rapid rail transit system. Particular attention is given to the precast concrete segmental tunnel lining, the prestressed concrete aerial structure girders, and the precast and prestressed concrete wall and roof panels for some of the auxiliary buildings.

Leonard, G, Jr (De Leuw, Cather and Company) *Prestressed Concrete Institute, Journal of* Vol. 26 No. 1, Jan. 1981, pp 16-24

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

15 335622

LARGE-DIAMETER SHIELD-DRIVEN TUNNEL IN THICK WATER-BEARING SAND STRATA: USE OF PILOT TUNNEL FOR GROUND DEWATERING

A pilot subway tunnel with a 2.6-m outside diameter in Japan was driven within the cross-section of the proposed large-diameter tunnel, and, using this pilot tunnel for drainage, the groundwater head was lowered from 12 m to the required height (approximately 5 m). Reference is made to the basic measures taken to deal with the groundwater in shield tunnelling through water-bearing strata, the groundwater lowering method that was employed on the Toshimacho section and the results of the theoretical analyses on groundwater flow, and forced compressed-air discharge to exclude the remaining hydrostatic and artesian groundwater and its advantages over conventional treatment of the remaining groundwater.

Tunnelling '79, Proceedings of the International Symposium, 2nd, London, England, March 12-16, 1979.

Miyoshi, M Okuzono, K

Institution of Mining and Metallurgy Proceeding 1979, pp 264-270

ACKNOWLEDGMENT: EI

ORDER FROM: Institution of Mining and Metallurgy, 44 Portland Place, London, England

15 335721

COMPACTION GROUTING TO LIMIT GROUND MOVEMENTS: INSTRUMENTED CASE HISTORY EVALUATION OF THE BOLTON HILL TUNNELS

This report describes and analyzes a special field instrumentation program carried out to monitor the effects of compaction grouting for control of ground settlements at the Bolton Hill Section of the Baltimore Region Rapid

Transit System. In addition to a complete presentation of the relevant instrumentation details, grouting procedures and ground movement measurements, the report gives a comparison of preconstruction predictions to actual ground behavior, summarizes the relative influence of the compaction grouting on tunneling ground movements, and gives recommendations for future applications. The use of compaction grouting to limit ground movements above soft ground tunnels at the Bolton Hill Section of the Baltimore Regional Rapid Transit System has been shown to be an effective, cost-saving procedure for the conditions encountered. The data obtained in an extensive instrumentation program at the initial compaction grouting locations has shed considerable light on the process and will aid in permitting a more rational application of the concepts to future projects.

Baker, WH (Baker (Haywood) Company); MacPherson, HH Cording, EJ (Illinois University, Urbana)
Mass Transit Administration of Maryland UMTA-MD-06-0036-81-1,
Apr. 1981, 86p

ORDER FROM: NTIS

15 335790

DESIGN OF TUNNEL LINING IN ROCK FOR LONG TERM TIME EFFECTS

Excavation of underground openings in rock relieves the in situ state of stresses, providing an initiating mechanism for time-dependent deformation in shaly rocks to occur. The construction of a permanent lining restrains the rock movement, resulting in an increase with time of pressure acting on the lining. Closed form solutions for this problem of rock structure-time interaction of circular tunnels have been developed, taking into account (a) the state of initial stresses, (b) the time-dependent properties of the lining as well as the rock, and (c) the time lapsed between excavation and lining. Expressions for lining pressures, stresses, thrusts, and moments are given for both "no slip" and "full slip" interact conditions. The effects of material parameters, lining flexibilities, and time lapse on quantities of engineering interest are studied and their implications on design illustrated. The results of analysis are compared with the field observations made in three tunnels. It is shown that the theoretical results are consistent with the observed extent and location of cracking in these tunnels. It is suggested that the methods proposed may be used for design considerations of permanent linings of tunnels in rock exhibiting significant time-dependent deformation. (TRRL)

Lo, KY (University of Western Ontario, Canada); Yuen, CM (Golder Associates, Mississauga) *Canadian Geographical Journal* Vol. 18 No. 1, Feb. 1981, pp 24-39, 12 Fig., 3 Tab., 3 Phot., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254200), Roads and Transportation Association of Canada

ORDER FROM: Royal Canadian Geographical Society, 488 Wilbrod Street, Ottawa 2, Ontario, Canada

15 335843

EXTENSION OF LINE B OF THE RATP (PARIS SUBWAY) UP TO THE GARE DU NORD [PROLONGEMENT DE LA LIGNE B DE LA RATP A LA GARE DU NORD]

The author describes the work involved in the extension of line B of the Paris Metro from the station at "Chatelet-les-Halles" to "Gare du Nord". He gives a geometrical and geological description of the project and presents the work involved in carrying out the different contracts. These works are being carried out on a very densely populated urban site under very unfavourable geological and hydrogeological conditions. Consequently, different methods of construction have been adopted to deal with the conditions encountered: large-span arches made up of prefabricated articulated segments, mechanical pre-cutting, stabilization by grouting. [French]

Bougard, M (Paris Transport Authority) *Tunnels et Ouvrages Souterrains* No. 39, May 1980, pp 178-195, 27 Fig., 16 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 110431), Central Laboratory of Bridges & Highways, France

ORDER FROM: ESL

DOTL JC

15 336254

RAPID EXCAVATION OF ROCK WITH SMALL CHARGES OF HIGH EXPLOSIVE. OPEN FILE REPORT

The purpose of this investigation was to test a blast shield, develop a conceptual design for an automated drill and blast system (ADBS), and make an economic analysis of the ADBS compared with conventional drill,

blast, and muck (DBM) systems. The ADBS tunneling concept was developed in an effort to design an excavation system of greater efficiency than the DBM system conventionally used. The ADBS would minimize downtime and approach noncyclic efficiently by small charge blasting. Small charge blasting uses simultaneously detonated light charges in four to eight short holes, usually in a line. Limitation of the total explosive per blast reduced air blast overpressure, fly rock velocity, vibrations, and noise enabling the blast shield to adequately contain these side effects. Conceptual design for the ADBS included blast shield, chasis, hydraulic drills, automated explosive loading and firing system, and an armored cab. Horizontal and vertical blast shield alignment controls and ventilation are incorporated into the design. The economic analysis determined ADBS advance costs to be 17 to 20 pct lower than DBM on a per foot basis.

Clark, GB Ashcom, DW Hanna, K
Colorado School of Mines, Bureau of Mines Final Rpt. BU-MINES-OFR-111-80, Jan. 1980, 250p

Grant H0272020

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-125577

15 337147

ALTERNATIVE CONCEPTS FOR UNDERGROUND RAPID TRANSIT SYSTEMS. VOLUME I: STUDY RESULTS

The objective of the study was to determine if construction costs and operating energy requirements of future high-performance underground rapid rail systems can be decreased while maintaining or improving service. The alternative design approaches studied were limited to well-established design concepts that differ from those used in BART (San Francisco), WMATA (Washington D.C.), and MARTA (Atlanta). The alternative design concepts investigated in this study are: gravity assist; over/under tunnels; vertically-oriented stations; subway train propulsion; and operational control policies. Comparisons were made of several system designs for a specific route and patronage structure. These comparisons indicate that it is practical to significantly reduce construction costs and operational energy requirements of modern underground systems while improving service by incorporating alternative concepts. Without any attempt at optimization, savings in capital costs in excess of 24 percent and savings in energy as high as 70 percent in traction effort, and 88 percent in braking are shown to be achievable.

See also Executive summary, PB-270102

Dayman, BJ Heft, RC Kurtz, DW Macie, TW Stallkamp, JA
Jet Propulsion Laboratory, Urban Mass Transportation Administration,
Office of the Secretary of Transportation Final Rpt. P-51-520-
77-2-VOL-1, UMTA-CA-06-0144-77-2, Mar. 1977, 107p

Contract DOT-AS-60019

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-180143

15 337148

ALTERNATIVE CONCEPTS FOR UNDERGROUND RAPID TRANSIT SYSTEMS. VOLUME II: SUPPORTING STUDIES, A, OPERATIONAL ASPECTS

The objective of the study was to determine if construction costs and operating energy requirements of future high-performance underground rapid rail systems can be decreased while maintaining or improving service. This part A of Volume II contains the basic information that was generated on the operational aspects of various alternative system designs: studies by JPL on performance and energy requirements; comments by the London Underground on the alternative approaches, as well as discussions on their related experiences.

See also Volume I, PB81-180143, Volume 2B, PB81-180168, and Volume 2C, PB81-180176. Portions of this document are not fully legible.

Dayman, BJ Heft, RC Kurtz, DW Macie, TW Stallkamp, JA
Jet Propulsion Laboratory, Urban Mass Transportation Administration,
Office of the Secretary of Transportation Final Rpt. P-51-520-
77-3-VOL-2A, UMTA-CA-06-0144-77-3, Mar. 1977, 158p

Contract DOT-AS-60019

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-180150

15 337149

ALTERNATIVE CONCEPTS FOR UNDERGROUND RAPID TRANSIT SYSTEMS. VOLUME II: SUPPORTING STUDIES. B. PRESSURE PULSE ANALYSIS

The objective of the study was to determine if construction costs and operating energy requirements of future high-performance underground rapid rail systems can be decreased while maintaining or improving service. This part B of Volume II contains all of the basic information of the pressure pulse analyses that were performed on double-track tunnels and intervened pairs of single-track tunnels.

See also Volume 1, PB81-180143, Volume 2A, PB81-180150, and Volume 2C, PB81-180176. Portions of this document are not fully legible.

Dayman, BJ Heft, RC Kurtz, DW Macie, TW Stallkamp, JA Jet Propulsion Laboratory, Urban Mass Transportation Administration, Office of the Secretary of Transportation Final Rpt. P-51-520-77-4-VOL-2B, UMTA-CA-06-0144-77-4, Mar. 1977, 200p

Contract DOT-AS-60019

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-180168

15 337150

ALTERNATIVE CONCEPTS FOR UNDERGROUND RAPID TRANSIT SYSTEMS. VOLUME II: SUPPORTING STUDIES. C. CAPITAL EQUIPMENT

The objective of the study was to determine if construction costs and operating energy requirements of future high-performance underground rapid rail systems can be decreased while maintaining or improving service. This part C of Volume II contains all the basic information generated on capital equipment of alternative approaches: design and cost estimates for underground structures, performance and costs of propulsion configurations and subway cars.

See also Volume 1, PB81-180143, Volume 2A, PB81-180150, and Volume 2B, PB81-180168.

Dayman, BJ Heft, RC Kurtz, DW Macie, TW Stallkamp, JA Jet Propulsion Laboratory, Urban Mass Transportation Administration, Office of the Secretary of Transportation Final Rpt. P-51-520-77-5-VOL-2C, UMTA-CA-06-0144-77-5, Mar. 1977, 271p

Contract DOT-AS-60019

ACKNOWLEDGMENT: NTIS

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PB81-180176

15 341044

TUNNELLING '79, PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM, 2ND, 1979

Proceedings of the international symposium include 35 papers that deal with the design, analysis and construction of vehicular, railroad sewer tunnels; study of soil and rock mechanics for ground support of tunnels; and geological surveys for the site selection of tunnels. 9 papers are indexed separately.

Tunnelling '79, Proceedings of the International Symposium, 2nd, London, England, March 12-16, 1979.

Jones, MJ

Institution of Mining and Metallurgy Proceeding 1979, 408p

ACKNOWLEDGMENT: EI

ORDER FROM: Institution of Mining and Metallurgy, 44 Portland Place, London, England

15 341153

MANAGEMENT STRATEGIES FOR QUALITY ASSURANCE FOR PITTSBURGH'S SOUTH BUSWAY

The management strategies for quality assurance are examined for Pittsburgh's South Busway Program. Specific consideration is given to (a) management structure, (b) end-result specifications, (c) sharing areas of risk, (d) mutual respect, (e) open communications with bilateral resolution of issues, (f) process for feedback, and (g) monetary and nonmonetary rewards. The avoidance of adversarial relations between owner, engineer, and contractor was key to a successful quality program in an adversarial political environment.

This paper appeared in TRB Record 792, Contractual Relationships: An Essential Ingredient of the Quality-Assurance System and Other Qual-

ity-Control Papers.

Heintzleman, WG (GAI Consultants Incorporated) *Transportation Research Record* No. 792, 1981, pp 32-34, 1 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

15 341155

CONTRACTOR'S VIEWPOINT AND CASE STUDY OF PITTSBURGH'S \$27 MILLION SOUTH BUSWAY PROGRAM

Project participants on Pittsburgh's new South Busway worked hard to create a productive climate for the successful completion of their \$27 million busway program. Throughout this project, quality assurance was of paramount importance. Quality construction and a productive climate were compatible through cooperation, goodwill, mutual trust, and teamwork among the owner, consulting engineer, contractor, and other parties. The project was completed on time and within budget through the owner's willingness to assume a fair share of risk. The principles and philosophies illustrated by this case study are not new and were used with a common-sense approach to the successful completion of this project.

This paper appeared in TRB Record 792, Contractual Relationships: An Essential Ingredient of the Quality-Assurance System and Other Quality-Control Papers.

Mascaro, JC (Cameron Construction Company) *Transportation Research Record* No. 792, 1981, pp 36-41, 1 Fig., 2 Tab., 5 Ref.

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DOTL JC

15 341285

GEOTECHNICAL MEASUREMENTS IN MODERN TUNNEL CONSTRUCTION [MOYENS MODERNES DE MESURES GEOTECHNIQUES DANS LA CONSTRUCTION DES TUNNELS]

The article reports on geotechnical measuring methods which are applied during the course of the New Austrian Tunnelling Method. The physical and mechanical parameters on which this method is based are successively presented. The measurements of these parameters were the subject of a programme routine, the various parts of which are analysed here together with the instruments employed. Furthermore, by means of practical examples, the methods of interpretation and the contribution of each element in the programme of auscultation are explained. The major importance of these in-situ measurements is demonstrated by a detailed examination of the interactions between the different parameters measured and the behaviour of the total rock mass: these different elements being much more representative of the state of the sub-surface environment than the coefficients of safety calculated on the basis of laboratory tests and the results of methods of calculation taking into account an ideal model. (TRRL) [French]

Habenicht, H *Tunnels et Ouvrages Souterrains* No. 38, Apr. 1980, pp 145-155, 15 Fig., 2 Phot., 26 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 110430), Central Laboratory of Bridges & Highways, France

ORDER FROM: ESL

DOTL JC

15 341557

ONE MINUTE PILE DRIVER SPEEDS MUNICH METRO CONSTRUCTION

Although both cut-and-cover and direct tunnelling methods are being used in constructing the Munich Subway, there has been a distinct shift over the last few years in favour of the latter technique. This has been due chiefly to the fact that since 1973, and even more since 1975, the New Austrian Tunnelling Method (NATM) has been applied in building the Munich Subway and shortcreting has been perfected both in technical and economic terms. Other reasons for the trend away from the cut-and-cover technique are that the tunnelling method is "cleaner", can be applied with less inconvenience for surrounding property owners, and allows more suitable tunnel gradients and radii. New techniques using a cutter-loader in conjunction with a pile-driver have proved fast and successful. The article discusses the techniques, machinery details, and applications experience.

Tunnels and Tunnelling Vol. 13 No. 1, Jan. 1981, pp 42-43

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

15 341563

MOLE CHEWS UP A MILE OF ROCK

The paper reports on the use of a laser-guided tunnel boring machine to drive four transit tubes totaling more than 1 mile in hard rock as much as 150 ft below the surface of Manhattan, New York. The bores--22 ft in diameter and 1,320 ft long--are intended for use by the Long Island Rail Road.

Engineering News-Record Vol. 206 No. 12, Mar. 1981, pp 74-75

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

15 341715

OSLO RAIL TUNNEL TURNS TO FREEZING TO SAVE HISTORIC BUILDINGS

The article discusses construction problems encountered in the driving of a 3.6 km long railway tunnel beneath the city of Oslo. Varying ground conditions, historical buildings and heavy traffic were some of the problems confronting the contractors. Ground freezing techniques were used at one section where a rock depression was encountered making blasting impossible. To establish the frozen zone, locations for pipes carrying the freezing liquid were drilled from an existing tunnel during night time operations. Details of freezing equipment and techniques used are given. After freezing, tunnel blasting operations were carried out and cast-in-situ concrete lining placed. The concrete lining was increased in thickness to avoid problems of cracking near to the frozen rock face.

Joesang, T *Tunnels and Tunnelling* Vol. 13 No. 5, June 1981, pp 26-28, 8 Fig., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254662)
ORDER FROM: ESL

DOTL JC

15 341716

CONSIDERATIONS ON THE DESIGN OF TUNNEL SUPPORT SYSTEMS IN THE NEW AUSTRIAN METHOD [CONSIDERAZIONI SUL DIMENSIONAMENTO DEI MEZZI DI SOSTEGNO IN GALLERIA NEL NUOVO METODO AUSTRIACO]

It is of fundamental importance at the planning stage to select tunnel support systems in relation to the type and quality of rock to be excavated. Literature references are extensively used to illustrate practical criteria for the design of tunnels in terms of rock classification. The study deals specifically with the new Austrian method of tunnel support and some numerical examples are given to illustrate the adaptation of design forecasts to real site conditions. [Italian]

Benussi, G (Anas Di Bolzano) *Strade* Vol. 83 No. 1194, Jan. 1981, pp 13-24, 3 Fig., 6 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254681)
ORDER FROM: Permanent International Association of Road Congr, Via Andreani 4, Milan, Italy

DOTL JC

15 341724

LIGHT ADAPTATION PROBLEMS WHEN LEAVING A SUBWAY TUNNEL [LICHTADAPTATIEMOEILJKHEDEN BIJ HET UITKOMEN VAN METROTUNNELS]

The problems of light adaptation when leaving an unlit subway tunnel can be solved in different ways. For the specific case of a tunnel at the planned new subway station "Kralingse Zoom" at Rotterdam-East these possibilities are described. It is recommended to screen the bright parts of the sky visible between the platform roofs before and after leaving the tunnel.(a) [Dutch]

Ellens, E Leebeek, HJ
Instituut voor Zintuigfysiologie TNO Monograph No. 1978-C30, 1978, 8p, 2 Fig., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 254451), Institute for Road Safety Research
ORDER FROM: Instituut voor Zintuigfysiologie TNO, Kampweg 5, Soesterberg, Netherlands

15 341963

MULTI-METHODS BUILD FRENCH METRO

The paper reports how tunneling and elevated construction are being combined to build France's first totally automated transit line. The line runs

through high-density urban sectors and water-logged chalk soil. In driving the tunnel, unusual earth stabilizing and reinforcing techniques were applied to gain both safety and speed during excavation.

Engineering News-Record Vol. 206 No. 16, Apr. 1981, pp 122-123

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

15 342934

SOIL MECHANICS ASPECTS OF SOFT GROUND TUNNELLING

The basic principles of soil mechanics applicable to the behaviour of slopes, foundations and retaining walls apply equally to the stability of tunnels in soft ground and to the settlements caused by tunnelling. Tunnel engineers, however, have a separate terminology to describe certain aspects of tunnelling and they employ terms such as squeeze, stand-up time and ground loss. In addition, tunnel engineers often attribute to creep those time-dependent phenomena which foundation engineers rightly associate with primary consolidation. Recently a number of calculations have been developed, mostly as a result of research carried out at Cambridge University, which deal with the stability of tunnels and tunnel headings and with settlements caused by tunnelling. These calculations always consider quite separately drained cases and undrained cases in accordance with the basic principles of soil mechanics but it is not always obvious which calculation is applicable for a particular practical tunnelling problem. This paper considers the stresses and pore pressures in soft ground due to tunnelling and it discusses the calculations appropriate for estimating the stability of the tunnel and its heading and the settlements caused by tunnelling. (Author/TRRL)

Atkinson, JH (City University, London); Mair, RJ (Scott Wilson Kirkpatrick & Partners) *Ground Engineering* Vol. 14 No. 5, July 1981, p 20, 9 Fig., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 255981)
ORDER FROM: ESL

DOTL JC

15 343292

USER'S GUIDE: COMPUTER PROGRAM FOR DESIGN AND ANALYSIS OF CAST-IN-PLACE TUNNEL LININGS (NEWTUN)

This user's guide describes and gives instructions for using the computer program NEWTUN. The purpose of NEWTUN is to analyze tunnels with continuous cross section. NEWTUN is a revision of an existing general-purpose program called EFRAM which analyzes plane frame structures on elastic foundations. This interactive computer program uses the stiffness method of structural analysis and the theory of beam elements on an elastic foundation.

Holtham, WJ Fay, JR
Waterways Experiment Station Final Rpt. WES-
INSTRUCTION-K814, Mar. 1981, 68p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

AD-A099672/8

15 343367

SUBSURFACE INVESTIGATION, SECTION F004, ANACOSTIA RIVER CROSSING, BRANCH ROUTE. REPORT NO. 8

Results are summarized of a series of environmental borings and supplementary deep test borings in the Anacostia River. Also included is a summary of a series of hollow-stem auger holes made to investigate the presence of obstructions in the ground, and the results of four full-scale deep-well pumping tests. The exploration was carried out along a portion of the subway line between the west Navy Yard on the north and Anacostia Drive on the south. This investigation pertains to the Washington Metropolitan Area Metro System.

Prepared in cooperation with DeLeuw, Cather and Co., Washington, DC.

Mueser, Rutledge, Johnston and DeSimone, Washington Metropolitan Area Transit Authority MRJD-81-173, Apr. 1981, 160p

Contract WMATA-3Z725S

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-194458

15 343668

MUCK UTILIZATION STUDY, GLENMONT ROUTE SECTIONS B009-B012, WASHINGTON, DC

The construction of the Washington Metropolitan Area Transit Authority (WMATA) subway required the removal of large quantities of earth and rock materials. This report describes the implementation of a plan which established two alternatives for the disposal of the excavated materials: (1) traditional disposal of the material as "waste" products and (2) utilization of the material in other public works projects.

Gifford, DG Critchfield, JW

Haley and Aldrich, Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-DC-06-0209-80-1, Sept. 1980, 50p

Grant DOT-UMTA-DC-06-0209

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-226748

15 343717

THE ATLANTA RESEARCH CHAMBER; APPLIED RESEARCH FOR TUNNELS; BLASTING TECHNIQUES CONVENTIONAL SHOTCRETE STEEL-FIBER-REINFORCED SHOTCRETE MONOGRAPHS ON THE STATE-OF-THE-ART OF TUNNELING

This final report describes the construction of the Atlanta Research Chamber (ARC) and the research conducted in it from October 1977 through February 1981. In addition, twenty-four monographs on the state-of-the-art of modern tunnel practice are included in this report. The Urban Mass Transportation Administration (UMTA) funded the ARC as part of the UMTA's continuing effort to discover ways to reduce tunnel and rapid transit costs. This report is organized accordingly: Chapters 1 and 2 present the introduction and a brief overview; Chapter 3 describes the geology of the ARC and onsite stress conditions; Chapter 4 presents the design of the ARC and an evaluation of rock movements expected as the twin Running Tunnels were excavated immediately below the ARC; Chapter 5 discusses the geotechnical instrumentation of the ARC; Chapter 6 discusses excavation by blasting, using a "scribing tool"; Chapter 7 discusses pre-construction laboratory and field work on conventional shotcrete; and Chapter 8 presents a pre-construction study on steel-fiber-reinforced shotcrete. In addition to the chapters on the technical work done in the ARC, this report contains monographs by outstanding experts on the state-of-the-art of tunneling. Also included in this report are the views of owners, contractors, labor union representatives, insurance and legal personnel, and foreign and domestic experts. All have practical application and may serve to promote the common goal to construct underground space economically and safely.

See also PB-297 574.

Rose, D

Metropolitan Atlanta Rapid Transit Authority, Urban Mass Transportation Administration Final Rpt. MARTA-GA-06-007, UMTA-GA-06-0007-81-1, Mar. 1981, 535p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-231151

15 344082

LANDOVER METROBUS GARAGE FACILITY; SUBSURFACE INVESTIGATION

Results are summarized herein of 36 test borings made at the site of the planned Landover Metrobus Garage Facility which is located adjacent to Pennsy Drive, approximately 1500 feet northeast of the existing Landover Metro station in Prince Georges County, Maryland. The report includes a group of geologic sections at the location of the planned bus garage structure and bus parking lot. Also included are logs of the test borings, results of laboratory tests on soil samples and comments on potential design and construction problems.

Prepared in cooperation with Deleuw, Cather and Co., Washington, DC.

Mueser, Rutledge, Johnston and DeSimone, Washington Metropolitan Area Transit Authority MRJD-81-174, Report No. 9, June 1981, 53p

Contract WMATA-3Z725S

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-219198

15 344401

DEMAND FORECAST OF UNDERGROUND CONSTRUCTION AND MINING IN THE UNITED STATES

The underground construction and mining industries of the U.S. do not have a usable, centralized source of demand forecasts for their products and services. Lack of knowledge of future demand contributes to a number of problems: individual companies experience planning difficulties, government agencies often are forced to develop long-range schedules without complete information about activities of other agencies, and the entire industry encounters cycles of boom and bust that might be avoided if more were known about what lies ahead. The U.S. National Committee on Tunneling Technology and its Subcommittee on Demand Forecasting have studied the problem, and this report is a first step toward meeting the need for a source of underground construction demand data. The data presented in this forecast were obtained by surveying key members of the underground construction and mining industries, as well as readers of the Tunneling Technology Newsletter, and by the Subcommittee's analysis and extrapolation of trends and other related factors. Compilation of the information are presented in three chapters: specific construction projects, nonspecific construction estimates, and tunnel demand for the mineral industry. Included are forecasts for water supply; wastewater conveyance and treatment; storm, sanitary, and storage tunnels; underground storage for sanitary sewer systems; transportation; hydroelectric power, including pumped storage; underground storage; and metal, nonmetal, and coal mining.

Sponsored in part by Defense Nuclear Agency, Washington, DC; Geological Survey, Reston, VA., and Urban Mass Transportation Administration, Washington, DC.

National Research Council, Bureau of Mines, Defense Nuclear Agency, Geological Survey, Urban Mass Transportation Administration NRC/AE/TT-81-1, June 1981, 39p

Contract J0199025

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-228710

15 344488

MANAGEMENT OF URBAN CONSTRUCTION PROGRAMS. VOLUME I: GUIDELINES FOR DEVELOPING A PROJECT MANAGEMENT PLAN

The overall objective of the study is to develop guidelines that can be used by local government authorities, such as transportation, water, and sanitation agencies, in developing projects. This report presents the guidelines from the perspective of the Project Manager, since this position carries the responsibilities for design and construction of a particular project, and possibly, for activation and operation of a facility or system. In this report, Volume I, the Committee sets forth its conclusions and recommendations regarding the purpose of a management plan, the major elements of a management plan, possible alternatives for essential elements, and guidelines for selecting among the alternatives for each element.

See also Volume 2, PB81-242398.

National Research Council, Transportation Systems Center, Urban Mass Transportation Administration Final Rpt. DOT-TSC-UMTA-80-48-1, June 1981, 32p

Contract DOT-TSC-1728

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-242380

15 344489

MANAGEMENT OF URBAN CONSTRUCTION PROGRAMS. VOLUME II: SUPPLEMENTAL INFORMATION

The overall objective of the study is to develop guidelines that can be used by local government authorities, such as transportation, water, and sanitation agencies, in developing sound management plans for the execution of Federally-funded urban construction projects. This report presents guidelines from the perspective of the Project Manager, since this position carries the responsibilities for design and construction of a particular project, and possible, for activation and operation of a facility or system. In this report, Volume II, supplementary information compiled by the Committee is presented from material reviewed and developed during the course of its study. It includes information for conceptual planning and examples of

techniques and procedures that have been used which might be helpful to Project Managers in understanding the management process and in developing and executing project management plans.

See also Volume 1, PB81-242380.

National Research Council, Transportation Systems Center, Urban Mass Transportation Administration Final Rpt. DOT-TSC-UMTA-80-48-2, June 1981, 103p

Contract DOT-TSC-1728

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-242398

15 344493

TUNNEL INSTRUMENTATION-BENEFITS AND IMPLEMENTATION: PROCEEDINGS OF A CONFERENCE HELD MARCH 24-25, 1980 AT NEW ORLEANS, LOUISIANA

As part of a continuing effort to reduce the cost of tunneling, the Federal Highway Administration (FHWA) and the Urban Mass Transportation Administration (UMTA) sponsored a seminar on the general subject of the benefits which can accrue from the use of instrumentation in the planning, design, construction, and performance of tunnels. The seminar was held in New Orleans, Louisiana, March 24-25, 1980, and was directed towards those decision makers in transportation agencies having prime responsibility for the engineering and construction of tunnels. It was felt that by providing them with a better understanding of the benefits which can accrue from the use of tunnel instrumentation, its use would be effectively promoted to the benefit of all members of the tunneling community. The official proceedings of the seminar are presented herein. In addition, these proceedings include a bibliography on tunnel instrumentation cross referenced with keywords, and a memorabilia section consisting of photographs taken during the seminar.

Hampton, D Browne, S Greenfield, E
Hampton (Delon) and Associates, Federal Highway Administration Final Rpt. FHWA-TS-81-201, Dec. 1980, 245p

Contract DOT-FH-11-9541

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-243040

15 345217

TUNNELS. PLANNING, DESIGN, CONSTRUCTION, VOLUME 1

This book contains the following chapters: History (ancient mines and tunnels, canals, Brunel's Thames Tunnel, railways, national systems, shields and compressed air, 20th century techniques); Functions and Requirements (pedestrian and cycle subways, railways, metro systems, highways, water conveyance, sewers, service tunnels, storage and other tunnels); Investigations (planning, topography, site history, geology, site investigation, methods of boring, sampling, in-situ tests, trial excavations, hydrology, gases, structures); Tunnelling in soft ground (pattern of ground stress, timbered headings, circular tunnel segmental lining, greathhead shield, tunnel jacking, size of tunnel, management of water, art of tunnelling); Compressed air working (physical aspects, excavation and support, physiological effects, decompression tables, medical control); Rock tunnelling (stresses, rock characteristics, drilling equipment, explosives, ventilation, drainage and pumping, immediate support, grouting); Tunnelling machines for soft ground and rock (types of tunnelling machines, bentonite shield, Mersey Kingsway tunnel mole, mechanization); Permanent linings (in situ concrete, sprayed concrete and rock bolts, segmental linings, brickwork and masonry); Survey and Control (ground survey, photogrammetric survey and mapping, buried services and structures, survey instruments, setting out and control); The Channel Tunnel and the Seikan Tunnel. (TRRL)

Megaw, JM Bartlett, JV
Horwood (Ellis) Limited Monograph 1981, 284p, Figs., Photos., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 257099)
ORDER FROM: Horwood (Ellis) Limited, Market Cross House, Cooper Street, Chichester, West Sussex, England

B8108603

15 345231

REVIEW OF JAPANESE SUBSURFACE INVESTIGATION TECHNIQUES

The paper reviews the current practice of subsurface investigation in Japan, with emphasis on particular techniques used during the preliminary and detailed phases of investigation. The method of standard penetration testing and its reliability with respect to testing depth and hammer type must be considered in the interpretation of blow-count values. Borehole geophysical methods, primarily seismic, provide a way to identify low velocity zones beneath a higher velocity zone during the preliminary phase of investigation. Innovations in undisturbed sampling techniques of cohesionless soils, borehole shear testing devices, and in situ measurement of earth pressure at rest are examples of continuing refinement in detailed geotechnical investigation methods used in Japan. (Author/TRRL)

This paper was presented at the Seminar on Geotechnical Engineering in Practice, Bangkok, July 20-21, 1979.

Mori, H *Geotechnical Engineering* Vol. 10 No. 2, Dec. 1979, pp 219-242, 12 Fig., 6 Tab., 24 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253175)

ORDER FROM: Southeast Asian Society of Soil Engineering, P.O. Box 2754, Bangkok, Thailand

15 345232

POINT ATTACK TOOLS: AN EVALUATION OF FUNCTION AND USE FOR ROCK CUTTING

Point attack tools are being increasingly used as the cutting elements of roadheaders. The paper summarizes the results of recent research at the mining research and development establishment on their behaviour in cutting rock. For comparable cuts, sharp point attack tools require higher forces than sharp wedge-shaped tools. As both types become worn, the ranking order is reversed. For all tools, the deeper the cut the greater the efficiency. In laboratory tests point attack tools made more respirable dust and had a higher potential for producing methane ignitions. Point attack tools may wear better, this attribute being promoted if they rotate in the holders. The rotation produces uniform wear, not "self-sharpening". Tip fracture potential is about the same for both point and wedge types. Point attack tools have value where resistance to abrasive wear is desirable, but a good depth of cut should be taken with them. In any projected use their environmental disadvantages should be considered. A theoretical analysis indicates that the same fundamental mode of rock breakage is invoked by both wedge and point attack tools. (a) (TRRL)

Hurt, KG Evans, I (Mining Research and Development Establishment) *Mining Engineer* Vol. 140 No. 234, Mar. 1981, pp 673-675, 4 Fig., 1 Phot., 6 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253481)

ORDER FROM: ESL

15 345390

EARTHQUAKE LOAD ANALYSIS OF TUNNELS AND SHAFTS

This paper presents a closed-form solution for determining bending moments and axial loads for tunnels and shafts under earthquake load, while considering soil-structure interaction as a pseudostatic problem. The results are presented graphically in terms of nondimensional parameters, such that these curves can be used directly to aid in design-load calculations. The solutions are particularly useful for relatively rigid structures embedded in soft soils, or for tunnels/shafts with small segment lengths.

Proceedings of the Symposium on Rock Mechanics 21st, Rock Mechanics: A State of the Art, University of Missouri, Rolla, May 28-30 1980.

Shukla, DK (D'Appolonia Consulting Engineering, Inc)
Missouri University, Rolla Conf Paper 1980, pp 622-631

ACKNOWLEDGMENT: EI

ORDER FROM: Missouri University, Rolla, Rolla, Missouri, 65401

15 345445

DRIVING OF METRO TUNNELS WITH THE AID OF GROUND FREEZING AT HELSINKI

Twin 6.5 m diameter tunnels were driven through saturated soil at a depth of 25 m under a street intersection with the aid of horizontal freezing. The frozen soil section was about 30 m long. Because of groundwater pressure the horizontal freeze holes were drilled with sealed casings. A new drill bit was introduced to form a tight plug at the end of the casing. The soil around the perimeter of the tunnel bores was frozen by vaporizing freon in the freeze

tubes. A 2.5 m thick ice wall in sand and moraine was developed during the freezing period of 55 days. The tunnel bores were excavated under protection of the frozen arch by cautious drilling and blasting.

Ground Freezing, International Symposium, 2nd, ISGF '80, Norway Institute of Technology, Trondheim, June 24-26 1980.

Vuorela, M (Lemminkainen Oy, Finland); Eronen, T
Norwegian Institute of Technology Conf Paper 1980, pp 907-915

ACKNOWLEDGMENT: EI

ORDER FROM: Norwegian Institute of Technology, University of Trondheim, N-7034 Trondheim, Norway

15 345448

ARTIFICIAL GROUND FREEZING IN SHIELD WORK

This paper described two cases exemplifying the application of ground freezing to shield work in Japan. A circulated coolant refrigeration system was adopted for freezing the ground. In Case 1, a vertical frozen wall of 3.5 meters thick was produced behind an entrance section of a shaft wall to protect entrance excavation of 8.48 meter diameter earth pressure balance shield, and was driven by the revolution of the shield cutter. Case 2, in which a cylindrical frozen wall was formed beneath a sewage effluent culvert in order to allow 5.20 meter diameter blind shield to be driven across. New trials, techniques, and measures to reduce ground surface heave or subsidence were put into practice in these operations.

Ground Freezing, International Symposium, 2nd, ISGF '80, Norway Institute of Technology, Trondheim, June 24-26 1980.

Kiriya, S (Seiken Company, Japan); Ishikawa, Y Kushida, Y
Norwegian Institute of Technology Conf Paper 1980, pp 940-951

ACKNOWLEDGMENT: EI

ORDER FROM: Norwegian Institute of Technology, University of Trondheim, N-7034 Trondheim, Norway

15 345462

A 3-D PHOTOELASTIC MODEL INVESTIGATION OF THE Y-JUNCTION OF THE CITY CIRCLE AND CLIFTON HILL TUNNELS

The distribution of stresses around the y-junction of two tunnels of the Melbourne underground rail loop was investigated using three-dimensional photoelastic models. The results are compared with those obtained from two-dimensional photoelastic models and from two-dimensional analytical solutions. A novel room-temperature method of three-dimensional photoelastic modelling called the "residual creep method" was used, in addition to the conventional "frozen stress" method. This new method allowed the use of heterogeneous materials, so that a concrete pillar at the y-junction could be simulated, and the results compared with those from the homogeneous frozen stress model (A). (TRRL)

Worotnicki, G Wold, MB
Commonwealth Scientific & Indus Res Org, Australia Monograph
Technical Rpt No 123, Feb. 1981, 42p, 39 Fig., 5 Tab., Photos., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254876), Australian Road Research Board

ORDER FROM: Commonwealth Scientific & Indus Res Org, Australia, Melbourne O Visin of Applied Geomechanics, P.O. Box 54, Mt Waverly, Victoria 3149, Australia

15 345720

BORED TUNNELLING FOR THE CARACAS METRO

Designed to alleviate traffic congestion problems, the first 12.5 km of the Caracas metro will link housing areas with business and industrial districts. Approximately 30% of this length will run in twin circular, bored and segmentally lined tunnels. The underlying rock of the area consists of gneiss and schist with overlying sand and silty clay sediments. For the mixed conditions of the 2380 m western tunnels, Robbins 192S machines were used, while for the 1230 m long eastern tunnels lying in alluvial materials, a Lovatt M227 tunnelling machine was chosen. Excavation problems encountered during tunnel construction are briefly detailed. (TRRL)

Howard, AJ (Mott, Hay & Anderson) *Tunnels and Tunnelling* Vol. 13 No. 6, July 1981, pp 13-15, 1 Fig., 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 257778)

ORDER FROM: ESL

DOTL JC

15 345721

TOKYO METRO-AN EXPANDING SUCCESS STORY

The article reviews construction of the new section of the Tokyo metropolitan area rapid transit system. The project extends by 6.2 km the Harzomon line into central Tokyo close to the Imperial Palace and running parallel to the Ginza line. The section comprises 220 m of single track and 336 m of double track shield-driven tunnel as well as 66 m of cut-and-cover construction work. The 440 m of twin-tube single track 7 m diameter tunnel will have a primary lining of flat reinforced concrete segments 250 mm thick or 300 mm ductile cast iron segments. A secondary 2-300 mm thick in-situ formed concrete lining will then be applied. (TRRL)

Tunnels and Tunnelling Vol. 13 No. 6, July 1981, pp 44-46, 1 Fig., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 257781)

ORDER FROM: ESL

DOTL JC

15 345730

MANILA TACKLES ITS COMMUTER CONGESTION

To reduce the problem of peak hour congestion in Manila, a 15 km elevated light transit system designed by Electrowatt Engineering Services is being planned for the city. The present transport system consists of some 30000 jeepneys and 50 buses all privately owned and with no state organisation. The elevated two-track railway, planned to run north-south through the conurbation, will carry 60 two-car trains bringing commuters from 21 stations to the central station. Because of the danger of ground tremors, the elevated transit system will be supported on concrete columns capable of resisting shock loadings. A feature of the design will be the prevention of track sections collapsing during an earthquake. Geological problems are caused by poor soil conditions at depths between 5-25 m, as well as a very high water table. Such problems are likely to require the use of prefabricated concrete piles to provide foundation stability. (TRRL)

Consulting Engineer Vol. 45 No. 6, June 1981, pp 23-24, 1 Fig., 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 257784)

ORDER FROM: ESL

15 345740

ATTENUATION EFFECTS OF UNDER-TRACK REINFORCING ON AUTOMATIC TRAIN PROTECTION SIGNALLING SYSTEMS

The aggregate of steel reinforcement in the concrete plinths and track bed of a particular mass-transit railroad is found to present an attenuating environment to the ATP (automatic train protection) signalling system. An attempt is made to investigate the problem via two-dimensional field theory by solving Laplace's equation for the magnetic vector potential. The distributed AC parameters of the secondary circuits formed unintentionally near the track are established. The attenuation of the ATP signals in the presence of steel reinforcement is evaluated for various conditions and is found to be in good agreement with measurements carried out with life-size circuits.

Tso, SK (Hong Kong University); Lam, FK Chan, FH Edgley, RK
Institution of Electrical Engineers, Proc Part B Vol. 128 No. 2, Mar. 1981, pp 92-100, 9 Ref.

ACKNOWLEDGMENT: EI

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DOTL JC

15 345980

TYNE AND WEAR METRO: MANAGEMENT OF THE PROJECT

The project involved well over 100 contracts for works designed and supervised by five firms of consulting engineers, the County Council and the Passenger Transport Executive, as well as new railway alignments by British Railways, and major service diversions by the statutory undertakers. The paper describes the necessary management of the project, giving details of the required organization, procedures for contract administration, techniques used in programming and cost control, special provisions for the scheme undertaken by the Executive on insurance and other items, and details of the capital cost of Metro.

Bartlett, JV Hartley, IF Layfield, P *Institution of Civil Engineers, Proceedings, Pt 1* Vol. 70 Nov. 1981, pp 669-693

ACKNOWLEDGMENT: British Railways

ORDER FROM: ESL

DOTL JC

15 345988

TYNE AND WEAR METRO: INTERCHANGES AND SURFACE STATIONS

The paper describes the concept, location, design and construction of the three major surface interchanges. It also describes the design and construction of new surface stations and the refurbishment of existing British Rail surface stations that were incorporated into the Metro. The architectural concept and co-ordination is described together with details of the architectural finishes.

Nisbet, RF *Institution of Civil Engineers, Proceedings, Pt 1* Vol. 70 Nov. 1981, pp 727-741

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

DOTL JC

15 345989

TYNE AND WEAR METRO: DESIGN AND CONSTRUCTION OF TUNNELLING WORKS AND UNDERGROUND STATIONS

The works for running the Tyne and Wear Metro system underground through the centres of Newcastle and Gateshead entailed tunnelling mainly in boulder clay under Newcastle, to the north of the River Tyne, and in the extensively mined coal measures rock under Gateshead to the south. The geology, tunnel design philosophy and methods of construction used for the tunnelling and station construction in these different ground conditions are described as well as some of the problems encountered. Details of plant used and rates of tunnel advance are given for the main tunnelling works. Some of the special techniques adopted for underground station design and construction in Newcastle are described.

Tough, SG Lord, JE. Garbett, P *Institution of Civil Engineers, Proceedings, Pt 1* Vol. 70 Nov. 1981, pp 695-725

ACKNOWLEDGMENT: British Railways
ORDER FROM: ESL

DOTL JC

15 346026

SPECIAL STUDY OF PRECAST CONCRETE TUNNEL LINER DEMONSTRATION: LEXINGTON MARKET TUNNELS, BALTIMORE, MARYLAND

During the period from the Spring of 1976 through early 1980, a demonstration project was carried out for precast segmented concrete tunnel liner in the Lexington Market Section of the Baltimore Regional Rapid Transit System. In the project, twin tunnels, each approximately 1550 feet in length, were lined with concrete in the outbound tunnel and steel in the inbound tunnel. Length, ground conditions, tunneling techniques, and crews were comparable for the two tunnels. This study and report of findings were commissioned by the Urban Mass Transportation Administration to provide government and industry personnel with a comprehensive evaluation of precast segmented concrete liner for use in transit tunnels in the United States. The performance of the two liner systems was documented in considerable detail through a combination of instrumentation, record keeping, photography, and personal observation. This performance and the program by which it was determined, are described in detail in this report.

Prepared in cooperation with UTD Corp., Alexandria, VA.

Wightman, WD Calabrese, S Foster, EL
Mass Transit Administration of Maryland, Urban Mass Transportation Administration Final Rpt. UMTA-MD-06-0039-81-1, Apr. 1980, 268p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-103482

15 346130

TECHNICAL AND ECONOMIC FEASIBILITY STUDY OF AT-GRADE CONCRETE SLAB TRACK FOR URBAN RAIL TRANSIT SYSTEMS

The report presents work conducted to evaluate the technical and economic feasibility of using concrete slab track systems for at-grade transit track. The functions of a rail transit track system are to guide railway vehicles and provide a safe and acceptable ride to passengers. Traditionally, a track system with cross ties and ballast has been used for at-grade construction. Such track systems utilize wood, monoblock concrete, or two-block concrete ties. These track systems undergo permanent deformation during loading due principally to consolidation and degradation of ballast that occurs

during track life. Therefore, maintenance operations are required periodically to provide proper surface and alignment. Improved track systems with superior capabilities to those of conventional track provide possible solutions to problems of continuing and costly track maintenance. A slab track system consisting of a continuous concrete support, sub-base, and compacted subgrade, is one example of such improved track system. Rails are secured to the concrete support using fasteners that provide restraint to rail movements and therefore, ensure proper gage and alignment. Experience with concrete slab track systems in foreign countries has shown that such track systems result in decreased maintenance and increased reliability of service. This experience has also indicated a generally higher initial cost of slab track. This report presents a world-wide review of details and performance of slab track projects and compares features of slab track systems with those of conventional ballasted track. Methods of constructing slab track systems and a cost comparison between slab and ballasted track systems are discussed. Recommendations for future research efforts related to the development of at-grade concrete slab track systems are also presented.

Hanna, AN
Portland Cement Association, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0100) Final Rpt. DOT-TSC-UMTA-81-22, Aug. 1981, 224p

Contract DOT-TSC-1765

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-113812

15 346442

STRAY CURRENT CORROSION: EFFECTS ON UNDERGROUND PIPES AND CABLES. JANUARY, 1966-SEPTEMBER, 1981 (CITATIONS FROM THE METALS ABSTRACTS DATA BASE)

The phenomena of stray current corrosion is considered in terms of underground conductivity and its contribution to accelerated corrosion. Topics include corrosion phenomena associated with electric railways, underground cables and reinforced concrete structures. The use of both anodic and cathodic protection systems is included. (Contains 127 citations fully indexed and including a title list.)

National Technical Information Service Tech Rpt. Sept. 1981, 78p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-881146

15 346705

OPTIMUM DESIGN METHODOLOGY FOR ELEVATED TRANSIT STRUCTURES. EXECUTIVE SUMMARY

Methodologies are investigated for designing high efficiency, elevated, urban guideways. The most efficient spans are continuous where the pier supports, bending stiffness and unit mass are optimally distributed. Calculations lead to spans of least overall weight, balanced peak stresses under all loading, and minimum rms vertical deflection for the vehicle trajectories. The study is in four parts. In Chapter 1, optimal pier spacings for uniform spans are predicted, where span inertia effects are included. Calculated optimal span responses to constant loads at constant speed, verified experimentally, show a peak stress reduction of up to 30 percent, compared to simple spans end-to-end. In Chapter 2, similar results are found for uniform, continuous, inertialess, spans where the transit mass is much larger than the span mass. In Chapter 3, the effects on span efficiency of the nonuniform stiffness and unit mass parameters are investigated, where extensive use is made of computer graphics to illustrate the design methodology. In Chapter Four, the Duke University transit system is the reference case used for alternative design studies, where up to 40 percent reductions in concrete weight are possible. These methodologies can be successively employed to minimize urban guideway costs through weight reduction. The optimal spans are slim, aesthetic structures, affording high degrees of passenger ride comfort.

See also Final Report, PB82-126996.

Wilson, JF
Duke University, Urban Mass Transportation Administration, (UMTA-NC-11-0010) Summary UMTA-NC-11-0010-81-1, Oct. 1981, 12p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-126988

15 346706

OPTIMUM DESIGN METHODOLOGY FOR ELEVATED TRANSIT STRUCTURES. FINAL REPORT

The need to design efficient supporting structures with minimal vibration response for use in modern transit vehicle systems generated this study. The methodologies presented herein purport to aid the designer in producing advanced-concept, minimum cost, urban transit structures with high strength to weight ratios, which also have aesthetic appeal and afford a high degree of ride comfort. This report is organized into 4 sections. In Chapter 1, optimal pier spacings for uniform spans are predicted; span inertia effects are included. Calculated optimal span responses to constant loads at constant speed, verified experimentally, show a peak stress reduction of up to 30 percent, compared to simple spans end-to-end. In Chapter 2, similar results are found for uniform, continuous, inertialess spans, where the transit mass is much larger than the span mass. In Chapter 3, the effects on span efficiency of the nonuniform stiffness and unit mass parameters are investigated; extensive use is made of computer graphics to illustrate the design methodology. In Chapter 4, the Duke University transit system is the reference case used for alternative design studies, where up to 40 percent reductions in concrete weight are possible. The author concludes that the most efficient designs are continuous span configurations with a minimum number of pier supports, properly spaced so that balanced stresses are achieved. This report contains conclusions, a list of references, and numerous charts depicting various span and guideway configurations.

See also Executive Summary, PB82-126988.

Wilson, JF

Duke University, Urban Mass Transportation Administration, (UMTA-NC-11-0010) Final Rpt. UMTA-NC-11-0010-81-2, Oct. 1981, 146p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-126996

15 346708

BEHAVIOR OF THE BAY AREA RAPID TRANSIT TUNNELS THROUGH THE HAYWARD FAULT

This study was undertaken to investigate the response of the BART tunnels to slow right lateral slippage along the fault. Data from the exploration and construction, tunnel instrumentation, and surveying were analyzed. Survey data, coupled with observations of track alignment and cracking pattern in the concrete liner have indicated that slippage of 6-8 mm per year is associated with a narrow shear zone mapped during construction. Finite element methods of analysis were used to model the observed tunnel behavior, and a strain softening model was used to explain seismic phenomena on the Hayward Fault. This report provides a list of references, recommendations for the future monitoring of tunnel response to fault slippage, and numerous charts depicting tunnels in California in terms of fault activity, deformations resulting from earthquakes, instrumentation, and ground vibrations. The authors conclude that accurate predictions of the behavior of the BART tunnels is not possible. However, fault slippage is expected to continue to displace the tunnels and track alignment must be regularly maintained.

Prepared in cooperation with California Univ., Berkeley.

Brown, IR Brekke, TL Korbin, GE

Bay Area Rapid Transit District, Urban Mass Transportation Administration Final Rpt. UMTA-CA-06-0120-81-1, June 1981, 223p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-127705

15 348007

SECOND-GENERATION UMTA TRANSIT STATION SIMULATION MODEL

The Transportation System Center, under the sponsorship of the Urban Mass Transportation Administration, is developing a second-generation transit station simulation model called USS II. This new discrete-event simulation program will offer significant improvements over its predecessor, USS I, in terms of ease of use, station modeling capabilities, and simulation accuracy. The major features of the current USS II design with respect to its modeling capabilities, outputs, and operational environment are described. (Author)

This paper appeared in Transportation Research Record No. 817, Rail Transit and Terminals.

Albright, RL Couture, MR (Transportation Systems Center); Benz, GP (Parsons, Brinckerhoff, Quade and Douglas, Inc) *Transportation Research Record* No. 817, 1981, pp 15-22, 7 Fig., 4 Ref.

ORDER FROM: TRB Publications Off

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15 348008

FUNCTIONAL DESIGN ELEMENTS FOR FERRY TERMINALS

The functional design of ferry terminals requires the exercise of a variety of skills and knowledge from such diverse areas as traffic engineering, pedestrian design, transit planning, and vessel operation. Specific types of ferry services are defined, and research findings are presented on how the terminal should be selected and the facilities planned to accommodate these services. For passenger-only ferry operations, planning guidelines are presented for passenger storage and processing facilities, including parking areas, waiting rooms, gangways, and other terminal elements. For vehicle-ferry terminals, guidelines are presented for toll facilities, vehicle sorting and holding areas, discharge demand needs, and other elements of vehicle-ferry terminals. (Author)

This paper appeared in Transportation Research Record No. 817, Rail Transit and Terminals.

Habib, PA Roess, RP (Polytechnic Institute of New York) *Transportation Research Record* No. 817, 1981, pp 22-29, 9 Fig., 2 Tab., 6 Ref.

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15 348010

GUIDELINES FOR PLANNING PUBLIC TRANSPORTATION TERMINALS

The considerations necessary in the planning of transit stations from the viewpoint of the transit user and the operator are described. The basic function of a transit station is to process the flow of passengers between modes. A station also serves to attract the user to the system and it provides space for service functions, access, and joint development. Transit stations should be designed for the convenience, comfort, and safety of the passenger. A clearly defined pathway is essential and will reduce the need for information, improve safety and security, and facilitate consumer services. Station operations are enhanced by the provision of sufficient exit and entrance facilities, dependable fare-collection equipment, and adequate platform dimensions. Maintenance should be considered in the planning process, and operating personnel are essential members of the design team. The station design experience of the three major new U.S. systems-San Francisco, Atlanta, and Washington, D.C.-is reviewed, and a brief outline is presented of the elements of a transit-station design methodology that, if used, can assist to incorporate both policy and design considerations into the station design planning process. (Author)

This paper appeared in Transportation Research Record No. 817, Rail Transit and Terminals.

Hoel, LA *Transportation Research Record* No. 817, 1981, pp 36-41, 8 Ref.

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DOTL JC

15 348393

ROCK BOLTING. A PRACTICAL HANDBOOK

In the first five chapters of this handbook an attempt is made to systemize and describe the existing bolt types and their characteristics. The 5 chapters are as follows: (1) bolt elements (bolt steel, bearing plates, rock straps, wire mesh-roof ties); (2) bolt group 1-immediate support (working support). This group includes split and wedge, polyester resin anchors, and expansion shells; (3) bolt group 2: permanent support (the Perfo method, Bergjet method, Injekto method, polyester grouting); (4) Bolt group 3-combined immediate and permanent support (expansion bolts in stainless/hot galvanized steel with no corrosion shells, rebar and round bolts with paddles in stainless steel on hot galvanized installed in resin or mortar, hollow expansion bolts, normal deformed rebar bolt with resin anchorage); (5) Bolt group 4: shuttering bolts (shuttering tie with expansion shell, shuttering tie with resin anchor); (6) bolt group 5-yielding bolts. The remainder of the manual deals with the pretensioning of bolts, the determination of bolt lengths and bolt patterns, background principles for rock support with bolts, and special bolt systems. (TRRL)

Schach, R Garshol, K Heltzen, AM (Norwegian Institute of Rock Blasting Techniques)

Pergamon Press Limited Monograph 1979, 91p, 52 Fig., 12 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 258445)
 ORDER FROM: Pergamon Press Limited, Headington Hill Hall, Oxford OX3 0BW, England

15 348430
APPROACHES TO HIGH EFFICIENCY DESIGN OF ELEVATED CONCRETE GUIDEWAYS

Precast, concrete, elevated guideways with "H"-shaped cross sections are proposed as practical alternatives to a successful state-of-the-art reference design, the transit system at Duke University. With some alternative configurations, 35 percent weight reductions are achieved, with an additional 8 percent reduction when rationally modified load factors are employed. The most efficient designs use a minimum number of pier supports, properly spaced for continuous span configurations so that balanced stress is achieved.

Carrato, PJ (Duke University); Wilson, JF *Journal of Advanced Transportation* Vol. 15 No. 1, 1919, pp 33-53, 7 Ref.

ACKNOWLEDGMENT: EI
 ORDER FROM: ESL

15 348446
TUNNELLING HISTORY AND MY OWN INVOLVEMENT

This book is in 2 parts. Part 1, entitled "Tunnelling History", describes: the early tunnels to the industrial revolution; results of the industrial revolution (from the canal age through the Thames tunnel and birth of shield tunnelling, coming of the railways, tunnelling systems and British railway tunnels-1680 to 1860); the critical 1860-1870 decade; the great advance from 1870 to 1914 (first alpine railway tunnels, subaqueous tunnels before the shield age, underground railways and the fresh phase of shield tunnelling, London deep-level "tube" railway system, first big under-river shields); modern times (the two decades between the wars 1919-1939, World War Two and after the second war up to 1976). Part 2, entitled "Tunnelling Experience", cites examples of tunnelling in soft ground, examines geotechnical processes and problems (start of "process work", grouting, ground-water lowering), settlements and cavities, gives further examples of work in compressed air, and describes tunnelling in chalk and in rock. A chapter deals with tunnelling machines and the channel tunnel, another with site investigations and the channel tunnel, while tunnel linings, thrust bores and mini tunnels are briefly considered.

Harding, H
 Golder Associates Monograph 1981, 272p, Figs., Photos., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 258781)
 ORDER FROM: Golder Associates, 170 Attwell Drive, 6th Floor, Rexdale, Ontario, Canada

15 348507
OBSERVED SETTLEMENTS OF BUILDINGS ADJACENT TO STATIONS CONSTRUCTED FOR THE MODIFIED INITIAL SYSTEM OF THE MASS TRANSIT RAILWAY, HONG KONG

The construction of the Modified Initial System of the Hong Kong Mass Transit Railway included numerous deep excavations and tunnels through a dense urban environment. This paper summarizes the methods of construction, ground conditions encountered and existing buildings adjacent to the railway. The measures adopted to monitor settlement of adjacent buildings are described, and the settlements resulting from various causes is given, and a relationship between total settlements and excavation depth is deduced.

Proceedings of the 6th Southeast Asian Conference of Soil Engineering, held in Taipei, Taiwan, May 19-23, 1980. For further information contact Dr. A. S. Balasubramanian, Asian Institute of Technology.

Morton, K (Mass Transit Railway Corporation, Hong Kong); Cater, RW Linney, L
 South East Asian Society of Soil Engineering Conf Paper Vol. 1 1980, pp 415-429

ACKNOWLEDGMENT: EI
 ORDER FROM: South East Asian Society of Soil Engineering, Asian Institute of Technology, Bangkok, Thailand

15 348513
PRECISION LASER BEAM DEFLECTOR SENDS TUNNEL ROUND THE BEND

The Optel Precision Beam Deflector (PBD) has been developed specifically to re-direct a laser beam when it is being used for guidance during tunnel

drives. Without this device the re-siting of the laser at chord points in the tunnel curves can be a time-consuming process which may also interrupt the drive. With one or more PBDs in the laser beam the laser can also be sited at a greater distance from the work zone thus reducing the chances of accidental damage. This article discusses the principle of operation of the PBD and its insensitivity to misorientation.

Marshall, P (Optel Instruments Limited) *Tunnels and Tunnelling* Vol. 13 No. 4, May 1981, p 45

ACKNOWLEDGMENT: EI
 ORDER FROM: ESL

DOTL JC

15 348514
PROBLEMS INVOLVED IN WELDING OPERATIONS IN TUNNELS [ARBEITSTECHNISCHE PROBLEME BEIM SCHWEISSEN IM TUNNEL]

This paper discusses the welding processes employed for the tunnel work when extending a section of local personal rapid transit railway, and it also deals with the health and safety precautions. In particular, the author discusses the conditions in the tunnel atmosphere (humidity, temperature, chemical composition, movement, air contamination by gases, fumes, vapors and dust), the fire and explosion hazard and the points to which attention was paid in deciding on the welding processes selected. [German]

Goette, KA *Schweissen und Schneiden* Vol. 33 No. 5, May 1981, pp 228-232

ACKNOWLEDGMENT: EI
 ORDER FROM: ESL

15 348521
DESIGN AND CONSTRUCTION OF LILLE SUBWAY LINE NO 1 [CONCEPTION ET CONSTRUCTION DE LA LIGNE NO 1 DU METRO DE LILLE]

After a report on the general context of the Lille subway, the different sections with the stresses due to their geographic and geological framework are presented: prestressed concrete viaducts, on which the rail equipment is directly anchored, without intermediary ballast, whence an exceptional precision of execution; covered trench built in the shelter of proped soldiers retaining wall (Berlin method) a busy commercial street, making it necessary to maintain traffic while the work is being done; and the deep tunnel built in the fractured chalk through which a strong water table current passes, whence the need to effect systematic injections. [French]

Guilleminot, B Vincent, M Carmes, J Anyot, J Pichereau, JP *Annales de l'Institut Tech du Batiment Travaux Pub* No. 369, July 1981, pp 129-158

ACKNOWLEDGMENT: EI
 ORDER FROM: ESL

15 348524
APPLICATION OF COMPUTER TO DESIGN OF STRUCTURES IN JNR

Computer applications in the design of structures in Japanese National Railways (JNR) is divided into two cases; computer aided design and structural analysis. Computer aided design is very useful for efficient design of standard structures, and it has been used since 1960 to reduce design costs, design checking, and design time. About 20 programs for design computation have been prepared for the structures. For new and complicated structures that are specially designed, structural analysis is performed by a finite element program, called STAPS. This paper discusses use of computer system in design works, outline of design programs, concept for developing computer aided design programs, problems in using design programs, and recent typical examples of structural analyses.

Proceedings of the International Conference on Computers in Civil Engineering, 1st, New York, New York, May 12-14 1981.

Shinoda, M (Japanese National Railways); Kuwahara, Y Tanaka, I
 American Society of Civil Engineers Conf Paper 1981, pp 748-758

ACKNOWLEDGMENT: EI
 ORDER FROM: ASCE

16 330219

TUNNEL CLEANING MACHINES

Description of experiments and problems encountered with the special tunnel cleaning machine on 256 km of the London Transport network.

Ridge, N Faulkner, FJ *Railway Engineer International* Vol. 5 No. 5, Sept. 1980, pp 38-40, 2 Fig., 1 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

DOTL JC

16 335124

NEW BUS GARAGE HARNESSES THE SUN

The paper shows how solar energy will provide interior heating and hot water for a bus garage in Amsterdam, NY.

Public Works Vol. 112 No. 2, Feb. 1981, pp 67-68

ACKNOWLEDGMENT: EI
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DOTL JC

16 337138

SURVEY AND ANALYSIS OF BUS REHABILITATION IN THE MASS TRANSPORTATION INDUSTRY

The Urban Mass Transportation Administration (UMTA) sponsored this study to survey and analyze bus rehabilitation as an alternative and supplement to new bus procurement, as well as to evaluate the needs and experiences of the transit industry regarding the rehabilitation or rebuilding of older buses as a means of capital improvement. This report reviews the scope and service of sixteen firms providing bus rehabilitation services for the mass transportation industry and the various rehabilitation projects undertaken by seventeen transit operators. In addition, the report addresses the following: (1) results of operating rehabilitated buses and the involvement of State DOTs; (2) comments from members of the transit industry regarding UMTA's bus rehabilitation policy; (3) a suggested list of work tasks and guidelines for rehabilitation projects; (4) cost of rehabilitating a twelve year old bus for a five-year life extension; and (5) demand for bus rehabilitation and the rebuilding capacity of both contractors and transit operators.

Prepared in cooperation with Clarence Generette Co., Bloomfield Hills, MI. Errata sheet inserted. See also report dated November 1975, PB-250475.

Balzer, BB Savage, AE Stark, RC
ATE Management and Service Company, Incorporated, Urban Mass Transportation Administration, (UMTA-IT-06-0232) Final Rpt. UMTA-IT-06-0232-80-1, Nov. 1980, 103p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-178501

16 345930

MERIVALE TRANSIT CENTRE-AN ENERGY-EFFICIENT GARAGE

This paper will describe the evolutionary design of a modern transit bus maintenance facility, the fourth major bus garage of the Ottawa-Carleton regional transit commission. A 1974 forecast of fleet growth also indicated the need for a 180-bus facility to be completed in 1976 and to be located in the west end of the city of Ottawa. This led to the construction of our Pinecrest Transit Centre, which incorporated many innovative features, based on our experience at the other garages. The design of this garage was to be the basis for the evolutionary design of our most recent facility, the Merivale Transit Centre. Some reduction of construction costs was achieved by making the precast insulated concrete wall panels as single pieces from foundation to roof rather than using a separately cast facade at the top of the wall sections. Drainage troughs in the storage bay floors were replaced by increased sloping of floors towards catchbasins. This latter change also reduces the cleaning costs. Although use of a steel, rather than poured concrete, superstructure reduced costs, this change was dictated by soil conditions and will incur slightly higher maintenance cost for painting in future. The use of a firewall dividing the building into two sections was less

expensive than the alternative of insulating all structural steel for fire protection as required by insurance underwriters. No other cost reductions could be achieved without seriously increasing future maintenance costs. (TRRL)

Newgard, PJ (Ottawa-Carleton Regional Transit Comm, Canada) *RTAC Forum* Vol. 3 No. 2, 1981, pp 89-93, 3 Fig., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257641), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

16 345969

SERVICE VEHICLES USED ON THE STIB (SOCIETE DES TRANSPORTS INTERCOMMUNAUX DE BRUXELLES) METRO NETWORK [LES VEHICULES DE SERVICE UTILISES SUR LE RESEAU METRO DE LA STIB (SOCIETE DES TRANSPORTS INTERCOMMUNAUX DE BRUXELLES)]

This article describes traction and rolling stock used (for service purposes) on the Brussels Metro. The author reviews the main component parts of these vehicles and discusses in detail the diesel light rail motor tractors, ballast cleaning train and the rail grinding wagon. The descriptions of vehicles are illustrated with diagrams and photographs. [French]

Hanocq, R *Rail et Traction* No. 132, Dec. 1980, pp 4-26, Figs., Photos.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Belgian National Light Railway, 14 rue de la Science, 1040 Brussels, Belgium

16 345985

THE GENERAL OVERHAUL OF PASSENGER STOCK AT THE DB'S REPAIR SHOPS USING THE FLOW-CYCLE METHOD

The principal rules in West Germany for vehicle maintenance are set out in the Railway Construction and Operating Regulations (EBO). Internal service regulations of the German Federal Railway (DB) meet the EBO requirements in a sort of "internal service legislation". In addition, there are also various international agreements to be observed. For the maintenance of the DB's 15,632 passenger and baggage stock (total as at 31.5.81), there are at present seven repair shops and one main workshop. The regular overhauls required by legislation are carried out in the DB repair shops using the so-called flow-cycle method, the advantages of which lie not only in reduced maintenance costs but also in the vehicles spending less time in repair. The author describes the planning of a flow-cycle line and also the sequence of a general overhaul as carried out at the DB's repair shop in Munich-Neuaubing. [German]

Killi, W *Eisenbahntechnische Rundschau* Vol. 30 No. 9, Sept. 1981, pp 673-680

ACKNOWLEDGMENT: British Railways

ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

DOTL JC

16 345990

INDUSTRIAL ROBOTS IN THE RANGE OF VEHICLE MAINTENANCE

In the range of the vehicle maintenance of the German State Railway (DR) preparations are made for the application of industrial robots. Industrial robots used already are described. The application of the unit construction principle for the development of the industrial robots including control and peripheral equipment has proved as a good technical solution. Questions of the capacity of working-power, the education and the organization must be solved by the management. The engineering office for rationalization of the vehicle maintenance department is responsible for development and coordination. [German]

Ziemann, G *Eisenbahntechnik* Vol. 29 No. 10, Oct. 1981, pp 419-421

ACKNOWLEDGMENT: British Railways

ORDER FROM: Bohmann Verlag, Canovagasse 5, A-1010 Vienna, Austria

17 317059

THE BUS DRIVEN ON A TRACK-DUAL MODE BUS [Der spurgefuehrte omnibus-dual mode bus]

The feasible technical developments in the bus as a part of the total traffic concept are discussed; the aim of these developments is automatic guidance. Two different designs of such an automatic guidance system were developed, one based on electronics, and the other on a mechanical device. With the mechanical control, guide rails are laid on the carriageway, and these have contact with special guidance rollers. These directly affect the steering of the wheels. Here the road costs are great, and the problem of switching points and crossings has to be solved as on the railways. This system is of interest where many buses travel a relatively short stretch and this stretch can be exclusively reserved for the bus. With the electronic control a simple guidance cable is placed in the bus carriageway and provided with a frequency of about 10 khz. Antennae in the vehicle pick up the electromagnetic signal for evaluation in an electronic controller which directly affects the steering of the vehicle. This system is of interest where few buses travel over a long stretch. The safety and reliability of these systems in all operating conditions is to be examined on a special experimental road, and a continuous test is to be undertaken with several vehicles. (TRRL) [German]

Hagen, H *ATZ - Automobil Technische Zeitschrift* Vol. 81 No. 5, May 1979, pp 189-192, 2 Fig., 7 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 311408), Federal Institute of Road Research, West Germany

ORDER FROM: Franckh'sche Verlagshandlung, Pfizerstrasse 5, Postfach 640, 7000 Stuttgart 1, West Germany

17 328926

MORGANTOWN PEOPLE MOVER ELECTROMAGNETIC COMPATIBILITY PROGRAM

Electromagnetic Compatibility (EMC) of a transit system is the absence of interference between all parts of the system, and between the system and the community which it serves. This report documents the EMC experience obtained during the design and development of the Morgantown People Mover (MPM) system in Morgantown, West Virginia. This report addresses background regarding the development of the MPM system and its current configuration as well as discussions pertaining to EMC. Conceptual and practical EMC requirement considerations and descriptions of the resulting requirements are presented. The analysis and testing performed to verify EMC is outlined and EMC problems unique to MPM are detailed. Refinement and extensions which might be considered for application to future systems are also discussed.

Herring, TH

Boeing Aerospace Company, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0048) Final Rpt. DOT-TSC-UMTA-80-35, Sept. 1980, 107p

ACKNOWLEDGMENT: NTIS

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PB81-148082

17 328932

MORGANTOWN PEOPLE MOVER REDUNDANT COMPUTING SYSTEM DESIGN SUMMARY

The purpose of this report is to describe the redundant computing system design used for the current 1980 Phase II Morgantown People Mover (MPM) system. The redundant computing system is that part of the control and communications system (C&CS) consisting of redundant computer hardware and software and the special purpose equipment (SPE) used to interface the dual computing system to the rest of the C&CS system. The Morgantown project, which began in 1969, is an Urban Mass Transportation Administration program that provides a personal rapid transit system between the central business district of Morgantown, West Virginia, and the widely separated campuses of West Virginia University. The MPM system is an automated, two-mode (schedule and demand) transit system that consists of a fleet of electrically powered, rubber-tired, passenger-carrying vehicles operating on a dedicated guideway network under the redundant computing system computer control. Since the MPM system was developed in three phases, this report presents some historical data leading to the current design. The report also includes results of experience with the redundant computing system, plans for potential system improvement, and recommendations so that future system designers can benefit from the experience gained in developing the Phase II MPM system.

Rucker, JI Hill, BJ

Boeing Aerospace Company, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0048) Final Rpt. DOT-TSC-UMTA-80-36, Sept. 1980, 159p

ACKNOWLEDGMENT: NTIS

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PB81-151367

17 328968

SYSTEMS OPERATION STUDIES FOR AUTOMATED GUIDEWAY TRANSIT SYSTEMS: REPRESENTATIVE APPLICATION AREAS FOR AGT

The purpose of the Application Area Definition task is to define the travel demands and guideway networks for a set of representative AGT system deployments. These demands and networks, when combined with detailed descriptions of the systems and their operating characteristics, define the representative systems to be modeled and analyzed in other tasks within the SOS program. Results of the definition of representative AGT system deployments for analysis in the AGT-SOS program are presented in this report. Each deployment consists of a demand type, an AGT system, and a guideway network type. Seven demand types, including three metropolitan areas, two central business districts, and two activity centers are defined, and a representative locale of each type is chosen. Station-to-station demands generated after the process for generating zone-to-zone demands for the metropolitan area applications are also presented. The following seven guideway network types are defined: shuttle, loop, one-way loop, two-way loop, multiple loop, partially connected grid, and fully connected grid. Ten AGT systems have been defined in another phase of the AGT-SOS program. From among the possible combinations of demands, systems, and networks, 19 representative deployments are selected, and a network is presented for each. The results of network flow analyses, in which the compatibility between the network and the station-to-station demand is evaluated, are presented for the representative SLT deployments.

See also PB80-226509.

Cowan, R Bonderson, L Alberts, F

General Motors Corporation, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0048) Final Rpt. DOT-TSC-UMTA-80-30, Nov. 1980, 223p

Contract DOT-TSC-1220

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-154551

17 328973

MORGANTOWN PEOPLE MOVER COLLISION AVOIDANCE SYSTEM DESIGN SUMMARY

The Morgantown People Mover (MPM) is an automated two-mode (schedule and demand) transit system that consists of a fleet of electrically powered, rubber-tired, passenger-carrying vehicles operating on a dedicated guideway under computer control. The present operational MPM system consists of 5 stations, a vehicle maintenance facility with a small test loop, a central control facility, 73 electrically powered, rubber-tired vehicles. This report describes the Collision Avoidance System (CAS) design used for the current (1980 Phase II) MPM system. It presents historical data leading to the current design. The report also includes results of experience with the CAS, plans for system improvements, and recommendations for future designers of such systems. Identification of safety and operability requirements led to a unique implementation of a proven safety concept--block occupancy control. Problems encountered and the design solutions which evolved are discussed with emphasis upon fail-safe features. The resulting CAS design is assessed and found to be extremely safe. Possible improvements and extensions are discussed. Shorter headway and bi-directional operations are found to be feasible. This report contains a glossary of terms and many charts illustrating the elements of the MPM system.

Schroder, RJ Washington, RS

Boeing Aerospace Company, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0048) Final Rpt. DOT-TSC-UMTA-80-37, Sept. 1980, 167p

ACKNOWLEDGMENT: NTIS

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PB81-154858

17 330120

BETTER JUSTIFICATIONS NEEDED FOR AUTOMATED PEOPLE MOVER DEMONSTRATION PROJECTS

The Urban Mass Transportation Administration has established a program to demonstrate whether automated people mover systems are workable solutions to downtown transit problems. These systems are driverless vehicles operating on fixed guideways. The program includes nine projects with a potential cost to the Federal Government of nearly \$675 million. Four of these projects were added at congressional direction. The Federal agency states that four of the five projects that were not congressionally directed are needed to meet program objectives. However, it has not adequately clarified the unique contributions each project will make toward meeting the objectives or why fewer projects and existing information are not sufficient. In addition, the planned evaluation of these projects should be strengthened.

General Accounting Office CED-80-98, Aug. 1980, 31p, Photos., Apps.

ORDER FROM: NTIS

PB81-135873

17 330190

DEVELOPMENT OF A MAINTENANCE PLAN FOR THE INTERMEDIATE CAPACITY TRANSIT SYSTEM

Maintenance would be much reduced if only that which is needed is carried out. Inspections and testing although necessary are time consuming; a good maintenance concept will limit this effect to that which is productive. This is attempted through integrating detection systems, scheduled equipment verification, and maintenance record monitoring to provide an efficient and effective detection of incipient faults.

Proceedings of the Canadian Reliability Symposium, Toronto, Ontario, May 16-17, 1980. Sponsored by the Society of Reliability Eng.

Keith, B (Canadair Services Limited) *Microelectronics and Reliability* Vol. 20 No. 1-2, Jan. 1980, pp 25-31

ACKNOWLEDGMENT: EI

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DOTL JC

17 330191

SYSTEM SAFETY APPROACH TO THE DESIGN OF AN INTERMEDIATE CAPACITY TRANSIT SYSTEM

The most effective means of avoiding accidents during the operational phase of a new urban transit system is to eliminate or reduce hazards during its design and development. The system safety management and safety analysis methods adopted during the design phase of the Intermediate Capacity Transit System (ICTS) are examined in this paper. The ICTS concept has produced a compact, lightweight vehicle design, of some 12m in length and 2.5m wide. The vehicle will operate coupled semi-permanently in pairs, which in turn can couple to make longer trains of four or six car total length. Vehicles are supported on steel wheels with steerable axles to eliminate squeal and wear on curves. The track or guideway is standard gauge and continuously welded rail is anticipated. The guideway will be either at-grade, elevated or, if necessary, in tunnel.

Proceedings of the Canadian Reliability Symposium, Toronto, Ontario, May 16-17, 1980. Sponsored by the Society of Reliability Eng.

Rumsey, AF (Canadair Service Limited) *Microelectronics and Reliability* Vol. 20 No. 1-2, Jan. 1980, pp 123-129

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

17 330668

UK'S FIRST PUBLIC MONORAIL GETS OFF THE GROUND

Although it has been designed with a leisure application, the monorail system operating in Rhyl has attracted interest as the first such system in the UK. Developed by Metrim Precision Engineering, the system is described as structurally simple and is visually unobtrusive. The simplicity of design is reflected in the design of the trains constructed of steel, fibreglass, aluminium and plexiglass. The trains are composed of four 12-passenger and three power cars giving a carrying capacity of 1400 passengers per hour. Supported on rectangular hollow steel beams 9 ft off the ground level at 40 ft centres, the track structure is lightweight and adaptable to the existing urban area.

Transport Vol. 1 No. 4, Sept. 1980, pp 69-71, 1 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 251560)

ORDER FROM: City Press, Fairfax House, Colchester, England

17 331097

AN ACTIVE AND PASSIVE STEERING CONTROLLER STUDY OF RUBBER-TYRED AUTOMATED GUIDEWAY TRANSIT VEHICLES

A comparative study of an active and passive steering controller of a rubber-tired Automated Guideway Transit (AGT) vehicle excited by random guideway irregularities is discussed. The thirteen-degree-of-freedom vehicle model, which was previously developed for passively steered rubber-tired AGT vehicles, is modified to facilitate the coupling of the vehicle to an active steering controller. Vehicle performance with the active steering controller, as well as the passive one, is evaluated in terms of root mean square (rms) values of the system outputs of interest. For the same level of the average rms tracking error, a two-sensor proportional active steering controller can improve the ride quality (about 12 per cent reduction in lateral rms acceleration) compared to the present passive steering controller for a typical AGT vehicle with random guideway irregularity inputs.

Kwak, YK Smith, CC *ASME Journal of Dynamic Systems, Meas and Control* Vol. 102 No. 3, Sept. 1980, pp 168-173

ACKNOWLEDGMENT: British Railways

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DOTL JC

17 331107

ATLANTA'S NEW CENTRAL PASSENGER TERMINAL

When the new Central Passenger Terminal Complex at the Hartsfield Atlanta International Airport opens in September, 1980, it will be the largest airport terminal complex in the world. Four principle elements comprise the design of this facility: (1) Two interconnected, landside terminal buildings; (2) four separate airside concourse buildings; (3) an underground, automated guideway transit and pedestrian mall system, linking the terminal buildings and concourses; and (4) the ground access system. The concept of a centralized terminal with satellite gates will most efficiently accommodate Atlanta's volume of transferring passengers, which accounts for 72% of all passengers arriving at the Hartsfield terminal.

Kortan, JF *ASCE Journal of Transportation Engineering* Vol. 106 No. TE6, Nov. 1980, pp 765-774

ACKNOWLEDGMENT: British Railways

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17 331850

LEARNING--ITS EFFECT ON DOWNTOWN PEOPLE MOVER OPERATION AND MAINTENANCE TRENDS--A CASE STUDY

The paper documents some yet unpublished data from the Morgantown, West Virginia system regarding its operation and maintenance experience. The author presents the findings of an analysis on this data as it relates to the effect of learning on operation and maintenance trends.

Ward, RE (West Virginia University) *ITE Journal* Vol. 50 No. 10, Oct. 1980, pp 50-53, 10 Ref.

ACKNOWLEDGMENT: EI

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17 331853

AUTOMATED GUIDEWAY TRANSIT: THE DUKE UNIVERSITY AUTOMATED PEOPLE/CARGO TRANSPORTATION SYSTEM

This report describes the installation of the automated people/cargo transportation system at Duke University in Durham, North Carolina, featuring the first automated guideway transit system to go into service which operates with linear induction motors together with air levitation.

Theumer, HA *Journal of Advanced Transportation* Vol. 14 No. 2, 1980, pp 161-176

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

17 334045

MAGNETIC LEVITATION TECHNOLOGY FOR AUTOMATED GUIDEWAY TRANSIT APPLICATIONS

The major difference in requirements for various magnetic levitation applications are reviewed and the resulting system designs are summarized. Mag-lev application requirements and developments in Europe, Japan and the United States are discussed. Developments in the United States of an integrated magnetic levitation and propulsion system for Automated Guideway Transit (AGT) applications in urban areas are reviewed in detail. Characteristics of power conditioning unit (PCU), the integrated linear induction motor (LIM), its control system, and basic configuration designs for both bottom supported and top suspended vehicles are presented. The advantage of a mag-lev AGT system in reducing operation and maintenance costs, increasing reliability, and enhancing passenger acceptance are also summarized. (Author)

Proceedings of the 30th Annual Conference of the IEEE Vehicular Technology Society International Conference on Transportation Electronics, September 15-17, 1980, Dearborn, Michigan.

Adriance, CJ (Boeing Aerospace Company) *IEEE Vehicular Technology Society Conference Proc* 80CH1601-4, Sept. 1980, pp 1-5, 11 Fig., 4 Ref.

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17 334046

AUTOMATED TRANSIT TECHNOLOGY DEVELOPMENT, A KEY TO THE FUTURE

The essential subsystem of Advanced Group Rapid Transit is the Command and Control System which controls individual vehicles and groups of vehicles. The approach to verification of the control system and associated subsystems functions involves the use of an engineering test facility to be completed at the Otis Denver, Colorado facility. The equipment configuration is to be functionally representative of equipment which can ultimately be deployed in urban areas. The critical technologies are embodied in the development of the Local (Zone) Control System and in vehicle propulsion for higher speed. Specifically: 1. Local (Zone) Management and Control-This is a minicomputer based hardware/software system which performs the operational control of all vehicles within an assigned zone for longitudinal speed regulation, merging, diverging, station operations, startup/shut-down, and recovery. This activity involves an extensive development of real-time control software for line headway operations down to 3 seconds for strings of vehicles. 2. Safety Assurance-This function is implemented by using microprocessor based controls on the wayside and the vehicle to assure safe operation (e.g., collision avoidance). The microprocessors are applied to meet the computational speed and data flow requirements of short headway systems. The processors are employed in two-out-of-three voting configurations to give fail-operational safety assurance. This approach represents the technology of the future for safety assurance. 3. Vehicle Development-AGRT requires a vehicle speed of 40 mph. This performance parameter requires a new inverter-linear induction motor (LIM) propulsion system development similar to the Otis system at Duke University. A major effort is being made to minimize vehicle weight, energy consumption, and cost. 4. Verification-The final year of the program will be devoted to operational testing. The tests will serve to verify the critical functional operations of the vehicles under automatic control. (Author)

Proceedings of 30th Annual Conference of the IEEE Vehicular Technology Society International Conference on Transportation Electronics, September 15-17, 1980, Dearborn, Michigan.

Saunders, LL (Otis Elevator Company) *IEEE Vehicular Technology Society Conference Proc* 80CH1601-4, Sept. 1980, pp 1-6, 10 Fig., 4 Ref.

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17 334198

DESIGN APPROACH FOR THERMAL REMOVAL OF SNOW AND ICE ON AUTOMATED--TRANSPORTATION-SYSTEM GUIDEWAYS

A computer simulation technique is described for modeling dynamic heat-transfer processes that influence the snow and ice removal performance of guideway heating systems. A concrete-channel guideway section is modeled, and the analysis results are presented to demonstrate the potential of this technique as a design tool for evaluating and screening snow-removal concepts. A cost model of guideway heating systems is developed. The model includes delay costs incurred by riders when the transportation

system is unavailable as a result of snow or ice accumulation on the running surface. This cost is added to the capital, operating, and maintenance costs, and an optimum cost-design point is identified for an electrically heated concrete guideway. A comparison of the costs of field testing with those of environmental chamber testing is also presented. It is recommended that design verification tests be conducted under extreme operating conditions to identify potential inadequacies missed in computer modeling. This strategy favors the use of chamber testing, where extreme conditions can be simulated on demand. (Author)

This paper appeared in Transportation Research Record No. 776, Guideway Snow and Ice Control and Roadside Maintenance.

Kramer, TJ (Boeing Aerospace Company) *Transportation Research Record* No. 776, 1980, pp 1-8, 14 Fig., 1 Tab., 10 Ref.

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DOTL JC

17 334724

QUICK PASSENGER CONVEYORS. THE TRAX (RATP) [Les trottoirs roulants accelérés. Le Trax de la RATP]

This article describes the state of the art of rapid passenger conveyors, and the principles and performance of Trax which, very likely, will be the first rapid passenger conveyor in service in the world. It carries people at a speed of 12 km/h over several hundred meters. [French]

Patin, P *Revue Generale des Chemins de Fer* Feb. 1980, pp 87-102, 8 Fig., 13 Phot., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 111104), Central Laboratory of Bridges & Highways, France, Institute of Transport Research

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17 335068

TRAFFIC CONTROL LEVEL OF THE H-BAHN RAPID TRANSIT SYSTEM

A new rapid transit system is described which is fully automatic and operates through the use of a coupled process computer system within the traffic control level. The safety level monitors the function of the traffic control level and exercises control action only in the event of malfunction. The operations control level with a central computer, which effects scheduling of all traffic, is superimposed on the traffic control level.

Ethevenaux, A Waechter, M *Siemens Power Engineering* Vol. 1 No. 7, July 1979, pp 213-216, 4 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

17 335831

BIRMINGHAM'S NEW PEOPLE MOVER

Britain's first magnetic levitation transport system (maglev), developed by British rail, is to be used for the 600 to 700 M link between Birmingham Airport, the mainline station Birmingham International, and the National Exhibition Centre. It will be constructed by a consortium of seven companies and the West Midlands County Council and is expected to open in April 1984. The article describes the work in comparing bus and maglev for airport access. The current modal choice was examined in detail to forecast future usage and determine overall public transport patronage. Because of the differences in the journey patterns of those visiting the exhibition centre and those using the mainline railway station, a multi-modal model was used calibrated on data from a major survey of airport passengers. The advantage of maglev over the conventional bus service was found to be reduced operating costs and a higher level of service. It was found that the benefits of maglev would justify the high capital costs incurred in the original construction.

Surveyor Vol. 156 No. 4634, Apr. 1981, pp 12-13, 1 Fig., 2 Phot., 1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254384)

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17 341542

SLIP CONTROL FOR LIM PROPELLED TRANSIT VEHICLES

Short stator linear induction motors, with an iron-booked aluminum sheet reaction rail and powered by a controlled inverter, have been selected as the propulsion system for transit vehicles in an intermediate capacity system

(12-20,000 pphpd). The linear induction motor is capable of adhesion independent braking and acceleration levels which permit safe, close headways. Simple control is possible allowing moving block automatic train control. A slip frequency control scheme for the LIM is presented, along with experimental results for motoring and braking obtained from a test vehicle. These values are compared with theoretical predictions.

International Magnetics Conference (INTERMAG '80), Boston, Massachusetts, April 21-24, 1980.

Wallace, AK (Canadair Services Limited); Parker, JH Dawson, GE
IEEE Transactions on Magnetics VMAG-16 N5, 1980, pp 710-712, 5 Ref.

ACKNOWLEDGMENT: EI
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17 341744

THE VAL SYSTEM APPLIED TO THE LILLE METRO [LE SYSTEME VAL APPLIQUE AU METRO DE LILLE]

At the end of the year the first VAL (Automatic Light Vehicle) system will come into service in Lille. It will be one of the first fully automated transport systems with no train crews on the vehicles. The basic features of the system are described as are developments in the technology applied and brief comments on safety, operations and maintenance. [French]

Ferbeck, D *Revue Generale des Chemins de Fer* May 1981, pp 273-288, 16 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
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DOTL JC

17 341935

PRODUCTIVITY THROUGH COMPUTER MANAGEMENT OF A FULLY AUTOMATED TRANSPORTATION SYSTEM

The Morgantown Personal Rapid Transit System is a fully automated, collection and distribution, origin to destination, nonstop transportation system. The system consists of a fleet of 73 electrically powered, rubber tired, passenger carrying vehicles, operating on a dedicated guideway network at 15 second headways. The system provides a safe, comfortable nonpolluting, reliable means of public transportation between the Central Business District of Morgantown, West Virginia, and the three separated campuses of West Virginia University. This study addresses the unique application of computers in operating a public transit system which is considered the first of its kind anywhere in the world.

Elias, SE (West Virginia University); Hendershot, R *Computers and Industrial Engineering* Vol. 4 No. 4, 1980, pp 257-268

ACKNOWLEDGMENT EI
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17 341938

LINEAR SYNCHRONOUS MOTOR DEVELOPMENT FOR URBAN AND RAPID TRANSIT SYSTEMS

Variants in magnetic suspension-repelling permanent magnets, electrodynamic and electromagnetic suspension methods, controlled lift magnets, and propulsion methods for magnetically suspended vehicles are discussed. The synchronous long stator linear motor has achieved particular importance since it makes possible efficient energy conversion. The load-carrying is not reduced by the weight of the drive and the layout enables good integration of the lift and thrust functions. A further reduction of the on-board power requirements can be achieved by using permanent magnets to generate the rated induction in the air gap. Several magnetic suspension systems constructed or under construction with the long stator method are mentioned.

Joint INTERMAG-MMM Conference (Magn and Magn Mater), 2nd, New York, New York, July 17-20, 1979.

Weh, H *IEEE Transactions on Magnetics* VMAG-15 No. 6, Nov. 1979, p 1422, 6 Ref.

ACKNOWLEDGMENT: EI
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DOTL JC

17 343072

EXTENDED SYSTEM OPERATIONS STUDIES FOR AUTOMATED GUIDEWAY TRANSIT SYSTEMS: PLAN FOR TASK 5--DPM FAILURE MANAGEMENT

The purpose of Task 5 in the Extended System Operations Studies Project, DPM Failure Management, is to enhance the capabilities of the Downtown People Mover Simulation (DPMS) and the Discrete Event Simulation Model (DESM) by increasing the failure modeling detail of these processors so that a variety of failure management strategies can be evaluated in terms of total vehicle and passenger delay. The purposes of this planning document are to list the major failure management strategies that are currently being considered in engineering studies of DPMs and to propose software modifications, in functional terms, and analysis techniques that will permit modeling of as many of these strategies as possible.

Duke, JF Lee, RA

General Motors Technical Center, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0048) Final Rpt. DOT-TSC-UMTA-80-28, June 1981, 35p

Contract DOT-TSC-1783

ACKNOWLEDGMENT: NTIS
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PB81-210569

17 343574

VEHICLE LONGITUDINAL CONTROL AND RELIABILITY PROJECT. VOLUME I. PROJECT SUMMARY

The Automated Guideway Transit Technology (AGTT) program is a comprehensive, critical technology development program, and it is oriented toward the development of systems analyses and system elements that may be used in advanced urban transportation systems. The Vehicle Longitudinal Control and Reliability (VLCR) project is vital to the AGTT program; it aims to provide the basis for improving the effectiveness of future AGT systems and for insuring that the best VLCR approaches are identified, documented, and demonstrated. The project emphasizes the improvement of the performance of longitudinal control subsystems. The project involved the development, design, and demonstration of a moving-block longitudinal control system; the development of techniques for reliability enhancement; and a study of automatic entrainment and platooning concepts. The final report of the VLCR project consists of 8 separate volumes. This volume, the Project Summary, provides an overview of the entire VLCR project and presents the significant findings and achievements. The detail analysis and design results are fully described in each of the volumes of the final report. This volume contains all the salient information including the goals and objectives, evaluation of existing technology, major results and achievements, discussion of promising concepts, descriptions of the major features of the test program, and a commentary on the project results.

See also Volume 2, Part B, PB80-138142.

Womack, W

Otis Elevator Company, Urban Mass Transportation Administration, (UMTA-IT-06-0148) Final Rpt. OTIS-TTD-VLCR-072, UMTA-IT-06-0148-7910, June 1979, 147p

Contract DOT-UT-70048

ACKNOWLEDGMENT: NTIS
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PB81-218406

17 343636

DEVELOPMENT/DEPLOYMENT INVESTIGATION OF H-BAHN SYSTEM [H-BAHN UNTERSUCHUNG VON TECHNOLOGIE, ENTWICKLUNG UND BETRIEB]

This report describes and provides the results of an assessment of the H-Bahn Automated Guideway Transit (AGT) system under development in the Federal Republic of Germany. It is a joint U.S./German technical assessment study that was completed under a bilateral agreement between the U.S. Department of Transportation (DOT) and the German Federal Ministry of Research and Technology (MORT). The study was conducted jointly by DOT's Transportation Systems Center and the SNV Studiengesellschaft Nahverkehr mbH. The purpose of this assessment study is: (1) to gather and exchange information in AGT technology; (2) to review problems and solutions encountered during the design, development, implementation, and operation of AGT systems; (3) to obtain information on engineering, economic considerations, operational performance, and

public response which can be used in planning future AGT systems; and (4) to provide urban planners with information that will enable them to determine the applicability of AGT systems to their specific transportation problems.

Prepared in cooperation with SNV Studiengesellschaft Nahverkehr m.b.H., Hamburg (Germany, F.R.). Sponsored in part by Bundesministerium fuer Forschung und Technologie, Bonn (Germany, F.R.).

Silva, L. Comparato, T. Watt, C. Heckelmann, W. Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0069) Final Rpt. DOT-TSC-UMTA-81-6, UMTA-MA-06-0069-81-1, Jan. 1981, 352p

ACKNOWLEDGMENT: NTIS
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PB81-214991

17 343638
VEHICLE LONGITUDINAL CONTROL AND RELIABILITY PROJECT. VOLUME 7. EXPERIMENTAL PROGRAM METHODOLOGY AND TEST RESULTS

This volume provides a description of the experimental system and allocates control system functions between wayside and on-board vehicle components and experimental data for a variety of longitudinal control maneuvers. The State Constrained Longitudinal Control Law is also discussed, which was implemented in hardware and software and evaluated by way of experimentation. In this report, the control system was partitioned into on-board and wayside components connected by way of an inductive communication system. The longitudinal control system performed velocity tracking, velocity regulation, overtake, queueing, slot slip, slot advance, and entrainment closure maneuvers within the service jerk and acceleration constraints. Experimental results are presented and conclusions drawn from the program.

See also Volume 5, PB-299 798. n

Schumacher, PJ
Otis Elevator Company, Urban Mass Transportation Administration, (UMTA-IT-06-0148) Final Rpt. OTIS-TTD-VLCR-78, UMTA-IT-06-0148-7912, Dec. 1979, 72p

Contract DOT-UT-70048

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17 343662
AUTOMATED MIXED TRAFFIC TRANSIT VEHICLE MICROPROCESSOR CONTROLLER

The long-range objective of the Automated Mixed Traffic Vehicle (AMTV) program is to develop the sensing and logic required to operate a low-speed, driverless shuttle bus or tram in mixed traffic and to demonstrate operation of such a system in a user environment. This report describes an improved AMTV speed control system employing a microprocessor and transistor chopper motor current controller and its performance is presented in terms of velocity versus time curves. The on-board computer hardware and software systems are fully described as is the software development system. All of the programming used in this controller was implemented using Fortran. This new microprocessor controller has made possible a number of new safety features and has improved the comfort associated with starting and stopping. Back-up systems are used when needed. In addition, most of the vehicle's performance characteristics can be altered by simple program parameter changes. A failure analysis of the microprocessor controller has been generated and the results are included in the Appendices, as well as flow diagrams for the speed control algorithms and complete Fortran code listings.

Marks, RA. Cassell, P. Johnston, AR
Jet Propulsion Laboratory, Urban Mass Transportation Administration
Final Rpt. JPL-PUB-81-24, UMTA-CA-06-0088-81-1, Feb. 1981, 113p

Contract DOT-UT-60008

ACKNOWLEDGMENT: NTIS
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PB81-225674

17 343678
AN ANALYSIS OF THE U.S. MARKET FOR AUTOMATED GUIDEWAY TRANSIT. VOLUME 1: NATIONAL MARKET ESTIMATES

UMTA's Automated Guideway Transit (AGT) program aims to determine where and under what conditions AGT service characteristics will satisfy the travel needs and socioeconomic requirements of urban areas in a manner that is competitive with or superior to other transportation alternatives. The 3-volume study investigates the potential of single line AGT relative to current non-automated transit technologies to provide transportation in urban areas and to contribute to the revitalization of urban areas. The study examines 3 general areas: (1) a national market estimate based on data from 46 urban areas; (2) 11 site-specific alternatives analyses within three representative urban areas; and (3) a two-phased consumer survey to determine individual preferences toward AGT. The purpose of the market estimate study is to develop a national forecast of the market for AGT applications based on an analysis of global costs and benefits.

See also Volume 2, PB81-228801. Prepared in cooperation with Skidmore, Owings, and Merrill, Boston, MA., and National Analysts, Inc., Philadelphia, PA. Also available in set of 3 reports PC E19, PB81-228785.

Kocur, G. Nagin, D. Reid, P.
Cambridge Systematics, Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-IT-06-0165-79-1, Nov. 1980, 230p

Contract DOT-UT-70008

ACKNOWLEDGMENT: NTIS
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PB81-228793

17 343679
AN ANALYSIS OF THE U.S. MARKET FOR AUTOMATED GUIDEWAY TRANSIT. VOLUME 2: URBAN AREA CASE STUDIES

UMTA's Automated Guideway Transit (AGT) program aims to determine where and under what conditions AGT service characteristics will satisfy the travel needs and socioeconomic requirements of urban areas in a manner that is competitive with or superior to other transportation alternatives. This 3-volume study investigates the potential of single line AGT relative to current non-automated transit technologies to provide transportation in urban areas and to contribute to the revitalization of urban areas. The study Volume 2 examines 11 site-specific alternatives analyses within three representative urban areas, describing the results of case studies conducted in the Chicago, Atlanta, and Dallas urban areas. Specific settings examined include corridors, central business districts, suburban activity centers, and medical centers. System design, ridership and cost estimates are reviewed for each site.

See also Volume 1, PB81-228793 and Volume 3, PB81-228819. Prepared in cooperation with Skidmore, Owings, and Merrill, Boston, MA. Also available in set of 3 reports PC E19, PB81-228785.

Kocur, G. Stern, W. Henderson, R. Smith, D.
Cambridge Systematics, Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-IT-06-0165-79-3, Nov. 1980, 258p

Contract DOT-UT-70008

ACKNOWLEDGMENT: NTIS
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17 343680
AN ANALYSIS OF THE U.S. MARKET FOR AUTOMATED GUIDEWAY TRANSIT. VOLUME 3: A CASE STUDY OF CONSUMER ATTITUDES

The report represents one part of a larger project to determine where and under what conditions automated guideway transit (AGT) will provide cost-effective service that satisfies urban area travel demand. In Volume 3, a two-phase survey consisting of an exploratory phase (6 group interviews) and a quantitative phase (550 personal interviews) was conducted. Consumer transportation preferences are reported in terms of the importance attached to selected features (transit mode, price, travel time, frequency of service). Factors such as system location, vehicle size, vehicle reliability, driver/station attendants, station location, and seat guarantee are addressed. These factors are examined by four purpose/destination segments (work and non-work travel, downtown and suburban areas) and the socioeconomic and demographic characteristics of survey participants.

See also Volume 2, PB81-228801. Prepared in cooperation with Cam-

bridge Systematics, Inc., MA. Also available in set of 3 reports PC E19, PB81-228785.

National Analysts, Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-IT-06-0165-79-4, Nov. 1980, 173p

Contract DOT-UT-70008

ACKNOWLEDGMENT: NTIS
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17 343733

SYSTEMS OPERATION STUDIES FOR AUTOMATED GUIDEWAY TRANSIT SYSTEMS. FEEDER SYSTEMS MODEL FUNCTIONAL SPECIFICATION

This document specifies the functional requirements for the AGT-SOS Feeder Systems Model (FSM), the type of hardware required, and the modeling techniques employed by the FSM. The objective of the FSM is to map the zone-to-zone transit patronage demand onto AGT station pairs and to generate feeder system performance data. The output of this model can be used in conjunction with AGT data in order to provide normalized comparisons between different AGT systems operating in the same demand environment with both conventional feeder service/AGT operation and dual mode feeder/AGT operation. Because of its generic nature, the model is recommended for representative AGT deployments' comparison only.

See also PB81-233504. Also available in set of 5 reports PC E15, PB81-223488.

Linden, TM

General Motors Corporation, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0048) Final Rpt. DOT-TSC-UMTA-81-14, June 1981, 37p

Contract DOT-TSC-1220

ACKNOWLEDGMENT: NTIS
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PB81-233496

17 343734

SYSTEMS OPERATION STUDIES FOR AUTOMATED GUIDEWAY TRANSIT SYSTEMS. SYSTEM AVAILABILITY MODEL USER'S MANUAL

The System Availability Model (SAM) is a system-level model which provides measures of vehicle and passenger availability. The SAM operates in conjunction with the AGT discrete Event Simulation Model (DESM). The DESM output is the normal source of the delays information portion of the SAM's input data set. There is no inherent restriction on the systems applicability of the SAM. Therefore, the range of applicability of the DESM defines the ranges of applicability for the SAM. This SAM User's Manual describes the program, its input requirements, and its operating procedures. The maintenance and standby fleet size required to support the operational fleet are also determined.

See also PB81-101693, PB81-233496 and PB81-233512. Also available in set of 5 reports PC E15, PB81-233488.

Oglesby, R

General Motors Corporation, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0048) Final Rpt. DOT-TSC-UMTA-81-12, June 1981, 70p

Contract DOT-TSC-1220

ACKNOWLEDGMENT: NTIS
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PB81-233504

17 343735

SYSTEMS OPERATION STUDIES FOR AUTOMATED GUIDEWAY TRANSIT SYSTEMS. AVAILABILITY MODEL FUNCTIONAL SPECIFICATION

The System Availability Model (SAM) is a system-level model which provides measures of vehicle and passenger availability. The SAM will be used to evaluate the system-level influence of availability concepts employed in AGT systems. This functional specification identifies the functions performed, the types of hardware required, and the modeling techniques employed by the SAM. This model is sufficiently flexible to aid transportation system planners in AGT system selection.

See also PB81-233504 and PB81-233520. Also available in set of 5 reports PC E15, PB81-233488.

Linden, TM Boldig, JD

General Motors Corporation, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0048) Final Rpt. DOT-TSC-UMTA-81-15, June 1981, 54p

Contract DOT-TSC-1220

ACKNOWLEDGMENT: NTIS
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PB81-233512

17 343736

SYSTEMS OPERATION STUDIES FOR AUTOMATED GUIDEWAY TRANSIT SYSTEMS. SYSTEM AVAILABILITY MODEL PROGRAMMER'S MANUAL

The programmer's manual for the System Availability Model (SAM) describes the program's functions, organization, variables, and processing algorithms. Debug tools built into the model, a global variable dictionary, subprogram logic tables, and subprogram descriptions are also described to aid maintenance and modification of this model.

See also PB81-233512 and PB81-233538. Also available in set of 5 reports PC E15, PB81-233488.

Oglesby, R

General Motors Corporation, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0048) Final Rpt. DOT-TSC-UMTA-81-13, June 1981, 153p

Contract DOT-TSC-1220

ACKNOWLEDGMENT: NTIS
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PB81-233520

17 343737

SYSTEMS OPERATION STUDIES FOR AUTOMATED GUIDEWAY TRANSIT SYSTEMS. DETAILED STATION MODEL FUNCTIONAL SPECIFICATION

The Detailed Station Model (DSM) is a discrete event model representing the interrelated queueing processes associated with vehicle and passenger activities in an AGT station. The DSM will provide operational and performance measures of alternative station configurations and management policies with respect to vehicle and passenger handling capabilities and will provide an analytic tool to support trade studies. Its architecture will facilitate interchange of alternative operational strategy algorithms and station traffic flow patterns to assist in the initial design selection by planners.

See also PB81-233520. Also available in set of 5 reports PC E15, PB81-233488.

Bender, J

General Motors Corporation, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-06-0048) Final Rpt. DOT-TSC-UMTA-81-16, July 1981, 48p

Contract DOT-TSC-1220

ACKNOWLEDGMENT: NTIS
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PB81-233538

17 344474

LOS ANGELES DOWNTOWN PEOPLE MOVER (DPM) OPERATIONAL ANALYSIS

Two different studies were performed by the Research and Special Programs Administration of the Transportation Systems Center in response to the concerns of the Urban Mass Transportation Administration about the ability of the planned Los Angeles Downtown People Mover (DPM) to handle the projected passenger demand for the year 2000. The first study addressed the question of whether the approximately 100,000 passengers per day in the year 2000 can be handled if the system headway is reduced to 60 seconds. The second study examined the more general issue of what train capacities are required at different headways to handle the demand with alternative passenger waiting time goals. This paper addresses these two areas separately, even though the second one arose from the first study. The approach used to analyze each issue is given, along with the underlying assumptions that were made. The results are then presented and conclusions drawn.

Priver, AS Dooley, TM

Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0081) Final Rpt. DOT-TSC-UMTA-80-4, UMTA-MA-06-0081-81-1, June 1981, 40p

ACKNOWLEDGMENT: NTIS
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PB81-241416

17 344509

COST EXPERIENCE OF AUTOMATED TRANSIT SYSTEMS.

SUPPLEMENT III

This report summarizes operations and maintenance (O&M) cost experience for the following AGT systems for the period 1976-1980: Airtrans, Sea-Tac, Tampa, Disneyworld (WEDway), Pearl Ridge, Minnesota Zoo, and Morgantown. O&M data on the Morgantown system is reported through 1980 (excluding data for the year 1979). Capital cost data is reviewed on Morgantown, Airtrans, Tampa, Sea-Tac, Miami, Busch Gardens, Disneyworld, King's Dominion, Fairlane, Atlanta and Minnesota Zoological Gardens. Updated data has been reported on Orlando and new data for the refined Houston Airport System. System characteristics are presented for both the Duke and Pearl Ridge systems, although no cost information is available at this time. In addition to presenting capital and operating and maintenance costs and trends, this report includes analysis of the factors influencing these costs. A section on the differences between urban and non-urban settings of AGT systems has been included and shows how the costs of existing non-urban systems might relate to a system in an urban development in terms of site conditions and site requirements. An appendix describing individual systems in detail is also included.

See also Supplement 2, dated March 80, PB80-204878.

von Rosenvinge, ME

Transportation Systems Center, Urban Mass Transportation Administration Lost Rpt. DOT-TSC-UMTA-81-36, UMTA-MA-06-0069-81-2, July 1981, 88p

ACKNOWLEDGMENT: NTIS
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PB81-245656

17 344576

GUIDEWAY TRANSPORTATION, 1964-JULY, 1981 (CITATIONS FROM THE NTIS DATA BASE)

The bibliography cites research on automated guideway transportation (AGT), in which passengers can be transported along tubes or rails under automatic control. The carriers, termed personal rapid transit vehicles or people movers, can accommodate individuals or small or larger groups. The reports cover many aspects of technology, such as demand actuated service, networks, elevated structures, monorail, light rail, computer aided control, vehicle merging, headway safety, shuttle loops, guideway designs, magnetic levitation, suspended vehicles, and dual mode. Discussions are made of steering control, ride quality, airport services to move people or baggage, gravity assistance in accelerating and braking, test vehicles, and maintenance. Other topics are cost comparisons of AGT with conventional transit, fares, and equipment failure. Air cushion vehicles are excluded. (This updated bibliography contains 292 citations, 58 of which are new entries to the previous edition).

National Technical Information Service Bibliog. Aug. 1981, 297p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-807869

17 344672

OBSTACLE DETECTORS FOR AUTOMATED TRANSIT VEHICLES: A TECHNOECONOMIC AND MARKET ANALYSIS

A search was conducted to identify the technical and economic characteristics of both NASA and nonNASA obstacle detectors. The findings, along with market information were compiled and analyzed for consideration by DOT and NASA in decisions about any future automated transit vehicle obstacle detector research, development, or applications project. Currently available obstacle detectors and systems under development are identified by type (sonic, capacitance, infrared/optical, guided radar, and probe contact) and compared with the three NASA devices selected as possible improvements or solutions to the problems in existing obstacle detection systems. Cost analyses and market forecasts individually for the AGT and AMTV markets are included.

Lockerby, CE

SRI International, National Aeronautics and Space Administration NASA-CR-164661, Dec. 1979, 51p

Contract NAS2-10143

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

N81-30048/5

17 345250

IS THE AEROMETRO HONG KONG'S ANSWER?

It is anticipated that Hong Kong will need additional rapid transport of people after the completion of the successful Mass Transit Railway (MTR). An overhead transport system has been suggested as an extension to the MTR, and a feasibility study is being undertaken of a 30 km network capable of transporting 9000 people per hour. It is claimed that the system would cost one-fifth of the cost of tunnelling and way-clearing for a ground network. Further advantages of the flexible tracked overhead system are presented, and details of design for high passenger flows and high wind stresses are considered. The possible incorporation of lengths of rigid track, where advantageous, is mentioned, and the designs and uses of various overhead systems in other countries are reviewed. (TRRL)

Barnes, S *Surveyor* Vol. 157 No. 4648, July 1981, pp 14-15, 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 257089)
ORDER FROM: ESL

DOTL JC

17 345254

MAGLEV GIVES BIRMINGHAM AIRPORT AN ADDED LIFT

The article describes the MAGLEV transit system to be installed at Birmingham Airport for moving passengers to the railway station and the National Exhibition Centre. The system, intended for operation in 1984, will consist of an elevated guideway which will run for 600 M carrying two parallel tracks on which 40-passenger capacity cars will travel under automatic control. The cars will be suspended above the track by magnetic fields and will move along the track by the action of a linear induction motor. Developed by the West Midlands County Council, the MAGLEV system emphasises simplicity of design and is intended more as a horizontal lift rather than a miniature railway. (TRRL)

Benussi, J *Transport* Vol. 2 No. 3, May 1981, p70

ACKNOWLEDGMENT: TRRL (IRRD 256755)
ORDER FROM: City Press, Fairfax House, Colchester, Essex, England

17 345384

DEVELOPMENT STATUS OF AUTOMATED GUIDEWAY TRANSIT (AGT) SYSTEMS IN EUROPE AND JAPAN

Europe and Japan have been developing AGT systems, similarly to the United States, since the end of the 60's. According to the degree of individualization, a distinction is made between Personal Rapid Transit (PRT) and Group Rapid Transit (GRT) systems. The development of the different PRT and GRT systems has advanced to such a degree in the Federal Republic of Germany, in France and in Japan, that the first small-scale practical operations are already taking place and larger scale projects are under construction or in the planning stages. The object of this paper is to report the current stage of development and testing of AGT systems outside the USA. The emphasis lies in the level of development with regard to readiness for operation as well as to the introduction of the systems to the public.

Proceedings of Convergence 80, 30th Annual Conference of the Institute of Electrical and Electronics Engineers Vehicle Technology Society International Conference on Transportation Electronics, Dearborn, Michigan, September 15-17 1980. Session D-5, paper 4.

Gerland, H (SNV Studienges Nahverkehr, West Germany); Zamlin, H
Institute of Electrical and Electronics Engineers Conf Paper IEEE/80CH1601-4, 1980, 9p

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

17 345394

COUPLED LATERAL-VERTICAL DYNAMICS OF RUBBER-TIRED AUTOMATED GUIDEWAY TRANSIT VEHICLES WITH RANDOM GUIDEWAY INPUTS

A method is presented which permits the simulation of the coupled lateral-vertical rigid body vibration response of a rubber-tired automated guideway transit (AGT) vehicle subject to guideway random irregularities. A coupled lateral-vertical dynamic model is developed. The general motions are expressed by Euler angles and inertial displacements. Basic vehicle dynamic modes are determined. A predicted lateral acceleration spectrum of the linearized model using guideway surface profile models for inputs are compared with the measured lateral acceleration spectra and found in the lower frequency (below about 7 Hz) range. Agreement was found between the predicted and measured rms accelerations for a wider range of frequencies.

Kwak, YK (Korea Military Academy, Seoul); Smith, CC *ASME Journal of Dynamic Systems, Meas and Control* Vol. 102 No. 2, June 1980, pp 85-93, 12 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

17 345395

MODEL-REFERENCE LONGITUDINAL CONTROL FOR AUTOMATED VEHICLE SYSTEMS

The problem of designing longitudinal control systems which provide acceleration and jerk limited response for automated vehicle systems is examined. Nondimensional models of vehicles propelled by d-c traction motors are used to evaluate the feasibility of the model-reference control concept. Analytical and computer simulation techniques are used to evaluate performance and assure critical string behavioral characteristics-asymptotic string stability and fixed end-point speed transition region (proper curve negotiation)

Caudill, RJ (Prikladnaya Mekhanika); Blasnik, SL *ASME Journal of Dynamic Systems, Meas and Control* Vol. 102 No. 2, June 1980, pp 77-84, 14 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

17 345398

SAFETY OF THE COMMAND AND CONTROL SYSTEM FOR AUTOMATED GUIDEWAY TRANSIT

This paper identifies some of the automated guideway transit (AGT) systems operating in the United States today, describes the functions performed by a typical command and control system, and discusses (1) safety-related problem areas associated with the implementation of an AGT command and control system and (2) future trends in command and control systems for AGT.

Proceedings of Convergence 80, 30th Annual Conference of the Institute of Electrical and Electronics Engineers Vehicle Technology Society International Conference on Transportation Electronics, Dearborn, Michigan, September 15-17 1980. Session D-3, paper 5.

Hunter, HH (Battelle Columbus Laboratories)
Institute of Electrical and Electronics Engineers Conf Paper IEEE 80CH1601-4, 1980, 4p

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

17 345446

HARMONIC FLUX INDUCTION TYPE ON-BOARD AUXILIARY POWER SOURCES SYSTEM FOR LEVITATED TRAINS

This report describes the principle and characteristics of, and the test results obtained with, a new harmonic flux induction type on-board power source system (HIPS) suitable for high speed magnetically levitated trains. The system uses a space harmonic component of the flux produced by track coils to supply power to train induction coils. Various characteristics of the induced voltage and output power of 100 k W/ car with the system is obtainable. The results obtained in calculations agree with those obtained in tests with a rotating experimental facility having an output power of 1 k W.

Institute of Electrical and Electronics Engineers Power Engineering Society Winter Meeting, Conference Paper, Atlanta, Georgia, February 1-6

1981.

Iwahana, T (Japanese National Railways); Fujimoto, T Maki, N Takahashi, H
Institute of Electrical and Electronics Engineers Pap 81 WM 188-2, 1981, 9p, 4 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

DOTL JC

17 345449

DEVELOPMENT OF A SLIP DETECTION TECHNIQUE FOR THE AIRTRANS RUBBER-TIRED VEHICLE

At the present time, operation of the Dallas/Fort Worth (DFW) AIRTRANS people-mover system may be curtailed during inclement weather. One of the first steps in developing a vehicle system to operate under adverse adhesion conditions is to identify a means of detecting rubber-tired wheel slip. Background technology surveys of the wheel slip phenomenon provided some surprises in regard to the coefficient of friction versus slip characteristics of rubber tires. Also uncovered were some interesting constraints in the purposes for and means of applying wheel slip detection and control systems to rubber-tired vehicles. Finally, computer-assisted analysis of vehicle response under slip conditions proves and simulates a technique for detecting this slip for a vehicle where all axles are driven.

Conference Record of the Industry Applications Society Annual Meeting, 15th, Cincinnati, Ohio, September 28-October 3 1980.

Sellers, DF (Vought Corporation)
Institute of Electrical and Electronics Engineers Conf Paper IEEE 80CH1575-0, 1980, pp 214-220, 3 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

17 345453

EFFECTS OF OPERATING CONDITION VARIATION ON THE PERFORMANCE OF A LIM PROPULSION SYSTEM

An intermediate capacity transit system, currently being developed, uses a linear induction motor and inverter for traction. Testing of the vehicles has shown that these propulsion units are subject to certain variations in operating conditions which have been quantified but over which the system designers and operators can exercise, at best, only limited control. Significant variations have been experienced in the following: reaction rail resistivity, dynamic airgap, slip frequency, phase unbalance, secondary discontinuity. The measured variations of these parameters are used to perform sensitivity analyses to determine the effects on thrust, vertical force and efficiency-power factor product. Test data are presented.

Conference Record of the Industry Applications Society Annual Meeting, 15th, Cincinnati, Ohio, September 28-October 3 1980.

Wallace, AK (Canadair Service Limited, Ontario)
Institute of Electrical and Electronics Engineers Conf Paper IEEE 80CH1575-0, 1980, pp 244-249, 4 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

17 345455

GROUNDING PRACTICE FOR ELECTRIC PEOPLE MOVER VEHICLES

Rubber-tired electric people mover vehicles are not inherently grounded as are steel-wheel on steel-rail vehicles. These vehicles are typically supplied by their collectors from power rails at 480-600 V 3-phase or 600 V dc power. A ground rail is provided which can be either current-carrying or isolated. By limiting the vehicle-to-ground voltage to 0.5 V under steady-state conditions and to 52 V under fault conditions, the vehicle can be considered as safe. The voltages can be effectively limited by connecting the wayside ground rail to the structural steel and metallic parts of the guideway and stations, by limiting the resistance of the grounding cable on the vehicle, and by using a ground fault detector to rapidly interrupt a fault in the vehicle.

Conference Record of the Industry Applications Society Annual Meeting, 15th, Cincinnati, Ohio, September 28-October 3 1980.

Kusko, A (Kusko (Alexander) Incorporated); LaMarca, JJ Glover, JD
Institute of Electrical and Electronics Engineers Conf Paper IEEE 80CH1575-0, 1980, pp 276-284, 14 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

17 345456

ENCORDER/DECORDER DESIGN FOR AUTOMATIC IDENTIFICATION AND AUDIO MONITORING OF AUTOMATED TRANSIT SYSTEMS

A new encoder/decoder design is presented for an automated guideway transit system. The existing encoder/decoder is a part of a two-way radio system that connects each vehicle with a central unit through a communication link. This existing system has several drawbacks that are cleared by the new design. The new encoder/decoder gives the operator of the central unit the capability of audio monitoring and scanning of the vehicles operating on the transit system. It automatically identifies any calling vehicle. Digital circuitry is used in the design of the system shown.

Midwest Symposium on Circuits and Systems, 23rd, University of Toledo, Ohio, August 4-5 1980.

Nessim, SM (West Virginia University); Mitry, SA
Toledo University Conf Paper 1980, pp 224-228, 9 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: Western Periodicals Company, 13000 Raymer Street, North Hollywood, California, 91605

17 345457

VERTICAL INSTABILITY OF AN ELECTRODYNAMIC SUSPENSION

Vertical instability is considered for horizontal motion of a current frame over an electrically conducting plate of finite thickness. The addition to the frame-plate repulsion force due to the change in eddy currents in the presence of vertical oscillations is estimated.

Kochetkov, VM *Power Engineering (USSR Translation)* Vol. 17 No. 5, 1979, pp 152-154

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

17 345976

PENDAIR--A PROPOSED LOWER COST RAPID TRANSIT SYSTEM COMPATIBLE WITH THE URBAN ENVIRONMENT

No abstract.

Bliss, DS *Institution of Mechanical Engineers Proceedings* Vol. 195 Sept. 1981, pp 271-294, 3 Tab., 23 Phot., 24 Ref.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: ESL

DOTL JC

17 346065

A SURVEY OF ELECTRIC PROPULSION MOTORS FOR AUTOMATED GUIDEWAY TRANSIT VEHICLES

Increasing interest in developing more efficient and lighter weight motors for transportation use stems from the advances made in power solid state devices, permanent magnet technology, and modern manufacturing processes. This report presents an overview of the current status of electric motors with potential applications in automated guideway transit (AGT) systems to be deployed in the 1990s. It is based on information and data gathered from electric machinery manufacturers, research organizations, and technical literature. This report surveys direct current (d.c.) motors, and reviews induction, synchronous, and linear electric motors. Performance characteristics of typical state-of-the-art d.c. and induction motors are provided. Current work on improved and advanced designs of rotary and linear motors are also reviewed. Some conclusions presented in this report state that: (1) performance requirements of existing AGT concepts can be satisfied with available technology traction motors; (2) conventional d.c. motors with switched power supplies will continue to be the most widely used motor for traction application; and (3) solid state devices will be a major factor towards achieving improved motor performance. This report provides numerous charts/figures that depict the technological aspects of d.c. motors, induction motors, synchronous motors, and linear electric motors. The report provides a glossary and a list of references.

del Cid, L

MITRE Corporation, Urban Mass Transportation Administration, (UMTA-VA-06-0056) MTR-80W274, UMTA-VA-06-0056-81-1, July 1981, 104p, Figs., Refs., Apps.

Contract DTUM60-80-C-71020
ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-109307

17 346066

EVALUATION OF THE PERFORMANCE OF THE PALOMINO LIM-PROPELLED STEEL-WHEEL-ON-RAIL VEHICLE

The PRT Palomino vehicle is a linear induction motor (LIM) propelled steel-wheel on steel-rail, 6-passenger transport vehicle. It has been in operation on the Pullman Standard 610 meter (2000 ft) oval test track at Hammond, Indiana, since January 1978. The LIM-propelled Palomino vehicle represents a class of steel-wheeled, steel-railed vehicles that promises to become the most practical for the next generation of AGT systems. This type of vehicle has outstanding advantages in lowest friction, simplest lateral guidance and smoothest ride. With LIM propulsion, the Palomino has the additional advantages of lowest friction and wear, highest resistance to environment, lowest maintenance costs, and most reliable tractive forces. This report is intended to document the test data necessary to evaluate the performance of this class of vehicles in the AGT role.

Prepared in cooperation with the Franklin Inst. Research Labs., Philadelphia, PA.

Scelzo, GP Belsterling, CA
PRT Systems Corporation, Urban Mass Transportation Administration, (UMTA-IL-06-0046) Final Rpt. UMTA-IL-06-0046-81-1, May 1981, 49p

Contract DTUM60-81-C-72066

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-109315

17 348003

PROJECT 21: A PRACTICAL NEW INTERMEDIATE-CAPACITY RAPID TRANSIT SYSTEM (ABRIDGMENT)

Project 21 is a rail transit system that incorporates most of the features of classical rail rapid transit but is optimized for elevated placement and for intermediate-capacity applications. An overview of the system is presented. The novelty of the system is concentrated in the slender guideway, car suspension, and a practical branch for two-way traffic. All of these, and the associated third-rail power distribution, have been refined in recent years and are considered ready for construction of a prototype. Commercial service in a 55-mile/h regional network could start in five years. The potential benefits are widespread use, extraordinary safety and reliability, quick installation, very low capital cost, and moderately low operating cost. (Author)

This paper appeared in Transportation Research Record No. 817, Rail Transit and Terminals.

Edwards, LK (Transit Innovations) *Transportation Research Record* No. 817, 1981, pp 1-4, 11 Fig.

ORDER FROM: TRB Publications Off

DOTL JC

17 348414

NEW TRANSPORT SYSTEMS INTRODUCED INTO URBAN ROAD NETWORK, EFFECTIVE USE OF ROAD SPACE

Elevated monorail/guideway systems are being constructed within road space in some Japanese cities. National subsidies are granted to the construction of their substructure in a form of road improvement grant. Outlined also are two guideway systems, which will launch operations in early 1981. (TRRL)

Papers from the 9th IRF World Meeting, Roads Into the Future--Urban Transportation--TS6, held at Stockholm, June 1-5, 1981.

Namiki, A (Ministry Of Construction, Japan)
Svenska Vaegfoereningen 1981, pp 163-174, 3 Fig., 3 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 257876), National Swedish Road & Traffic Research Institute
ORDER FROM: Svenska Vaegfoereningens Foerlags AB, Box 27115, S-102 52 Stockholm, Sweden

17 348443

MAGNETICALLY SUSPENDED VEHICLES FOR TRACKED HIGH-SPEED TRAFFIC-PART 4

Magnetically levitated transport systems designed to complement railway and airway forms of transport are discussed. Superimposed on existing railway routes, as a high performance rapid transit system, a magnetically levitated transport system can offer long-distance operating speeds of 400-500 km/hr, short distance passenger transport speeds of 300 km/hr and rapid freight transport at about 250 km/hr. Elevated guideways for magnetic suspension systems have less impact on the surrounding environment compared with tracked railways, which so reduces installation cost. Operating characteristics and the economics of running such public transport systems are compared with other transport modes. (TRRL)

Mayer, WA (Dornier-Werke, GmbH, West Germany) *Electric Vehicle Developments* Sept. 1981, pp 18-21, 8 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 258859)

ORDER FROM: Institution of Electrical Engineers, Savoy Place, London WC2R 0BL, England

17 348508

OPERATIONAL EQUATION OF THE GUIDEWAY INSPECTION SYSTEM FOR LEVIATED GROUND TRANSPORTATION

This article examines the development of the guideway inspection car. Guideway irregularities are defined and the inspection method of irregularities is discussed, then the method of using arithmetic operation with coordinate transformation and integration is presented.

Takehita, K *Railway Technical Research Inst, Quarterly Reports* Vol. 22 No. 1, Mar. 1981, pp 2-5

ACKNOWLEDGMENT: EI

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DOTL JC

17 348512

POWER FACTOR AND HIGHER HARMONIC CURRENTS OF THE ELECTRIC POWER SYSTEM FOR A HIGH POWER THREE PHASE AC ELECTRIFIED AUTOMATED GUIDEWAY TRANSIT

In three phase ac electrified Automated Guideway Transit (AGT) systems, the car uses a thyristor phase control type controller. The controller of this type has a low power factor, and it generates higher harmonic currents to the power line. A simulator has been developed to calculate electric power and higher harmonic currents in a multi-vehicle power feed system. Simulations for the Osaka-Nanko Port Town AGT system show the average power factor is less than 0.7 and harmonic currents exceed the limits with no countermeasures. After several simulations, the power feed system was developed which uses a 5th higher harmonic filter of 250 k VA at all seven feeder substations and 7th 11th and 13th harmonic filters, which total 1.0 MVA, at the receiving substation.

Joint American Society of Mechanical Engineers, Institute of Electrical and Electronics Engineers, and Association of American Railroads Railroad Conference 1981, Atlanta, Georgia, April 28-30 1981.

Saito, K, Kuwa, SI, Koyama, I, Azuma, T, Kimura, S
Hitachi Limited Conf Paper 81CH1667-5, 1981, pp 14-18

ACKNOWLEDGMENT: EI

ORDER FROM: Hitachi Limited, 4-1 Marunouchi, Tokyo, Japan

17 348515

RIDE QUALITY ANALYSIS OF REPULSIVE-TYPE MAGNETICALLY LEVITATED VEHICLES

The ride quality characteristic of magnetic levitated vehicles of repulsion type with coils on tracks is analyzed for the case including secondary suspension. The relation between ride quality and levitation system parameters is investigated. Analysis is carried out for both the coil track method and the sheet-track method concerning damping, which influences the ride quality to a large extent. The dynamic characteristics of the levitation heights, corresponding to the track nonuniformity are determined, the Power Spectral Density of the vehicle acceleration is computed and ride quality is estimated.

Tsuhamoto, O, Iwata, Y *Electrical Engineering in Japan* Vol. 99 No. 5, Sept. 1979, pp 76-85, 8 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

17 348516

VIEWS ON THE UTILIZATION OF THE MAGNETIC LEVITATION EFFECT IN HIGH SPEED GROUND TRANSPORTATION [PERSPEKTYWY ZASTOSOWANIA ZJAWISKA LEWITACJI MAGNETYCZNEJ W SZYBKIM TRANSPORTCIE]

The advantages and the usefulness of a new transportation system making use of the magnetic levitation effect are given. The fundamental problems of linear motor propulsion as well as electromagnetic and electrodynamic suspension of vehicles are described. Constructions of vehicles in which magnet pads replace wheels are presented. [Polish]

Gieras, J (Akademia Tech-Roln, Bydgoszcz, Poland) *Przegląd Elektryczny* Vol. 57 No. 1, Jan. 1981, pp 3-9, 29 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

17 348799

WEST GERMANY INVESTS IN MAGNETIC TRAINS

Europe's largest experimental magnetic levitation railway is taking shape in West Germany after more than 10 years of research. It is hoped to build a 31.5 km track by 1983. The train will seat 196 passengers and have a top speed of 400 km per hour. The test runs have two purposes: to find out how the train operates over a distance, and to collect data on how the train behaves at maximum speed. The trains will have 60 electromagnets in each coach, suspended under the ferromagnetic track and attracted toward it. Sensors continuously measure the 10 mm air gap between the vehicle and the track, and vary the power of the electromagnets accordingly. (TRRL)

New Scientist Vol. 92 No. 1282, Dec. 1981, p 651, 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 258872)

ORDER FROM: IPC Magazines Limited, King's Reach Tower, Stamford Street, London SE1 9LS, England

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21 322167

THE NATIONAL BUS COMPANY "MAP" MARKET ANALYSIS PROJECT. 4. EXAMPLES OF STUDY BUS SYSTEM DESIGN

This, the fourth and final article of the series, contains examples of the use of map data in several examples covering the design of both peak and off-peak services for several rural and urban areas and an off-peak inter-urban service. The effect of traffic management measures is also considered in one case. Analysis of the demand in Yeovil, a small Somerset town, by half-hourly periods emphasised the differences in the pattern of passenger movement from fine-zone origins to coarse-zone destination throughout the morning peak. Exact destinations and origins of passengers were used to modify the rural peak service between Evesham and Pershore in Worcester. Average hourly off-peak passenger movements from the outer housing estate to the centre of Andover in Hampshire were monitored. It is estimated that the full Andover study could reduce running costs by 20 per cent, with a revenue loss of between 3 and 9 per cent. The rural off-peak study proposed an increased service between Abergavenny and Raglan in South Wales; reduced journey times and a more frequent service are proposed for the off-peak inter-urban links between Birmingham and Stourbridge. Time savings and a more frequent and reliable service are the result of a traffic management scheme in the Midland town of Tamworth. (TRRL)

Jelley, CA. (Colin Buchanan and Partners) *Traffic Engineering and Control* Vol. 21 No. 1, Jan. 1980, pp 14-20, 13 Fig., 6 Tab., 1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 247862)
ORDER FROM: ESL

DOTL JC

21 323171

THE EFFECTS OF NETWORK STRUCTURE ON RELIABILITY OF TRANSIT SERVICE

A set of simulation experiments are described which have been constructed to investigate the effects on service reliability of several characteristics of network structure in urban bus systems. Principal focus is on the factors which lead to vehicle bunching, and on the effects of network form and route density on transfers. The results of these experiments highlight the importance of controlling link travel time variability, and of scheduling to ensure expeditious transferring especially in radial networks.(a) (TRRL)

Turnquist, MA (Northwestern University, Evanston); Bowman, LA (Peat, Marwick, Mitchell and Company) *Transportation Research. Part B: Methodological* Vol. 14B No. 1/2, Mar. 1980, pp 87-99, 3 Fig., 1 Tab., 11 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 247702)
ORDER FROM: ESL

DOTL JC

21 325069

ZONE SCHEDULING OF BUS ROUTES TO IMPROVE SERVICE RELIABILITY

A model of an urban bus route incorporating measures of both reliability and average trip time is developed. The impact of zone scheduling on these measures is determined by selecting optimal zone structures using a dynamic programming model. Application of the model to a specific bus route shows that zone scheduling can simultaneously improve reliability and average trip time while also allowing bus fleet reductions compared to all-local service.

Jordan, WC (Northwestern University, Chicago); Turnquist, MA *Transportation Science* Vol. 13 No. 3, Aug. 1979, pp 242-268, 16 Ref.

ACKNOWLEDGMENT: EI
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DOTL JC

21 325644

A SURVEY OF LT BUS PASSENGERS' WAITING TIME

This technical note describes the results of a survey of passengers' waiting times at bus stops, for routes of differing frequencies and characteristics. Passengers' waiting times were determined by direct observation; concurrently at certain stops, passengers were interviewed about their usage of the service, bearing in mind that more experienced travellers may have learnt enough about the service to shorten their wait. The opportunity was also taken to ask about the origin of the journey, to learn more about catchment areas of bus stops, particularly in residential areas where there was a choice of routes. Section 1 of this report contains a description of the survey design,

the data methods employed, and practical problems encountered. Section 2 presents an analysis of observed waits in terms of service frequency etc, and section 3 attempts to throw some light on these results by looking in detail at patterns of passenger arrivals in relation to bus arrivals. In section 4, results from the passenger interviews are presented. (TRRL)

Rendle, G

London Transport Executive Monograph Tech Note TN136, Mar. 1980, 11 p. 2 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 249402)

ORDER FROM: London Transport Executive, 55 Broadway, London SW1H 0BD, England

21 330669

BRITISH RAILWAYS BOARD: LONDON AND SOUTH EAST COMMUTER SERVICES

In the report on rail commuter passenger services in south east England, the commission investigates whether the British Rail board could improve its efficiency and so reduce costs without affecting quality of services provided. Reference is made to the extent to which service deficiencies are the result of inefficiency, the scope for productivity improvements, and, the efficiency of the board in adjusting services to match demand and also whether greater efficiency would increase net revenue. Conclusions and recommendations are made covering financial framework; quality of service; manpower; industrial relations, matching supply and demand; fare structure; investment; and management. Finally some observations are made on commuter requirements, the complexity of financial constraints, and, future objectives.

Federal Water Pollution Control Administration Monograph No. 8046, Oct. 1980, 316p, Figs., Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 251659)

ORDER FROM: Her Majesty's Stationery Office, Monopolies and Mergers Commission, 49 High Holborn, London, England

21 331055

INTEGRATED TRANSIT-NETWORK MODEL (INET): A NEW URBAN TRANSPORTATION PLANNING SYSTEM PROGRAM

The Integrated Transit-Network Model (INET) is a new Urban Transportation Planning System (UTPS) computer program for analysis of transit systems. Its objectives are to account for the interaction of highway and transit networks, exploit existing highway network data, provide for accurate but simple and inexpensive transit-network coding, provide input for other UTPS programs, furnish useful evaluative reports, and help bridge the gap between systems and operations planning. A small transit network is hypothesized to demonstrate INET's features and explain its assumptions, mechanics, and operation. Special subjects are route layout, cruise and stop delay time, exclusive and mixed rights-of-way, scheduling, and cost and impact estimates. There is a brief discussion of INET's use with real transit and highway data; the results testify to INET's exceptional simplicity and accuracy. (Author)

This paper appeared in Transportation Research Record No. 761, Public Transportation Planning.

Dial, RB (Urban Mass Transportation Administration); Levinsohn, D (Comsis Corporation); Rutherford, GS (Rutherford and Associates) *Transportation Research Record* No. 761, 1980, pp 33-40, 7 Fig., 5 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

21 331801

SCHEDULING BUS SYSTEMS WITH INTERCHANGES

The paper discusses some rules for scheduling a bus system consisting of an intertown route linking a string of interchanges each of which is the center of a set of feeder routes. Some of these rules are straightforward. The problem of distributing the feeder bus departures and arrivals evenly over the available timeslots is solved using a new result in combinatorial group theory. Many concrete numerical examples are given.

Salzborn, FJ (Adelaide University, Australia) *Transportation Science* Vol. 14 No. 3, Aug. 1980, pp 211-231, 2 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

21 334144

JOURNEY TO WORK

Over the years from 1966 to 1976 the United Kingdom as a whole has moved from a situation where 1 in 3 of all journeys to work were made by public transport to less than 1 in 5, whereas the number by car has increased from less than 1 in 3 to over 1 in 2, and this latter trend continues in spite of the great variety of bus priority schemes which have been introduced. This article analyses the problems of peak hour versus off-peak bus operation and modal split travel, and concludes that effective marketing is needed to increase off-peak bus traffic to a point where most of the fleet is operating all day (though loadings will vary during the day) to give a more economic utilisation of buses and staff. Reference is made to work carried out by the Transport and Road Research Laboratory, Crowthorne, Berks. (TRRL)

From book entitled "Urban Planning and Public Transport."

Wadsworth, JM

Construction Press Limited 1979, pp 132-144, 3 Fig., 1 Tab., 4 Phot., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252793)

ORDER FROM: Construction Press Limited, Lunesdale House, Hornby, Lancaster LA2 8NB, England

21 334406

SIMULATED MODEL FOR URBAN BUS MANAGEMENT IN INDIA

This paper deals with the problem of urban bus route management. For this purpose a computer simulation model has been developed which replicates the operational characteristics of an urban bus route in India. The model is broad based and flexible enough to compare alternatives and indicate the consequences that can be expected from various facility improvements along the route. The computer program is written in Fortran IV language and tested in IBM 360/44. The general traffic is simulated macroscopically at constant time intervals. The bus traffic is represented microscopically, ie individually, and processed only when significant bus events take place. The buses arrive at the first block or link as per scheduled arrival times, modified to include the stochastic variation. Their movement is governed by the normal cruising speed of bus, its acceleration and deceleration characteristics, the impedances caused by the general traffic and traffic control devices at intersections, and the passenger servicing at bus stops. The sensitivity analysis and validation of the model are done with respect to the magnitudes represented by certain elements of the model to the real life conditions of the system simulated. These include (i) time-distance relationship of bus service, (ii) irregularity of service and (iii) passenger waiting time.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Khanna, SK Money, PS Arora, MG (Roorkee University, India)

Organization for Economic Cooperation and Devel, European Conference of Ministers of Transport Conf Paper Volume 2, 1980, pp 1400-11, 3 Fig., 2 Tab., 7 Ref.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

21 334704

CONTROL STATION OF THE SUBWAYS IN VIENNA (AUSTRIA) [Die Leitstelle der U-bahn Wien]

The necessity of economic operating management and quick intervention in the case of failure require the combination of all operating and technical installations within a central directing station. The control station of the Viennese subway system is described where all messages and the control of the entire power supply, the central station monitoring, the telecommunication installations and the centralized control box with remote control and the central control section are combined. Use is made of the most modern techniques. [German]

Schorn, W *Elektrische Bahnen* Vol. 78 No. 9, Sept. 1980, pp 229-235, 3 Ref.

ACKNOWLEDGMENT: EI

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21 335809

SOME PROBABILISTIC ASPECTS ON THE ROUTE SYNCHRONIZATION PROBLEM

An optimization problem connected with transfer between two bus lines is studied. At the transfer point the buses arrive after random journey times from their respective dispatching points. The time-table of one of the lines, the main one is fixed and that of the other one, the feeder line, is subject to control. The problem of minimizing the mean delay x at the transfer point is stated and some examples are given. (TRRL)

Grega, W Thedeon, T

Stockholm University, Sweden Monograph No. 1980:6, 1980, 16p, Figs., 6 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254062), National Swedish Road & Traffic Research Institute

ORDER FROM: Stockholm University, Sweden, Department of Statistics, P.O. Box 6701, Stockholm 23, Sweden

21 337972

NEW YORK MTA MANAGEMENT STUDY. VOLUME 1: SUMMARY REPORT

The objective of the 5-volume management study was to identify those areas of the MTA's (The Metropolitan Transportation Authority) structure, finance, responsiveness to the public management and operations in need of strengthening, and to propose methodologies and alternative strategies to affect them. The overall goal is the improvement in the quality and performance of transit service and the improved use of available financial resources. Thirteen individual tasks were addressed that investigated the capital planning, bus operations, rail operations, and the organization and management structure of MTA. Volume I, presents the major conclusions and recommendations of the consultant portion of Phase III of the study. The study concentrates on specific aspects of the planning, operations and management of the MTA and its subsidiaries.

See also Volume 2, PB81-199424. Also available in set of 5 reports PC E99, PB81-199408.

Booz-Allen and Hamilton, Incorporated, Urban Mass Transportation Administration, (UMTA-IT-09-0058) UMTA-IT-09-0058-81-1, Jan. 1980, 44p

ACKNOWLEDGMENT: NTIS

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PB81-199416

21 337973

NEW YORK MTA MANAGEMENT STUDY. VOLUME 2: PLANNING

In this volume, the planning tasks investigated aspects of capital, operating, and financial planning of the (Metropolitan Transportation Authority) MTA and its subsidiaries. The major areas of concentration were: (1) capital planning process at the New York City Transit Authority (TA) and the Long Island Rail Road (LIRR); (2) service planning and coordination in all MTA transit units; and (3) financial planning, mainly at MTA headquarters. This volume contains specific recommendations for improving aspects of capital and operating planning activities of the MTA and its subsidiaries.

See also Volume 1, PB81-199416 and Volume 3, PB81-199432. Also available in set of 5 reports PC E99, PB81-199408.

Booz-Allen and Hamilton, Incorporated, Urban Mass Transportation Administration, (UMTA-IT-09-0058) UMTA-IT-09-0058-81-2, Jan. 1980, 412p

ACKNOWLEDGMENT: NTIS

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PB81-199424

21 337974

NEW YORK MTA MANAGEMENT STUDY. VOLUME 3: BUS OPERATIONS

Volume III contains the analysis of the operations and financial performance indicators for New York City Transit Authority's Surface Division--TA Surface and Manhattan and Bronx Surface Transit Operating Authority (MaBSTOA). This Surface Division operates the largest bus fleet in the U.S. (over 4,200 buses). This volume consists of the following sections: (1) analysis of performance indicators for TA Surface Division; (2) comparative analysis of depot performance; (3) cost center analysis of TA Surface Division; and (4) three appendices dealing with operating statistics,

methodology and model description, and actual and expected performance indicator statistics.

See also Volume 2, PB81-199424 and Volume 4, PB81-199440. Also available in set of 5 reports PC E99, PB81-199408.

Booz-Allen and Hamilton, Incorporated, Urban Mass Transportation Administration, (UMTA-IT-09-0058) UMTA-IT-09-0058-81-3, Jan. 1980, 285p

ACKNOWLEDGMENT: NTIS
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PB81-199432

21 337975

NEW YORK MTA MANAGEMENT STUDY, VOLUME IV: RAIL OPERATIONS

Volume IV is a summary of the dual operations of the (The Metropolitan Transportation Authority) MTA. It includes the major conclusions and recommendations of the tasks dealing with both rapid rail transit and commuter rail operations. The summary covers a detailed analysis of rapid rail transit personnel productivity and car maintenance activities, as well as an analysis of commuter rail personnel productivity and commuter railcar maintenance for the Long Island Rail Road (LIRR).

See also Volume 3, PB81-199432 and Volume 5, PB81-199457. Also available in set of 5 reports PC E99, PB81-199408.

Booz-Allen and Hamilton, Incorporated, Urban Mass Transportation Administration, (UMTA-IT-09-0058) UMTA-IT-09-0058-81-4, Jan. 1980, 400p

ACKNOWLEDGMENT: NTIS
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PB81-199440

21 337976

NEW YORK MTA MANAGEMENT STUDY, VOLUME V: ORGANIZATION AND MANAGEMENT

Volume V contains a summary of the organization and management activities of the MTA, New York City Transit Authority, and the Long Island Rail Road (LIRR). It includes the major conclusions and recommendations dealing with the management structure and organization of LIRR and TA and a detailed analysis of current practices, deficiencies, and needs in the area of management training and development. Case studies of specific management systems and techniques in the TA and LIRR are also presented.

See also Volume 4, PB81-199440. Also available in set of 5 reports PC E99, PB81-199408.

Booz-Allen and Hamilton, Incorporated, Urban Mass Transportation Administration, (UMTA-IT-09-0058) UMTA-IT-09-0058-81-5, Jan. 1980, 245p

ACKNOWLEDGMENT: NTIS
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PB81-199457

21 344417

TRANSIT OPERATOR GUIDELINES FOR TRANSFER POLICY DESIGN

The report provides guidelines to aid transit operators in the design of policies to accommodate bus and/or rail transfers. The effects of eleven types of transfer policy actions are discussed. The report also identifies situations or settings in which particular transfer policies can most beneficially be applied.

Charles River Associates, Incorporated, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0049) Final Rpt. DOT-TSC-UMTA-81-29, June 1980, 120p

Contract DOT-TSC-1406

ACKNOWLEDGMENT: NTIS
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PB81-240590

21 344496

PUBLIC TRANSIT CONNECTIVITY, VOLUME 1

This 2-volume study develops and tests a methodology for measuring network connectivity for the purpose of evaluating transit system design and transit performance. The study approach involves looking at the problem

from the perspectives of graph theory, urban transportation planning models, and statistical sampling. Volume 1 considers the total system and problem setting and the different factors that influence the development of the transit network, routes and schedules, and the quality of services rendered. Volume 1 also provides numerical examples to illustrate the steps in applying the connectivity methodology for the evaluation of transit operations.

See also PB81-243388.

Lam, TN Schuler, HJ
California State Division of Mass Transportation, Urban Mass Transportation Administration DMT-084-VOL-1, UMTA-CA-09-8003-81-1, Jan. 1981, 55p

ACKNOWLEDGMENT: NTIS
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PB81-243370

21 344497

PUBLIC TRANSIT CONNECTIVITY, VOLUME 2

This 2-volume study develops and tests a methodology for measuring network connectivity for the purpose of evaluating transit system design and transit performance. Volume 2 discusses the research results along with the case studies involving actual data and transit systems for 5 regions in California. The authors state that the case studies indicate that the concept is sound, the indices are meaningful in representing connectivity, the data requirement for calculating the indices is minimal, and the procedures are very easy to put into practical use.

See also PB81-243370.

Lam, TM Mohammadi, B Uyeno, M
California State Division of Mass Transportation, Urban Mass Transportation Administration DMT-084-VOL-2, UMTA-CA-09-8003-81-2, Jan. 1981, 158p

ACKNOWLEDGMENT: NTIS
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PB81-243388

21 345211

A MATHEMATICAL MODEL FOR AN URBAN BUS ROUTE

The present paper is a mathematical description of an urban bus route in peak hour traffic. "Bus route" is here used in a collective sense to denote a set of more or less parallel-going sub-routes, here called "service variants". The deterministic and stochastic mechanisms of bus operation are analysed-with focus on time evolution-and general models for route structure, boarding and alighting events, link travel times and stop times are formulated. Various measures of goodness of fit are defined, for validation and model choice. The models are primarily intended for use in an interactive simulation program.(a) (TRRL)

Andersson, P-A (Linköping University, Sweden); Scalia-Tomba, GP (Stockholm University, Sweden) *Transportation Research. Part B: Methodological* Vol. 15B No. 4, Aug. 1981, pp 249-266, 4 Fig., 16 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 256604)
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21 345215

OPERATIONAL RESEARCH IN LONDON TRANSPORT

London Transport is a mature public transport system with many serious operational problems. Some have been around a long time, such as labour availability and methods of controlling services. Others have more recently become important; problems of vehicle availability-levels of spares, management of engineering supply. Yet others are periodic, such as debate over types of operation-crew versus omo, ticketing systems and network structure. Operational research has been assisting management in understanding and searching for solutions in each of these. The paper describes and relates their key features. In addition, although it is not seen as a major problem area, the London Transport experience of timetabling and duty scheduling by computer will be summarised.(a) (TRRL)

Weston, JG (London Transport) *Journal of the Operational Research Society* Vol. 32 No. 8, Aug. 1981, pp 683-694, 4 Fig., 1 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 257065)
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21 345256

RELATION BETWEEN PASSENGER WAITING TIME AND REGULARITY IN THE SERVICE GIVEN BY PUBLIC TRANSPORT IN TOWNS [RELATIE TUSSEN DE WACHTTIJD VOOR DE PASSAGIER EN DE REGELMAAT IN DE DIENSTUITVOERING IN HET STEDELIJK KOLLEKTIEF OPENBAAR VERVOER]

The average waiting time of passengers at halts is an indication of the quality of the service. The quality of a frequent service is maximum if the deviation of regularity is zero. In that case the average waiting time of the passenger is half of the time table interval time. If the service executed shows some irregularity, the waiting time will rise. This paper shows how to calculate the average waiting time by using the terms 'timetable interval time' and 'proportional regularity deviation'. Application of "passing moments" reduces the irregularity in services. A before and after study at the Rotterdam tramline 5 shows the effects of using "passing moments" on regularity, average waiting time and actual intervals. (TRRL) [Dutch]

Degman, FC (Studiecentrum Verkeerstechneek); Hakkesteeg, P Muller, TH (Delft University of Technology, Netherlands)
Secretariaat Verkeerskundige Werkdagen Conf Paper May 1981, pp 415-436, 4 Fig., 1 Tab., 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 255856), Institute for Road Safety Research

ORDER FROM: Secretariaat Verkeerskundige Werkdagen, PO Box 163, Driebergen-Rijsenbur, Netherlands

21 345262

EXTENSION OF A BUS NETWORK: CRITERIA FOR STRUCTURING AND EVALUATING THE ECONOMIC ASPECTS [ESTENSIONE DI UNA RETE BUS: CRITERIA DI STRUTTURAZIONE E DI VALUTAZIONE DEGLI ASPETTI ECONOMICI. PARTE 1]

Criteria for structuring and evaluating the economics of extending a bus network as defined as follows: (1) detailed survey of the network to be extended; (2) detailed description and analysis of existing services and demand in the proposed expansion area; (3) a detailed formulation of the hypotheses for restructuring the network by means of partial expansion; (4) an analysis of initial estimates and final costs relative to the single lines comprising the existing network (or at least the network as a whole); (5) an estimate of the initial costs relative to the groups of lines restructured to provide the additional services; and (6) an estimate of the share of overall budget costs for the extended system, to be borne by each of the administrations or authorities involved. A description is given of the application of these criteria in the restructuring of the public transport system of Sesto San Giovanni, northeast Milan, Italy. (TRRL) [Italian]

Trani, C (Di Pisa University, Italy) *Autostrade* Vol. 22 No. 11, Nov. 1980, pp 7-69, Figs., Tabs., Photos.

ACKNOWLEDGMENT: TRRL (IRRD 254093)

ORDER FROM: Societa Autostrade, Via Antonio Nibby 10, 00161 Roma, Italy

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21 345278

CONTROLLIG REGULARITY AND PUNCTUALITY IN PUBLIC TRANSPORT, A REACTION ON RECENT PUBLICATIONS AND DEVELOPMENTS IN THE NETHERLANDS [REGELMAAT EN STIPTHEIDSBEBEERSING IN HET OPENBAAR VERVOER, EEN REACTIE OP RECENTE PUBLIKATIES EN ONTWIKKELINGEN IN NEDERLAND]

In Holland several experiments have been carried out in Amsterdam, The Hague and Rotterdam in relation to regularity and punctuality in public transport. After a brief description of each of these experiments they are compared, as far as possible, and followed by an indication of a possible integration of the elements of the experiments into a total control system. (a) (TRRL) [Dutch]

Denjn, HR (Studiecentrum Verkeerstechneek); Kanters, E (Ingenieursburo Kanters En Wolf Ev)
Secretariaat Verkeerskundige Werkdagen Conf Paper May 1981, pp 500-512, 4 Refs.

ACKNOWLEDGMENT: TRRL (IRRD 255859), Institute for Road Safety Research

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21 345407

STOPPING SCHEDULES FOR URBAN RAIL TRANSIT SYSTEMS DURING PEAK PERIODS

Three stopping schedules have been commonly proposed for operating trains on an urban rail line during peak commuter hours: (1) All-stop, where each train stops at every station, (2) Zone-stop, where each train stops only at stations in a given zone and then runs non-stop to a terminal, and (3) Skip-stop, where each train skips some of the stations (usually in some order, e.g. skip every other station). The suitability of each of the above and a hypothetical non-stop schedule is discussed with the aid of approximate analytical models. Some of the factors that are quantified, based on optimal headways, are average travel time, round trip travel time, total seat-km per hour, approximate fleet size, and the number of trains per series. Further, the reliability of each stopping schedule and their ability to cater to various origin destination patterns is discussed. Zone-stop is shown to be especially desirable during peak commuter hours.

Proceedings of the Institute of Transportation Engineers Sixth Annual Meeting: Inter-City Transportation and the Urban Scene, held April 22-24, 1981 in Victoria, British Columbia.

Wirasinghe, SC Ghoneim, NS (Calgary University, Canada)
Institute of Transportation Engineers Conf Paper 1981, pp 387-403

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21 345464

BUS SYSTEMS SHOULD HELP [BUSSYSTEME SOLLEN HELFEN]

By the introduction of so-called bus-traffic systems public transport should be conceived in the future in a more attractive fashion. The report is concerned with a handbook issued by the VOEV and the VDA regarding bus transport systems, which should provide some prerequisites for transformation in practice. The individual requirements for route and bus stops, vehicle and operation are explained in extracts. Numerous examples and possibilities are graphically illustrated. (TRRL) [German]

Colditz, HP *Omnibus-Review* Vol. 30 No. 3, 1979, pp 126-129, 6 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 312638), Federal Institute of Road Research, West Germany

ORDER FROM: Verlag Heinrich Vogel, Kreuzstrasse 14, 8 Munich 2, West Germany

21 345932

RESERVED CONTRA-FLOW BUS LANES ON CHAMPLAIN BRIDGE IN MONTREAL

This document describes the results of an experiment which has been conducted since June 1978. The experiment bears on reserved bus lanes on a bridge and its approach roads, on the axis of one of the main urban expressways leading to downtown Montreal. The reserved bus lanes on Champlain bridge in Montreal constitute a unique experiment in Quebec, and perhaps in Canada, of the operation of a contra-flow lane on an urban expressway. The results described in this report will enable us to measure the success of this experiment and to assess to what extent these policy elements have improved traffic volumes, efficiency and the image of this part of the Montreal public transit system. (TRRL)

Parenteau, Y (Quebec Ministry of Transport, Canada); Quy, NQ (Conseil Des Transp De La Reg De Montreal, Canada); Menard, J (Quebec Ministry of Transport, Canada) *RTAC Forum* Vol. 3 No. 2, 1981, pp 74-79

ACKNOWLEDGMENT: TRRL (IRRD 257643), TRRL

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

21 345957

SETTING FREQUENCIES ON BUS ROUTES: THEORY AND PRACTICE

Since most transit systems have relatively stable route structures and politically determined levels of subsidy, one of the main recurrent decisions the transit planner must make is the service frequencies to be provided on each route in the system. Current practical and theoretical approaches to this problem are reviewed and, in light of their seeming inadequacies, a new model for setting frequencies is developed. The model allocates the available buses between time periods and between routes so as to maximize net social benefit subject to constraints on total subsidy, fleet size, and levels of vehicle loading. An algorithm is developed to solve this nonlinear program that can

be applied by using a small computer program or, simplified in some generally acceptable way, by using a pocket calculator. In a case study the model is shown to produce results quite different from the existing allocation, which suggests changes that are insensitive to the specific set of parameters and objectives. It is shown that the model can readily be applied to evaluate the impacts of an alternative vehicle capacity and to investigate the value of changing service policies. (Author)

This paper appeared in Transportation Research Record No. 818, Design of Public Transport Services.

Furth, PG Wilson, NH (Massachusetts Institute of Technology)
Transportation Research Record No. 818, 1981, pp 1-7, 1 Fig., 2 Tab., 14 Ref.

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21 345958

STRATEGIES FOR IMPROVING RELIABILITY OF BUS TRANSIT SERVICE

Four major classes of strategies for improving reliability of bus transit service are analyzed: vehicle-holding strategies, reduction of the number of stops made by each bus, signal preemption, and provision of exclusive right-of-way. The principal findings are that (a) strategies to improve service reliability can have very substantial impacts on overall service quality, including improvements in average wait and in-vehicle time as well, and (b) the best strategy to use in a particular situation depends on several factors, but service frequency is the most important. For low-frequency services (less than 10 buses per hour), schedule-based holding strategies or zone scheduling is likely to work best. For midfrequency services (10-30 buses per hour) zone scheduling or signal preemption is likely to be most effective, although headway-based holding can also work well if an appropriate control point can be found. In high-frequency situations (more than 30 buses per hour), an exclusive lane combined with signal preemption should be considered. (Author)

This paper appeared in Transportation Research Record No. 818, Design of Public Transport Services.

Turnquist, MA *Transportation Research Record* No. 818, 1981, pp 7-13, 2 Fig., 1 Tab., 19 Ref.

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21 346106

A METHODOLOGY TO ESTIMATE PASSENGER FLOW: RIVERSIDE LINE, MASSACHUSETTS BAY TRANSIT AUTHORITY, BOSTON, MA

The work documented in this report represents part of an endeavor to develop improvements in management techniques to operate local transit systems more efficiently and economically. In particular, the ability to accurately ascertain route specific passenger flows or passenger demands has become essential for adequate resource allocation and scheduling of transit runs. This raises the requirement to develop an optimal survey procedure for the estimation of passenger profiles/distributions along the route. The report presents the results and description of a methodology to collect boarding and deboarding passenger data on the Riverside Line of the Massachusetts Bay Transit Authority and to estimate for each station along the route an average passenger flow profile by half-hourly time periods. Such profiles can then be fed into a scheduling model which simulates and accommodates passenger congestion at various points in time. It is a culmination of several small-scale passenger surveys and a statistical model employing indicator variables and the survey data to estimate the station and time factors for the derivation of average flow rates per minute. The results prove that relatively inexpensive sampling techniques can result in acceptable estimates of ridership by route.

See also PB82-101817.

Kwok, BS

Transportation Systems Center, Urban Mass Transportation Administration Final Rpt. DOT-TSC-UMTA-80-46, UMTA-MA-06-0074-81-3, Aug. 1981, 55p

ACKNOWLEDGMENT: NTIS

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PB82-101825

21 346205

BUS TRANSIT MONITORING MANUAL. VOLUME 1: DATA COLLECTION PROGRAM DESIGN

This two-volume manual documents a method to develop comprehensive statistically-based data collection programs that will enable transit operators to collect passenger-related data in a cost-effective manner. The objective of the bus transit monitoring study is to develop this method in order for the bus transit industry to support the short range planning process. The two volumes of this manual document this method and provide transit operators with step-by-step procedures to develop their own individually-tailored programs. This volume, Volume 1, explains the various components of a comprehensive, route-level data collection program, beginning with the determination of data needs and finishing with interpretation of the data. A two-stage approach is described with a baseline phase to produce detailed profiles for each bus route, and a monitoring phase to gather limited data on a periodic basis. The advantages and disadvantages of various data collection techniques are discussed in the report.

See also Volume 2, PB82-122235. Prepared in cooperation with ATE Management and Service Company Cincinnati, Ohio.

Attanucci, J Burns, I Wilson, N

Multisystems, Incorporated, Urban Mass Transportation Administration, Department of Transportation Final Rpt. UMTA-IT-09-9008-81-1, Aug. 1981, 162p

Contract DOT-UT-90005

ACKNOWLEDGMENT: NTIS

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PB82-122227

21 346206

BUS TRANSIT MONITORING MANUAL. VOLUME 2: SAMPLE SIZE TABLES

This two-volume manual documents a method to develop comprehensive statistically-based data collection programs that will enable transit operators to collect passenger-related data in a cost-effective manner. This volume, Volume 2, provides an extensive set of tables for determining sample sizes for systems and routes of varying size and operating characteristics.

See also Volume 1, PB82-122227. Prepared in cooperation with ATE Management and Service Company Cincinnati, Ohio.

Attanucci, J Burns, I Wilson, N

Multisystems, Incorporated, Urban Mass Transportation Administration, Department of Transportation Final Rpt. UMTA-IT-09-9008-81-2, Aug. 1981, 350p

Contract DOT-UT-90005

ACKNOWLEDGMENT: NTIS

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PB82-122235

21 346752

THE STATE OF THE ART IN THE ROUTING AND SCHEDULING OF VEHICLES AND CREWS

The report presents the state of the art in routing and scheduling of vehicles and crews. It discusses the theoretical bases surrounding many of the problems, and describes in detail many routing and scheduling applications. The report provides a classification of routing and scheduling problems according to their underlying characteristics; discusses many of the issues in implementation; and includes a comprehensive bibliography of references (more than 500 citations) relating to routing and scheduling. This report also presents conclusions and future research topics that include (1) a discussion of the prospects for using routing and scheduling models within real-world settings, and (2) a list of possible directions of future research in the area of routing and scheduling. The authors state that organizations are just starting to realize the potential for savings resulting from the automation of their routing and scheduling activities. They also advocate the development of general purpose computer software systems that would include a flexible interactive user interface, and a data-base system that is easy to understand and manipulate.

See also PB82-120202.

Bodin, L Golden, B Assad, A Ball, M

Maryland University, College Park, Urban Mass Transportation Administration, (UMTA-MD-11-0004) Final Rpt. UMTA-MD-11-0004-81-2, Sept. 1981, 413p, Refs.

ACKNOWLEDGMENT: NTIS
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PB82-130451

21 348388

OPTIMAL DISTRIBUTION OF SLACK-TIME IN SCHEDULE DESIGN

The optimum amount and distribution of slack-time on bus and train services varies with route length, loading pattern, rail and road conditions, type of vehicle and fare-collection system. An idealised service is considered and a computer simulation is used to compare different ways of allocating slack-time to a schedule. Irregularity is modelled by the use of an "irregularity index" equal to the variance of the vehicle headway divided by the mean headway squared. The unstable equilibrium of a bus running late is accounted for in the model. Late-running buses contribute greatly to the formation of bunches. Results suggest that both average and terminal irregularity is minimised if many intermediate timing points are used in a schedule. It was found to be more advantageous to allocate a disproportionately large fraction of any slack-time available in a schedule to the timing points early in a route. Also irregularity is greatly increased by even a slight degree of dependence of trip-time variation on vehicle headway. In practice, it is operationally convenient to have fewer timing points than the results recommended. Often slack-time is preferred only at the terminal, where it can be incorporated into driver layover time. Slack-time elsewhere adds to operating costs, but as the authors show, it can be used to reduce bunching. (TRRL)

Golshani, F Thomas, T (Warwick University, England) *Traffic Engineering and Control* Vol. 22 No. 8/9, Aug. 1981, pp 490-492, 4 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 259209)
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21 348456

OPTIMISATION OF THE FLOW OF PUBLIC TRANSPORT USING TIME-AND TRAFFIC-DEPENDENT SIGNALS [OPTIMIERUNG DES VERKEHRSABLAUFS DES OEFFENTLICHEN VERKEHRS DURCH ZEIT-UND VERKEHRSABHAENGIGE SIGNALSTEUERUNG]

All types of loss which affect public transport on set routes were investigated on test journeys. The percentage time lost by each type of loss of the total journey time was used as a basis for comparison. In Part I the reasons for all longitudinal obstructions were evaluated and possible ways of reducing these given. Bus lanes do not only assist, they also create new problems. Edge lanes for buses running against the direction of one-way streets and similar ones in the road central area remain undisturbed. Taxi traffic on bus lanes is not detrimental. The average longitudinal delay in normal times was 3.5%, maximum 10%. The diversion of those turning left away from main intersections to places where at this time there is less or no on-coming traffic (time scattering), results in conditions easier and safer for public transport vehicles on set routes. The rule permitting buses only to turn right at main junctions has proved successful. Part II investigates all transverse obstructions. The reduced right of way does not encumber public transport traffic.

Only 0.25% of journey time is lost as a result. Time lost at red traffic signals amounts to 16% for buses and 13% for trams. The co-ordination of signals also assists the public transport vehicle with a time gain of 18% compared with single distribution systems. The integration of private car traffic aided by computers results in more red signal losses with non co-ordinated signals. In 'green waves' the dynamically correct position for the bus stop in relation to the signals is decisive (bus-stop location rule). The red phase can be covered to a large extent by the passenger changing times. Losses at red signals can be reduced in this way almost to 11%. Free switching of the signals by route vehicles only works at certain locations in the network, but works well for groups of signals. Red signals by route vehicles only works at by route-preference. As a means of comparison of the value of control systems the fluidity value is given as a percentage of the vehicles approaching green. For signals without bus-stop a 92% probability of clear way using a modified signal-town route plan resulted. Part III deals with special signals for tramways and buses. The 42 volt technology results in more economy and safety. Because the "permissive signal"-as a conditional free signal-still makes many clear passages possible it ought to be covered by legislation. Also as a conditional halt-sign on pre-signal stretches at over 50 km/h, a permissive stop signal in connection with speed signals could protect against rapid braking under all weather conditions. A supplement illustrates the economic programming with one-way progression on two directional roads and co-ordination with safe left turning traffic. The all important planning units (locally and area related) of construction, traffic control and traffic regulation are illustrated using detailed examples. [German]

Vonbe, W, A *Forschung Strassenbau und Strassenverkehrstechnik* No. 227, 1977, pp 110-246, Figs., Tabs., 41 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 312655), Federal Institute of Road Research, West Germany

ORDER FROM: Bundesminister fuer Verkehr, Abteilung Strassenbau, Lennestrasse 30, D-5300 Bonn, West Germany

21 348474

PRIORITY FOR BUSES AT JUNCTIONS: EFFICIENCY AND LIMITS- CASE OF THE PARIS REGION [LA PRIORITE POUR LES AUTOBUS AUX FEUX DE CARREFOURS : EFFICACITE ET LIMITES-CAS DE LA REGION PARISIENNE]

Buses have difficulty in travelling in an urban environment in spite of reserved lanes which are not always respected by car drivers. The authorities in charge in Paris estimate that the time has come to extend these reserved lanes to ensure priority for buses at traffic signals. The method consists of detecting a bus approaching the traffic signal and extending the duration of green phase or shortening that of the red phase. This would ensure a faster crossing of junctions or even sections between stops for buses. (TRRL) [French]

Stouff, A *Transport, Environment, Circulation* No. 39, Mar. 1980, pp 38-43, 6 Fig., 8 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 112245), Central Laboratory of Bridges & Highways, France, Institute of Transport Research

ORDER FROM: Transport, Environment, Circulation, 11 Place Adolphe Chenoux, F-75015 Paris, France

22 331242

A SPECIFICATION FOR BUS MAINTENANCE MANUALS

The purpose of this specification report is to provide assistance to organizations responsible for producing or procuring instructional materials for bus maintenance manuals. Based on the premise that significant gains in maintenance productivity can be achieved through reductions in mechanic errors, these specifications delineate the characteristics required of maintenance manuals to be of maximum usability to online maintenance personnel. This specification report covers maintenance procedures including preventive, corrective, and diagnostic actions. Non-procedural items such as theory of operations, equipment specifications, descriptive accounts of support equipment and tools, schematics, etc., are not included in this report. The specification is organized to cover two broad topics: (1) the design of instructional materials, and (2) the process through which the instructional materials must be taken to meet the design criteria. The design criteria are structured around a presentation style known as the Job Performance Aid (JPA). The development process refers to the transformation of technical data into specific instructions for use in maintenance manuals. This report provides a glossary of terms as well as an index of terms. (UMTA)

Inaba, K Engelschall, J Barr, W Gold, D
 Xzyzx Information Corporation, Urban Mass Transportation
 Administration, (IT-06-0235) Final Rpt. UMTA-IT-06-0235-81-1, Nov.
 1980, 122p

Contract DOT-UT-72022

ACKNOWLEDGMENT: UMTA
 ORDER FROM: NTIS

PB81-178352

22 343153

AN ANALYSIS OF BUS DEFECTS, THEIR CONSEQUENCES AND METHODS FOR REMEDYING THEM

The report describes a study into the problems for both the bus operator and the passenger of bus defects which are reported by drivers while during or out of service. Analyses have been carried out using historical data on the frequencies of occurrence of defects, times of service depletion and overall repair times for several different bus types from a few urban bus operators in Britain.

Also pub. as ISSN-0306-3402.

Jenkins, IA
 Newcastle upon Tyne University, England Res Rpt. RR-29, July 1979,
 63p

ACKNOWLEDGMENT: NTIS
 ORDER FROM: NTIS

PB81-202327

22 345923

CONTAINING VEHICLE MAINTENANCE COSTS

The article describes ways in which the National Bus Company has been able to increase efficiency and economy in vehicle maintenance through the use of computers. With the aim of reducing the public service vehicle maintenance costs of over 100 million pounds sterling annually, the NBC has introduced vehicle maintenance costing (VMC). This computer-based system provides information concerning actual costs incurred during the service life of vehicles. The system is able to identify an individual vehicle and allows monitoring of maintenance costs and particular problem areas. Thus the costing system can provide a useful aid in vehicle development as well as routine maintenance procedures. (TRRL)

Transport Vol. 2 No. 4, July 1981, pp 46-47, 1 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 257935)
 ORDER FROM: City Press, Fairfax House, Colchester, Essex, England

22 348006

MANAGEMENT DECISION MODEL FOR LIGHT RAIL VEHICLE SERVICE: DEVELOPMENT AND APPLICATION

A vehicle reliability methodology to aid in the determination of an operating service policy or maintenance schedule for a light rail transit system is presented. A decision-theoretic approach is developed to balance the costs of troubleshooting and regular maintenance against the risks of breakdown, repair and passenger delay. The reliability of a vehicle is compared with a critical vehicle reliability obtained from the decision-theoretic approach to determine the suitability of a vehicle for service or to determine the optimal scheduling of the next regular maintenance to minimize expected cost. This expected cost includes the cost of passenger delay in addition to operating and maintenance costs. To provide an example of how the methodology is used, reliability distributions were fitted to the miles between discrepancies for the propulsion, electrical, brake, and door subsystems based on data from the Massachusetts Bay Transportation Authority. Flexibility in applying the technique is illustrated in a sensitivity analysis. Changes in the decision process are shown with respect to changes in five key parameters. (Author)

This paper appeared in *Transportation Research Record* No. 817, Rail Transit and Terminals.

Scranton, RJ (Northeastern University); Stark, SM (Chicago Transit Authority); Schoon, JG (Northeastern University) *Transportation Research Record* No. 817, 1981, p 12

ORDER FROM: TRB Publications Off

DOTL JC

23 322147

PROFESSIONAL DRIVER TRAINING FOR THE 1980'S. TRUCK AND BUS DRIVER TASK ANALYSIS [Yrkesfoeraruutbildningen infoer 1980-Talet]

As a basis for the development of a new curriculum for the teaching of professional drivers, a study was made in order to obtain a comprehensive evaluation of various aspects of the driver task. 211 composite tasks were defined for the evaluation. They were grouped into the following nine categories: vehicle inspection, loading and unloading, vehicle technics and maintenance, passenger transportation, laws and rules administration, man as a driver and other vocational matters. Every task was judged on four variables: frequency, safety, transportation efficiency and difficulty. Opinions were obtained from 487 persons in four groups: drivers, employers, teachers (for professional drivers), and local councils of professional drivers. The drivers and the local councils of professional drivers differ from the teachers and the employers. They have rated the tasks as more important for safety and efficiency than the teachers and the employers. The overall results indicate that the tasks of the categories "vehicle inspection" and "laws and rules" are considered most frequent. "vehicle inspection", "driving", "laws and rules" and "man as a driver" are the categories that have obtained the highest safety ratings. "loading/unloading" is considered most important for efficient transportation and the task category "man as a driver" has been judged as most difficult, disregarding some emergency situations which seem impossible to master. (TRRL) [Swedish]

Spolander, K

National Swedish Road & Traffic Research Institute Monograph VTI Rapport Nr 192, 1980, 73p, 2 Fig., Tabs., 16 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 247880), National Swedish Road & Traffic Research Institute

ORDER FROM: National Swedish Road & Traffic Research Institute, Fack, S-581 01 Linkoeping, Sweden

23 322703

THE IMPACT OF LABOR-MANAGEMENT RELATIONS ON PRODUCTIVITY AND EFFICIENCY IN URBAN MASS TRANSIT

Four components of mass transit performance are analyzed: service efficiency; service effectiveness; employee withdrawal (i.e. turnover, absenteeism and tardiness); and adaptability. Measures of these four dependent variables are related to several controllable aspects of the labor-management relationships: the legal framework that constrains labor-management interaction; labor and management organization; the relationship climate between labor and management (i.e. containment-aggression, accommodation, or cooperation); and the makeup of the collective agreement. The focus of the empirical research is on mixed-route bus systems, and on the bargaining unit that represents the transit operators in those systems. Data was collected from organizational archives, personal interviews, questionnaires, and on-site observations at 28 transit properties. The results provide a number of insights. The legal framework for labor relations had less impact upon transit performance than anticipated. Organizational variables, such as size and operating policies, were found to moderate organization structure relationships. Sweeping generalizations about the impact of work rules on performance were found to be unwarranted. However, it appears that high relative wages and increasingly favorable sick leave policies may be a disincentive for employees to consistently report to work.

Perry, JL Angle, HL Pittel, ME

California University, Irvine, Department of Transportation Final Rpt. DOT/RSPA/DPB-50/79/7, Mar. 1979, 190p, Tabs., Refs.

Contract DOT-OS-70042

ORDER FROM: NTIS

23 330085

JOB-RELATED EMPLOYEE ATTITUDES IN URBAN MASS TRANSIT

Early efforts of behavioral scientists interested in finding attitude-behavior linkages on the job centered largely on job satisfaction. More recently, organizational commitment has joined job satisfaction as a focal variable and, indeed, shows greater promise as a predictor of both employee participation and worker productivity. Nonetheless, job satisfaction continues to interest organizational scholars, partly due to current societal concern about the quality of working life. Neither concept, however, seems to have found a wide audience within the transit industry. This research attempts to fill that void by assessing the degree of organizational commitment as well

as patterns of job satisfaction in a sample of 1244 lower-level employees in 24 public mass transit organizations. Cross-industry comparisons are facilitated by the use of standard measures for which normative data are available. Contrary to the belief of some scholars, lower-level transit employees do become committed to their organizations. On the other hand, overall satisfaction levels were lower for transit employees than for those employed in most comparative occupations. The specific job aspects responsible for dissatisfaction tended to be those related to the rewards and employee treatment that are under control of the organization rather than the nature of the work itself. In general, the unique pattern of job concerns found among transit employees indicates that attitudinal research based on other occupations should be applied in the transit industry only with due caution. (Author)

This paper appeared in Transportation Research Record No. 759: Critical Issues in Urban Transit Finance Management.

Angle, HI (Minnesota University, Minneapolis); Perry, JL (California University, Irvine) *Transportation Research Record* No. 759, 1980, pp 22-25, 3 Tab., 22 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

23 330142

BUS DRIVER TRAINING SIMULATOR ASSESSMENT

Simulation has become an increasingly important tool in driving research, highway research, and vehicle design. This report documents the results of an investigation into the feasibility of developing a driving simulator as a means of teaching safe driving and other operating techniques in the training of bus operators. During this investigation, an Advisory Committee, consisting of representatives from small, medium, and large transit properties and from the American Transit Union, provided data on training programs, training costs, and training needs. The AFL-CIO Appalachian Council Research Department furnished the results of their survey on transit training needs and shared their experiences in developing and implementing a standards bus operator training program. Also, the Massachusetts Bay Transportation Authority made their training data available and arranged a tour of their training facilities. Features required a driving simulator to meet training needs were identified, and the cost of implementing and operating such a simulator were assessed. This report describes the various types of simulators, the benefits of simulation, and the potential benefits of a driving simulator for transit training. This report also presents an evaluation of existing applicable driving simulators, the tradeoffs of developing costs and operational costs versus the effectiveness of the desired features, and current training programs. This study concludes that due to the high costs of simulators with the required features, it appears that no cost benefit would accrue with the use of such a simulator. Therefore, no training time savings and safety benefits could be documented to justify the use of a driving simulator for bus operator training. (UMTA)

Wright, V Forman, R

Transportation Systems Center, Urban Mass Transportation Administration, (DOT/TSC-323) Final Rpt. UMTA-MA-06-0074-80-1, Jan. 1980, 40p

Contract MA-06-0074

ORDER FROM: NTIS

PB81-128977

23 331217

MARTA'S EEO OFFICE: THREE COMPLEMENTARY/CONFLICTING ROLES

This report deals with three perspectives of MARTA's Equal Employment Opportunity (EEO) Office, which was established in the Spring of 1972. The three perspectives are: EEO's role as watchdog; its role as nurturer of minority business; and its complex roles in internal MARTA politics. The report also includes a general structure and orientation outline. This report contains references and Appendix 1: Excerpts from MARTA's "Invitation for Bids, Appendix A, Equal Employment Opportunity and Minority Business Utilization Responsibilities". (UMTA)

Golembiewski, RT Anderson, MJ

Georgia University, Athens, Urban Mass Transportation Administration, (GA-11-0006) UMTA-GA-11-0006-81-9, July 1979, 35p

Contract GA-11-0006

ACKNOWLEDGMENT: UMTA

ORDER FROM: NTIS

PB81-157406

23 331220

FACILITATING TRANSITIONS TO THE SEVERAL MARTAS

From the beginning, MARTA sought to develop a management system that would facilitate the inevitable flow of today into a different organization in the future. This report deals with suggestions concerning facilitating transitions for public managers who are sensitive to current work structure design and operation to assist in a smooth transition so that future work demands can be realized. This report may also be of interest to managers contemplating a start-up of their own. (UMTA)

Golembiewski, RT

Georgia University, Athens, Urban Mass Transportation Administration, (GA-11-0006) UMTA-GA11-0006-81-12, July 1979, 29p

Contract GA-11-0006

ACKNOWLEDGMENT: UMTA

ORDER FROM: NTIS

PB81-157430

23 331223

YOU SEEM TO HAVE GIVEN UP ON US..., YOU DON'T SEEM TO CARE FOR THE AUTHORITY

This report deals with MARTA's General Manager and his five-step procedure for appraisal and evaluation of executive performance. Over a year ago, the General Manager developed and implemented this more or less standard procedure which is outlined briefly as follows: (1) Concerns were aired with each major subordinate in approximate weekly sessions; (2) Where concerns persisted or increased, a confidential letter to the executive was prepared by the General Manager detailing the employee's strengths, weaknesses, and special concerns about performance; (4) If problems persisted or worsened, the General Manager drafted a letter to the executive reaffirming the specific problems and setting a target date by which specific improvements were expected; and (5) If improvements did not occur by the target date, termination would follow. (UMTA)

Golembiewski, RT

Georgia University, Athens, Urban Mass Transportation Administration, (GA-11-0006) UMTA-GA11-0006-81-15, July 1979, 35p

Contract GA-11-0006

ACKNOWLEDGMENT: UMTA

ORDER FROM: NTIS

PB81-157463

23 331233

THE MARTA CODE OF ETHICS: "CONFLICT BETWEEN...PRIVATE INTERESTS AND PUBLIC RESPONSIBILITIES..."

This report deals with MARTA's experience with its Code of Ethics. In this case study, emphasis is placed on: (1) the development of the Code, which highlights major issues to be confronted; (2) a test of the Code, which illustrates how its prescriptions were applied in practice; (3) the details of the Code in Appendix 1, which provides the full text of the minimum ethical standards to be applied within MARTA, as well as numerous examples of what the Code intends to prescribe and prohibit; and (4) the Rules of the Board of Ethics in Appendix 2. (UMTA)

Golembiewski, RT

Georgia University, Athens, Urban Mass Transportation Administration, (GA-11-0006) UMTA-GA-11-0006-81-7, July 1979, 41p

ACKNOWLEDGMENT: UMTA

ORDER FROM: NTIS

PB81-154833

23 331234

REORGANIZING THE GENERAL MANAGER'S OFFICE

This report deals with the history and development of the MARTA management system from its beginnings as an embryonic organization in March 1972, through its many organizational changes over a three year period to April 1975. The case study report describes the 1975 reorganization as well as the issues and contending forces that impacted on three sets of actors--the Board, the General Manager, and the Senior Staff. This report contains charts that illustrate the many attempts to restructure the

organization, as well as the 1975 restructuring of MARTA Executives. Appendix 1 of this report is a staff paper describing the organizational restructuring, and Appendix 2 is a status report describing the organizational restructuring. (UMTA)

Perkins, RF Golembiewski, RT

Georgia University, Athens, Urban Mass Transportation Administration, (GA-11-0006) UMTA-GA-11-0006-81-8, July 1979, 40p

ACKNOWLEDGMENT: UMTA

ORDER FROM: NTIS

PB81-154841

23 331238

DEVELOPING AN ARBITRATION PROCESS FOR RESOLVING CONTRACT DISPUTES: PREPARING FOR THE WORST WHILE HOPING FOR THE BEST

This case study addresses the development and implementation of arbitration strategies at MARTA. The report describes the effort to defuse the destructive potential for conflict among MARTA, UMTA, and contractors over the handling of contract disputes. The 3 existing MARTA strategies aimed to limit conflict, namely--assuming part of the risk of performance, using federal contract language and legal precedent, and providing absolute limits for work-stoppages--did not prevent disagreements over contracts. After much effort and several dead-ends, MARTA executives settled on a method for resolving contractual disputes, namely, arbitration. It generated confidence among all parties that any disputes involving contract performance would be treated fairly, quickly, and cheaply. The appendices in this report are: MARTA Contract Clauses Relating to Arbitration, and MARTA Procedures for Contractor Claims. (UMTA)

Trattner, JB Miller, GJ

Georgia University, Athens, Urban Mass Transportation Administration, (GA-11-0006) UMTA-GA-11-0006-81-1, July 1979, 23p

ACKNOWLEDGMENT: UMTA

ORDER FROM: NTIS

PB81-154775

23 331891

DIVIDED LOYALTIES: WHISTLE-BLOWING AT BART

When three engineers of Bay Area Rapid Transit District were fired in 1972 for publicizing what they perceived to be safety defects in the automatic train control (ATC), it set off this study of a professional's relationship with his employing organization. The book, divided into four chronological parts, was not to develop a single explanation of events surrounding the incident. Each of four perspectives--those of the engineers, of BART management, of the BART board of directors, and of the professional societies--was researched and presented by a different author. To explore the phenomenon of "whistle-blowing", it is necessary to identify organizational conditions--authority structure, lines of communication, and opportunities to participate in decision making--that give rise to initial disagreement with some organizational practice. This social science research considers the roles of selling the BART project to the public, of political pressures, or inadequate funding mechanisms, and of consultants, concluding that technical professionals often ignore the importance of non-technical influences upon the decision-making process.

Anderson, RM Perrucci, R Scheudel, DE Trachtman, LE

Purdue University 1980, 407p

ORDER FROM: Purdue University, West Lafayette, Indiana, 47906

23 334281

PART-TIME LABOR, WORK RULES, AND TRANSIT COSTS

This research study examines two major issues, namely: 1) the impact of labor union work rules on bus transit operating costs, and 2) the magnitude of cost savings that can be expected from the use of part-time drivers. These issues are examined within the context of finding ways to reduce transit deficits. The work rules analyzed in this report include restrictions on part-time labor, changes in spread premium, and limitations on maximum spread time for drivers. Labor costs were estimated using the RUCUS automated scheduling program which was applied to actual service schedules from five U.S. transit properties. The analysis yielded cost estimates for a total of 45 combinations of work rules and service schedules, and revealed that: 1) paying spread time after 10 hours, rather than 12, boosts labor cost by 4 percent to 7 percent with negligible effect on number of drives required; 2) the effect of reducing the maximum spread time is

highly sensitive to the peak/base ratio and the interval between the morning and evening peak; and 3) savings from the use of part-time labor, under favorable conditions, will be in the range of 3 to 8 percent but may be canceled out by wage increases necessary to secure union approval of the change. This report concludes that work rule changes are no panacea for transit deficits; the principal source of deficits is the decision to maintain low fares and low-patronage routes. The appendixes in this report include a glossary of scheduling terminology, and tables and simplified methods that can be used to estimate the cost effects of work rule changes in a given transit property. (UMTA)

Chomitz, KM Lave, CA
California University, Irvine, Urban Mass Transportation Administration
Final Rpt. UMTA-CA-11-0018-81-1, Jan. 1981, 150p

ORDER FROM: NTIS

PB81-180556

23 334405 SCHEDULING OF DRIVERS FOR MASS TRANSIT SYSTEM USING INTERACTIVE OPTIMIZATION

In costing a transit system for operational planning, the need exists to develop procedures that both estimate the crew requirements of the transit system and take into account the workrules of the crews. This procedure must output approximate crew schedules for use in the evaluation process. It appears that the most effective way to implement these procedures is in an interactive planner-computer (but not necessarily conversational) environment. Because of the many physical constraints that exist in crew scheduling, this analysis dovetails into the formation of operational crew schedules. For this problem, interactive computing has many advantages over batch computing. In an interactive mode, all constraints of the problem do not have to be represented explicitly within the mathematical model. As such, this model is easier to set up and simpler to solve. The planner can then examine the solution derived from the model and make whatever changes in the solution deemed necessary in order to satisfy the constraints of the problem not imbedded within the model. These changes specified by the planner are then input to the model and the model resolved. This process continues until the planner can go no further with the analysis. This approach will allow for crew schedules for large transit systems (several thousand trips) to be formed in a reasonable amount of computer time. A batch processing version of this procedure that includes interactive-like features has been implemented. The algorithm iteratively solves a large number of matching problems. The results of a test of this system on a division from the mass transit system in Maryland are presented. In addition, we describe in detail the interactive portions of the system and give computational studies of some of them.

World Conference on Transport Research, Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Ball, M Bodin, L (Maryland University, College Park); Dial, R (Urban Mass Transportation Administration)
Organization for Economic Cooperation and Devel, European
Conference of Ministers of Transport Conf Paper Volume 2, 1980, pp 1372-99, 8 Fig., 1 Tab., 14 Ref.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

23 337151 STUDY OF OPERATOR ABSENTEEISM AND WORKERS' COMPENSATION TRENDS IN THE URBAN MASS TRANSPORTATION INDUSTRY

This report examines and documents the nature, extent, and trends of absenteeism. The study was undertaken to identify ways of reducing the adverse impact of absenteeism on service quality and costs. A thorough review of the methods currently used in transit industry has been performed, and analysis has enabled the study team to make recommendations to assist transit managers. This study concludes that absenteeism in transit is a severe and rapidly worsening problem. Effects of workers' compensation statutes on transit costs and quality of service are shown to be significant and increasing. The authors suggest reconsideration of these laws, particularly their administration.

Sponsored in part by Port Authority of Allegheny County, Pittsburgh, PA.

Baker, HS Schueftan, O

Peat, Marwick, Mitchell and Company, Urban Mass Transportation Administration, Port Authority of Allegheny County Final Rpt. UMTA-PA-06-0050-80-1, Mar. 1980, 164p

Grant UMTA-PA-06-0050

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-180937

23 345938 THE POTENTIAL FOR PART-TIME LABOUR IN URBAN TRANSIT

This report analyzes the potential impacts of part-time bus drivers on urban bus transit companies. Initially, the report discusses the background to the financial problems of the industry and the interest in part-time drivers as a cost-saving approach to the peaking problem. A summary of the seminar and workshop conducted during the study of part-time labour is provided to present the opinions of labour and management representatives on the subject. This is followed by a discussion of the composition of the wage cost for drivers and following this is an analysis of two properties, the Toronto Transit Commission and O C Transpo, to demonstrate the potential cost savings that could be realized by employing part-time drivers. Finally, the report discusses the institutional and political aspect of part-time drivers and the possible impact on collective bargaining. (TRRL)

Moore, I (Sage Management Consultants, Limited, Canada); Dosman, EJ (Toronto University/York Univ Joint Program, Canada) *RTAC Forum*
Vol. 3 No. 2, 1981, pp 48-58, 2 Fig., 7 Tab., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257646), TRRL
ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

23 346197 TRANSIT: THE WAY TO GO IN THE '80S. HANDBOOK FOR TRANSIT INTERNSHIPS

The National Transit Intern Program (NTIP) is a U.S. Department of Transportation-Urban Mass Transportation Administration sponsored effort to encourage qualified college students to seek careers in the transit industry. NTIP is a partnership between the transit community and educational institutions with the goal of increasing the number of personnel having both the necessary academic training and transit experience. The aims of NTIP are: (1) to develop a model for internship programs involving transit agencies and academic institutions nationwide; (2) to test and refine the model; (3) to evaluate the model for effectiveness; and (4) to institutionalize ongoing support for intern programs through a job information clearinghouse maintained and administered by the American Public Transit Association (APTA). This first edition internship handbook is designed to help reduce the transit industry's management and technical personnel shortages by increasing the flow of college-trained and transit-experienced personnel to the transit industry. The purpose of the handbook is to provide a descriptive internship model to be utilized by local transit agencies in implementing or expanding internship programs.

Land, GA Storck, K
American Public Transit Association, Urban Mass Transportation Administration UMTA-DC-06-0224-81-1, Apr. 1980, 56p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-120403

23 346198 NATIONAL TRANSIT INTERN PROGRAM: EVALUATION

In December 1978 the Urban Mass Transportation Administration (UMTA) of the Department of Transportation (DOT) awarded the American Public Transit Association (APTA) a contract to establish and implement Phase II of the National Transit Intern Program (NTIP). The report consists of three evaluation components. The first is a summary of activities performed during Phase II of the program; the second is an assessment and analysis of NTIP's efforts to help participating agencies in selecting prospective managers and to help college-trained students in their career placement; the third and final component is a summary of APTA's future role in NTIP.

Land, GA
American Public Transit Association, Urban Mass Transportation Administration Final Rpt. UMTA-DC-06-0224-81-2, June 1980, 76p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-120411

23 348392

WORKING WITH PUBLIC TRANSPORT. WORKING CONDITIONS, HEALTH, SPARE TIME. FINAL REPORT FROM THE RESEARCH PROJECT "WORK ENVIRONMENT OF LOCAL TRAFFIC PERSONNEL IN LARGE AND MEDIUM-SIZED CITIES" [ATT ARBETA INOM LOKALTRAFIKEN. ARBETSFOERHAALANDEN-HAELSA-FRITID. SLUTRAPPORT FRAAN FORSKNINGSPROJEKTET "ARBETSMILJOEN FOER LOKALTRAFIKPERSONAL I STOERRE OCH MEDELSTORA TAETORTER"]

This report is based on interviews with 1450 persons working in the local public transport sector as drivers of buses, underground railways and trams

and as gate guards in 6 Swedish cities. The aim was to study the psychological aspects of the work such as stress, health and the effect of working hours on family life and spare time activities. Causes for staying home from work and the situation of immigrant workers have also been studied. (TRRL) [Swedish]

Aronsson, G Barkloev, K
Stockholm University, Sweden Monograph Rpt No. 26, 1980, 232p.
Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 258818), National Swedish Road & Traffic Research Institute

ORDER FROM: Stockholm University, Sweden, P.O. Box 6706, S-11385 Stockholm, Sweden

24 324600

COMMERCIAL SPEED, PRODUCTIVITY FACTOR OF URBAN PUBLIC TRANSPORT [LA VITESSE COMMERCIALE, FACTEUR DE PRODUCTIVITE DES TRANSPORTS EN COMMUN URBAINS]

It has been observed that commercial speed has a direct influence on drivers' salary, the latter accounting for approximately three quarters of the overall operating costs of public transport networks. It is obvious that this fact, often ignored by public authorities that have the power of decision as regards many transport problems, should be given wide publicity in all interested circles. The aim of this article is to review all significant factors which have to be examined by people responsible for transport networks so as to facilitate their efforts to attain the goal set up for them, e.g. Better service for urban populations and reduction in the operating costs of urban public transport. (TRRL) [French]

Appelmans, P Devroye, J (Societe des Transports Intercommunaux de Bruxelles) *UITP Revue* Vol. 26 No. 4, Oct. 1977, pp 279-286, 4 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 109201)

ORDER FROM: International Union of Public Transport, Avenue de l'Uru-guay 19, B-1050 Brussels, Belgium

DOTL JC

24 325150

COSTS OF PUBLIC TRANSPORTATION IN VARIOUS CITIES IN TEXAS

An analysis has been made of the costs of public transportation in Texas over a five-year period. Data were gathered from 15 transit systems in the state to determine, after the effects of inflation are taken out, which costs are escalating, how much, and why. Thirty-two expense items were delineated that contributed to total cost. These items were categorized into administration, maintenance, or operations functions.

Womack, KN *Texas Transportation Researcher* Vol. 16 No. 2, Apr. 1980, pp 5-6

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

24 329595

BUS PLANNING METHODS. 2. DATA COLLECTION

In the second of three articles dealing with methods for planning bus services, the main topics are: options available for collecting data; the costs of alternative options; and frequencies with which data should be collected to review the performance of each aspect of bus operations. The salient features of survey methods are described and a combination of surveys suitable for most bus operations suggested. Comparison of survey costs shows that origin-destination surveys cost over twice as much as stage-to-stage surveys. For monitoring financial performance and checking bus loadings, it is shown that biennial stage-to-stage surveys of every service would in most cases be appropriate. (Author/TRRL)

Skinner, RJ *Traffic Engineering and Control* Vol. 21 No. 10, Oct. 1980, pp 476-481, 5 Fig., 3 Tab., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250380)

ORDER FROM: ESL

DOTL JC

24 329598

BUS PLANNING METHODS. 1. PROJECT EVALUATION

This article, the first of three dealing with methods for planning bus services, introduces a basic approach and gives some practical guidelines on how to set about evaluating alternative schemes. First, the advantages of two forms of evaluation are compared: an approach based on assessing extra passenger-miles generated; and a cost-benefit approach. The use of an evaluation framework is illustrated by considering a typical case of reducing service frequencies. Overall, the cost-benefit approach is shown to be both useful and manageable in evaluating most schemes for improving bus services. (a) (TRRL)

Skinner, RJ (Morgan (R Travers) and Partners) *Traffic Engineering and Control* Vol. 21 No. 8/9, Aug. 1980, pp 415-419, 2 Fig., 5 Tab., 6 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250258)

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DOTL JC

24 330670

FARES ELASTICITY OF SUBURBAN RAIL TRAVEL

This report describes the progress made so far in an attempt to determine elasticities of demand for suburban rail travel using British Rail's NPAAS (National Passenger Accounting and Analysis System) data—a four-weekly time series started in 1971 and giving passenger flows by ticket type. It describes the method of analysis used to determine the elasticity of rail travel demand with respect to the main types of fare used. The model used has been applied to a sample of sixty-two flows with origins outside greater London and with destinations at one of the main London terminals. The analysis has covered the period from the setting up of NPAAS to the middle of 1977. Elasticities of about -1.0 for reduced-fare tickets, -0.7 for full-fare tickets and between -0.2 and -0.4 for season tickets have been obtained. A similar model applied to a small sample of flows where there have been appreciable service changes showed no plausible frequency or journey time elasticities significantly different from zero. (Author)

Hughes, P

Transport and Road Research Laboratory, (0305-1315) Monograph TRRL SR614, 1980, 17p, 7 Fig., 4 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 251389)

ORDER FROM: NTIS

PB81-133217

24 330700

URBAN PUBLIC TRANSPORT: EVALUATION OF PERFORMANCE

This report identifies approaches for evaluating public transport service through the use of performance indicators. Chapter 1 introduces various concepts of transport performance and relates them to different users and purposes. Chapter 2 discusses the various specialised groups (public transport managers, municipal managers, policy board, regional planners, street traffic system managers, central, national and state government, public transport users and research community), and their perceived needs for performance measures. Chapter 3 deals with data collection while chapter 4 examines the various functions fulfilled by performance indicators (cost, service production, service reliability, engineering, accidents, revenue, patronage, effectiveness indicators). Chapter 5 describes the design of performance indicators for service planning, internal assessment over time, comparisons between different operating areas, and comparisons between different operations. Chapter 6 outlines the research needs in system performance. An appendix summarizes selected case studies of approaches used by some member countries in their performance evaluation. (TRRL)

Organization for Economic Cooperation and Devel, (92-64-12127-7) Monograph 1980, 76p, Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 251096)

ORDER FROM: Organization for Economic Cooperation and Devel, Suite 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

24 330833

DEVELOPMENT OF MULTIMODAL PERFORMANCE MEASURES FOR TRANSIT SYSTEMS IN NEW YORK STATE

The New York State Department of Transportation was required to certify as to the "economy and efficiency" of transit operators participating in the state's public transportation operating assistance program. This paper describes the efforts undertaken to meet this mandate. Discussed are past efforts to link performance measures to funding programs; reasons for modifying measures which had been used in previous efforts; and some of the problems and issues raised by the use of such criteria. The paper identifies 15 performance measures being used by New York state in its evaluations, the actual ranges encountered in the transit operations being funded through the state program, and tentative "acceptable and desirable" levels of those measures which the Transportation Department is using in its evaluation. The role these measures play in the state's operating assistance policy decision process is also described. (Author/TRRL)

Keck, CA Zerrillo, RJ Schneider, NR (New York State Department of Transportation) *Transportation (Netherlands)* Vol. 9 No. 4, Dec. 1980, pp 355-367, 1 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252133)

ORDER FROM: ESL

DOTL JC

24 331053

STRATIFICATION APPROACH TO EVALUATION OF URBAN TRANSIT PERFORMANCE

In a period of growing transit operating deficits, increasing attention and concern is being directed at both the decreasing levels of productivity of transit systems in general and the broad differences in measured service performance compiled for various transit systems. In making these performance assessments, analyses have commonly relied on highly aggregated industrywide data and have not given adequate consideration to the changing and unique operational context within which individual transit systems must function. This paper presents a stratification approach to the evaluation of urban bus transit system performance. The stratification scheme was used on the premise that there exist many environmental and policy factors outside the control of the transit operator that constrain the performance of the transit system. Factors such as area population, population density, union work rules, system configuration, fleet age, and operational forms have strong influences on the productivity and efficiency levels of an individual transit service. By implementing the stratification procedure and compiling temporal data pertaining to both environmental and policy influences and system performance, the possible bias in making assessments and comparisons of existing transit systems can be controlled, and changes in performance levels of a system in response to both external changes and operational improvements can be predicted. (Author)

This paper appeared in Transportation Research Record No. 761, Public Transportation Planning.

Sinha, KC (Purdue University); Jukins, DP (Southeastern Wisconsin Regional Planning Comm); Bevilacqua, OM *Transportation Research Record* No. 761, 1980, pp 20-27, 1 Fig., 6 Tab., 5 Ref.

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24 331056

VALUE OF URBAN TRANSIT OPERATING-COST MODELS AS FORECASTING TOOLS

Eight urban transit operating-cost models were reviewed to determine their value as forecasting tools. The models were found to have structural problems. In the average-daily-cost model and annual-cost model, the association inputs with outputs was assumed to have a strong positive correlation. Case-study transit system data were used to test these relationships. The findings indicate that these two models were not reliable because strong positive correlations existed in too few of the expected relationships. The eight models were not designed to include variables that measure the influence of institutional factors on operating costs. The necessity to subsidize transit operations has led to increasing involvement of the public sector in transit operating decisions. Planners are advised to refrain from relying totally on any of the eight models for estimation of operating costs. Such additional techniques should be considered as developing probabilities of changes in cost categories and generating alternate scenarios of operating conditions. (Author)

This paper appeared in Transportation Research Record No. 761, Public Transportation Planning.

Ortner, JD (Automobile Club of Southern California) *Transportation Research Record* No. 761, 1980, pp 40-47, 7 Tab., 25 Ref.

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24 331490

ON THE ECONOMICS OF RAPID-TRANSIT OPERATIONS

This paper develops and estimates a new cost function for rapid-rail properties in the United States and Canada. Its advantage over previously developed cost models lies in its being an approximation to an arbitrary cost function, and thus not subject to the restrictions inherent in other models. The characterization of the industry that emerges from this work differs in important respects from that previously reported. An application to Bay Area Rapid Transit system is also discussed.

Viton, PA (Pennsylvania University, Philadelphia) *Transportation Research. Part A: General* Vol. 14A No. 4, Aug. 1980, pp 247-253, 19 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

24 334116

COST SAVINGS FROM ONE-MAN OPERATION OF BUSES: A RE-EVALUATION

Estimated cost savings resulting from conversion of UK bus routes to one-man operation were reported by Brown and Nash in 1972. A reduction in operating costs by an average of 13.7% were reported. This article is intended to show that by a replication of this study using more recent data, multi-collinearity is revealed. This may have been severe enough to produce an unreliable estimate of the savings of conversion to one-man operation. A revised version of the Brown and Nash regression model is presented which eliminates problems associated with multi-collinearity. This analysis shows that one-man operation reduced operating costs by 15.6%. A rejoinder by Nash and Brown is included. (TRRL)

Boyd, CW *Journal of Transport Economics and Policy* Vol. 15 No. 1, Jan. 1981, pp 59-67, 3 Tab., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252616)

ORDER FROM: London School of Economics and Political Science, Houghton Street, Aldwych, London WC2A 2AE, England

DOTL JC

24 334355

MEASURING THE INFLUENCE OF SUBSIDIES ON TRANSIT EFFICIENCY AND EFFECTIVENESS

This study develops a procedure for measuring the impact of subsidies on transit performance and implements the procedure by using a 1975-1976 sample to empirically test for the influence of substandardization. This research is devoted to model development and data analysis in an effort to identify relationships between subsidies and transit performance. The theory underlying the determinants of the relationships is developed, and a justification is presented for the efficiency and effectiveness indicators to be tested. Each indicator, serving as the dependent variable, is regressed on relevant control variables, and on subsidies classified by source, use, and control. For the sample of 55 observations from 1975-1976, current levels of subsidies have increased riders per capita by 93 percent (every subsidy dollar resulted in a two rider increase in annual ridership) and expenses per vehicle hour by 9 percent over what they would have been if no subsidies had been provided. This result is based upon the assumptions that regression coefficients would have remained constant if subsidies were reduced to zero, and that there is a direct causal relationship between the subsidies and dependent variables. The findings were that subsidies have minor and generally insignificant effects on the six efficiency indicators, but state and local operating subsidies have significantly favorable impacts on the one effectiveness measure, riders per capita, resulting in increases of one to five riders for each dollar of subsidy. These findings should be further verified in several years with additional empirical analysis using Section 15 (FARE) data, a large random sample, and longitudinal observations.

Barnum, DT Gleason, JM

Indiana University, Gary, Nebraska University, Omaha, Urban Mass Transportation Administration, (NE-11-0004) Final Rpt. UMTA-NE-11-0002-80-4, June 1979, 148p

Contract NE-11-0004

ORDER FROM: NTIS

PB80-189269

24 334407

PROJECTS EVALUATION IN THE CONTEXT OF MULTI-DIMENSIONAL CORPORATE OBJECTIVES FOR A PUBLIC TRANSPORT UNDERTAKING

A set of multi-dimensional corporate objectives has been adopted which reflect the continuing need for financial discipline and technical operational efficiency, as well as the wider statutory obligations of the Greater Manchester Transport. These objectives form the basis of a corporate planning process which is currently being developed and implemented. The Corporate objectives are, broadly: (1) To reduce the decline in patronage and eventually to reserve it; (2) To improve vehicle utilisation; (3) To improve the passenger load factor; and (4) To reduce real costs per unit of output (standard hour). The paper demonstrates how project evaluation is carried out in Greater Manchester Transport using the results of applied economic research and the trade-off approach inherent in much economic theory. The paper analyses the weighting given to the four objectives within the trade-off process and the development of a unified measure of a project's performance. By way of illustration a number of evaluations which have been carried out

are discussed. Emphasis in the paper is on the ways in which the output of economic research can be applied to the problem of project evaluation in these circumstances. This evaluation method, as part of the Corporate planning process, can be of considerable value in planning public transport to meet its financial and social obligations and is therefore worthy of wider consideration in the urban public transport sector.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Cochrane, RL (Greater Manchester Transport, England); Tyson, WJ (Manchester University, England)
Organization for Economic Cooperation and Devel. European Conference of Ministers of Transport Conf Paper Volume 2, 1980, pp 1038-54

ORDER FROM: Organization for Economic Cooperation and Devel. Suite 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

24 343154

MEASUREMENT OF THE PERFORMANCE OF BUS SERVICES

A study has been made of methods of assessing the performance of bus services from the passengers' point of view. In the light of the results of surveys of passengers' attitudes to the performance of bus services, reliability was chosen as the attribute most likely to reflect their views. Accordingly, three 'unreliability measures' are examined in detail. These relate to average waiting time; excessively long waits; and excessively long in-vehicle journey times. The unreliability measures are designed for use on a route-by-route basis and care has been taken in their definition to ensure that they can be applied to services of both short and long scheduled headways and to journeys of different lengths. With the increasing use of automatic vehicle-location systems and selective vehicle detection equipment for bus priorities, there is scope for introducing automatic reliability monitoring along the lines proposed in this report. The potential for the use of such equipment for this purpose is discussed.

Also pub. as ISSN-0306-3402.

Gault, HE Doherty, PG
Newcastle upon Tyne University, England Tech. Rpt. RR-28, Feb. 1979, 32p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-202319

24 343601

FIELD APPLICATION AND EVALUATION OF BUS TRANSIT PERFORMANCE INDICATORS. EXECUTIVE SUMMARY

This research study was performed in two parts: (1) field examination of the use of performance measures, and (2) use of the performance evaluation model. The first part of this research surveyed 19 bus transit operators in the five state area of Illinois, Indiana, Michigan, Ohio, and Wisconsin. The study revolved around operations data collection, and the type and degree of performance evaluation in current use. An assessment of the adequacy of the indicators was performed. The current and potential uses of performance monitoring were evaluated especially in relation to the goals and objectives of the system. In general, the study concluded that about half of the transit systems visited collected enough operating data to inexpensively develop a comprehensive performance monitoring program. The second part of this study involved implementation of the Performance Evaluation Model developed that was basically designed to evaluate the effects on performance due to a short term change in fare, headway, or number of stops on a bus route. Several cities were selected.

See also PB81-209348. n

Sinha, KC Guenther, RP
Purdue University, Urban Mass Transportation Administration, (UM-TA-IN-11-0005) CE-TRA-81/1-ES, UMTA-IN-11-0005-81-1, Mar. 1981, 7p

ACKNOWLEDGMENT: NTIS
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PB81-209330

24 343602

FIELD APPLICATION AND EVALUATION OF BUS TRANSIT PERFORMANCE INDICATORS. FINAL REPORT

This research study was performed in two parts: (1) field examination of the use of performance measures, and (2) use of the performance evaluation

model. The first part of this research surveyed 19 bus transit operators in the five state area of Illinois, Indiana, Michigan, Ohio, and Wisconsin. The study revolved around operations data collection, and the type and degree of performance evaluation in current use. An assessment of the adequacy of the indicators was performed. The current and potential uses of performance monitoring were evaluated especially in relation to the goals and objectives of the system. In general, the study concludes that about half of the transit systems visited collect enough operating data to inexpensively develop a comprehensive performance monitoring program. The second part of this study involved implementation of the Performance Evaluation Model developed that was basically designed to evaluate the effects on performance due to a short term change in fare, headway, or number of stops on a bus route. Several cities were selected. The actual operating statistics were compared to the model output. The model was also modified to provide for more ease of use, flexibility, and accuracy. The report states that the field tests for this model have indicated its reliable estimates of a variety of performance measures. This report contains a list of references, and includes a detailed user's manual describing the data preparation and program logic.

See also PB81-209330. n

Sinha, KC Guenther, RP
Purdue University, Urban Mass Transportation Administration, (UM-TA-IN-0005) CE-TRA-81/1-F, UMTA-IN-11-0005-81-2, Mar. 1981, 132p

ACKNOWLEDGMENT: NTIS
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PB81-209348

24 345343

TRANSIT PERFORMANCE MEASURES AND LOCAL OBJECTIVES: STATE-LEVEL POLICY CONSIDERATIONS (ABRIDGMENT)

With increased involvement by the states in financing public transportation, the issue has arisen whether states should determine the standards by which the quality of transit service is measured. Either the performance measures on which these standards are based can be used to define a minimum quality level to qualify for state funds or they may actually constitute the basis for distributing state assistance. In this study, several possible criteria for distributing assistance at the state level are contemplated. Some of them are in conflict; it would not be possible to apply all of them simultaneously. The purpose of this analysis is to explicate the policy implications of alternative allocation criteria. (Author)

This paper appeared in Transportation Research Record No. 813, Finance Issues: County Highways and Public Transit.

Forkenbrock, DJ (Iowa University) *Transportation Research Record* No. 813, 1981, pp 23-26, 5 Ref.

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24 345423

MBTA COMPUTER SYSTEM CONTROLS COSTS, SCHEDULES

Massachusetts Bay Transportation Authority is installing a computerized Cost and Schedule Control (CASC) system for management of an anticipated \$275 million in construction contract awards in 1981. This management information system will control costs and schedules for the design and construction of new subway lines and stations and the modernization of existing rail transit facilities. The CASC package consists of several subsystems all sharing a common data pool. These include budgeting, bid management, materials tracking, real estate tracking, scheduling, contract payment and schedule progress. Expansion to cover operating procedures and budgets is foreseen.

Progressive Railroading Vol. 24 No. 10, Oct. 1981, pp 83-84, 3 Phot.

ORDER FROM: Murphy-Richter Publishing Company, 20 North Wacker Drive, Chicago, Illinois, 60606

DOTL JC

24 345971

COMPUTERIZATION AT THE BELGIAN NATIONAL TRAM COMPANY--SNCV [L'INFORMATIQUE A LA SOCIETE NATIONALE DES CHEMINS DE FER VICINAUX--SNCV]

The SNCV's network covers 200 km of electric tram lines and 25,396 km of bus lines. Since the SNCV bought its first computer in 1960 it has gradually extended applications in various fields: stock management, wages,

salaries, pensions, social charges, production (distances covered), season ticket accounting, accidents, inventories and statistics. [French]

Valcke, A *UITP Revue* Vol. 30 No. 3, 1981, pp 201-207, Photos.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

DOTL JC

24 345975

**IMPROVING REGULARITY IN PUBLIC TRANSPORT
[REGELMAATBERVORDERING IN HET OPENBAAR VERVOER]**

This article describes the first results of research into ways by which the regular performance by public transport can be improved. [Dutch]

Hakkesteeft, P *Verkeerskunde* Vol. 32 No. 9, Sept. 1981, pp 425-432

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Dutch Touring Club ANWB, Wassenaarseweg 220, Box 2200, The Hague, Netherlands

24 346177

STATEWIDE TRANSIT EVALUATION IN MICHIGAN

The objective of this report is to share the experience gained during the development of a performance evaluation methodology for public transportation in the State of Michigan. This report documents the process through which an evaluation methodology was developed including a review of project objectives, milestones, meetings, and products. Two major lessons learned during the development of the evaluation methodology for mid-size transit systems in Michigan are (1) that there is a need to establish the groundwork for conducting performance evaluation; and (2) the concerns and perspectives of public transportation systems regarding performance evaluation must be addressed and integrated into the development and implementation of the evaluation program. Although the paper is based on the experience of one state government agency, the findings and conclusions are generally applicable to other organizations that may evaluate public transportation performance, especially those that provide/administer funding.

Holec, JM Schwager, DS
Peat, Marwick, Mitchell and Company, Urban Mass Transportation Administration, Office of the Secretary of Transportation, (UMTA-MI-09-8004) Tech Rpt. UMTA-MI-09-8004-81-1, July 1981, 79p

ACKNOWLEDGMENT: NTIS
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PB82-115999

24 346663

PROTOTYPE BUS SERVICE EVALUATION SYSTEM

Many transit operators have a critical need for a service evaluation system which can measure existing service performance. To assist these operators, the Office of Planning Assistance of the Urban Mass Transportation Administration, through its Special Studies Program, initiated operator prototype studies in Boston and Norfolk. The purpose of these studies is to develop and test systems for bus service evaluation. The emphasis of these studies is on how local operators can use existing planning techniques to meet their evaluation needs. This report represents the second report from these studies. This report describes the development and testing of a prototype bus service evaluation system in Norfolk, Virginia. The project

has two objectives: (1) to develop a service evaluation system utilizing existing techniques and (2) to test and verify that such a service evaluation system is a practical and effective method for service evaluation.

Becker, AJ Talley, W Krumke, J Anderson, P
Tidewater Transportation District Commission, Urban Mass Transportation Administration, Department of Transportation, (UMTA-VA-09-7001) Final Rpt. UMTA-VA-09-7001-81-1, Apr. 1981, 67p

ACKNOWLEDGMENT: NTIS
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PB82-117763

24 348403

**EVALUATION OF URBAN PUBLIC TRANSIT SYSTEM
PERFORMANCE: INTERNATIONAL PERSPECTIVES**

In recent years urban public transport has exhibited similar trends in many western nations. Urban sprawl, increased automobile use and general inflation have led to a rapid decline in the financial viability of most transit operations. In several instances this financial situation led to reduced services, fewer patrons and so reinforced the downward spiral. Recently, however, an increased awareness of the financial, environmental and social costs associated with continued automobile dependence and poor quality transit services has led to major initiatives by local and senior governments to upgrade the level of transit service provided. Energy price escalation and supply disruptions, inflation, economic instability and environmental concerns have all contributed to the greatly increased expectation that urban transit must be used as a tool in the drive for governments to provide not only improved urban transportation, but also a better quality of life. (Author/TRRL)

Drolet, RE (Urban Transit Authority Of British Columbia) *RTAC Annual Conference Preprints* Vol. 1 Sept. 1981, pp D61-85, 4 Fig., 7 Tab., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258374), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

24 348461

**DISCUSSION ON THE CONCEPT OF "LEVEL OF SERVICE OF
TRANSPORT" [ZUR DISKUSSION DES
"VERKEHRSLEISTUNGS"-BEGRIFFS]**

For the further development of the theory of traffic operation it is necessary to analyse exactly the performance of transport operators. An attempt is made in the paper to deal with the basic economic structure of the level of service of transport. The level of service achieved by transport services is investigated as a performance product and process, as a market and operation service and for service levels in occasional and scheduled transport according to the systemisation of transport-related production factors and the analysis of part functions and part processes of transport service level. Finally three important characteristics are established which differentiate between transport processes and industrial production processes. (TRRL) [German]

Claussen, T (Hochschule Der Bundeswehr, Germany) *Zeitschrift fuer Verkehrswissenschaft* Vol. 50 No. 4, 1979, pp 245-257, 5 Fig., 33 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 312662), Federal Institute of Road Research, West Germany

ORDER FROM: Federal Institute of Road Research, West Germany, Bruhlerstrasse 1, Postfach 510530, D-5000 Cologne 51, West Germany

25 329147

PATRONAGE IMPACTS OF CHANGES IN TRANSIT FARES AND SERVICES

The report presents information on public transit fare and service elasticities of demand. Data were obtained from a comprehensive review of studies performed in the United States and other countries, especially the United Kingdom. Estimates of individual fare and service elasticities were obtained from analyses of individual fare and service changes, and from direct-demand and mode-choice models based on time-series and cross-sectional data. This report confirms the fact that transit demand is inelastic with respect to fares and services; that is, the proportional change in transit patronage in response to fare and service variations is less than the proportional change in fares and services. More importantly, the data presented in this report reveal that there is a large degree of consistency in the aggregate system-wide demand elasticities. Although there is variation in the disaggregate elasticity values, this variation is reduced and remarkable stability emerges when the analysis focuses on individual disaggregate categories. This underlying consistency, which exists across many types of cities and even countries, suggests that significant shifts in patronage could result without a deterioration in revenues from manipulations in fare and service levels.

Mayworm, PD Lago, AM McEnroe, JM
Ecosometrics, Incorporated, Urban Mass Transportation Administration,
(UMTA-MD-06-0054) Final Rpt. RR-135-1, UMTA-MD-06-
0054-81-1, Sept. 1980, 246p

Contract DOT-UT-90014

ACKNOWLEDGMENT: NTIS
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PB81-167652

25 331050

ELASTICITY MEASURES OF BEHAVIORAL RESPONSE TO OFF-PEAK FREE-FARE TRANSIT

Changes in transit ridership behavior in response to the elimination of off-peak transit fares are examined. Empirically, the analysis is based on data collected for a one-year free-fare demonstration sponsored by the Urban Mass Transportation Administration in Trenton, New Jersey. Fare elasticity of demand is used as the measure of behavioral response. Important to the analysis is the clarification of distinctions among different measures of fare elasticity. In order to both illustrate the differences among types of elasticity and demonstrate the separate impact attributable to the choice of estimating technique, several techniques are applied and their results compared. It is concluded that the demand response to fare elimination is inelastic and that variations among individuals in the extent of response cannot be associated with differences in socioeconomic characteristics. Free fare is therefore judged not to be a direct means of fulfilling the transportation needs of socio-economically defined population groups. (Author)

This paper appeared in Transportation Research Record No. 761, Public Transportation Planning.

Doxsey, L (Transportation Systems Center) *Transportation Research Record* No. 761, 1980, pp 7-14, 1 Fig., 2 Tab., 2 Ref.

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25 331178

TRANSPORT SYSTEM OPTIMIZATION AND PRICING

How should the pricing principles prescribed by welfare economic theory be translated into operational pricing policy for different transport services? This question is considered for scheduled transport services in general, and for urban bus transport and cargo shipping in particular, for seaports and for highways. The second main question is: what would the financial result be in these cases of applying a pricing policy aimed at net social benefit maximization? To answer this second question the tempting short-cut of assuming the whole supply-side as given, which is typical of the prevailing "short-run" approach to normative price theory, has to be resisted. In the present study another approach is adopted. At first the conditions for efficiency in the production of transport services are investigated in a system context. Then it is possible to predict the financial result of optimal pricing. The predictions are disturbing: with the notable exception of urban roads, optimal pricing of the services provided by transport infrastructure as well as of public transport services would result in much larger financial deficits than tax payers would probably be prepared to sustain. Thus, the third main

question is: what is the optimal departure from first-best pricing of transport services in the presence of a budget constraint? The current idea that second-best pricing is obtained by applying the value-of-service principle, i.e. price discrimination, is opposed, and a modern version of the cost-of-service principle is recommended. (TRRL)

Jansson, JO
Handelshoegskolan, Ekonomiska Forskningsinstitutet Monograph
1980, 428p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 251902), National Swedish Road & Traffic Research Institute

ORDER FROM: Handelshoegskolan, Ekonomiska Forskningsinstitutet, Box 6501, Stockholm, Sweden

25 331222

MARTA AND THE 15, FARE: KEEPING "WHOSE" FAITH UNTIL MARCH 1979?

Following the defeat of a November 1968 Referendum, MARTA successfully implemented a strategy aimed at capturing the support of its two key constituencies in a 1971 Referendum. The two constituents can generally be described as largely inner-city Black and largely suburban White. These two groups held widely different views as to how to distribute the costs and benefits of the mass transit program. In response to the concerns of Black Atlanta leaders, MARTA officials began more minority hiring, promised the routing of a proposed rail system to Black neighborhoods, and also provided the 15, fare, which was to remain in effect until March 1, 1979, when a 5, increase would occur. The White constituency emphasized the need for more bus service and a rapid rail system to outlying areas, even if this meant higher fares and curtailment of services in Atlanta. MARTA promised to provide numerous service improvements to the suburbs. This report includes discussions of the legal battles surrounding the fare issue and its ramifications. The life of the 15, fare lasted through March, 1979, which is the date originally promised. However, the fare was increased by 25, instead of 5, (UMTA)

Proehl, CW, Jr Golembiewski, RT
Georgia University, Athens, Urban Mass Transportation Administration,
(GA-11-0006) UMTA-GA11-0006-81-14, July 1979, 22p

Contract GA-11-0006

ACKNOWLEDGMENT: UMTA
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PB81-157455

25 331224

WHAT'S FAIR ABOUT LOW FARE? AN ECONOMIC ANALYSIS OF A POLITICAL DECISION

MARTA's political choice of a low bus fare to gain a local funding-base for mass transit also turned out to be shrewd public economics. This case study attempts to demonstrate this point through an analysis of costs and benefits for riders and nonriders from 1972 through 1977. The analysis will follow a brief description of the evolution of the financial arrangements and some observations on the immediate effects of low fare on ridership patterns. This analysis will estimate the "fairness" of the sales tax/low fare method of financing public transportation by comparison with two alternatives. A Technical Appendix: "Stratification of Ridership Volume and Estimation of Number of Transit-User Families by Income Group" included in the report, shows how some of the parameters are derived which are used in this study. (UMTA)

Bates, JW
Georgia University, Athens, Urban Mass Transportation Administration,
(GA-11-0006) UMTA-GA11-0006-81-16, July 1979, 22p

Contract GA-11-0006

ACKNOWLEDGMENT: UMTA
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PB81-157471

25 334409

SENSITIVITY OF CHANGE IN USER FARES TO TRANSIT RIDERSHIP: ELASTICITY

This paper investigates transit demand elasticity and the sensitivity of transit ridership to changes in fares. The primary objective is to identify those factors affecting transit travel characteristics during a fare change and then consider the application (appropriateness) of transit demand elasticity to

estimate the impacts on ridership. Prior studies have suggested problems with elasticity in terms of its mathematical computational procedures as well as its aggregate approach to transit riders which is composed of various types of user groups. Since this method is so widely utilised, it is productive to assess its effectiveness. This study indicates that the value and application of transit elasticity to predict passenger volume effects resulting from a change in fares is perhaps limited. Further, linear regression on the direct relationship between fare and patronage is recommended as a test to insure that transit demand elasticity is indeed appropriate. Basic transportation factors affecting transit travel are described in sufficient detail to assist the reader in comprehension of the total transportation problem and its probable solution. Three additional methods are offered as alternatives to elasticity to estimate ridership following a change in fares.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Bers, EL (Urban Mass Transportation Administration)
Organization for Economic Cooperation and Devel, European
Conference of Ministers of Transport Conf Paper Volume 3, 1980, pp
2033-39, 11 Ref.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite
1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

25 334585
FARE-FREE PUBLIC TRANSIT POTENTIAL IN ATHENS, GREECE

This paper draws on a study conducted in Athens, Greece to examine the application potential and possible effects of fare-free public transit in the greater Athens area. Principal objectives of the study were to determine an equitable method of distributing costs to area households, and to determine how well a fare-free system and its method of local financial support would be accepted by the citizenry.

Giannopoulos, GA (Thessaloniki University, Greece) *Traffic Quarterly*
Vol. 34 No. 2, Apr. 1980, pp 313-327, 3 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

25 334698
TRANSIT RIDERSHIP RESPONSIVENESS TO FARE CHANGES

The principal focus of this paper has been on identifying the differences in fare elasticities of transit demand among market groups. Although system-wide elasticity values, such as the Simpson and Curtin formula, have been useful for predicting aggregate ridership changes resulting from changes in fares, these values do not provide reliable estimates of the ridership and revenue impacts of individually-targeted fare programs. The evidence currently available on disaggregated fare elasticities of demand are presented.

Lago, AM (Ecosometrics, Incorporated); Mayworm, PD Mcenroe, JM
Traffic Quarterly Vol. 35 No. 1, Jan. 1981, pp 117-142, 26 Ref.

ACKNOWLEDGMENT: EI
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25 334702
SALE OF SNCF PASSENGER TICKETS, VENDING MACHINES CONSIDERED AS A LINK BETWEEN THE SNCF AND ITS CUSTOMERS [Vente des prestations voyageurs a la SNCF, Les machines de vente, outil de dialogue entre la SNCF et sa clientele]

After recalling French National Railways policy as regards the sale of tickets in stations, the article reviews the measures adopted for the installation of automatic ticket vending machines and machines operated by booking clerks; it explains how these new generation machines are involved in the dialogue between man and machine so that a ticket can be sold in the best way in line with the policy adopted. [French]

Baufine-Ducrocq, B *Revue Generale des Chemins de Fer* Vol. 99 Oct. 1980,
pp 551-560

ACKNOWLEDGMENT: EI
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25 335012
URBAN BUS REVENUE COLLECTION: CURRENT METHODS AND DIRECTIONS OF DEVELOPMENT

A review of existing and future urban bus revenue collection methods, both in the UK and in other parts of the western world, is reported. It is found that conversions to one-person-operation have continued, with two-person-operation tending to be retained only where there are special circumstances. There is some diversity of opinion about the best operating systems, but there is a general preference for simple equipment, and there has been an increase in the use of off-bus ticket sales, though the full economic implications of such sales are not fully understood. Development of several specifications of new driver-based machinery, with related slot readers for handling coded season tickets, is currently taking place in the UK. It is also becoming technically feasible to develop advanced automated systems, for example utilizing stored value tokens, or credit cards, and some innovations have occurred in the USA. However, having converted to one-person-operation, the lack of scope for further major staff savings makes the justification of investment in expensive equipment difficult, with the result that such systems are unlikely to be in widespread use on UK buses in the short term. (Author/TRRL)

Watts, PF Naysmith, A
Transport and Road Research Laboratory Monograph SR 629, 1980,
24p, 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252988)
ORDER FROM: NTIS

PB81-165086

25 335612
POLITICAL ECONOMY OF A PUBLIC CORPORATION: PRICING OBJECTIVES OF BART

The revealed preference approach is used to identify the objectives implicit in the fare structure of a rail mass transit system. A model assuming bureaucratic aggrandizement provided a better predictor of actual fares than a majority rule or interest group political model. Bureaucratic objectives work to the advantage of commuters from distant suburbs, who are relatively wealthy and young. The data are too weak to support firm conviction about these conclusions, but our methods contribute to quantitative political economy.

Cooter, R Topakian, G *Journal of Public Economics* Vol. 13 No. 3, June
1980, pp 299-318

ORDER FROM: North-Holland Publishing Company, P.O. Box 211, 1000
AE Amsterdam, Netherlands

DOTL JC

25 335842
AUTOMATIC FARE COLLECTION AND TICKETING SYSTEMS FOR PUBLIC TRANSPORT

There is an increasing use of microprocessor technology in automatic machines used for fare collection, ticket selling and ticket validation in the public transport field. However, no system has emerged that is ideal for all situations. The principles involved are presented through a description of the automatic system and components used on the eastern suburbs railway in Sydney. Potential future applications are briefly reviewed. The current system is being monitored and evaluated as a pilot project for possible extensions of automatic equipment to other parts of the network. (Author/TRRL)

National Conference Publication No. 81/1. Symposium on Computer
Control of Transport 1981, Sydney, 19-20 February 1981.

Carlisle, JS (McLachlan Group)
Institution of Engineers, Australia No. 81/1, 1981, pp 7-14, 8 Fig., 3 Tab.,
1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250618), Australian Road Research
Board
ORDER FROM: Institution of Engineers, Australia, 11 National Circuit,
Barton, A.C.T. 2600, Australia

25 337158
OVERVIEW OF RAIL TRANSIT FARE COLLECTION

A study was conducted of the performance of rail transit fare collection equipment. The results can be used to evaluate new and improved fare collection systems. Options in fare collection were illustrated by examining four transit systems. Reliability data, in terms of transactions per failure,

were gathered for elements of these systems. Detailed investigations and subsystems failure analyses were conducted for two graduated, distance-related fare systems. Several models were developed for evaluating the impact of equipment reliability on operating costs and passenger delays. Those utilized the binomial probability distribution to calculate the incidence of simultaneous machine failures as a parameter in multi-server queuing and delay frequency models.

Rubenstein, LD Land, JE Deshpande, G Harrow, B
Jet Propulsion Laboratory, Urban Mass Transportation Administration
Final Rpt. JPL-PUB-80-89, UMTA-CA-06-0116-80-1, Aug. 1980, 152p

Contract DOT-AT-80015

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-182578

25 345230

SELF-SUSTAINING PUBLIC TRANSPORTATION SERVICES

Between 1970 and 1978, transit deficits in the United States grew by over 700%. The rapidly mounting deficits are of great concern because governmental outlays for transit cannot be expected to grow indefinitely. If transit service is to continue to expand, it is likely that means will have to be found to narrow the gap between revenues and expenses. This paper surveys three U.S. transit systems which have been self-supporting in the sense of passenger revenues covering operating costs. From a detailed examination of fares, level of service, costs and characteristics of areas served by these systems, in comparison with the same descriptors of conventional loss-incurring transit systems, there emerges an overall concept of a self-supporting transit service. It is characterized by high quality of service, a relatively high fare, a targeting of the service toward users who are willing to pay for the high level of service provided; and finally, providing information that is readily available to both regular transit users as well as prospective new riders. The final section of the paper considers whether the concept is generalizable, and discusses some possible objections to the institution of such service. (Author/TRRL)

Morlok, EK Viton, PA (Pennsylvania University, Philadelphia) *Transport Policy and Decision Making* Vol. 1 No. 2/3, 1980, pp 169-194, 3 Fig., 11 Tab., 19 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253903), Institute for Road Safety Research
ORDER FROM: Martinus Nijhoff Publishers, P.O. Box 22, Dordrecht, Netherlands

25 345259

THE ELASTICITY OF MEDIUM-DISTANCE RAIL TRAVEL

This report describes further analysis of British rail's "national passenger accounting and analysis system" data to estimate demand elasticities with respect to rail fares, following a preliminary report of results obtained from a study of passenger flows between 60 towns and central London termini, over distances up to 120 kilometres. A fresh analysis of an enlarged data base (consisting of the original 60 flows plus a further 80 flows) using a modified form of analysis has estimated mean fare elasticities for season, cheap-day and full-fare tickets of -0.50 plus or minus 0.07, -0.65 plus or minus 0.06 and -0.20 plus or minus 0.04 respectively, although the errors on the means probably overstate the accuracy of these estimates because systematic errors may well be present. The latest analyses showed that the estimated elasticities were independent of the size of the passenger flow and of distance from London, except in the case of cheap-day trips where the greater the distance travelled the more elastic the journeys. Journey-time elasticities were estimated for two stations in the western region served by the high speed train; both values were found to be about -0.7 plus or minus 0.3 for off-peak travel. The reduction in mean journey time during the peak, however, was too small to enable elasticities to be estimated. A service frequency elasticity of 0.6 plus or minus 0.3 was obtained for season ticket travel from just one of the stations. (Author/TRRL)

Oldfield, RH Tyler, E
Transport and Road Research Laboratory, (0305-1293) Monograph
NLR 993, 1981, 24p, 9 Fig., 4 Tab., 10 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257057)
ORDER FROM: TRRL

25 345269

THE NEW DUTCH BUS FARE SYSTEM AND THE BUS/RAIL TRAFFIC BALANCE [STRIPPENKAART EN TREIN/BUS PARALLELTRAJECATEN]

In 1980 a new nationwide fare collecting system was adopted in Holland for rural and local bus transport: the "strippenkaart". In this simple system a bus passenger pays his fare in strips, with the formula 1 strip for each zone, plus 1 extra. The fare level is in general slightly below the old level except for young people (up to 19 years), whose weekly and monthly tickets dropped from 0,85 to 0,5 x adult. These lower fares combined with free transfers (also from rural to local transport) do not only mean lower receipts in the transport industry, bus also in cases where bus-and rail routes run parallel, it disturbs the balance between them. In general children formerly preferred the rail, but they were persuaded by a fare difference of over 50%. The result is empty seats in peak-hour trains and bus companies running expensive extra peak-hour buses. Revision of fare level is proposed in order to bring back the balance between bus and rail in parallel situations. When revising the system it should be made possible to transfer from rural bus routes without the necessity of buying a new ticket. Better service (faster journey) and lower cost could be the result. (TRRL) [Dutch]

Deegt, RB (Studiecentrum Verkeerstechneik); Saher, WF (Agv Adviesgroep Voor Verkeer En Vervoer)
Secretariaat Verkeerskundige Werkdagen Conf Paper May 1981, pp 597-616, 3 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 255865), Institute for Road Safety Research
ORDER FROM: Secretariaat Verkeerskundige Werkdagen, P.O. Box 163, Driebergen-Rijsenburg, Netherlands

25 345270

A NATIONAL TICKET SYSTEM FOR THE NETHERLANDS

A description is given of the national ticket system introduced in the Netherlands on 1 October 1980, and covering nearly all journeys made by bus, tram and metro undertakings. Multi-journey and season tickets are valid on all vehicles irrespective of operator. The basis of the system is the division of the whole country into travel zones. Details are given of the standard 15-coupon ticket and those available on vehicle, and their use for journeys within and across travel zones. Other ticket combinations are available for travel throughout the country. Tariffs for sectional and season tickets are tabulated. The scheme is government-sponsored, and intended to increase the efficiency and attractiveness of public transport. (TRRL)

Taplin, MR *Modern Tramway and Light Rail Transit* Vol. 44 No. 520, Apr. 1981, pp 115-117, 1 Fig., 1 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 256212)
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

DOTL JC

25 345738

SOME EFFECTS OF CHANGES IN PUBLIC TRANSPORT FARES, KOLLTAX [NAAGRA EFFEKTER AV AENDRADE KOLLEKTIVTRAFIKTAXOR, KOLLTAX]

The object of this investigation was to find, in conjunction with a planned increase in public transport fares in Gothenburg, what would be the effect of: (1) fare changes on municipal finances; (2) fare changes on different groups of travellers and income groups; and (3) how costs would be divided between state and municipality with regard to taxation. The assumption was that a 10% rise would be introduced, and price elasticities were examined by sequential and cross section analysis. Price elasticity with respect to public transport journeys was found to be about -0.3. In 1978, 58% of all taxpayers claimed a deduction in respect of work trips, 18% by car and 40% by public transport. Owing to changes in deductions claimed, a 10% rise in fares would result in sek 4.1 M loss in local tax revenue, but a gain to the transport undertaking of sek 9.1 M, corresponding to a reduction in local taxation rate of sek 0.04. The state would lose sek 3.5 M in tax. Regular public transport travellers and pensioners (who cannot claim tax deduction) would each lose about sek 30 annually, while those who do not use public transport would gain owing to the local taxation rate remaining the same. (TRRL) [Swedish]

Goteborgs Stadskontor, Finanssekretariatet Monograph 1980, 20p, 7 Fig., 4 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 257157), National Swedish Road & Traffic Research Institute

ORDER FROM: Goeteborgs Stadskontor, Finanssekretariatet, P.O. Box 2131, Goeteborg, Sweden

25 345937

FLAT VERSUS DIFFERENTIATED TRANSIT PRICING: WHAT'S A FAIR FARE?

Virtually every U.S. bus system today charges its customers flat fares. Recent trends, however, suggest that passengers are traveling farther and proportionally more during peak hours, factors which have contributed toward transit's cost spiral. As deficits continue to soar and available funding tightens, current pricing rationales must be seriously questioned. This paper assesses the efficiency and equity impacts of three California transit agencies' fare structures. Short-distance, off-peak patrons are found to heavily cross-subsidize long-haul commuters. Fares differentiated by distance and time-of-day, in contrast, could improve the transit industry's fiscal posture while eliminating differences in payment rates. Barriers to their implementation remain formidable, however, both in terms of current fare collection capabilities and political acceptability.(a) (TRRL)

Cervero, R (California University, Berkeley) *Transportation (Netherlands)* Vol. 10 No. 3, Sept. 1981, pp 211-232, 8 Fig., 3 Tab., 22 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257958)
ORDER FROM: ESL

25 345983

A RATIONAL ALTERNATIVE FARE STRUCTURE FOR BRITISH RAIL'S LONDON AND SOUTH-EAST COMMUTER PASSENGERS

The present fare structure on British Rail's London and South-East network is considered by the author to be irrational and unfair. An alternative fare structure is derived which eliminates these defects. The derivation is based on two premises: (1) the total cost associated with a particular train journey is met by the sum of the fares; (2) no passenger pays a different rate from a fellow passenger at any instant in the journey. The fare structure derived is almost a mirror image of the present one. Its introduction would be expected to have profound and far-reaching effects.

Gibson, JG *Journal of Transport Economics and Policy* Vol. 15 No. 3, Sept. 1981, pp 269-275

ACKNOWLEDGMENT: British Railways
ORDER FROM: London School of Economics and Political Science, Houghton Street, Aldwych, London WC2A 2AE, England

DOTL JC

25 346135

EVALUATION OF DENVER RTD ROUTE RESTRUCTURING PROJECT

In February 1978, the Denver Regional Transit District (RTD) eliminated the 25-cent off-peak fare and retained a 50 cent peak hour fare for bus boardings during the morning two-hour rush period and evening two-hour rush period. The experiment in innovative transit pricing continued for one year as a Federally-assisted demonstration project to determine the effects of free off-peak transit in a major urban area. During the demonstration, RTD also undertook a complete transformation of its network of bus routes and schedules. Following two years of planning, in September 1978, RTD accomplished the restructuring of its transit services from a network of mostly historic radial routes serving the old central business district to one more closely conformed to a grid system. This report summarizes the evaluation of the route restructuring project in Denver with respect to the implementation requirements of a major redesign of fixed-route transit services and its effects on: (1) travel behavior; (2) bus operations; (3) quality

of service; (4) costs and revenues; (5) secondary effects on the environment; and (6) public support for transit services and improvements. The extensive data collection activities conducted by RTD as part of the demonstration, included transit operations monitoring, surveys of transit users onboard, and follow-up telephone.

See also report dated May 79, PB-298 783. Portions of this document are not fully legible. ñ

Donnelly, RM Ong, PM
De Leuw, Cather and Company, Urban Mass Transportation Administration, Transportation Systems Center Final Rpt. UM-TA-CO-06-0010-80-1, July 1981, 235p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-115338

25 348401

TRANSIT PASSES IN VANCOUVER AND VICTORIA: A COMPARATIVE STUDY

During 1980 both the Greater Vancouver Regional District (GVRD) in Vancouver and the Capital Regional District (CRD) in Victoria embarked upon bus pass programs as a means of increasing public awareness of the local transit service and as a convenience factor for their patrons. In Vancouver, the GVRD introduced a two-part personalized, non-transferable monthly pass selling for 40 times the regular cash fare. One part is a permanent photocard and the second part is a renewable pass. The major purpose of the Vancouver pass program is to provide a convenience to the regular transit user while minimizing the impact on total transit revenues. In Victoria, the CRD introduced a one-part, fully transferable monthly pass selling for 36 times the regular adult cash fare. The major purpose of the Victoria pass program was to make available a convenient prepayment mechanism that would encourage ridership and would increase public awareness of the new regional transit services. (Author/TRRL)

Geehan, TE (Hickling Partners, Incorporated); O'Brien, WB (Capital Regional District, Victoria) *RTAC Annual Conference Preprints* Vol. 1 Sept. 1981, pp D23-38, 2 Fig., 2 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 258372), Roads and Transportation Association of Canada
ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

25 348801

MERSEYSIDE ASSESSES THE EFFECTS OF RAILWAY DEVELOPMENT

This article describes and presents the main results of the improvements made to rail services in Merseyside since 1977. A zone ticket system was introduced in 1978 and a new concessionary travel pass in 1979. Some details are given of the general increase in passenger traffic over various routes within Merseyside, including the use made of improved bus/rail interchange facilities. Results of a special central Liverpool study before and after the introduction of concessionary travel are presented, showing additional journeys made and transfers from other transport modes. The extra revenue due to rail improvements, the capital costs of the rail projects, operating costs and the effects of bus/rail integration schemes are considered. (TRRL)

Modern Railways Vol. 38 No. 399, Dec. 1981, p 536, 6 Fig., 5 Tab., 3 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 259090)
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

DOTL JC

26 320346

TRANSIT SYSTEMS MATERIAL INFORMATION BANK, 1975-PRESENT

The project is developing and maintaining an information bank on the various types of structural and non-structural materials used in transit systems with respect to their flammability, smoke production, toxic gas production, and other characteristics related to fire safety. The information bank will include identification of the various types of analyses and tests by which candidate materials may be ranked according to their flammability, smoke and toxic gas production, and development of guideline specifications for materials selection. This project has established a materials consulting service for UMTA and the transit industry. Material specifications for transit vehicles have become increasingly important because of fires on vehicles. This project will provide technical information to establish new or improved standards for fire safety to be applied to federally funded procurement of transit vehicles. Guidelines or standards prepared under this project will be coordinated with interested and affected organizations such as the American Public Transit Association and the National Fire Protection Association. (TSC)

Urban Mass Transportation Administration On-Going No Date, n.p.

ACKNOWLEDGMENT: Transportation Statistical Reference File, TSC (346)
ORDER FROM: TSC

26 329015

STATISTICAL EVALUATION OF THE EFFECTIVENESS OF FEDERAL MOTOR VEHICLES SAFETY STANDARD 222: SCHOOL BUS SEATING AND CRASH PROTECTION

FMVSS 222 is a death-and-injury reduction Standard which includes the structural strength of the seating system, padding and provision of restraining barriers. In the case of small buses under 10,000 lb gross vehicle weight, it requires passenger restraints for each seating position. This Standard became effective 1 April 1977. A clinical analysis has been performed of 56 nonfatal and 26 fatal multidisciplinary school bus accident investigation (MDAI) reports spanning 1970 through 1978. Estimates of reductions in injury severity have been made by the Clinical Analysis Team. These reports were coupled with an analysis of National Safety Council information and 60 Fatal Accident Reporting System school bus accident reports for 1975-1978.

See also Rept. No. 5, PB81-152233.

Northrop, GM Sweeton, E Stent, P Costenoble, K
Center for the Environment and Man, Incorporated, National Highway Traffic Safety Administration Final Rpt. CEM-4254-677, DOT-HS-805-662, Oct. 1980, 125p

Contract DOT-HS-8-02014

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-152241

26 331270

EFFECT OF CARGO DISPLACEMENT ON VEHICLE COLLISION BEHAVIOR

The potential for rollover after a vehicle has collided with a roadside barrier is greatest for vehicles that have a high center of gravity, such as school buses, intercity buses, and trucks. There are various computer programs that can simulate vehicle-barrier interaction, but they can be expensive to run and do not address the phenomenon of cargo displacement during vehicle impact with a roadside barrier. A computer program that can be used to estimate the effect of cargo displacement on secondary-impact vehicle roll response is described. It is applied to delineate the rollover potential of a school bus carrying unrestrained children during a collision with a highway barrier. (Author)

This paper appeared in Transportation Research Record No. 769, Roadside Hazards, Traffic Barriers, and Safety Appurtenances.

Labra, JJ (Southwest Research Institute) *Transportation Research Record* No. 769, 1980, pp 1-4, 4 Figs., 3 Tab., 1 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

26 334186

MAXIMUM DECELERATION AND JERK LEVELS THAT ALLOW RETENTION OF UNRESTRAINED, SEATED TRANSIT PASSENGERS

Three experiments performed to determine the maximum deceleration and associated rate of change of deceleration (jerk) that will allow the majority of potential users of automated guideway transportation systems to remain securely in their seats are described. In each experiment subjects representative of three anthropometric classes underwent various levels of deceleration and jerk. These experiments were performed in an instrumented vehicle controlled by an automated braking system. Seat sensors, movies, and subject ratings were employed to determine the deceleration at which subjects began to move off the set pan. Subjects were decelerated while seated normally, sideways, and forward facing but tilted backward (facing forward with the seat pan tilted back 3, 9, or 12 deg). Subjects underwent jerk levels of 0.25, 0.75, and 1.25 g/s while seated normally only. Jerk was found not to affect maximum deceleration levels. Modifications of features common to transit seating were found to increase retention. The maximum deceleration allowing retention was determined for both forward-and side-facing seated passengers. These results are discussed and presented in tabular and graphic form. (Author)

This paper appeared in Transportation Research Record No. 774, Maintenance Management Systems and Transportation Ride Quality.

Abernethy, CN (Digital Equipment Corporation); Jacobs, HH (Dunlap and Associates, Incorporated); Plank, GR Stoklosa, JH Sussman, ED (Transportation Systems Center) *Transportation Research Record* No. 774, 1980, pp 45-51, 4 Figs., 3 Tab., 13 Ref.

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26 334525

BRIDGE RAIL TO RESTRAIN AND REDIRECT BUSES

A standard Texas traffic rail Type T202 27 in. high was strengthened and modified so that it could restrain and redirect school and intercity buses under 60 mph (96.6 km/hr) 15 deg angle impacts. A semi-elliptical extruded aluminum rail was mounted on cast aluminum posts to increase the rail height to 42 in. (107 cm). Three crash tests were conducted on the bridge rail. The first test was with a 66-passenger school bus weighing 19,690 lb (8,931 kg) and impacting the rail at 54.4 mph (87.6 km/hr) at a 15 deg angle. The bus was smoothly redirected. The second test was with an 1800 lb (817 kg) minicar with front wheel drive and impacting the rail at 59.4 mph (95.6 km/hr) at a 15 deg angle. The vehicle was redirected but the small front wheel did penetrate the 13 in. (.33 m) opening under the concrete beam and snagged a post. The third test was with an intercity bus weighing 32,080 lb (14,562 kg) and impacting the rail at 61.1 mph (98.3 km/hr) at a 15 deg angle. The intercity bus was restrained and smoothly redirected. These tests have shown that a simple and economical rail can redirect school and intercity buses at speeds up to 60 mph (96.6 km/hr) and 15 deg angle impact. The cost of this rail is estimated at about \$41 per foot.

Hirsch, TJ

Texas Transportation Institute, Texas State Department of Highways & Public Transp, Federal Highway Administration FHWA/TX-81-12230-3, Res Rpt. 230-3, Feb. 1981, 71p, Figs., 1 Tab., 11 Ref., 5 App. SPONSORING AGENCY:

HP&R Res Study 2-5-78-230

ORDER FROM: NTIS

26 335857

SAFETY EFFECTIVENESS EVALUATION OF RAIL RAPID TRANSIT SAFETY

On July 28 and 29, 1980, the National Transportation Safety Board held a public hearing on rail rapid transit safety. Twenty-five witnesses testified during the hearing on fire safety issues, emergency evacuation from rail rapid transit systems and safety oversight of transit systems. The Safety Board examined fire safety issues involving transit car design; emergency exit from cars; emergency tunnel ventilation; evacuation from tunnels; emergency procedures including training, drilling, and testing; emergency communications, equipment, and mobility; and local/State/Federal safety oversight of rail rapid transit properties. The Safety Board issued urgent recommendations to the Urban Mass Transportation Administration for a survey of rail rapid transit systems to determine their capability for evacuation of passengers under various operational and passenger load conditions and to

establish Federal guidelines for the elimination or minimization of combustible and toxic gas and smoke-generating materials in existing rail rapid transit cars. The Safety Board further recommended that the Secretary of Transportation propose Federal legislation which would explicitly authorize the establishment of safety standards for rail rapid transit systems. Other recommendations seek Federal guidelines for car and tunnel designs, safety equipment, and training; the need for 5-year safety and research and development plans; a fire research and testing program; a study of the need for fire suppression systems; and improved training for tunnel rescue efforts for employees and emergency personnel.

National Transportation Safety Board NTSB-SEE-81-1, Jan. 1981, 108p, Figs., 3 App.

ORDER FROM: NTIS

PB81-159188, DOTL NTIS, DOTL RP

26 337883

TRANSIT RELIABILITY INFORMATION PROGRAM PARTICIPANTS GUIDELINES

The document provides guidelines for participation in the Transit Reliability Information Program (TRIP). TRIP is a government-initiated program designed to assist the transit industry in satisfying its need for transit equipment reliability data. TRIP provides this assistance through the operation of a national Data Bank. The primary purpose of the TRIP Data Bank is to provide a computer-based system for the collection, analysis, and reporting of reliability information on transit equipment. The report is designed to familiarize prospective participants and users of TRIP with the operation, capabilities, and use of the Data Bank. TRIP will encompass all classes of transit equipment, including, for example, rail rapid vehicles; track and structures; wayside ATO/ATC; transit buses; automatic fare collection, etc.

Silvia, PJ

Dynamics Research Corporation, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0060) Final Rpt. DOT-TSC-UMTA-81-5, Mar. 1981, 155p

Contract DOT-TSC-1559

ACKNOWLEDGMENT: NTIS

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PB81-189276

26 341273

SAFETY VERIFICATION OF A RAPID TRANSIT SYSTEM

This paper focuses on the formal documented safety verification program conducted by MARTA in conjunction with the inauguration of revenue service on its East/West Lines. All of the activities undertaken in conjunction with the conduct of the program are examined with particular attention directed to the transit vehicle and train control--the two most critical elements of a rapid transit system. (Author)

Proceedings of the 30th Annual IEEE VTS International Conference on Transportation Electronics, September 15-17, 1980.

Lock, AM (Metropolitan Atlanta Rapid Transit Authority) *IEEE Vehicular Technology Society Conference Proc* Proceeding Sept. 1980, 5p, 1 Fig.

ORDER FROM: IEEE Service Center, 445 Hoes Lane, Piscataway, New Jersey, 08865

80CH1601-4

26 343802

TRANSPORTATION SAFETY INFORMATION REPORT: 1980 (ANNUAL SUMMARY)

The "Transportation Safety Information Report," is a compendium of selected national-level transportation safety statistics for all modes of transportation. The report presents and compares data for transportation fatalities, accidents, and injuries for the current and preceding years. Featured in this report is the annual summary of modal safety hazards and safety program highlights for 1980, as well as summary charts detailing modal safety trends from 1970-1980.

Compagna, M

Transportation Systems Center Final Rpt. DOT-TSC-RSPA-81-7, June 1981, 85p

ACKNOWLEDGMENT: NTIS

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PB81-227498

26 344410

SURVEY OF FIRE MODELING EFFORTS WITH APPLICATION TO TRANSPORTATION VEHICLES

This report presents the results of a survey of analytical fire models with applications pertinent to fires in the compartments of transportation vehicles; a brief discussion of the background of fire phenomena and an overview of various fire modeling concepts are also included. Six analytical fire models have been identified and the basic model design and construction of each is presented along with the data input requirements and output format.

Hathaway, WT

Transportation Systems Center Final Rpt. DOT-TSC-OST-81-4, July 1981, 89p

ACKNOWLEDGMENT: NTIS

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PB81-238404

26 345243

SAFETY ASPECTS OF THE HIRE AND DRIVE OMNIBUS

The report is issued as the twenty first progress report of the committee. In recent years there has been a considerable increase in demand for hire and drive buses. The committee's inquiry has considered the road safety risk arising from the lack of safety requirements for the hire and drive omnibus industry. The committee recommends that: (a) all hire and drive vehicles with a seating capacity of eight and over be required to undergo a compulsory safety inspection at least once a year; (b) all vehicles registered under the Transport Regulation Act 1958 as a "private omnibus" and with a seating capacity of eight and over should be subject to a vehicle safety inspection at least annually; (c) the driver of any hire and drive vehicle with a passenger seating capacity in excess of twenty-two must be licensed by the Transport Regulation Board; (d) drivers of all hire and drive vehicles with a seating capacity of eight and over must hold a licence endorsed for driving in hazardous conditions as defined by the Transport Regulation Board; (e) legislation be introduced to ensure that the passenger carrying capacity of all hire and drive and "private omnibus" vehicles is based on the manufacturer's original specifications; and (f) jump seats must not be fitted to hire and drive omnibuses. (TRRL)

Victoria Parliament Monograph No. 5/1980, 1980, 12p

ACKNOWLEDGMENT: TRRL (IRRD 250551), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

26 345451

PROBABILITY OF TRAINS OVERTURNING IN HIGH WINDS

Experience in various parts of the world has shown that trains may overturn in very high winds. The aerodynamic forces on trains in cross-winds and other factors affecting overturning are discussed. A procedure for estimating the probability of overturning per year for fleet operation of trains over a particular route is described. Most of the probability is predicted to come from a small length of track on embankments in coastal locations or in hilly country. The computation is very sensitive to errors in the parameters that describe the exposure of the sites, so the value of the total probability is only approximate.

Wind Engineering, Proceedings of the International Conference, 5th, Colorado State University, Fort Collins, July 8-14 1979.

Cooper, RK (Railway Technology Center, England)

Pergamon Press, Incorporated Conf Paper Volume 2, 1980, pp 1185-94

ACKNOWLEDGMENT: EI

ORDER FROM: Pergamon Press, Incorporated, Maxwell House, Fairview Park, Elmsford, New York, 10523

26 345747

FIRES IN PUBLIC SERVICE VEHICLES IN THE UNITED KINGDOM

Past records show that fires in public service vehicles (PSV's) in the United Kingdom result in few injuries per year. In apparent contradictions of this, there is evidence to suggest that the time it takes for fire to spread through a PSV can be short and can be considerably exceeded by occupant evacuation times via emergency exits. The characteristics of rapid flame spread and slow evacuation times are related to the possibility of a catastrophic collision between a PSV and a potentially high-risk vehicle such

as a petrol tanker. Although fire-retarding materials are being used in PSV's, it is doubtful if these will ultimately prevent extensive injuries in an accident of this nature, and the solution seems to hinge on the design of such vehicles as tankers. The cost of a multi-vehicle garage fire is discussed and the importance of garage design in addition to vehicle design is considered.(a) (TRRL)

Johnson, W Walton, AC (Cambridge University, England) *International Journal of Vehicle Design* Vol. 2 No. 3, Aug. 1981, pp 322-334, 1 Fig., 6 Tab., 3 Phot., 22 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257792)

ORDER FROM: Inderscience Enterprises Limited, La Motte Chambers, St Helier, Jersey, England

26 346143

CRASH PROTECTION SYSTEMS FOR HANDICAPPED SCHOOL AND TRANSIT BUS OCCUPANTS. VOLUME 1. EXECUTIVE SUMMARY

A series of eight school and transit buses were subjected to nine frontal fixed barrier, two rear moving barrier and three side impact tests. Each test bus carried up to seven fully instrumented dummies-one in the driver seat, two in forward facing seats, two in side facing seats, and two in wheelchairs. The wheelchairs were secured and the wheelchair-seated dummies were restrained using commercially available restraint systems. The dummy locations, wheelchair securements, passenger restraints, crash modes and impact speeds were selected on the basis of a state-of-the-art survey and accident data analysis of operational practices and experiences with school and transit buses. The report contains the results of the state-of-the-art survey, accident data analysis and the bus crash test program. Typical deceleration crash pulses for a wide range of school bus sizes and full size transit buses are presented, as are plots of dummy trajectories and records of dummy injury measures for the selected test conditions.

See also Volume 2, PB82-121088.

Khadikar, AV Will, E

Minicars, Incorporated, National Highway Traffic Safety Administration
Intrm Rpt. IR-1074-12-80-VOL-1, HS-805 821, Dec. 1980, 32p, 3 Tab.

Contract DOT-HS-7-01774

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-121070

26 346144

CRASH PROTECTION SYSTEMS FOR HANDICAPPED SCHOOL AND TRANSIT BUS OCCUPANTS. VOLUME II. TECHNICAL REPORT

This is the Interim Report of the National Highway Traffic Safety Administration (NHTSA) program, "Crash Protection Systems for Handicapped School and Transit Bus Occupants" (Contract DOT-HS-7-01774).

See also Volume 1, PB82-121070 and Volume 3, PB82-121096. n

Khadikar, AV Will, E

Minicars, Incorporated, National Highway Traffic Safety Administration
Intrm Rpt. IR-1074-12-80-VOL-2, HS-805 822, Dec. 1980, 252p, Figs., Tabs., 93 Ref.

Contract DOT-HS-7-01774

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-121088

26 346145

CRASH PROTECTION SYSTEMS FOR HANDICAPPED SCHOOL AND TRANSIT BUS OCCUPANTS. VOLUME III. APPENDICES A, B, C, AND D

The volume contains appendices A, B, C, and D to the report, including manufacturers of dummies, anthropometry, survey questions and deceleration crash pulses.

See also Volume 2, PB82-121088, and Volume 4, PB82-121104.

Khadikar, AV Will, E

Minicars, Incorporated, National Highway Traffic Safety Administration
Intrm Rpt. IR-1074-12-80-VOL-3, HS-805 823, Dec. 1980

Contract DOT-HS-7-01774

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-121096

26 346146

CRASH PROTECTION SYSTEMS FOR HANDICAPPED SCHOOL AND TRANSIT BUS OCCUPANTS. VOLUME IV. APPENDIX E

This appendix contains the test reports prepared by Dynamic Science, Inc. on crash tests conducted with two small school buses.

See also Volume 3, PB82-121096. Also pub. as Dynamic Science, Inc., Phoenix, AZ. report No. 4936-78-105.

Khadikar, AV Will, E

Minicars, Incorporated, National Highway Traffic Safety Administration
Intrm Rpt. IR-1074-12-80-VOL-4, HS-805 824, Dec. 1980, 525p, Figs., Tabs., 2 App.

Contract DOT-HS-7-01774

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-121104

26 346755

CRASH PROTECTION SYSTEMS FOR HANDICAPPED SCHOOL BUS OCCUPANTS. VOLUME I. EXECUTIVE SUMMARY

A series of sled tests were conducted to determine the influence of five major parameters on the occupant protection of handicapped school bus passengers. The selected parameters were bus crash pulse, dummy size, wheelchair orientation, wheelchair securement type and passenger protection system. In the tests, both ambulatory and wheelchair seated occupants were simulated with anthropomorphic dummies, and padding and belt systems were evaluated in both large and small school buses. The parameters were established via baseline bus crash tests, a state of the art survey, and an accident data analysis. The present report describes the results, and analyses of the results, which show the influence of each parameter on occupant protection. The results provide a data base that could be effectively used in designing complete passenger protection systems for handicapped passengers in school buses.

See also Volume 3, PB82-131756.

Khadikar, AV Will, E Costa, V

Minicars, Incorporated, National Highway Traffic Safety Administration
Final Rpt. FR-1074-03-81-VOL-1, HS-805 826, Mar. 1981, 33p

Contract DOT-HS-7-01774

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-131749

26 346756

CRASH PROTECTION SYSTEMS FOR HANDICAPPED SCHOOL BUS OCCUPANTS. VOLUME III. APPENDICES

The objectives of the program were to identify and document lifts, ramps, tie-downs/securement systems and other ingress and egress hardware that has been used in the transportation of handicapped passengers-further, to critically evaluate the available hardware to assess its impact on the convenience and safety of the handicapped occupant during operational and crash situations; to compile, analyze and evaluate existing accident data involving handicapped occupants in order to ascertain specific causes of injuries and deaths; and to identify the injury causing hardware and mechanisms.

See also Volume 1, PB82-131749.

Khadikar, AV Will, E Costa, V

Minicars, Incorporated, National Highway Traffic Safety Administration
Final Rpt. FR-1074-03-81-VOL-3, HS-805 828, Mar. 1981, 354p, Figs.

Contract DOT-HS-7-01774

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-131756

26 348395

DEATH ON THE ROAD

The author, using accident statistics, examines the significance of road accidents. Because a high proportion of people killed in road accidents are aged less than 40, it is more realistic to consider the years of life expectancy lost when making comparisons of the major causes of death. Although

cancers of the large intestine, rectum and breast kill more people than cars, the life expectancy lost in road accidents is twice as much. Lung cancer and road accidents are almost equal in the number of years of life expectancy lost. The author is appalled that pedestrians are more likely to be killed than people inside cars. Buses and trains are a much safer means of travel, and are much less dangerous to pedestrians. It is argued that while a certain casualty rate among the users of motorised transport may be acceptable, a single pedestrian death should be intolerable. If all journeys which could be made by train and bus were made in this way, the saving in death and injury would be enormous. (TRRL)

Smith, T *New Scientist* Vol. 92 No. 1276, Oct. 1981, pp 260-261, 3 Fig., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258746)
 ORDER FROM: IPC Magazines Limited, King's Reach Tower, Stamford Street, London SE1 9LS, England

DOTL JC

26 348510

PHILOSOPHY AND PRACTICE BEHIND RAILWAY SAFETY INSTALLATIONS [PHILOSOPHIE ET PRATIQUE DES INSTALLATIONS DE SECURITE FERROVIAIRES]

The traditional principles for railway safety were established for installations which, in the first instance were purely mechanical and, later, electromechanical ones. They have made for constant improvement in safety and it has been possible to maintain them through a few adaptations when electronic devices came into use. A calling into question of these principles results from, on the one hand, the reliability and probability approaches to safety first noted in aviation and in the nuclear energy industry, and, on the other, from the development of digital technologies. A thorough methodological study appears to be an indispensable prerequisite for the application of the latter in railway installations. Railway engineers, therefore, must be trained in these new disciplines, because it is important that they conserve their role as system designers. [French]

Weber, O *Revue Generale des Chemins de Fer* Vol. 90 No. 4, Apr. 1981, pp 273-288, 12 Refs.

ACKNOWLEDGMENT: EI
 ORDER FROM: ESL

DOTL JC

27 335070

**CABLELESS TELEVISION MONITORING IN THE
AMSTERDAM METRO**

A carrier-frequency operated cableless television monitoring system is described which was installed in Amsterdam Metro to monitor both station and train operations. Pictures from two cameras on the platform are electronically combined and transmitted to the screen in the cab to give the

driver a clear view of all doors of a 150 m long train. It has been shown that the same carrier-frequency band can be used on neighboring tracks in the same station without any mutual interference in television reception.

Raven, KL Stach, M *Siemens Power Engineering* Vol. 1 No. 7, July 1979, pp 209-213

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

28 329509

SELLING URBAN TRANSIT [L'art de vendre les transports en commun]

This paper discusses the effectiveness of marketing as a tool to increase urban transit ridership. It was concluded that service improvements--special bus lanes, express buses, and monthly passes--and "hard sell" advertising have been responsible for increasing transit ridership in Toronto, Montreal, Ottawa, and Edmonton. Selling the economy of transit has been a popular and successful advertising ploy to divert people from their cars. [French]

Ross, G *TRANSPO 80* Vol. 3 No. 4, 1980, pp 22-24, 1 Fig.

ORDER FROM: Department of Transport, Canada, Public Affairs Division, Ottawa, Ontario K1A 0N5, Canada

28 331231

MARKETING IN MARTA: EVOLVING AN INNOVATIVE ROLE IN MASS TRANSIT

This report presents an analysis of transit marketing and provides some specific experience that may be instructive to transit properties gearing-up to a full marketing effort. The case study describes the growth of the marketing effort within MARTA. The case provides an opportunity to follow the evolution of one effort in public sector marketing--the consideration of the what and the how, as well as some guesses as to how the new era of transit marketing will fare. The analysis process focuses on: (1) MARTA's position in the market; (2) the environmental forces and factors that affect MARTA marketing; (3) the broader organization into which MARTA marketing must fit; (4) marketing functions and responsibilities within MARTA; (5) MARTA's marketing mix--the product, price, and promotion of transit in Atlanta; and (6) MARTA's methods and procedures to market its product, some successes and failures, and plans for the future. (UMTA)

Bates, JW

Georgia University, Athens, Urban Mass Transportation Administration, (GA-11-0006) UMTA-GA-11-0006-81-5, July 1979, 23p

ACKNOWLEDGMENT: UMTA

ORDER FROM: NTIS

PB81-154817

28 331360

PROGRAMMATIC RESEARCH APPROACH TO TRANSIT MARKETING

This article describes, in three phases, a program of research designed to illustrate a potentially useful series of methodologies for transportation marketing research. This research is reported in three phases. The research program was operationalized in a medium-sized southwestern city. Travel patterns in the city reflect the dominance of the car, with over 97 percent of trips taken in private automobiles. The results of the research are specific to the characteristics of this research investigation; the methodology is applicable in any area.

Golden, LL (Texas University, Austin); Alpert, MI Betak, JF *Traffic Quarterly* Vol. 34 No. 4, Oct. 1980, pp 627-647, 12 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

28 335700

MARKETING PUBLIC TRANSIT: CONSUMER BEHAVIOR, MARKET SEGMENTATION, AND LOW CAPITAL MARKETING APPROACHES

This report summarizes the results of consumer behavior, market segmentation, and low capital marketing approaches for public transit in medium-size urban areas. Data collection was accomplished by the use of two questionnaires. One questionnaire was for the consumers in the Nashville Metropolitan Area and the other was for selected transit agencies nationwide. The following categories of questions were included on the home interview survey: work trip; modal choice; Nashville transit system; transit improvement ideas; marketing ideas; and consumer information. A proportionately stratified sample design was selected to provide a statistically reliable sample and approximately 200 personal interviews were completed. Transit questionnaires were sent to 50 transit companies serving medium-size urban areas. Twenty-six completed questionnaires (52 percent response rate) were returned. The following categories of questions were included on the transit agency survey: transit agency and service area; transit

characteristics; information service and advertising; marketing; ridership and fare structure; special service; and fleet size. On the basis of the research performed and the results achieved in this project, the following recommendations are made: 1) more emphasis should be placed on marketing efforts directed toward specific market segments within the constraints of low cost marketing strategy; 2) new promotional campaigns geared to specific market segments should continue to be offered and developed; 3) efficient express bus service as a necessity for mode change to bus should be offered; 4) marketing efforts should be segmented toward those consumer characteristics that affect the mode choice decision and simultaneous service improvement is essential; and 5) travel mode segments can be identified to facilitate specific marketing efforts to improve transit patronage. (UMTA)

Surti, VH

Tennessee State University, Urban Mass Transportation Administration
Final Rpt. UMTA-TN-11-0004-81-1, Jan. 1981, 119p

Contract TN-11-0004

ORDER FROM: NTIS

PB81-189730

28 342377

MARKET OPPORTUNITY ANALYSIS FOR SHORT-RANGE PUBLIC TRANSPORTATION PLANNING--METHOD AND DEMONSTRATION

This report is a part of NCHRP Project 8-16, "Guidelines for Public Transportation Levels of Service and Evaluation," which is directed toward the development of a marketing orientation for short-range transportation planning activities in small-to medium-sized urban areas (50,000 to 500,000 population range). The purpose of this report is to relate the methodology and demonstration of a market opportunity analysis for short-range urban public transportation planning. The findings and methodology set forth herein represent information and experience gained from (1) the many site visits to urban areas by the research team members, (2) a review of past research literature concerning urban transportation marketing studies, and (3) the field data and analysis gained from the test city--Jacksonville, Florida. The development of methodology and application of a market opportunity analysis (MOA) for proper identification of viable urban public transportation market segments has been an arduous task. The use of marketing terminology in public transportation has become widespread in recent years, and terms such as "target markets" or "market segments" often are used even though these groupings usually are constructed through definition rather than good marketing research. As used in this report, the term "market segments" refers to groups of potential buyers with similar responsiveness to a marketing appeal. Segmentation is a strategy for selecting and appealing to market targets. And market analysis is an analytical process for finding additional opportunities in markets for a product, a good, or a service. While the MOA process is known to the private business world, its application to public transportation can be termed social science applied research. This report describes the research steps followed in the experimental application of an MOA process to locate and evaluate public transportation opportunities. Although the MOA process is relatively new and in this application uses sophisticated quantitative techniques, an attempt has been made to simplify the process to facilitate future MOA replications. The report describes the conceptual steps of analysis techniques including example data tables. Finally, the report describes the actual segmentation analysis attributes study and concept tests used in the test city and reports the results of these studies. (Author)

Woodruff, RB Barnaby, DJ Mundy, RA Hills, GE (Tennessee University, Knoxville) *NCHRP Report* No. 212, Sept. 1981, 132p, Figs., Tabs., Apps.

ORDER FROM: TRB Publications Off

28 345959

RIDERSHIP RESPONSE TO CHANGES IN TRANSIT SERVICES

Evidence on ridership response to changes in transit service is presented. Mean values and standard deviations of transit-service elasticities are presented for changes in headways, vehicle miles, in-vehicle and out-of-vehicle travel time, transfers, and seat availability. A review of the methods used in estimation of demand elasticity is presented as well as suggestions on how

service elasticities can be used in joint transit-fare and service-level planning to improve revenues and ridership. (Author)

This paper appeared in Transportation Research Record No. 818, Design of Public Transport Services.

Lago, AM Mayworm, PD McEnroe, JM (Ecosometrics, Incorporated)
Transportation Research Record No. 818, 1981, pp 13-19, 6 Tab., 33 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

29 323409

PUBLIC TRANSPORT IN HELSINKI [Transports publics d'Helsinki-développement d'une image de l'entreprise]

Public transport in Helsinki forms an organization which belongs to the municipality. It offers passengers numerous and widely varied services. In the past however, these services were often very difficult to identify and use because the vehicles, different types of buildings and structures, equipment and information printed were presented under different formats. A great effort of coordination was made and a systematic programme set up to project a coherent image of the organization to the public. (TRRL) [French] Luoto, L (Helsingin Kaupungin) *UITP Revue* Vol. 28 No. 1, Jan. 1979, pp 67-71, 4 Fig., 8 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 109195)

ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

DOTL JC

29 329023

COGNITIVE ASPECTS OF TRANSIT USE IN AREAS OF HIGH AND LOW TRAVEL DENSITY

The report addresses several questions regarding the manner in which information on transit systems should be prepared and disseminated. The report is divided into six chapters, ranging in topics from the fundamental broad-based questions of how well urban residents understand their city and the transit system, to specific questions of what to include on a transit map. The report identifies the numerous steps a transit planner needs to consider in preparing a comprehensive information dissemination (marketing) program. In this report, the six studies of cognitive factors in mass transit use are reported, namely: (1) Interviewers posing as lost travelers gathered route information from fellow travelers; (2) Business establishments were telephoned and asked for route information/direction to their places of business; (3) Bus riders were surveyed to determine whether route names or route numbers were preferred; (4) Distance perception and "mental maps" of Chicago were studied in a sample of respondents; (5) Three varieties of transit route maps were tested for their utility to users; and (6) A literature survey of cognitive factors in transportation use was performed. All studies point out problems existing in the proper form and usage of transit route information by the public.

Soot, S Stenson, HH

Illinois University, Chicago, Urban Mass Transportation Administration, (UMTA-IL-11-0028) Final Rpt. UMTA-IL-11-0028-81-1, Dec. 1980, 79p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-153959

29 334363

TIMETABLE, PASS, AND TOKEN DISTRIBUTION ANALYSES

RTD route timetables are currently a primary source of transit information. The District offers a fare reduction program to its customers in the form of passes or tokens. Substantial quantities of timetables, tokens, and passes are distributed to a wide range of outlets on a regular basis. At present, RTD has 82 regular outlets for timetables, 66 for passes, and 17 for tokens. Bus tokens and passes are also distributed at 35 King Soopers and 54 Safeway stores. An additional 50 timetable outlets are serviced on a request basis. Two primary reasons for this study are the concern over the rising cost of distributing timetables, passes, and tokens, and a recognized need to explore policy options relevant to the distribution system. The purpose of this memorandum is to analyze the existing distribution system and to suggest system changes that could maximize the availability of timetables, passes, and tokens while minimizing the costs. (Author)

Regional Transportation District Jan. 1980, 20p, 2 Fig., 5 Tab., 3 App.

ORDER FROM: Regional Transportation District, Office of Policy Analysis, 56 Steel Street, Denver, Colorado, 80206

29 334364

INFORMATION AIDS FOR TRANSIT CONSUMERS: CONFERENCE PROCEEDINGS

The Urban Mass Transportation Administration of the U.S. Department of Transportation asked the Transportation Research Board to conduct a Conference on Information Aids for the Transit Consumer. The conference provided a forum for the discussion of transit marketing techniques as they

pertain to consumer information systems. The objectives of the conference were to identify the issues and problems that relate to transit consumer information elements and to discuss the desirability of a handbook on transit marketing. The meeting was structured around workshops that focused on system maps, timetables, destination (roller) signs and bus-stop signs, and systems orientation. This report contains a summary of the workshops as well as the plenary session and the resource papers. (Author)

Proceedings of a Conference held at the National Academy of Sciences, Washington, D.C., April 30-May 2, 1979.

Transportation Research Board, Urban Mass Transportation Administration, (UR12) Final Rpt. Nov. 1979, 64p, 1 Fig., Refs.

Contract DOT-UT-80040

ORDER FROM: TRB Publications Off

29 334367

COMPREHENDING SPATIAL INFORMATION: THE RELATIVE EFFICIENCY OF DIFFERENT METHODS OF PRESENTING INFORMATION ABOUT BUS ROUTES

The study examined the relationship between mode of presentation and ease of comprehension for information about bus routes. The information was presented to subjects in one of the following four ways: (a) as a conventional road map, (b) as a schematic map, (c) as a set of lists of bus stops in sequential order, and (d) as a set of lists of bus stops in alphabetical order. Subjects were given pairs of location names and had to work out which buses were required to get from the first to the second location in each pair. Overall times to solution were faster for the maps than for the lists, with the schematic map being clearly the best form of representation for this task. Complexity (i.e., number of buses required to solve a problem) did not affect performance with the maps but did with the lists, especially the alphabetical lists. (Author)

Barrtram, DJ (Hull University, England) *Journal of Applied Psychology* Vol. 65 No. 1, 1980, n.p., 5 Fig., Refs.

ORDER FROM: American Psychological Association, Incorporated, 1200 17th Street, NW, Washington, D.C., 20036

DOTL JC

29 334368

ROUTES LOOPS TRANSFERS AND DEAD ENDS

This article presents a selection of current map systems from around the world. Readers can begin to compare, contrast and evaluate solutions that have withstood actual use in major urban centers. Professional graphic designers as well as the general public are often ignorant of the graphics used by mass transportation systems beyond their normal areas of travel. Unfortunately, these graphics have not received as much attention from graphic designers as have other aspects of visual communication. The basic texts on this subject are few, although Bertin's *Semiologie Graphique* and Herdeg's *Graphis: Diagrams* provide a good starting point. (Author)

Marcus, A *Print* Vol. 32 No. 2, 1978, pp 49-98

ORDER FROM: P.C. Publications, 355 Lexington Avenue, New York, New York, 10017

DOTL JC

29 336690

THE GENERATION OF INTEGRATED PUBLIC TRANSPORT TRAVEL INFORMATION BY COMPUTER

The existing procedures utilized by travel enquiry clerks, when answering inquiries on journeys involving interchange, are often cumbersome and sometimes slow. The use of a computer to compile travel information would thus appear to be of benefit to travellers and public transport operators alike by providing the facilities for quicker, more accurate and consistent responses to inquirers. The practicability of producing computer software that would generate schedules of trip-opportunities from the public transport timetables was investigated by the Transport and Road Research Laboratory. The Report describes the software developed, the various options that may be adopted in it, its input and its output. The software has a number of other applications of interest to local authorities, which are also described. (Copyright (c) Crown Copyright 1980.)

Also pub. as ISSN-0305-1315.

Pickett, MW

Transport and Road Research Laboratory TRRL-SR-630, 1980, 17p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-160210

29 348444

TIMETABLE EVALUATION (2)

For results of stage 1 of the survey, see IRRD 258857. The stage 2 survey shows that: (I) there is a preference for the 12 hour clock (II) there is little difference between preference for the four 12 hour clock/2 dimension styles, though the "boxed" format proved most popular (III) respondents preferred the full timetable to the display of clockface headways or other means of reducing the timetable size of repeated headway services (IV) the 12 hour clock one dimension timetable, with times listed down, was preferred (V) timetable ownership was far higher in Kidderminster than Holbeach, though this does not appear to have affected results. Examination of services in a town of 45000 population suggests that about 20 different one dimension leaflets would be needed to cover the town. (TRRL)

National Bus Company Monograph No. 24, Mar. 1979, n.p., Figs., Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 258858)

ORDER FROM: National Bus Company, Marketing & Operational Res, Deanery Mews, Minster Precinct, Peterborough, England

29 348445

TIMETABLE EVALUATION

This report describes a study to test how comprehension of bus timetables

depends on the format. Passengers were asked to rank different formats in order of preference, to show comprehension of actual departure time, and to indicate their ease of using the 24 hour clock. The methodology involved questioning on the buses and in the city centre at three locations (Peterborough, Southend and Kidderminster) using timetables typical of the three areas, and a representation of the Merseyside and W Yorkshire PTE style. 230 passengers were questioned at each site (105 "on-bus"; 125 "High Street") making a total of 690. A stratified random sample was used at the high street sites. Results showed that: (I) less than 40% of interviewees were at ease with the 24 hour clock (II) the Southend type format proved the most popular (III) very few people (less than 15%) correctly answered the timetable question (IV) less than 40% of respondents had a timetable at home. As over a third of respondents do not appear to understand the concept of a two dimensional timetable consideration may have to be given to designing simple one dimensional leaflets to supplement existing timetable booklets.(a) (TRRL)

National Bus Company Monograph No. 17, Oct. 1978, n.p., Figs., Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 258857)

ORDER FROM: National Bus Company, Marketing & Operational Res, Deanery Mews, Minster Precinct, Peterborough, England

31 320358

PRIORITY TECHNIQUES FOR HIGH OCCUPANCY VEHICLES-- STATE-OF-THE-ART

This report reviews programs and techniques in operation or under construction as of 1975, which provide buses and carpools priority of movement on streets and freeways. It contains discussion, with photographs and charts, of characteristics of programs in operation, and criteria for planning and evaluations; and appendices A-B. Summary of selected characteristics of 17 freeway-related and 37 arterial city street priority techniques: shows type, date started, project length, hours of operation, major agencies involved, costs, and results. (TSC)

Paper Copy. List of overseas cities having priority activities, references, additional sources of information, and glossary (11 p.).

Department of Transportation One-Time Nov. 1975, 38p

ACKNOWLEDGMENT: Transportation Statistical Reference File, TSC (358)
ORDER FROM: OST

31 322086

BASILDON: A BUS SYSTEM REVITALIZED

Details are given of the measures carried out to help alleviate traffic congestion problems in Basildon new town by improving the public transport system. A public transport working group comprising all the relevant authorities and the bus company was set up to identify aims and requirements. Some of the problems identified were unreliability, indirect routing, complex fare structures and lack of service information. Amongst the measures taken were: the provision of an adequate service between each neighborhood and its district centre and the town centre; the introduction of a travel card with fare simplification; house to house distribution of promotional material, public transport maps and fares and timetable information. The new routes proved to be a success and emphasis is given to the success played by the large scale public information exercise. Amongst the conclusions reached are that the success of any scheme to improve public transport cannot necessarily be measured in terms of number of car owners persuaded to use public transport, but rather must be measured in terms of the numbers who are persuaded to make better use of the services and are thus dissuaded from acquiring their own car.

Brown, C MacKenzie, J (Basildon Development Corporation) *Planner* Vol. 66 No. 2, Mar. 1980, pp 42-44, 1 Fig., 3 Phot., 6 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 248716)
ORDER FROM: ESL

DOTL JC

31 322161

MODELS FOR TRANSPORTATION LEVEL OF SERVICE

The paper describes the development of models for predicting travel times of door to door trips for both transit and automobile trips. The models for access times have a distribution associated with them and permit a truly disaggregate assignment of travel time components. The equations for linehaul travel time of the highway using modes (bus, auto) are volume dependent and can thus be used in equilibrating travel demand and level of service. All the models are related directly to transportation policy options-changing bus line spacings, bus headways, number of (priority) lanes etc-and translate the effects of such policies into specific values of the level-of-service attributes without the need to code networks and run paths. The use of the model in a practical application is also discussed. (a) (TRRL)

Talvitic, A Dehghani, Y (State University of New York, Albany); Batchelor, BH *Transportation Research. Part B: Methodological* Vol. 14B No. 1/2, Mar. 1980, pp 87-99, 5 Fig., 4 Tab., 10 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 247703)
ORDER FROM: ESL

DOTL JC

31 322513

LOCATION OF RAIL STATIONS FOR MANY TO ONE TRAVEL DEMAND AND SEVERAL FEEDER MODES

Suburbs can be served by a railway line in a number of ways. What usually happens however is that the train travels to a large main station and stops at every station on the way. The aim of the study is to determine where to build new stations along the line.

Hurole, VF Wirasinghe, SC *Journal of Advanced Transportation* Vol. 14 No. 1, 1980, pp 29-45, 7 Fig., Refs.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Institute for Transportation, Incorporated, 1410 Duke University Road, Durham, North Carolina, 27705

31 322693

PUBLIC TRANSIT/PRIVATE POOLING: MOVING MORE PEOPLE. PUBLIC TRANSIT COMES OF AGE

Cities, towns and some rural areas are responding to the increasing consumer demand for convenient, affordable mass transit with a variety of creative programs. Most major cities are improving their existing mass transit systems by providing incentives to make it easier for more people to take advantage of public transportation. In Los Angeles bus ridership has climbed 48% in the last five years with 1.2 million persons using the city buses every day. Improvements introduced by the city's Rapid Transit District include special bus lanes and contra-flow lanes. Employers are providing free or discount bus passes. Seasonal public transportation for recreational use is also provided. Successful fare programs in some cities are also discussed and include a free off-peak-hours bus service in Trenton N.J., shopper specials for the elderly, and no-fare bus service in Seattle. Small cities are also dramatically increasing their transit use. Rural transportation programs operated by the Department of Welfare have proved successful in West Virginia. Community experience across the country proves that public transportation could be made to work to conserve energy.

Willett, S (National Consumers' League) *Energy Consumer* Sept. 1980, pp 14-15

ORDER FROM: Department of Energy, Office of Consumer Affairs, 1000 Independence Avenue, SW, Washington, D.C., 20585

31 322702

LOWER MANHATTAN TRANSPORTATION MANAGEMENT STUDY

This study develops a transportation management plan to assign street use priorities, lessen pedestrian/vehicular conflicts and identify low capital cost improvements to implement the plan. The plan provides for improved pedestrian and vehicular circulation, more efficient surface transit operations, increases pedestrian and vehicular safety, more efficient goods movement and delivery access, improved access to mass transit, increased pedestrian space and reduced air pollution levels. The overall vehicular traffic flow plan involves the creation of traffic cells in the assignment of direction and classification to the streets. In addition to the overall circulation plan, specific components of the circulation system were investigated. The latter investigation led to the development of recommendations and the identification of improvements which could be implemented. An implementation schedule was developed, capital costs were estimated, and possible funding sources were identified.

Prepared for and submitted to the New York City Departments of City Planning and Transportation and the Mayor's Office of Development.

Vollmer Associates Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-IT-09-0034, May 1980, 130p, Figs., Tabs.

ORDER FROM: NTIS

31 324665

THE EVALUATION OF ACTIVE BUS-PRIORITY SIGNAL ROUTES

In an attempt to provide priority facilities for high occupancy vehicles, many cities have investigated or installed active bus priority signals at selected intersections. This paper describes one such installation at the intersection of Bell Street and Oriel Road in Heidelberg, Victoria, Australia. In particular, it describes the impact of the signals on bus performance levels and on non-priority traffic performance levels. An evaluation is performed taking account of the costs of the installation, the changes in the amount of fuel consumed and the changes in the perceived budgeted delay of people passing through the intersection. Perceived, budgeted delay is defined as to take account of the variability of delay and the perception of small delay changes. The evaluation at this site showed that, for various reasons, it was difficult to justify the priority signals at this isolated intersection. The evaluation is then extended to the concept of a route of bus priority signal intersections. A simple model is built to simulate the performance of such a priority route and the evaluation repeated. As a result of using perceived delay as a measure of performance, it is then shown that although the priority intersections along the route may not be individually justifiable, the priority route as a whole may show considerable net benefits. These benefits will occur given

that there are greater than a critical number of priority intersections on the route. This critical number will depend on the assumptions made in the priority route model. It is concluded that re-evaluation of bus priority signal intersections along the lines suggested in the paper may yield a number of viable bus priority intersections and bus priority routes which were previously considered to be non-viable. (a) (TRRL)

Richardson, AJ (Monash University, Australia) *Transportation (Netherlands)* Vol. 9 No. 2, June 1980, pp 173-189, 2 Fig., 4 Tab., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 249257)

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31 325989

OPERATIONS AND DESIGN GUIDELINES FOR FACILITIES FOR HIGH- OCCUPANCY VEHICLES

Design guidelines intended to enhance the safety of high- occupancy vehicle (HOV) preferential-treatment projects are proposed. These guidelines reflect the principal findings of a nationwide research program sponsored by the Federal Highway Administration in 1977 that involved the examination of more than 22 HOV projects for safety issues. Virtually every type of HOV technique was investigated, including freeway and arterial separated facilities, concurrent-flow lanes and contraflow lanes, freeway toll-plaza lanes, freeway ramp treatments, and arterial bus-preemption strategies. Cause-and-effect relationships of accident patterns on these projects were investigated and general guidelines formulated. Based on this analysis, HOV treatment-specific recommendations are offered to assist transportation planners and designers in improving the operations and design of HOV facilities with respect to safety.

This paper appeared in *Transportation Research Record 757, Facility Design and Operational Effects*.

Bowman, D Miller, C Deuser, B (Beiswenger, Hoch and Associates) *Transportation Research Record* No. 757, 1980, pp 45-54, 4 Tab., 3 Ref.

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DOTL JC

31 328969

PLANNING AND DESIGNING A TRANSIT CENTER BASED TRANSIT SYSTEM: GUIDELINES AND EXAMPLES FROM CASE STUDIES IN TWENTY-TWO CITIES

The purpose of this report is to examine the transit center concept to determine if and how it might be applied in American cities to provide more efficient and effective transit service on an areawide basis. Transit centers are interchange facilities that will be typically located in suburban areas at or near major activity centers and will serve as focal points for high levels of local, radial, and circumferential transit service. Bus/bus, bus/rail, and auto/rail transfers will occur there. In this report, present metropolitan travel patterns in American cities are examined. The inability of highly downtown-focused transit networks to meet metropolitan travel needs in American cities is discussed. In addition, the grid network approach to route planning is critiqued. A planning framework, consisting of 10 steps and designed to aid planners design transit centers, is presented. Each step of the process is illustrated with examples from 22 case studies which include four Canadian, one Indian, and one West German city. Abstracts of the case studies are included in Appendix A of this report. Regional shopping centers are suggested to be ideal sites for transit center locations. The transit center oriented network is assessed critically from an operational, financial, and political perspective. Sixty-two examples of areawide plans, location and design criteria, the physical design of downtown, freeway and suburban off-street transit centers and cost estimates are presented.

Schneider, JB Smith, SP Thompson, PD Heid, JL Ng, IW Washington University, Seattle, Urban Mass Transportation Administration, (UMTA-MA-11-0007) UMTA-WA-11-0007-81-1, Sept. 1980, 133p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-154569

31 329589

AREA TRAFFIC CONTROL IN BORDEAUX: A CONTRAST WITH BRITISH PRACTICE

A control system, known as Gertrude, has been used since 1976 in the central area of the city to maintain and improve peak flow, give emergency

vehicles priority, aid bus movements and remove congestion from critical areas. A "Bottle of Bordeaux" concept is used to model the system, where the orifice gives the limit to the throughput, the neck gives the method of control and the bottle provides a reservoir for excess demands. In this way, up to 36 fixed-time plan combinations are used to ensure that the critical junctions remain clear. The area is divided into four interacting zones with nine plans for each zone. Zone plans are based on a closed-loop system metering major routes. The author describes the operation and configuration of the central computer processing system which does not rely on vehicle-actuated control of individual signals. Data from the critical outstations are transmitted from local controllers to the central computer where overall plan changes are devised and carried out. The bus priority elements allow buses right up to the stop line at critical junctions. The major difference compared with UK policy is that Gertrude applies cartesian principles whereas UK traffic engineering usually employs a pragmatic piecemeal approach. (TRRL)

Morrish, DW *Traffic Engineering and Control* Vol. 21 No. 8/9, Aug. 1980, pp 433-436, 4 Fig., 13 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250398)

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DOTL JC

31 329686

MODEL STUDY BUS LANE KRIMPEN-ROTTERDAM [Modelstudie busbaan krimpén-rotterdam]

The effects of the free bus lane on traffic mode choice in the commuting traffic between Krimpen and Rotterdam are studied. The method of data acquisition as developed in the study, makes it possible to collect data in an efficient and cheap way for a disaggregate model study. The developed models give a good description of the traffic mode choice pattern at a certain moment. In the models four groups of variables are included (1) social-economic, (2) mobility, (3) accessibility and (4) journey times and journey costs. It is concluded that the influence of the bus lane on car traffic is negligible. Before and after studies show an almost equal number of cars during the morning peak-hour. The capacity of the car/bus system has increased by 5%. (TRRL) [Dutch]

Waterstaat Ministerie van Verkeer, Netherlands Monograph 1979, 101p, 13 Fig., 10 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 249913), Institute for Road Safety Research

ORDER FROM: Waterstaat Ministerie van Verkeer, Netherlands, Plesmanweg 1, The Hague, Netherlands

31 329687

MODELLING THE OPERATION OF URBAN PASSENGER TRANSPORT WITH THE HELP OF SPATIAL MATRICES

This article addresses the problem of mathematical modelling of the operation of urban passenger transport, a problem that has great practical importance for both the design of urban transport networks and the organisation of transport services for the urban population. It demonstrates that a model of urban passenger trips will only be adequate for this task if it reflects the distribution of those trips over the twenty-four-hour time period, as well as their distribution between different parts of the city: in other words, that it will only be adequate if it is dynamic. It is thus impossible to apply here classical (plane) matrices accommodating only two dimensions of the system-in this case zones of departure (origins) and arrival (destinations). For modelling urban passenger movements we have therefore to move to spatial (three-dimensional) matrices, and the article describes such a model which has been built. A method is proposed for processing the spatial matters by carrying out partitions of them. A new operation of the superposition (short multiplication) of plane and spatial matrices is introduced, which makes it possible to solve the problem of mathematical modelling of complex systems. A method is described whereby the dynamic model of urban passenger journeys has been used to optimise design solutions of urban transport networks and to improve the operation of urban passenger transport. Other possibilities for the use of spatial matrices in the modelling of complex urban systems are also indicated. (a) (TRRL)

Lieberman, SI (Moscow Architectural Institute) *Environment and Planning B* Vol. 7 No. 1, 1980, pp 87-94, 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250270)

ORDER FROM: Pion Limited, 207 Brondesbury Park, London NW2 5JN, England

DOTL JC

31 330374

PUBLIC TRANSPORT ACCESSIBILITY MEASUREMENT

This article describes a method of obtaining an aggregate index of accessibility to public transport services at any particular location in a specified area. The method involves measuring walk distances from individual household locations to all bus and rail access points within a specified walking distance from the household address. All services stopping at these points are then aggregated into a single notional service and an index of public transport accessibility based on this service is calculated. The application of the method in an area of inner London is discussed and some of the results obtained are presented. The article also investigates the relationship between the measures obtained and certain household characteristics such as household income and car ownership levels. (Author/TRRL)

Dallal, EA *Traffic Engineering and Control* Vol. 21 No. 10, Oct. 1980, pp 494-495, 1 Fig., 2 Tab., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250399)

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DOTL JC

31 330664

PARK AND RIDE, TOWARDS A BETTER USE OF PUBLIC TRANSPORT. KEYLIST OF PROVISIONS FOR CAR DRIVERS [Parkeer en reis. Naar een beter gebruik van het openbaar vervoer. Toetsingslijst voor de automobilist]

The Department of Transport in the Netherlands is planning to draw up a national park and ride plan. The Dutch tourist office ANWB has made a key list of requirements which a park and ride system has to meet to get the p r symbol. This key list can be used to show the possible shortcomings in the layouts of parking places at public transport stations which are entitled to p r. Requirements for before-transport, p r selection, parking, walking distance, comfort, public transport mode and after-transport are highlighted. [Dutch]

Dutch Touring Club ANWB Monograph Oct. 1979, 12p, 14 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 251542), Institute for Road Safety Research

ORDER FROM: Dutch Touring Club ANWB, Wassenaarseweg 220, Box 2200, The Hague, Netherlands

31 331057

ALLOCATION OF BUS TRANSIT SERVICE

To achieve an equitable distribution of its transit service, the Southern California Rapid Transit District intends to allocate service by formula to the communities it serves. The formula would have measures of ridership and population. Before a decision maker can set the relative weights of these two variables, the effect on service levels in the various constituencies must be determined. This paper describes a study that determined the formula that came closest to prescribing the existing levels of service. Data on population, service levels, and ridership were obtained from a system of area accounts, in which data are maintained at the census-tract level and then aggregated into larger areas as required. Regression was used to determine that the formula that best fit existing service levels would have weights of 48 percent on ridership and 52 percent on population. It was found that a better fit was obtained when service was measured in dollars expended rather than in bus kilometers. (Author)

This paper appeared in Transportation Research Record No. 761, Public Transportation Planning.

Woodhull, J (Southern California Rapid Transit District) *Transportation Research Record* No. 761, 1980, pp 47-50, 2 Tab., 2 Ref.

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31 331063

NEAR-SIDE OR FAR-SIDE BUS STOPS: A TRANSIT POINT OF VIEW

The optimum location of a bus stop near an intersection is defined as that which minimizes the sum of the cost of time to passengers and the operating cost of buses. Two cases, controlled and signalized intersections, are presented in this paper. A theoretical approach is adopted. A near-side and a far-side bus stop are assumed in the vicinity of the intersection under consideration. The relevant costs are calculated and compared. The location that minimizes these costs is chosen. The optimum location is shown to be

dependent on the demand for boarding and alighting from the bus at the near side or the far side and on the expected delay to the bus. Some simple rules are suggested. The method is illustrated by a numerical example to show the validity and practicality of the theory developed. (Author)

This paper appeared in Transportation Research Record No. 761, Public Transportation Planning.

Ghoneim, NSA Wirasinghe, SC (Calgary University, Canada) *Transportation Research Record* No. 761, 1980, pp 69-75, 7 Fig., 1 Tab., 7 Ref.

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31 331372

OPERATION OF A MODERN TROLLEYBUS SYSTEM: PART I

This report contains information pertaining to costs of trolley bus operation by Basle Transport, a public enterprise in charge of local public transport in northeast Switzerland. The report attempts to show that lower operating costs result from more frequent services, that there is less pollution of the environment, that allowances are made for developments in the fuel sector, that electrically powered vehicles have longer working life, and that trolley buses are popular with the general public. Three technical points are addressed: maneuverability, maximum speed, and problems involved with moving without overhead conductor wires in case of power cuts. The trolley buses have considerable maneuverability in that they can deviate over four meters from the middle line on either side. On straight stretches, trolley buses can reach the maximum legal speed of 60 kilometers per hour and can pass under the modern high speed overhead switches at 40 kilometers per hour. All Basle Transport trolley buses are fitted with a VW industrial power unit, which enables the vehicle to pass under stretches without current and also to maneuver in the service area. This report also contains data comparisons between trolley buses and motor-buses for the following categories: investments in vehicles and overhead conductor wires; fixed costs, i.e., depreciation allowance, interest payment, and garaging costs; variable costs, i.e., fuel, vehicle maintenance, and overhead conductor wire maintenance; and total costs per kilometer.

Third International Conference, Electric Vehicle Development Group, London, England, November 1979.

Stutz, C (Basle Transport)

Peregrinus (Peter) Limited Nov. 1979, pp 49-50

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31 331373

OPERATION OF A MODERN TROLLEYBUS SYSTEM: PART II

This paper discusses contact lines that are used with modern trolley buses. Since the vehicle may drift as far as 4-5 meters to either side of the contact line, the contact wires are also under lateral stress from the pressure of the current collector. A fully elastic system accommodates this and also the considerable increase of schedule speed due to better vehicles and roads. In connection with the pressure of the current collector, the slanted pendulum suspension with its horizontal and vertical components eliminates the detrimental effect of the vertical contact wire buckling at the point of support and thereby ensures an absolutely nonsparking current supply even at the highest speeds. Wear of contact wire and carbon brush is reduced to a minimum, and from this, it may be concluded that expenditure for maintenance will be lower. A newly created high speed switch enables the trolley bus to fully adapt to the speed of other traffic--up to 40 km/h when turning and up to 60 km/h straight ahead. The parallelogram pendula in the straight lines are mounted zigzag to the supporting framework, which results in a certain fixed slanting position of the pendula. The elastic flexibility of the contact line also at the points of support eliminates the disadvantages of the rigid contact line. With this system it is possible to accomplish working capacities of the sliding contact carbons of up to 4,000 kilometers. Even brushing over with the trolley bus shoe as much as 500,000 times will hardly show any noticeable wear of the contact wires. Although the price of this system is not particularly cheap, a less costly alternative system is in the process of being developed; but less costly does not mean lower quality. The customer will have a choice, and it will be possible to combine the two systems.

Third International Conference, Electric Vehicle Development Group, London, England, November 1979.

Steffani, GD (Kummler and Matter, Switzerland)

Peregrinus (Peter) Limited Nov. 1979, p 51

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31 331495

DEVELOPMENT OF THE LOCAL TRAFFIC SYSTEM IN THE REGION COLOGNE/BONN (WEST GERMANY) [Entwicklung des Nahverkehrssystems im raum Koeln/Bonn]

The underground system of Cologne guarantees a compatible connection with the network whenever a new section is put into service. Special attention has been paid to the transition to Stadtbahn (urban railroad) operation. The preliminary Stadtbahn operation distinguishes itself as an inexpensive and quick solution in order to utilize urban lines with a high supply quality. The longest Stadtbahn line from Cologne to Bonn is well utilized by the population in this area. It is served by Stadtbahn electric multiple units of modern design with double heading. [German]

Bollhoefer, D *Elektrische Bahnen* Vol. 78 No. 5, May 1980, pp 129-137

ACKNOWLEDGMENT: EI

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DOTL JC

31 331852

STATUS OF GERMAN LIGHT-RAIL SYSTEMS--OPERATIONAL AREAS OF GERMAN LIGHT-RAIL SYSTEMS

Operational areas of German light rail systems are described and comparison is made of the operation of underground and light rail systems.

Scheelhasse, K *Journal of Advanced Transportation* Vol. 14 No. 2, 1980, pp 197-211

ACKNOWLEDGMENT: EI

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31 334188

SIMPLE EQUILIBRIUM ANALYSIS OF THE DEDICATION OF A FREEWAY LANE TO EXCLUSIVE BUS USE

In this paper, the dedication of an existing freeway lane to exclusive (withflow) bus use is critically examined. A simple equilibrium analysis by means of a logit mode-choice model and typical volume-delay curves indicates that such projects might bring about the expected benefits only under extreme congestion. The benefits are measured in terms of the ratio of total person hours before to those after the implementation.

This paper appeared in Transportation Research Record No. 775, Travel Demand Models: Application, Limitations, and Quantitative Methods.

Sheffi, Y (Massachusetts Institute of Technology) *Transportation Research Record* No. 775, 1980, pp 7-11, 4 Fig., 2 Tab., 10 Ref.

ORDER FROM: TRB Publications Off

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31 334310

AIR/RAIL LINKS

Rail links between airports and city centers are being developed in response to the congestion of motorways that have traditionally provided such access. These rail lines can be integrated into the urban and suburban networks, but there is now a tendency to connect airport lines into the mainlines, thus extending rather substantially the area served directly by the air/rail services. This brochure gives an idea of the different systems adopted in 20 cities throughout the world and lists other projects which are in progress or are being studied. [French/German/Engl]

International Union of Railways, BD June 1980, 55p

ORDER FROM: International Union of Railways, BD, 14 rue Jean Rey, 75015 Paris, France

DOTL RP

31 334350

EVALUATION OF PARKING MANAGEMENT STRATEGIES FOR URBAN AREAS

The state of the art of parking management in urban areas in the United States was established using an extensive review of the literature and a nationwide questionnaire survey that was distributed to 458 city officials, 173 of whom responded. Based on the information thus obtained, key elements of parking management were identified including groups affected and impacts of parking, descriptions of various strategies, the need for management, and problems encountered with implementing parking controls. A detailed evaluation of 17 strategies and 9 support measures was performed, and a practical set of guidelines that can be used by planners and traffic engineers for selecting and evaluating parking management measures

was developed. A list of reference materials was provided to aid transportation engineers locate additional information sources. It was concluded that parking management strategies are not being used on an areawide basis; however, several measures, including residential parking permit programs, in-lieu parking regulations, and park and ride lots, provide potential benefits for most urban areas. Field evaluations of parking strategies are needed to determine the effectiveness of these measures and to promote their use in transportation plans. (FHWA)

Parker, MR, Jr Demetsky, MJ

Virginia Highway & Transportation Research Council, Virginia Department of Highways and Transportation, Federal Highway Administration, (VHTRC 81-R9) Final Rpt. FHWA-VA-81-9, Aug. 1980, 147p

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PB81-197741

31 334352

IMPACT OF NEW TRANSIT SERVICE IN JOHNSON CITY, TENNESSEE

Johnson City, Tennessee, with a current population of 39,000, is typical of communities which found their bus service deteriorating during the 1970's. As a result of this deterioration, a new fixed-route, fixed-schedule bus system was initiated by the City of Johnson City on October 12, 1979. Although nine months of operations are not sufficient to identify long-term or intermediate-term impacts, this report has attempted to identify the short-term impacts of initiating the Johnson City Transit (JCT) system. Johnson City's case has special significance because it is the first transit system developed in Tennessee since World War II, and the first to be established in the new environment of scarce energy resources and rapidly increasing gasoline and auto driving costs. The primary objectives of this study were to document important events related to the development of the transit system and to identify its impacts on: 1) the travel behavior and modal choice decisions of individuals representing different transit markets; 2) alternative supplies of transportation services, such as social service agencies; 3) retail business and employers of selected categories; and 4) vehicle occupancies, roadway volumes, and the availability of downtown parking. The study relied primarily on "before" and "after" surveys of businesses, social service agencies, users of transit service, and traffic volume. The findings of these surveys are presented in this report. Also presented is a brief review of the history of development of transit services in Johnson City. It was found that overall, Johnson City has developed a reliable, attractive transit service offering a high level of service to its residents. (UMTA)

Wegmann, FJ Chatterjee, A

Tennessee University, Knoxville, Urban Mass Transportation Administration, (TN-11-0003) Final Rpt. UMTA-TN-11-0003-81-1, Jan. 1981, 136p

Contract TN-11-0003

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PB81-172702

31 334391

THE WIDENING CONTEXT OF TRAFFIC MANAGEMENT AND CONTROL

This paper reviews developments in traffic management and control with particular reference to the basis in research for the various techniques and their application, and what further research is required to enable them to be used to best advantage in the wider context in which they are now being applied. Many individual traffic management and control measures are based either upon observation and analysis of the movement of vehicles at junctions of different kinds and along stretches of road, or upon analysis of accident records for periods before and after making changes at particular sites. These observations and analyses enabled the local effects of specific measures to be estimated in terms of vehicle delay and, in some cases, delay to passengers and pedestrians or reduction in accidents. Regulation of parking was seen in a wider context but even so the emphasis was upon the global effects on traffic movement of changes in parking supply, rather than upon more detailed effects on the choices made by drivers. More recently, traffic management and control have not only been used extensively and systematically over whole urban centres, but also for more radical purposes

such as giving substantial priority to buses or pedestrians, or discouraging through movement while maintaining access. These developments make it important to be able to estimate the effects of changes in traffic management and control upon the behaviour of users of the road system, in order to be able to estimate and evaluate the likely effects of proposed schemes and policies. The extent to which techniques are available for this purpose and the requirements for further research are discussed.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Allsop, RE (University College, London)
 Organization for Economic Cooperation and Devel, European
 Conference of Ministers of Transport Conf Paper Volume 3, 1980, pp
 1429-39, Refs.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite
 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

31 334393
ANALYTICAL DECISION FRAMEWORK FOR URBAN TRAFFIC MANAGEMENT

This paper presents analytical models for multicriteria optimization of the urban highway system's performance and discusses their possible application. The models are based on supply-demand equilibration in a network of transportation facilities. Types of facilities analyzed are arterial streets and freeways with their associated access and egress links. Decision parameters may include signal controls, ramp metering rates, priority lane assignments, variable-message signing, as well as many other types of decisions. The effect of modal performance on mode choice by the users of the system is an inherent aspect of the analysis. Computational results indicate the feasibility of applying computerized optimization techniques for the development of a variety of traffic management strategies.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Gartner, NH (Lowell University)
 Organization for Economic Cooperation and Devel, European
 Conference of Ministers of Transport Conf Paper Volume 3, 1980, pp
 1455-71, 4 Fig., 3 Tab., 16 Ref.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite
 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

31 334721
THE RHEIN-RUHR URBAN RAILWAY; OPERATIONAL BEGINNING IN ESSEN [Stadtbahn Rhein-Ruhr Betriebsbeginn in Essen]

The structure of the Ruhr area required a regional traffic network linking cities. Furthermore, a situation developed where there were scarcely any specific routes for public transport, so that with the growth of car traffic a great deal of congestion developed. This situation caused the government of the land of North Rhine Westphalia to develop a regional urban railway in the Rhine-Ruhr area. The purpose of the new urban railway was to solve the problem of the divided public transport system in the region by means of a high capacity rail bound transport system. To achieve these aims some 13 Ruhr cities and the city of Dusseldorf set up an urban railway company, the main task of which was the standardisation of the system. The various stretches opened in different cities remain, however, under the control of the local transport operators. The function of the urban railway is to link the city centres with the adjacent areas; to take over the major portion of the transport between municipal areas by means of a network extending beyond city boundaries; and to link this network with the underground network and the main line network of the German Federal Railway (Deutsche Bundesbahn). [German]

Teubner, W *UITP Revue* Vol. 29 No. 1, Jan. 1980, pp 49-66, 6 Fig., 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 312400)
 ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

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31 334748
KEEPING PACE WITH URBAN TRANSPORTATION DEVELOPMENTS: AN INTERNATIONAL REVIEW OF SYSTEMS MANAGEMENT RESEARCH

The paper presents a review of the literature that deals with assessing practice and research on traffic and transportation management issues, including studies on area traffic control systems, electronics aids for freeway operation, traffic operation at sites of temporary obstruction, capacity of at-grade junctions, traffic corridor control, bus lanes and busway systems, integrated urban traffic management, energy problems an urban and suburban transport and traffic measurement methods.

Horn, BE (Organization for Economic Cooperation and Devel) *ITE Journal* Vol. 51 No. 1, Jan. 1981, p 30, 15 Ref.

ACKNOWLEDGMENT: EI
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31 334799
PRELIMINARY DESIGN AND EVALUATION OF COORDINATED PUBLIC TRANSPORTATION SERVICES

An integrated system of coordinated transit services described is shown to offer potential improvements in the productivity and efficiency of transit operations in low density urban areas. The recommended method allows for a formal evaluation of feasible alternatives relative to the established system objectives, and the results of the evaluation can be interpreted to show how systems that provide minimal service levels can be implemented to evolve into a system with higher levels of service. Scheduling and transfer considerations are developed in a subsequent detailed design phase of the planning process.

Cottrell, BH, Jr Demetsky, MJ *Traffic Quarterly* Vol. 35 No. 1, Jan. 1981, pp 143-162, 11 Ref.

ACKNOWLEDGMENT: EI
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DOTL JC

31 334843
EVALUATION OF URBAN PARKING SYSTEMS

The report is the outcome of a study by an international research group entrusted with an assessment of "methods of evaluating urban parking systems" in OECD countries. It has been prepared as a result of three meetings of the group held between October 1978 and February 1980. First, the study places parking systems in the urban transport context. The major types of parking facilities and parking characteristics are then reviewed (chapter II) as a background against which aims and instruments relative to parking strategies should be considered (chapter III). Chapter IV presents an assessment of factors for determining the desirable levels of car parking in different types of urban areas and in relation to the major urban policy criteria. The following two chapters deal with the definition and evaluation of the various traditional and innovative parking strategies and measures as well as with considerations regarding their implementation. Methods for evaluating the effectiveness of individual or combined parking measures are then considered in chapter VII. The last chapters of the report present a list of research needs and the group's major conclusions. Finally, an annex provides details on parking features of a select group of OECD cities. (Author/TRRL)

Organization for Economic Cooperation and Devel Monograph Dec. 1980, 97p, Figs., Tabs., 114 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252778)
 ORDER FROM: Organization for Economic Cooperation and Devel, Suite 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

31 334946
RENAISSANCE FOR YESTERDAY'S TRAMS & BUSES

The traditional streetcar and trolley bus are regaining favor in many parts of the world. Completely new tram and light-rail systems are being established in four French cities and elsewhere in Europe while other existing tramways are being rehabilitated and extended in Europe, Africa, Asia and Australia. Many proven streetcar designs are finding application on new systems. British cities are looking at reestablishment of trolley bus service and new vehicle designs are in production for various European applications.

Goldsack, PJ *Mass Transit* Vol. 8 No. 6, June 1981, pp 6-9, 2 Phot.

ORDER FROM: Mass Transit, 555 National Press Building, Washington, D.C., 20045

DOTL JC

31 335089
ENERGY SAVINGS POTENTIAL OF PREFERENTIAL TREATMENT PROJECTS

More than half the U. S. petroleum supply is used for transportation, and highway transportation use can be cut substantially. This can be accomplished through the use of high occupancy vehicles--particularly carpools, vanpools and buses. A major incentive for high occupancy vehicles is preferential treatment projects that provide significant time saving. A concerted effort is needed to develop preferential treatment projects and the associated policies which will complement the physical improvements. A major Federal program is recommended that would develop physically separate preferential treatment projects in urban radial corridors. Policies to encourage ride-sharing and discourage single occupant vehicles are also recommended. Energy savings of up to 10 percent of total highway usage could be achieved nationwide.

Rothenberg, MJ (JHK and Associates) *ASCE Journal of Transportation Engineering* Vol. 107 No. 3, May 1981, pp 263-271, 7 Ref.

ACKNOWLEDGMENT: EI

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31 335283
URBAN RAPID TRANSIT SYSTEMS RHINE-RUHR-WUPPER RIVERS; PUTTING INTO OPERATION THE RAPID TRANSIT ROUTE SEGMENT DUESSELDORF MAIN DEPOT-SOLINGEN-OHLINGS, WEST GERMANY [S-Bahn Rhein-Ruhr-Wupper, Inbetriebnahme des S-Bahn-Streckenabschnittes Duesseldorf Hof--Solingen-Ohlings]

A project, begun in 1967, in the vicinity and the city of Duesseldorf is reported. The purpose was to link the Duesseldorf main depot with its airport. This project was planned in three stages. While the first stage has already been finished and the second stage is in the process of being finished in 1980, the third stage has only begun. Constructional details and aims are outlined. Electrification is used for the entire system. [German]

Eibenstein, A *Elektrische Bahnen* Vol. 78 No. 10, Oct. 1980, pp 285-286

ACKNOWLEDGMENT: EI

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31 335707
HIGH-SPEED WATERBORNE COMMUTER SERVICE IN BOSTON, MASSACHUSETTS

Many cities in this country are built around navigable waterways for obvious commercial reasons. This factor, combined with the apparent lack of congestion of many of these waterways, makes over-the-water commuter services an important consideration for future development. The Boston Harbor South Shore Over-The-Water Commuter Service was initiated in December, 1979 to test the suitability of high-speed over-the-water technology for providing commuter service. The demonstration was sponsored by the Massachusetts Executive Office of Transportation and Construction to supplement an existing conventional hull vessel providing service between Hingham, Massachusetts and downtown Boston. A shortage of high-speed vessels forced the State to institute the high-speed service with a single, used HM-2 Mark III hovercraft which seats 60 passengers. A number of difficulties were experienced in maintaining an adequate level of service because of the limitations of this vessel as well as the lack of a comparable backup for it during routine or corrective maintenance. Also, the vessels' seating constraint precluded any significant marketing effort. Despite these problems, the hovercraft had a significant impact on travel time and total over-the-water ridership on the corridor doubled. The major conclusions of the demonstration are summarized in the report. Recommendations are given regarding how to avoid some of the demonstration's weaknesses in future projects. (UMTA)

Forstall, KW

Multisystems, Incorporated, Urban Mass Transportation Administration
Final Rpt. UMTA-MA-06-0049-8014, MA-06-0049, Aug. 1980, 58p

Contract DOT-TSC-1083

ORDER FROM: NTIS

PB81-191660

31 335828

IMPORTANT STAGE IN THE IMPROVEMENT OF TRANSPORT IN AND AROUND PARIS: THE UNDERGROUND SUBURBAN STATION AT PARIS-LYON IS OPEN [UNE ETAPE IMPORTANTE DE L'AMENAGEMENT DE LA REGION PARISIENNE: LA GARE SOUTERRAINE DE BANLIEUE DE PARIS-LYON EST EN SERVICE]

The article describes the new installations, which have been built as part of the complete renovation of Paris-Lyon station in France and gives some details of the major schemes in progress which will change the pattern of railroad services in the Paris area within the next years. [French]

Revue Generale des Chemins de Fer Vol. 99 Dec. 1980, pp 701-707

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

31 335830

WILL KILMACOLM LINE COME TO A DEAD END?

A description is given of the railway line which runs from Glasgow Central Station westwards via Paisley to Kilmacolm, and its main use by peak hour commuters. Local authorities' provision of subsidies for financially unprofitable railway passenger services is discussed, and the events leading to British Rail's decision to withdraw these services on this line from 2 February 1981. The author considers the economics of providing alternative bus transport, and describes the efforts of the users' committee to save the line. The future of other suburban rail services is viewed in the light of the possible closure of the line to Kilmacolm.

Hayton, K (Glasgow School Of Art) *Surveyor* Vol. 156 No. 4638, May 1981, pp 8-9, 1 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 254609)

ORDER FROM: ESL

DOTL JC

31 335985

EVALUATION OF PRIORITY TREATMENTS FOR HIGH OCCUPANCY VEHICLES

This report presents evaluation summaries of 27 priority treatment projects for high occupancy vehicles (HOV's). The projects evaluated consist of contraflow; concurrent flow and physically separated HOV lane treatments on both grade separated and surface street facilities. In addition, priority HOV ramps, bus signal preemption, priority HOV parking facilities and toll pricing strategies are covered. The evaluations include project descriptions, locations and characteristics plus presentations of key project impacts. Summary tables and discussions compare these findings with updated characteristics and impacts of 14 additional projects evaluated in an earlier study document, Priority Treatment for High Occupancy Vehicles: Project Status Report (March 1977). A detailed bibliography is cross-referenced to each project. These results provide a base from which to evaluate ongoing and future HOV priority treatments. (FHWA)

Rothenberg, MJ Samdahl, DR

JHK and Associates, Federal Highway Administration Final Rpt.
FHWA-RD-80- 62, Jan. 1981, 122p

RESPONSIBLE INDIVIDUAL: Bissell, H (HRS-33)

Contract DOT-FH-11-8242

ORDER FROM: NTIS

31 336702

FUNCTIONAL DESIGN OF FERRY SYSTEMS. PHASE 1

This report provides a comprehensive and critical review of the two key functional components of ferry systems--vessels and terminals--operating in the U.S. and Canada. It is intended primarily to be used as an informational and planning document by urban transportation planners considering waterborne transport as an alternative passenger mode. Both conventional and advanced technology high speed vessels are examined. Transportation engineering and pedestrian facility planning techniques are utilized in recommending efficient terminal design and operations.

Habib, PA Bloch, A Roess, RP

Polytechnic Institute of New York, Maritime Administration Final Rpt.
MA-RD-970-80085, July 1980, 145p

Contract MA79-SAC-B0015

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-159584

31 337293

PRIORITY TREATMENT FOR HIGH-OCCUPANCY VEHICLES ON THE NORTH PANAM FREEWAY, SAN ANTONIO--A FEASIBILITY STUDY

The report presents an evaluation of the need for priority treatment for high-occupancy vehicles on the North Panam Freeway (I-35) in San Antonio, Texas. The study addresses an 8.5 mile section of roadway from the Fratt Interchange to the interchange of I-35 and I-37. Applicable priority treatments and the effectiveness of those treatments to the year 2000 were identified.

Sponsored in part by Texas State Dept. of Highways and Public Transportation, Austin. Transportation Planning Div.

Christiansen, DL Lomax, TJ
Texas Transportation Institute, Federal Highway Administration, Texas State Department of Highways & Public Transp Res Rpt. TTI-2-10-74-205-12, FHWA/TX-80/12-205-12, July 1980, 90p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-185928

31 337925

REDUNDANCY IN PUBLIC TRANSIT. VOLUME I: ON THE IDEA OF AN INTEGRATED TRANSIT SYSTEM

Conventional wisdom in Public Administration traditionally maintained that functional duplication in public services is wasteful. This position has been recently challenged, and it is suggested that redundant organizational structures can make the execution of a given program more reliable and the design of new programs more innovative. This 4-volume study examines the problem of redundancy/duplication of transit services in the San Francisco Bay Area Transit System. Volume I, this report, examines the present structure of two independent public agencies offering directly duplicative transit services, namely--Bay Area Rapid Transit (BART) system, and the Alameda-Contra Costa Transit District (AC Transit). The report discusses such issues as multiorganizational coordination, interagency contracting, role of the Metropolitan Transportation Commission, reorganization of Bay Area transit, redundancy and system failure, and economic efficiency and organizational reliability tradeoffs.

See also Volume 2, PB81-194342. Also available in set of 4 reports PC E99, PB81-194326.

Landau, M Chisholm, D Webber, MM
California University, Berkeley, Urban Mass Transportation Administration, (UMTA-CA-11-0001) Final Rpt. UMTA-CA-11-0001-81-1, Aug. 1980, 75p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-194334

31 337926

REDUNDANCY IN PUBLIC TRANSIT. VOLUME II: THE PROFITS OF COMPETITION IN PUBLIC TRANSIT

This 4-volume study examines the problem of redundancy/duplication of transit services in the San Francisco Bay Area Transit System. Volume II investigates the organizational form and style of operations of the Bay Area transit modes. The first section of this report poses 3 broad questions--(1) self-sufficiency of Bay Area transit modes--to what extent are they able to cover operating costs; (2) organizational question--what would be the consequences of merging BART and AC Transit; and (3) feeder service to BART question--what is the best level of providing such a service. The analysis resulting from the considerations provide some numerical answers to the what-if questions posed, and the major conclusions are translated into tentative answers to the policy questions. The author concludes that, if both BART and AC Transit were to operate as profit maximizers, they would deliberately offer a variety of different services; hence attract more riders.

See also Volume 1, PB81-194334, and Volume 3, PB81-194359. Prepared in cooperation with Pennsylvania Univ., PA. Also available in set of 4 reports PC E99, PB81-194326.

Viton, PA
California University, Berkeley, Urban Mass Transportation Administration, (UMTA-CA-11-0001) Final Rpt. UMTA-CA-11-

0001-81-2, Aug. 1980, 98p
ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-194342

31 337927

REDUNDANCY IN PUBLIC TRANSIT. VOLUME III: THE POLITICAL ECONOMY OF TRANSIT IN THE SAN FRANCISCO BAY AREA, 1945-63

This 4-volume study examines the problem of redundancy/duplication of transit services in the San Francisco Bay Area Transit System. Volume III, this volume, focuses on two developments--(1) the historical process that produced the Bay Area Rapid Transit (BART) District in 1957 and the district's regional rapid transit plan, approved by the voters of Alameda, Contra Costa, and San Francisco counties in November 1962; and (2) the process that produced the Alameda-Contra Costa Transit (AC Transit) District in 1955 and 1956, and the particular transit service this district began operating in 1960. The relation between these two districts is one of the central concerns of this report. These developments are analyzed as contingent outcomes of a regional transit movement that was active during this period. Several aspects of this movement's history are analyzed.

See also Volume 2, PB81-194342, and Volume 4, PB81-194367. Prepared in cooperation with Los Angeles County Regional Planning Commission, CA. Also available in set of 4 reports PC E99, PB81-194326.

Adler, S
California University, Berkeley, Urban Mass Transportation Administration, (UMTA-CA-11-0001) Final Rpt. UMTA-CA-11-0001-81-3, Aug. 1980, 436p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-194359

31 337928

REDUNDANCY IN PUBLIC TRANSIT. VOLUME IV: STRUCTURE, COMPETITION, AND RELIABILITY IN PLANNING AND OPERATIONS

The study consists of 4 separate volumes, and it examines the problem of redundancy/duplication of transit services in the San Francisco Bay Area Transit System. Volume IV, this report, examines two propositions--(1) that during transit planning, redundant planning would increase the intensity of search for transit alternatives; and (2) that during operations, redundant modes would increase service reliability in the face of a variety of disturbances. In this report, the propositions are examined in three case studies--(1) a study of inter-organizational, redundant transit operations in the San Francisco Bay Area; (2) a study of modally integrated monopolistic transit operations in Washington, DC; and (3) a study of inter-organizational competitive transit planning in Minneapolis-St. Paul.

See also Volume 3, PB81-194359. Prepared in Cooperation with Stanford University, Calif. Also available in set of 4 reports PC E99, PB81-194326.

Bendor, JB (Stanford University)
California University, Berkeley, Urban Mass Transportation Administration, (UMTA-CA-11-0001) Final Rpt. UMTA-CA-11-0001-81-4, Aug. 1980, 335p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-194367

31 341102

TRAVEL TIME AND VOLUME RELATIONSHIPS IN SCHEDULED, FIXED-ROUTE PUBLIC TRANSPORTATION

Managerial decisions and inter-patron congestion delays result in user costs for travel on fixed-route public transportation which vary with patronage volume. This paper analyses the types of variations which can be observed in riding and waiting times for a given public transportation fare, frequency and service structure, and develops the resulting performance functions. Typical managerial decisions with respect to fare and frequency of service are then considered, and the variation in user cost resulting from such supply changes is discussed. Various managerial strategies are explored such as maintaining service standards or constant load factors and maximizing service, profit, or net social benefits. An example of a peak-hour, radial transit route is used extensively to illustrate the impact of such decisions. (Author/TRRL)

Hendrickson, CT (Carnegie-Mellon University) *Transportation Research, Part A: General* Vol. 15A No. 2, Mar. 1981, pp 173-182, 6 Fig., 2 Tab., 18 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254156)
ORDER FROM: ESL

DOTL JC

31 341107
ANALYTICAL MODEL OF TRAFFIC DELAYS UNDER BUS SIGNAL PREEMPTION: THEORY AND APPLICATION

Major emphasis has been placed in recent years on the improvement of the operations of existing transportation facilities, using transportation systems management strategies. Accordingly, preferential treatment of high occupancy vehicles is playing an increasing role in transportation projects. This paper deals with one of these strategies, the priority treatment of buses at signalized intersections. Such treatment is aimed at improving the capacity of intersections. The paper develops an analytical model of delays at signalized intersections under a bus preemption scheme. The analysis is presented for the simplest case, i.e., two intersecting one-way streets. The results suggest that the benefits of bus preemption can be increased by properly adjusting several design parameters such as cycle and phase duration of the preempted phases as well as the non-preempted parameters. The model outlined in this paper is applicable to any situation in which stochastic variation is introduced into the signal cycle as well as to bus preemption. Consequently, other potential applications of the model include the design/analysis of traffic actuated signals, and pedestrian actuated signals. (Author/TRRL)

Jacobson, J (Department of Transportation); Sheffi, Y (Massachusetts Institute of Technology) *Transportation Research, Part B: Methodological* Vol. 15B No. 2, Apr. 1981, pp 127-138, 2 Tab., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254162)
ORDER FROM: ESL

DOTL JC

31 341274
COMONOR--A BUS CONVOY SYSTEM

A low cost system for drastically increasing the capacity of a bus lane, by reducing the boarding problems at bus stops is described. The system, which consists in organising a convoy of buses, was implemented and is in operation in two major corridors of the city of S. Paulo. If the boarding area is expanded to cover several buses and passengers board simultaneously, the bus stop capacity will substantially increase due to the following reasons: in a bus convoy the 12 seconds needed for each bus to stop and depart are simultaneous, reducing therefore the time lost per bus for such operations; each passenger takes 2 seconds to board a bus. In a 6-bus convoy, 6 passengers board in the first 2 seconds (one passenger in each bus) representing 1/3 sec/passenger reducing by six the time spent to board only one bus. At the end of the boarding process this rate decreases because some buses will board less passengers. However, the average boarding time per passenger is 0.75 seconds or a 62% reduction. The combination of these two factors permits the convoy operation to double or triplicate the bus stop capacity allowing a continuous flow with high frequency of buses and high passenger demand and utilizing only one bus lane.

Proceedings of the 30th Annual IEEE VTS International Conference on Transportation Electronics, September 15-17, 1980.

Germani, E Szasz, PA *IEEE Vehicular Technology Society Conference Proc* Proceeding Sept. 1980, 5p, Tabs., Photos.

ORDER FROM: IEEE Service Center, 445 Hoes Lane, Piscataway, New Jersey, 08865

31 341558
TRANSIT STATION CLASSIFICATION FOR ACCESS MODE ANALYSIS

A classification scheme for rapid transit stations that shows requirements for similar modes of access is investigated. Data for 18 parameters that appear to distinguish the 34 BART stations were employed to establish station groups. Among the 18 variables used were those that characterize the physical nature of the terminal (above or below ground, parking, etc.); the accessibility of the terminal (local bus, expressways, local streets); and the socioeconomic nature of the area surrounding the terminal (race, average income, percent industrial, etc.). The relative importance of these variables was established during the analysis.

Korf, JL (Virginia Highway & Transportation Research Council); Demetsky, MJ *Journal of Advanced Transportation* Vol. 14 No. 3, 1980, pp 275-300, 7 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

31 341559
SPECIFICATION OF RAPID TRANSIT ACCESS MODE REQUIREMENTS

Descriptive aggregate measures of access transportation to rapid transit stations are investigated to provide guiding principles for rapid transit access planning. Problems associated with the development of a data base that provides sufficient sensitivity for analyzing the problem are identified. Data from the BART and Lindenwold systems are selected with certain qualifications, and used to show the influence of location, parking availability, and station accessibility on rapid transit access service. Concepts for economic cost models are used to define generalized impedance curves for the different access modes.

Demetsky, MJ (Virginia University); Korf, JL *Journal of Advanced Transportation* Vol. 14 No. 3, 1980, pp 255-274, 3 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

31 341717
THE MISSING LINK. A REPORT ON BUS-RAIL INTERCHANGE FACILITIES

This report presents an overall picture of the need for better coordination between bus and rail services in Britain. The results of a survey of bus/rail interchange facilities at a national sample of railway stations in the UK are analysed. Apart from some purpose-built integrated interchanges, the survey shows the quality of information and facilities to be poor. It is suggested that some low-cost improvements could be made in the absence of finance for large schemes. Better presentation of information on services to places not served by rail is necessary, and a number of centres for such information are suggested. Rail replacement bus services are considered in general with such services in two particular areas being discussed in some detail.

Central Transport Consultative Committee Monograph Dec. 1980, 22p, 12 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 255827)
ORDER FROM: Central Transport Consultative Committee, 3-4 Great Marlborough Street, London, England

31 341936
ANALYSIS OF BART OPERATIONS VIA COMPUTER SIMULATION

Reference is made to the Bay Area Rapid Transit (BART) system in San Francisco, Calif. Two BART problem areas were analyzed by computer simulation, namely, train merges at the Oakland "we" and train turn-arounds at the end-points of the system. The purpose of the simulation analysis was to gain an understanding of how these problem areas constrain operations, and to suggest procedures for alleviating the congestion.

USA-Japan Computer Conference Proceedings, 3rd, San Francisco, California, October 10-12, 1978.

Wong, PJ (SRI International); Harmon, FE
American Federation of Info Processing Societies 1978, pp 510-514

ACKNOWLEDGMENT: EI
ORDER FROM: American Federation of Info Processing Societies, 1815 North Lynn Street, Arlington, Virginia, 22109

31 341960
EMPIRICAL MODELS OF TRANSIT SERVICE AREAS

Empirical tools for planning access to transit systems are developed. Transit access is defined as those portions of the journey spent getting to the transit system, and then from the transit system to the destination point. The usual transit modes include the following: walking, park-and-ride, kiss-and-ride, paratransit feeder, transit feeder, taxi and bicycle. The impact of the access characteristics on transit ridership and the normative definition of the area accessed by the transit system are explored. The models presented concern bus routes (in Vancouver, St. Louis and Washington, D. C.) and commuter rail and express bus service (in northeastern New Jersey). The models determine normative classifications for transit service areas on the basis of access distance and time.

Lutin, JM (Parsons, Brinckerhoff, Quade and Douglas, Inc); Liotine, M Ash, TM *ASCE Journal of Transportation Engineering* Vol. 107 No. 4, July 1981, pp 427-444

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

31 344569

BART AND METRO--RAPID TRANSIT FOR THE SAN FRANCISCO AND WASHINGTON, DC. AREAS. 1964-JUNE, 1981 (CITATIONS FROM THE NTIS DATA BASE)

The two-section bibliography is devoted to the development of rapid rail mass transportation in two major metropolitan areas. The first section contains citations referring to BART, the San Francisco Bay area rapid transit system in California. Section two refers to the combined subway and surface transit system for the District of Columbia and outlying areas in Maryland and Virginia. Materials in both sections cover line siting, policies and planning, cars and power systems, stations and trackwork, human factors, travel patterns, and public attitudes. Attention is given to financing, revenue, maintenance, local impact, and environmental impact, as well as fare collection, noise, and legislation. Local and regional needs are discussed. (This updated bibliography contains 377 citations, 15 of which are new entries to the previous edition.)

National Technical Information Service Bibliog. Aug. 1981, 384p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-808180

31 345222

A BUS PRIORITY LANE'S IMPACT ON PASSENGERS AND THE OPERATOR

This paper was presented at session 8: Transport Operations. A key element of an integrated package of bus priority measures which have been recommended for Brisbane is a bus lane on one of the approaches of a major Brisbane intersection. Detailed data have been collected to predict the performance of the bus lane. Significant improvements in both mean travel time and variability are expected. The effect of this on existing patrons is noted. Examination of existing bus time-tables of the route involved is undertaken to assess possible operator financial savings. The paper discusses situations whereby potential operator benefits can be realised (a). The number of the covering abstract of the forum is IRRD no. 250625. (TRRL)

Papers from the 6th Australian Transport Research Forum, Brisbane, October 22-24, 1980.

Sayeg, P (Pak Poy (Pg) And Associates Pty Ltd)
Queensland Metropolitan Transit Authority 1980, pp 513-528, 5 Fig., 1 Tab., Photos., 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250649), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

31 345401

THE EL MONTE BUSWAY: RAPID TRANSIT IN LOS ANGELES

The San Bernadino Freeway Express Busway, or the El Monte Busway, as it is better known, is a much-studied and often heralded success, despite the fact that it inconspicuously grew out of one of numerous failures associated with a start for rapid transit in Los Angeles. In this paper, a historical sketch of prior transit plans is given, along with the genesis of the project. The El Monte terminal and two intermediate stations at County-USC General Hospital and California State-Los Angeles are discussed. Some of the engineering and architectural characteristics are highlighted, in addition to the development of one scenario for the future of the busway.

Proceedings of the Institute of Transportation Engineers Sixth Annual Meeting: Inter-City Transportation and the Urban Scene, held April 22-24, 1981 in Victoria, British Columbia.

Leonard, GB (Daniel, Mann, Johnson and Mendenhall)
Institute of Transportation Engineers Conf Paper 1981, pp 267-281

ORDER FROM: ESL

31 345404

C-TRAIN: PROJECT BACKGROUND AND OPENING PLANS, MAY 1981

Within the next decade the city of Calgary will possess a network of L.R.T. lines serving the south, northwest, and northeast portions of the city, in total extending for some 20 miles in three radial directions from the downtown core. The south leg is under construction. It is 12.5 km in length, has seven suburban stations and nine side loading platforms downtown. Twenty-seven light rail vehicles were ordered for that first stage. Each car is a 6-axle, articulated vehicle 24.3 meters long, double-ended, with a maximum speed of 80 km/h, manufactured by Siemens and Duwag in Dusseldorf, West Germany. Several key programs have been undertaken to facilitate and promote the continual use of transit. These programs include an expanded and integrated feeder bus network, beautification of the Seventh Avenue, a free fare zone in the downtown area, public relations programs, Opening Day Ceremonies, and the future of L.R.T. extensions.

Proceedings of the Institute of Transportation Engineers Sixth Annual Meeting: Inter-City Transportation and the Urban Scene, held April 22-24, 1981 in Victoria, British Columbia.

Hampton, G (City of Calgary Transportation Department, Canada)
Institute of Transportation Engineers Conf Paper 1981, pp 333-343

ORDER FROM: ESL

31 345405

INTERMODAL PASSENGER TERMINALS: TRENDS AND ISSUES

Intermodal terminals are receiving considerable attention in the transportation community. These terminals improve the quality of public transportation, encourage energy efficient modes, and minimize duplication of facilities. Intermodal terminals, a relatively new trend for Canada and the U.S., have been in operation for many years in Europe. In the Netherlands, The Hague and Utrecht have complex multimodal terminals. France has such terminals in Paris and Lyon. Great Britain has them in Altrincham and Birmingham, and is planning to turn the Hammersmith station in London into a modern multimodal terminal. In the U.S. the Department of Transportation is planning to construct numerous multimodal stations in the Northeast Corridor. In Canada, VIA Rail has developed concepts for multimodal terminals at Vancouver, Regina, and Levis Quebec. The issues surrounding the development of intermodal terminals are more political than technical. The key to successful intermodal terminal design is complete integration of the modes it serves. This includes federally operated VIA Rail and provincially controlled bus service, intercity and urban transportation. Fares and schedules have to be integrated. Barriers in terminals must be eliminated. The terminal must be managed by one organization. The fundamental issue is co-operation, not competition.

Proceedings of the Institute of Transportation Engineers Sixth Annual Meeting: Inter-City Transportation and the Urban Scene, held April 22-24, 1981 in Victoria, British Columbia.

Braaksma, JP (Carleton University, Canada)
Institute of Transportation Engineers Conf Paper 1981, pp 344-367

ORDER FROM: ESL

31 345413

CLEVELAND: RENOVATING THE RAIL TRANSIT SYSTEM

The Greater Cleveland Regional Transit Authority is currently renovating the Shaker Heights trolley line, rebuilding the line's 15 mi of track and replacing the old trolleys with new light rail vehicles. New crossovers will be installed on the 3.2 mi of grade-separated, double-track trunk line where the Shaker Heights system feeds into the Red Line rapid transit track. Other improvements planned for the near future include a new \$31 million central rail maintenance complex, a \$38 million cab signaling project, and an order for 60 rapid transit cars for the 19.2 mi Red Line.

Kizzia, T *Railway Age* Vol. 181 No. 15, Aug. 1980, pp 46-48, 2 Fig., 1 Phot.

ORDER FROM: ESL

DOTL JC

31 345430

SELECTION OF URBAN TRANSPORTATION SYSTEMS

This paper describes an information system which accepts as input a set of characteristics describing a particular urban transportation need and yields as output a list of transportation technologies capable of satisfying that need.

A broad range of urban transportation need situations can be fed into the system. However, it is restricted to need situations where the need is for people movement rather than goods movement. This system consists of two tables. Their use is described and examples are given. The procedure used to develop the tables is discussed. The system identifies new transportation technologies.

Walbridge, EW (Illinois University, Chicago) *Transportation Planning and Technology* Vol. 6 No. 4, 1981, pp 221-231, 32 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

31 345461

TRAM PRIORITY IN MELBOURNE

This paper describes the types of priority techniques available to foster improved levels of service for tram services. It considers priority in terms of both space and time dimensions. The application of these priority measures to the Melbourne tram system is discussed and recommendations are made for possible implementation. The report was submitted as a minor thesis for the degree of master of engineering science (A). (TRRL)

Fraser, M (Melbourne and Metropolitan Tramways Board)
Monash University, Australia, (0156-2126) Monograph Working Paper 80/21, Sept. 1980, 50p, Figs., Tabs., 38 Refs.

ACKNOWLEDGMENT: TRRL (IRRD 25465), Australian Road Research Board

ORDER FROM: Monash University, Australia, Department of Civil Engineering, Wellington Road, Clayton, Victoria 3168, Australia

31 345726

**PRIORITY MEASURES FOR PUBLIC TRANSPORT
[PRIORITEITSMAATREGELEN TEN BEHOEVE VAN HET
OPENBAAR VERVOER]**

Priority measures for public transport are studied. Emphasis is laid on priority measures in traffic engineering. The national government subsidizes such priority measures, and a methodology for judgement is needed. A main aspect of the judgement is the question of the effects which can be obtained as a result of a certain priority measure. This was studied with the aid of the simulation program FLEXYT. The results of this simulation are judged by means of criteria, such as waiting time and stops for different road users, with the aid of the concordance analysis. With these results as the basis a number of recommendations are set out for the application of the priority measures studied. (TRRL) [Dutch]

Jaspers, J
Verkeersakademie Tilburg Monograph May 1981, 102p, Figs., Tabs., 26 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257477), Institute for Road Safety Research

ORDER FROM: Verkeersakademie Tilburg, Stappegoorweg 201, Tilburg, Netherlands

31 345727

**LANES FOR PUBLIC TRANSPORT [OPENBAAR
VERVOERSTROKEN]**

A study into those design criteria which are used or should be used in the installation of bus and tram lanes was carried out. The first step was to produce an inventory of criteria mentioned in existing literature. One criterion only appeared to be clear and complete, viz the criterion mentioned by R Lane: "the benefits ought to outweigh the disbenefits". Starting from this a first attempt was made to establish how the criterion could be shaped into concrete and tangible guidelines. The following division was made (1) aspects which can be quantified in terms of money (e.g. construction, maintenance, fuel consumption, rolling stock), (2) aspects which can be quantified in terms of time (e.g. travelling time of passengers, vehicle operation hours), and (3) aspects which cannot or can hardly be quantified (e.g. increase in number of passengers, improvement in the quality of public transport, shifting of modal split, etc). Although, in principle, each aspect should be measurable, there exists the possibility that arbitrary conditions are being imposed to take account of safety, provision for shops and the capacity of the road network. Finally two existing bus lanes were singled out in order to check the extent to which the aspects mentioned in the report played a part when the decision to construct these bus lanes was taken. (TRRL) [Dutch]

Studiecentrum Verkeerstechiek Monograph No. 11, May 1981, 51p, Figs., Tabs., 13 Phot., 12 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257479), Institute for Road Safety Research

ORDER FROM: Studiecentrum Verkeerstechiek, P.O. Box 163, Driebergen-Rijsenburg, Netherlands

31 345732

**CRITERIA FOR BUS AND TRAM LANES [KRITERIA
BUS-TRAMBANEN]**

The report describes a study of the criteria for building bus or tram lanes. A study of literature was first carried out. The criteria found were vague, incomplete and one-sided. Therefore the criterion "the advantages must be bigger than the disadvantages" was selected as the basis for judging which criteria should be used for the decision on such lanes. (TRRL) [Dutch]

AGV Adviesgroep Voor Verkeer en Vervoer BV Monograph No. 131, Dec. 1980, 43p, 1 Fig., 1 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 257046), Institute for Road Safety Research

ORDER FROM: AGV Adviesgroep voor Verkeer en Vervoer BV, Willem Dreesiaan 16, Utrecht, Netherlands

31 345733

**CORRIDOR-STUDY PARK AND RIDE. THE MODAL SPLIT OF
COMMUTERS. PART I [CORRIDORSTUDIE PARKEER EN REIS.
DE MODAL SPLIT VAN KEUZEREIZIGERS IN HET
WOON-WERKVERKEER. DEEL I]**

In formulating a policy to improve park and ride it is necessary to know of the possibilities which exist for such a policy. Therefore research was done to answer the four following policy questions: (1) how big is the share of park and ride in the present situation? (2) which possibilities exist for policy making? What percentage of park and ride trips are in fact realizable? (3) what has to be done to realize this percentage? Which are the parking limits in the central urban area, and (4) what will be the effect of park and ride on the transport mode of the commuters who at present travel to the railway station on foot, by bicycle or by public transport? In this part of the study the collection of data is described and the first analyses are presented. (TRRL) [Dutch]

Projectbureau Integrale Verkeers Vervoersstud IVVS Monograph Feb. 1981, 273p, Figs., Tabs., 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257035), Institute for Road Safety Research

ORDER FROM: Projectbureau Integrale Verkeers Vervoersstud IVVS, Koningsskade 4, The Hague, Netherlands

31 345746

URBAN AND RURAL TRANSPORT

Urban and rural transport is interpreted as local public passenger transport, which is predominantly bus. Data are presented on this subject in: the historical background, the infrastructure, organization and management, finance, planning process, schedule compilation, commercial practices, statutory controls, fare collection, vehicles and rolling stock, operational control, and the future. (TRRL)

Faulks, RW

Allan (Ian) Printing Limited Monograph 1981, 188p, Figs., Tabs., Photos.

ACKNOWLEDGMENT: TRRL (IRRD 257553)

ORDER FROM: Allan (Ian) Printing Limited, Shepperton, Surrey, England

31 345748

PUBLIC TRANSPORT IN PARIS

The purpose of this note is to describe the public passenger transport system of Paris with particular reference to the increase in traffic achieved in recent years, which has been contrasted to the declining use of public transport in London. Because the circumstances applying in the two cities differ greatly, the comparisons are restricted to issues of general organization and policy. Details are given of the development and transport plans for the Paris region, public transport in Paris (provided by (1) the RATP -Regie Autonome des Transports Parisiens-which operates the metro underground railway, the reseau express regional- RER-regional metro and the urban and suburban bus services. It corresponds broadly to London Transport; (2) the SNCF- Societe Nationale des Chemins de Fer Francais-which operates the suburban

surface railways equivalent to British Railways in the London area; (3) APTR-Association Professionnelle des Transports Routiers-65 privately owned bus companies providing services in outer suburban areas and new towns), regional public transport finance, recovery of traffic by RATP, and the future of public transport in the Paris region. (TRRL)

Greater London Council Monograph No. 383/0231 T/MT, Nov. 1980, 24p, 4 Fig., Tabs., 11 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257816)

ORDER FROM: Greater London Council, County Hall, London SE1 7PB, England

31 345918

THE MINIBUSES AND THE PUBLIC TRANSPORT SYSTEM OF KUALA LUMPUR

This report is one of a series of studies undertaken by the TRRL, examining public transport in developing countries, and describes the minibus system of Kuala Lumpur, Malaysia's capital and largest city. In 1975 a fleet of minibuses was introduced into the city, operating in competition with the existing stage buses. The operation and service of the minibus system is examined to determine why it has been so successful in attracting passengers away from the conventional stage bus system. While the stage bus is more efficient per unit of capacity, various institutional factors have made the minibus more successful. (A) (TRRL)

Transport and Road Research Laboratory, (0305-1315) NSR 678, 1981, 29p, 4 Fig., 10 Tab., 2 Phot., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258429)

ORDER FROM: TRRL

31 345951

ENFORCEMENT OF TSM PROJECTS

Transportation system management (TSM) strategies introduced on California freeways in recent years have included ramp metering, preferential lanes for high-occupancy vehicles, and bypass lanes for buses and carpools at metered ramps. Several factors have frustrated efforts to enforce the traffic laws that accompany these strategies; these include personnel limitations, enforcement priorities, public hostility, confusion, and physical constraints imposed by the geometry and design of specific projects. As a consequence, violations have increased on several projects. This paper covers the first six months of an ongoing two-year study designed to measure and evaluate the effect of different enforcement options, engineering features, and educational programs on violation rates for various TSM freeway strategies and to trace the resulting impact of these violation rates on safety, freeway performance, and public attitudes. During this six-month period, statistics were assembled to describe violation rates, enforcement levels, and operating performance on current and past California projects; drivers were surveyed; and different levels and combinations of routine and special enforcement activities were tested on a variety of TSM projects. Violation rates were measured before, during, and after the assignment of highway patrol officers to enforce specific projects. This paper documents current violation rates, sketches profiles of violator behavior prior to special enforcement activities, outlines the preliminary results of the first wave of special enforcement, and documents the results of surveys designed to test the attitudes of drivers toward violators, enforcement, and the TSM projects themselves. (Author)

This paper appeared in Transportation Research Record No. 816, Transportation System Management--Parking, Enforcement, and Other Issues.

Billheimer, JW (SYSTAN, Incorporated) *Transportation Research Record* No. 816, 1981, pp 58-65, 11 Fig., 4 Tab., 4 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

31 345953

ENFORCEMENT REQUIREMENTS FOR HIGH-OCCUPANCY VEHICLE FACILITIES

Enforcement of high-occupancy vehicle (HOV) traffic restrictions forms an integral and sometimes critical element of HOV preferential treatment projects. This paper summarizes the findings of a research study conducted for the Federal Highway Administration. This research (a) reviewed enforcement on HOV facilities, (b) identified effective HOV enforcement techniques, (c) developed model legislation for effective HOV enforcement, and (d) prepared HOV enforcement guidelines. Sixteen projects in the United States, representative of each type of freeway and arterial treatment,

were visited to gain in-depth operational and enforcement data on each project. These projects exhibited varying enforcement programs, deficiencies, and performance levels. Enforcement guidelines have been prepared for each type of freeway and arterial priority treatment of HOVs. In order to improve enforcement of HOV facilities, innovative techniques, involving photographic instrumentation, mailing of citations, tandem (team) patrol, and paraprofessional officers, have been identified within the context of this research. For these innovative techniques to be effective, a compatible legal environment is necessary. This research conducted a legal review of six prominent legal issues posed by these techniques. Model legislation is drafted to provide the proper legal environment for effective HOV enforcement. (Author)

This paper appeared in Transportation Research Record No. 816, Transportation System Management--Parking, Enforcement, and Other Issues.

Miller, C Deuser, R (Beiswenger, Hoch and Associates, Incorporated) *Transportation Research Record* No. 816, 1981, pp 68-75

ORDER FROM: TRB Publications Off

DOTL JC

31 345981

TYNE AND WEAR METRO: CONCEPT, ORGANIZATION AND OPERATION

The Paper describes the concept of providing a 280 million pounds sterling rapid transit system by revitalizing a suburban railway linked with tunnels and new alignments to provide central penetration into the town and city areas. The system will integrate with other transport modes and provide opportunities to improve mobility in an area experiencing a rapid run-down of its traditional industries of mining, shipbuilding and heavy engineering.

Howard, DF Layfield, P *Institution of Civil Engineers, Proceedings, Pt 1* Vol. 70 Nov. 1981, pp 651-668

ACKNOWLEDGMENT: British Railways

ORDER FROM: ESL

DOTL JC

31 345982

FEPASA OVERHAULS COMMUTER LINE

When the service of broad-gauge trains from Julio Prestes to Carapicuiaba is extended one station west to Santa Terezinha next year, the first stage of Sao Paulo Railway's Cr567 210m suburban modernisation programme will have been completed. Embracing track renewal, station reconstruction, catenary replacement and purchase of 75 six-car trainsets, the package is designed to meet the huge demand for travel in one of Sao Paulo's western corridors. Capacity will rise from 200000 passengers/day to 1.1 million by the end of the decade.

Vale Ferraz, NF *Railway Gazette International* Vol. 137 No. 10, Oct. 1981, pp 835-836

ACKNOWLEDGMENT: British Railways

ORDER FROM: ESL

DOTL JC

31 346027

STATE OF THE ART OF CURRENT PRACTICES FOR TRANSIT TRANSFERS

The major objectives of the study are to: (1) describe and summarize the transfer policies currently in use on U.S. transit properties; (2) identify reasons why properties use or do not use particular transfer policies; (3) determine the consequences of alternative transfer policies in different settings; and (4) analyze and identify situations or settings in which particular transfer policies can be applied beneficially. A transfer policy consists of a set of operator actions involving vehicle routing and scheduling, transfer charges, information for passengers, and terminal facilities, which affects the movement of passengers between transit vehicles as part of a continuing trip. This study examines the current use and impacts of eleven potential transfer policy components related to these operator actions. The effects of each component on operator costs, user satisfaction, ridership, and revenue, are related to such site-specific factors as historical and current patterns of passenger flows, route structure, service frequency, shape and size of the service area, layout of the central business district, and degree of schedule adherence. Based on these relationships, the situations or settings in which particular transfer policies can most beneficially be applied are identified.

Charles River Associates, Incorporated, Urban Mass Transportation Administration, Transportation Systems Center Final Rpt. UMTA-MA06-0049-80-13, July 1981, 295p

Contract DOT-TSC-1406

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-103490

31 346056

URBAN RAIL IN AMERICA: AN EXPLORATION OF CRITERIA FOR FIXED-GUIDEWAY TRANSIT

This study reflects the view that under certain conditions rail systems may be cost-effective, offer many advantages, and provide a high quality of service. The purpose of this study is to help define such conditions. This study sketches an outline of a national program: roughly a 50 percent expansion of the rapid transit system and a 150 percent expansion of the light rail system, which would require \$22 billion at 1980 costs. The study shows that such expenditures can be covered by "hard" savings in land, energy, labor and passenger travel time. The study is directed to explore what range of travel volume may be sufficient to warrant what type of fixed-guideway investment; to indicate the location of urban corridors having such a travel volume; to offer a rough assessment of the national market for fixed-guideway facilities; and to aid in focusing local alternatives analyses on the most promising locations.

Pushkarev, B Zupan, J
Regional Planning Association Incorporated, Urban Mass Transportation Administration, (UMTA-NY-06-0061) Final Rpt. UMTA-NY-06-0061-80-1, Nov. 1980, 368p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB82-106907

31 348005

EDMONTON'S LIGHT RAIL TRANSIT FROM CONCEPT TO OPERATIONS

An overview of the light rail transit (LRT) operation in Edmonton, Alberta, from construction through operation, is presented. Edmonton's LRT proved to be very cost effective in the construction phase. Edmonton had few institutional constraints at the time of construction, and it also had excellent construction conditions and a small project management staff. This small staff provided oversight for the project, using consultants, architects, contractors, and other city departments to complete the work. The project managed to stay within budget and was completed ahead of schedule. Since these conditions were unique, no comparisons should be made with other cities or other countries or even with conditions as they will be in Edmonton in the future. The operating phase has so far proved to be less cost effective. The LRT operation has not produced the labor savings expected, primarily because of the fare-collection system adopted. Although there are problems in computing an operating ratio for the system because of revenue allocation formulas, it can be said that this ratio lies between 0.43 and 0.60, depending on the assumptions made. It is shown that the operating ratio will improve due to the proof-of-payment system that went into effect in November 1980. Further development in the northeast sector of the city should further improve the operating ratio in the next five years. (Author)

This paper appeared in Transportation Research Record No. 817, Rail Transit and Terminals.

Bakker, JJ (Alberta University, Canada) *Transportation Research Record* No. 817, 1981, pp 7-12, 1 Fig., 6 Tab., 6 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

31 348389

TRIP DISTRIBUTION IN ROUTE-BOUND TRAFFIC

This paper presents some mathematical models estimating how people travel in a bus network, based on boarding and alighting data and general route characteristics. The models are also applicable to other route-based, e.g. trackbound modes of transport. The basis is the classical gravity model for all-mode travelling, and an equivalent entropy-optimising model. (TRRL)

Andersson, P-A
Linköping University, Sweden Monograph No. 1981:12, 1981, 56p, 2 Fig., 19 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258789), National Swedish Road & Traffic Research Institute

ORDER FROM: Linköping University, Sweden, Matematiska Institutionen, Linköping, Sweden

31 348391

MODEL PROJECT BORAAS. COORDINATED PLANNING AND SUPERVISION OF DIFFERENT PUBLIC TRANSPORT. PROGRAM [MODELLPROJEKT BORAAS. SAMORDNAD PLANERING OCH LEDNING AV OLIKA KOLLEKTIVA TRAFIKFORMER. PROGRAM]

This is a programme for a research project with the aim of making a full scale test in a relevant Swedish city to see in what ways changes of organisation, planning and information could lead to more effectively used resources from the viewpoint of companies, road users and society. The project is divided into three subprojects. (1) Co-ordinated planning and new traffic forms. (2) Influence on attitudes and information to road users. (3) Joint order, supervision and information headquarters. The results are intended to be reported in spring 1983. (TRRL) [Swedish]

Kollektivtrafikberedningen Monograph No. 1981:5, 1981, 30p, 3 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 258814), National Swedish Road & Traffic Research Institute

ORDER FROM: Kollektivtrafikberedningen, P.O. Box 1339, Solna, Sweden

31 348400

IMPACT OF TRANSFERS ON TRANSIT RIDERSHIP

Transfers have a significant impact on transit demand. The reduction in demand is thought to vary between 10% and 40% depending on the quality of the transfer itself. Data from Edmonton and Kitchener-Waterloo suggested that for a timed transfer of less than 5 minutes the demand reduction is about 15 to 20 percent, while a transfer with 5-10 minutes waiting time has about a 25 to 30 percent reduction in demand. Examination of the before and after data for the Edmonton LRT suggest that the introduction of transfers has a significant impact on the LRT system. At the design and evaluation level special attention should be given to the design of the system and to the transfer characteristics. Further data should be gathered to confirm the effects of transfers on ridership. (Author/TRRL)

Vaga, K (Ontario Ministry of Transportation & Communic, Can); Shortreed, JH (Waterloo University, Canada) *RTAC Annual Conference Preprints* Vol. 1 Sept. 1981, pp D3-22, 8 Fig., 1 Tab., 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258371), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

31 348451

PASSIVE BUS PRIORITY WITH THE COMPUTER PROGRAM BUS-TRANSYT IN A CO-ORDINATED SIGNAL SYSTEM [PASSIV BUSSPRIORITERING MED BUSS TRANSYT I ETT SAMORDNAT SIGNALSYSTEM. EXAMENSARBETE]

In this paper the use of a computer program called Bus-Transyt has been analyzed in four time controlled signalized junctions in the city of Malmö. The program consists of a simulation part and an optimization part. The work started with an analysis of how well the simulation part simulated the buses' arrival times in the system. At the same time a sensitivity analysis of indata was performed to find the effect of eventual difference in the indata. One of the results of optimization in the system was an increase of mean speed both for buses and cars. (TRRL) [Swedish]

Andersson, B Linderholm, L
Lund University of Technology, Sweden Monograph No. 40, 1978, 57p, Figs., 12 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258799), National Swedish Road & Traffic Research Institute

ORDER FROM: Lund University of Technology, Sweden, P.O. Box 725, S-220 07 Lund 7, Sweden

31 348471

EVOLUTION IN TARIFF POLICY AT THE STIB (SOCIETY DES TRANSPORTS INTERCOMMUNAUX DE BRUXELLES) [EVOLUTION DE LA POLITIQUE TARIFAIRE A LA S.T.I.B.]

In ten years twenty kilometres of underground services and tram services were opened to the public. The integration of the new lines in the existing

network is described, e.g., adaptation of the alignment of tram and bus lines and resulting modifications in the habits of users. Changes were introduced along itineraries, which were resented by users, although an increased level of service was the end product. A more rational tariff system was introduced. (TRRL) [French/English/German]

Applemans, P (Society des Transports Intercommunales de Bruxelles)
UITP Revue Vol. 28 No. 2, Apr. 1979, pp 153-164

ACKNOWLEDGMENT: TRRL (IRRD 112180)
ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

DOTL JC

31 348472
THE AMSTERDAM UNDERGROUND RAILWAY [LE METROPOLITAIN D'AMSTERDAM]

In 1958 the municipal council in Amsterdam adopted a basic plan with flexible links composed of 4 lines that would cover the whole city. This decision was later cancelled because of financial, social and regional planning constraints. Attention is drawn to the operation and construction of new tram lines. Details are given of the underground railway, aspects concerning its personnel, telecommunication, safety and movement of vehicles, plants, electric supply, lines, tracks and stations. (TRRL) [French/English/German]

Ossewaarde, JM Dusewaard (Gemeentevervoerbedrijf Amsterdam)
UITP Revue Vol. 29 No. 4, Oct. 1979, pp 285-302, 3 Fig., 14 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 112181)
ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

DOTL JC

31 348473
"ARTICULATED TROLLEY BUSES" IN NANCY. 50 LARGE-CAPACITY TROLLEY BUSES WILL BE IN SERVICE IN 1982 [L'OPERATION "TROLLEYBUS ARTICULES" A NANCY-CINQUANTE TROLLEYBUS DE GRANDE CAPACITE CIRCULERONT DES 1982]

Details are given of the studies, rolling stock, centralized traffic control system, electric infrastructure, financing and financial return of the operation. Although the trolley buses will cause visual intrusion because of the installation of catenaries, they will decrease air and noise pollution and afford a rapid, punctual and noise free public transport system. (TRRL) [French]

Marchand, A Lefebvre, A *Moniteur des Travaux Publics et du Batiment* No. 22, June 1981, pp 28-35, 14 Fig., 2 Tab., 3 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 112141), Central Laboratory of Bridges & Highways, France
ORDER FROM: *Moniteur des Travaux Publics et du Batiment*, 91 Rue du Faubourg-Saint Honore, 75383 Paris, France

31 348476
SPEED STUDY OF CARS AND BUSES 1980 [JOUKKO-JA MUUN AJONEUVOLIIKENTEEN NOPEUSTUTKIMUS 1980]

The study is one of a series of speed studies made in the Helsinki area since the beginning of 1970. In the 1980 study, 12 public transport routes and ten road-sections were surveyed. The results indicate that in the 1970's no changes in speeds have been found. The improvements in the public transport system have made the buses as rapid a transport mode as private cars as regards the connections to CBD from the other parts of the region. (TRRL) [Finnish]

Paakaupunkiseuden Yhteistyövaltuuskunta (YTV) Report N1980-10, Dec. 1980, 36p, 22 Fig., 7 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 258703)
ORDER FROM: Paakaupunkiseuden Yhteistyövaltuuskunta (YTV), Sähkötajankatu 1, Helsinki 52, Finland

31 348519
DESIGN OF THE DANISH RAILROAD SYSTEM (DSB) FOR THE ELECTRIFICATION OF ITS ELECTRIC LINE NETWORK [PLANUNGEN DER DAENISCHEN STAATSBAHNEN (DSB) ZUR ELEKTRIFIZIERUNG IHRES FERNSTRECKENNETZES]

The Danish Railroad System has been operating since 1934 an urban rapid transit system with 1.5 kv dc and overhead line in the suburban area of Copenhagen. Due to the increase of diesel fuel prices, the conversion to electric traction of the most important trunk lines has become economical. A description is given of the investigation results of an electrification working party employed for this purpose. The single phase ac system with 25 kv/50 Hz has been chosen. It is foreseen that by 1998 the routes Copenhagen-Helsingor, Copenhagen-Korsor and the main lines in Jutland and on the island Funen will be electrified. The electric tractive units planned for operation, the organization, realization plans, overhead line system and questions of energy supply are discussed. [German]

Jensen, P (Danske Staatsbaner, Denmark) *Elektrische Bahnen* Vol. 79 No. 2, Feb. 1981, pp 34-40

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

31 348796
NETHERLANDS RAILWAYS MAKE THE ROAD TO THE STATION CONSPICUOUS [DE NEDERLANDSE SPOORWEGEN TIMMEREN OPNIEUW AAN DE WEG NAAR HET STATION]

Review of a report on the accessibility of railway stations for traffic in general and for bicycles and pedestrians in particular. Based on this report the author criticizes the plan Holland West, a structure scheme for the area particularly between Amsterdam and The Hague.(A) (TRRL) [Dutch]

Bach, B (Delft University of Technology, Netherlands) *Verkeerskunde* Vol. 32 No. 11, Nov. 1981, pp 530-533, 4 Fig., 4 Phot., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 259275), Institute for Road Safety Research
ORDER FROM: Dutch Touring Club ANWB, Wassenaarseweg 220, Box 2200, The Hague, Netherlands

31 348800
LIGHT RAIL FOR PORTLAND

The background of events leading to the reintroduction of light rail transport on a 23 km route in Portland, Oregon, is described. Portland has a small and congested central business district, and the freeway developments in the area have only increased this congestion. One proposed freeway scheme was withdrawn when a community association won a court action on the grounds that a 1969 report had been invalidated by changed circumstances. Alternatives, such as a "park and ride" scheme were tried unsuccessfully. Eventually a light rail option was approved on the grounds that it would be cost justified, when compared with other alternatives, in terms of its carrying capacity, operator-to-passenger ratio, capital costs and direct operating costs. The 1973 Federal Highway Act permits the diversion of road funds and taxes to finance transit developments, and the 92 per cent federal proportion of the road costs could become 80 per cent of the cost of the transit alternative. Work has already been started on the construction of the line, which will start from the streets of central Portland. Running speeds will average 25 mile/h, and cars will run at ten minute intervals during the day and at 20 to 30 minute intervals in the evenings and on Sundays. The service will be fully coordinated with the existing bus system. (TRRL)

Price, JH *Modern Tramway and Light Rail Transit* Vol. 44 No. 527, Nov. 1981, pp 412-415, 2 Fig., 7 Ref.

ACKNOWLEDGMENT: TRRL (8201TR052E)
ORDER FROM: Allan (Ian) Limited, Terminal House, Shepperton TW17 8AS, Middlesex, England

DOTL JC

32 320342

SMALL CITY TRANSIT (SINCE 1970-PRESENT)

Series of reports on funding and operations of public transit projects designed to serve populations ranging from 9500 to 170000 in 13 small cities or surrounding rural areas. Most are municipally operated systems, initiated since 1970, providing either fixed route bus service or demand responsive (dial-a-ride) bus or taxicab service. Many are initially funded by UMTA grants. Data are from reviews of operating records, visits to cities, and interviews. Case studies: Each report provides a brief narrative description of community transportation needs, transportation project operations, and costs; usually a map showing transit routed; and a summary tabulation of most or all of the following data: A. Demographics: population, pop. density, median income, car ownership, transit dependence, and average distance to transit service. B. Transit coverage and service: number and average length of routes; hours of service, and number, types, and capacities of vehicles. C. Cost and productivity: operating costs; vehicle miles and hours; driver hours and wages; and costs and passengers per vehicle hour and mile. D. Revenue and subsidy: fares, revenue and subsidy per passenger, and funding sources and amounts. E. Ridership: average passengers; growth rate and composition (including elderly, youth, and handicapped); and major trip purposes. (TSC)

Paper copy, Microform.

Urban Mass Transportation Administration No Date, n.p.

ACKNOWLEDGMENT: Transportation Statistical Reference File, TSC (342)
ORDER FROM: UMTA

32 322099

A COMPARISON OF OPTIMAL MINIBUS, DIAL-A-BUS AND CONVENTIONAL BUS SERVICES

An assessment has been made of the comparative performance of minibus, dial-a-bus and conventional bus services when operated at their optimal fare and frequency and in the absence of competing stage carriage services. This was effected using previously developed computer models. The three types of service were assessed individually over the same off-peak operating hours at frequencies from two to six buses an hour and the performances of the service at their profit maximising and net benefit maximising fares were examined. It was concluded that, when operated at the same frequency all three services were equally attractive to passengers. The dial-a-bus service was, however, found to be less efficient and more expensive to operate. None of the services could be operated at a net profit, although the conventional bus approximately covered its costs at a frequency of two buses an hour whilst generating a positive net social benefit. Comparison with an earlier study, where all services were constrained to operate at the same fare and in the presence of competing stage carriage services showed that the relative performance and efficiency of the optimal services were unchanged; the optimal services however, performed better from both financial and social points of view than those to which the constraints applied. (Author/TRRL)

Tunbridge, RJ

Transport and Road Research Laboratory, (0305-1293) Monograph LR928, 1980, 13p, 7 Tab., 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 248515)
ORDER FROM: ESL

32 328963

THE RUNAROUND: USER-SIDE SUBSIDIES FOR MASS TRANSPORTATION IN DANVILLE, ILLINOIS

In August 1977, the City of Danville, Illinois was awarded a two-year amendment to an Urban Mass Transportation Administration Service and Methods Demonstration grant to test the application of a user-side subsidy concept supporting fixed-route transit to be provided by private transportation companies. This document discusses Phase II and the second year of Phase I. The distinguishing feature of a user-side subsidy is that providers of a service receive the subsidy only in amounts proportional to the number of people who use the service. The user-side subsidy arrangement offers a number of strong advantages over more conventional subsidy arrangements, and the overriding advantage is its value in promoting efficient use of transportation resources. This report discusses service provided by private contractors who were selected on a competitive basis every four months.

Koffman, D Bloomfield, P

Crain and Associates, Urban Mass Transportation Administration, Transportation Systems Center Final Rpt. UMTA-IL-06-0034-80-1, Apr. 1980, 380p

Contract DOT-TSC-1408

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-151375

32 329010

THE USER-SIDE SUBSIDY TAXI PROGRAM IN THE HARBOR AREA OF LOS ANGELES, CALIFORNIA

The user-side subsidy, shared-ride taxi program operating in the Harbor Area of Los Angeles, California, known locally as Share-A-Ride, is one of eleven special transportation efforts for mobility-impaired persons that are financed by the State's Transportation Development Act, Intra-Community Services funds in Los Angeles County. Besides offering service for the elderly, handicapped, and low-income residents of the area (20 square miles), the objective of this program is to provide operating experience that will allow for a comparison of user-side and provider-side subsidy services. This report describes how the Harbor Area program operates, provides detailed operating data, and analyzes the results of the program. The study relied on available data and personal interviews. Data included monthly operating reports, a survey of participants, and a sampling of waybills and rider coupons used in January and August 1979. Monthly contact was maintained with both the administering and operating agencies.

Richard, B

Crain and Associates, Urban Mass Transportation Administration, Transportation Systems Center Final Rpt. UMTA-MA-06-0049-80-9, May 1980, 79p

Contract DOT-TSC-1408

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-151458

32 330093

POTENTIAL ROLES FOR AUXILIARY-PARATRANSIT SERVICES IN AN ENERGY SHORTAGE

This paper focuses on six types of services (rental-lease vehicles, shared-ride taxi, dial-a-ride, jitney services, school buses, and intercity bus operations) that may be particularly important during future fuel shortage. The potential value of each service and obstacles to expanded operations are discussed. A number of issues that seem to be of general concern with respect to all of these service types are highlighted. Finally, general recommendations regarding each service type are presented.

This paper appeared in Transportation Research Special Report No. 191, Considerations in Transportation Energy Contingency Planning. Proceedings of the National Energy Users' Conference.

Carlson, C McShane, MP (Massachusetts Institute of Technology)
Transportation Research Board Special Report No. 191, 1980, pp 48-59, 17 Ref.

ORDER FROM: TRB Publications Off

32 330140

EVALUATION OF THE MINNEAPOLIS RIDESHARING COMMUTER SERVICES DEMONSTRATION

The Total Commuter Services Demonstration (Share-A-Ride Program) was initiated by the Metropolitan Transit Commission in 1977 as a prototype transportation brokerage program designed to arrange alternatives to driving alone for commuters. The program promoted and coordinated services for carpooling, vanpooling, and bus commuting at selected employment sites in the Minneapolis-St. Paul area. This Share-A-Ride program has been designed to be a permanent, ongoing program, characterized by: 1) intensive marketing efforts aimed at employers/employees at selected sites; 2) matching services for carpool, vanpool, and bus information applicants; 3) follow-up assistance with carpool/vanpool formation; and 4) administration of a fleet of leased vans. This report presents the final evaluation of the operations and impacts of a ridesharing brokerage program aimed at multi-employer suburban work sites in the Minneapolis metropolitan area. This evaluation report is based mainly on the project events occurring during the first two operational years of the program, November 1977-October 1979. A unique aspect of this demonstration was its focus on multi-employer work sites in non-downtown locations. The demonstration showed that these sites represent an important market for ridesharing. It also demonstrated the difficulty of engaging participation from small firms. Share-A-Ride tested a number of new program features including a variety of marketing strategies, a manual matching technique, a telephone brokerage

technique, and the use of private contractors for marketing and vanpool services. This report serves as a guide to others. (UMTA)

Weisbrod, GE Eder, ES
Cambridge Systematics, Incorporated, Urban Mass Transportation Administration, (77028-07) Final Rpt. UMTA-MN-06-0008-80-1, June 1980, 353p

Contract DOT-TSC-1405

ORDER FROM: NTIS

PB81-124661

32 330692

DIAL A BUS-A CONTRIBUTION BY MODERN INFORMATION TECHNIQUES TO THE IMPROVEMENT OF LOCAL PUBLIC TRANSPORT [Rufbus- ein Beitrag Moderner informationstechnik zur Verbesserung des Oeffentlichen Nahverkehr]

A call-bus system should commence operations in Friedrichshafen in 1978. The call-bus technology commences by using available vehicles (mini-buses) and available traffic routes (roads). The feasibility of modern information technology will be applied for an optimal use of vehicles, with the assistance of an integrated information system between passenger, control centre and vehicle. The passenger can notify his travel requirements by post-card (for regular instructions), telephone or call-pillars to the control centre. The most suitably situated vehicle for the required journey is allocated and dispatched. Using digital radio the route is given to the vehicle and the position of the vehicle is confirmed. A description is provided of the control centre with its functions concerning journey requirement processing, vehicle disposition, vehicle surveillance and control, vehicle control using data-radio with vehicle terminals and the central communication processor and the call-pillars and data-communication between passengers and control centre. The proposed interaction between passenger, control centre and vehicle control is, at present, untested in practice. The tests at Friedrichshafen should also show how far it is possible to make integrated information systems accessible to the public. (TRRL) [German]

Etschberger, K *Verkehr und Technik* Vol. 30 No. 11, Nov. 1977, pp 425-430, 4 Fig., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 310528), Research Association for Road Communications, W Gr

ORDER FROM: Schmidt (Erich) Verlag, Herforder Strasse 10, 4800 Bielefeld, West Germany

32 330828

DIAL/A/RIDE: A REVIEW

Although as originally conceived demand responsive transport (drt) systems offered a many-to-many capability with complex computerised control, more recent developments have offered simpler, manually controlled, systems. From the introduction of the first UK drt systems in 1972 it is possible to observe three broad categories of drt: first generation small-scale services operated without central control; second generation services providing more intensive coverage and with central control; and, third generation services based on the first generation services but operated in rural areas. Tables indicate the periods of operation of such UK systems from 1972-1979 as well as passenger loading and cost:revenue data. The article evaluates the reasons for a number of the systems ceasing operation. Other drt systems have, once developed, been replaced by conventional stage carriage operations. The continuance of drt in the UK is seen as one of a useful adjunct to conventional services as well as the provision of services for particular groups. (TRRL)

Oxley, PR *Transportation Planning and Technology* Vol. 6 No. 3, 1980, pp 141-148, 4 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 252128)

ORDER FROM: ESL

DOTL JC

32 331061

EVALUATION OF THE BARNSTABLE COUNTY PUBLIC TRANSPORTATION DEMONSTRATION PROJECT

This paper evaluates the public transportation demonstration project in Barnstable County, Massachusetts (population, 130,000; area, 100 sq km (389 sq miles); 15 towns. Service was provided with ten 12-passenger vehicles on a prearranged demand-responsive basis. The demonstration project operated for 22 months and was then continued on a permanent basis. The

paper addresses various aspects of planning and design, which include preliminary project planning, program monitoring and evaluation, a rider-identification pass, data collection, user characteristics, system performance, financing, user attitudes, pricing, and simple supply-and-demand relationships. Major results and conclusions are that (a) some form of door-to-door public transportation service is necessary to meet the special needs of the elderly and the handicapped in small urban and rural areas; (b) consideration should be given to coordinating any new service of this type with similar existing services; (c) the system performance of such a service may need as much as 15 months to reach a stable condition; (d) the use of a rider-identification pass is a relatively low-cost simple mechanism by which to collect fares, market service, and obtain useful data; (e) attitudinal surveys may be helpful in determining user satisfaction and in identifying desired service changes; (f) consideration should be given to pooling various federal, state, and local funds to finance projects; and (g) any method used to apportion the local share of a deficit among towns may have to include a trip-length variable such as passenger kilometers if the desire of local officials is to base the apportionment on each town's level of use. (Author)

This paper appeared in Transportation Research Record No. 761, Public Transportation Planning.

Collura, J (Massachusetts University, Amherst); Warren, RP O'Leary, DP (Cape Cod Regional Transit Authority); Bohn, D (Vanasse-Hangen Design, Incorporated) *Transportation Research Record* No. 761, 1980, pp 58-65, 3 Fig., 2 Tab., 6 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

32 331075

CARPOOL COORDINATOR DEMONSTRATION PROJECT: FINAL REPORT

This paper evaluates the Carpool Coordinator Demonstration Project undertaken by the New York State Department of Transportation under contract to the New York State Energy Office. The Carpool Coordinator is a company employee who actively forms carpools among employees using manual and personalized techniques and who is available to resolve ridesharing problems as well as promote carpooling. Using six state agencies in the Albany, N.Y. area, a quasi-experimental design is employed to test the effectiveness of the concept, and to control for carpool formation which would normally occur in the face of rising gasoline prices and restrictions of supply. "Before" and "after" surveys in the six agencies were conducted in October 1978 and again in October 1979. The results show that in test agencies the carpool coordinators increased ridesharing substantially (10 percentage points) while ridesharing among control agencies rose 3.5 percentage points over the same period of time. Thus the coordinator project was able to effect an increase of 6.5 percentage points because of its activities. Approximately 195,000 gallons of gasoline were conserved by new carpools in all six agencies, an average of 283 gallons of gasoline per year per carpooler. Of this, 101,000 gallons is attributable to the carpool coordinator program. The direct cost of the project in the three agencies was \$26,000 producing an overall benefit/cost ratio of 3.9. Evaluation shows that by concentrating initially on employees commuting the longest, in terms of distance and time, benefits to employees can rapidly exceed program costs.

Brunso, JM

New York State Department of Transportation Prel Res No. 171, Feb. 1980, 56p, Figs., Tabs., 22 Ref., Apps.

ORDER FROM: New York State Department of Transportation, Planning Research Unit, State Campus, Albany, New York, 12232

32 331089

SHARED RIDE TAXI SERVICES AS COMMUNITY PUBLIC TRANSIT

This report examines the use of taxi firms as the providers of publicly supported demand responsive transit. These subsidized shared ride taxi (SRT) systems have become the predominant form of general public DRT in California, with 29 such systems now in operation. Based on California's experiences with subsidized SRT, this study presents case reviews of SRT implementation and operation, analyzes the issues associated with the development of taxi-based transit services, and evaluates the performance of subsidized SRT. The major issues concern: (1) service provision, including the institutional reasons for contracting, competition for contracts, and contractual arrangements and their effects; and (2) the consequences for taxi firms of becoming public transit providers, including legal implications,

operational changes, labor-management relations, the impact of subsidization, and future plans. SRT performance is evaluated in terms of cost-efficiency and effectiveness and also compared to that achieved by other forms of community level transit.

Teal, RF Fielding, GJ Giuliano, G Marks, JV Goodhue, RE
California University, Irvine, Urban Mass Transportation Administration
Final Rpt. CA-11-0017-1, Mar. 1980, 238p, Tabs., Apps.

Contract CA-11-0017

ORDER FROM: NTIS

32 331374
THE FEASIBILITY OF LATE EVENING TAXI-TRANSIT COORDINATION

As a result of the underutilization of fixed-route transit service during late evening hours, the City of Madison, Wisconsin became interested in exploring the feasibility of utilizing taxis to supplant or supplement the fixed route service during late evening hours. Based on data analysis, three alternative taxi/transit coordination scenarios were developed and analyzed: replacement of buses with taxis operating on fixed routes, replacement of fixed-route service, and shortening of fixed-routes and the provision of neighborhood feeder services. It was concluded that some form of taxi feeder service is the most promising in terms of cost-effectiveness. The type of feeder service specifically recommended is known as "cycle many-to-one," in which taxis circulate through each service area on a 30-minute cycle, returning to the transfer point to meet each line haul vehicle and thus ensuring coordinated transfers. Passengers transferring from the line haul to a taxi would be able to do at the transfer point. Sufficient slack time would be included in both taxi and line haul schedules to ensure the transfers are coordinated. One of the major advantages of the feeder alternative is that it is possible to implement it in a step-by-step process. Staging the implementation minimizes initial expenditures and provides the opportunity to refine system operations before the system is fully operational. Also, it allows the community some time to understand and accept the new system.

Wisconsin Department of Transportation, Multisystems, Incorporated
May 1979, 108p, Figs., Tabs., Refs., 1 App.

ORDER FROM: Wisconsin Department of Transportation, 4802 Sheboygan Avenue, Madison, Wisconsin, 53702

32 331837
A THEORETICAL TRAVEL-TIME MODEL FOR FLEXIBLE-ROUTE BUSES

A theoretical model for estimating the expectation and variance of buses' running times under a flexibly-routed mode of service is proposed. The model is based on a probabilistic concept that adequately accommodates the usual randomness in the number and location of passengers served during successive vehicle trips. A few simplifications are embodied in the model but it can serve as a basis for a more refined model such as a computer simulation model that can be used in designing real bus systems. The physical setting assumed in the model is a rectangular grid road network where all houses face the side streets as in some suburban regions. Because it oversimplifies real-life situations, this assumption would need to be relaxed to make the model applicable to more general cases. Both the partially flexible-route service where some passengers are captive to fixed-route service and others are served at their doorsteps, and the fully flexible-route service where all passengers are served at their doorsteps, are studied. In each case, a very simple routing convention that can be conveniently executed by the bus drivers is assumed. The proposed travel time model confirms the intuitively correct phenomenon that when the concentration of passenger trip-ends is very high, the vehicle-route degenerates into a fixed-route in which the buses visit all possible loading points within the service area. (Author/TRRL)

Adebisi, O (Amadu Bello University, Nigeria) *Transportation Research. Part B: Methodological* Vol. 14B No. 4, Dec. 1980, pp 319-330, 6 Figs., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252436)
ORDER FROM: ESL

DOTL JC

32 334029
LEGAL IMPEDIMENTS TO RIDESHARING ARRANGEMENTS

The most significant impediment in state laws to forming ridesharing arrangements are laws requiring motor vehicles transporting passengers for

compensation to qualify as common or contract carriers. In recognition of the undesirability of such requirements, the legislatures of 32 states have adopted an exception to permit pooling without approval of the state public utility commission. Thirteen states do not have any such specific exceptions, and 6 states have motor carrier laws which regulate common but not contract carriers. Another impediment to ridesharing arrangements is the cost of availability of insurance. This report discusses compulsory insurance laws, guest statutes, no-fault laws, lapse in insurance coverage and workmen's compensation laws. This report also discusses whether ridesharing vehicles are commercial motor vehicles or buses, and the consequences of considering them as such. Aspects such as inspection, authority to acquire vans, the number of passengers, and hitchhiking restrictions are discussed. State fair labor standards acts, and income tax laws and their relation to ridesharing are also covered. Comments are made on the use of state-owned vehicles for ridesharing.

Kearney, EF (National Comm on Uniform Traffic Laws & Ordinances)
Department of Transportation Dec. 1979, 67p

ORDER FROM: GPO

32 334285
EVALUATION OF THE ROCHESTER, NEW YORK COMMUNITY, TRANSIT SERVICE DEMONSTRATION. VOLUME 1: EXECUTIVE SUMMARY

The Rochester Community Transit Demonstration followed four years of paratransit experimentation funded locally and through a previous demonstration grant (The Rochester Integrated Transit Demonstration). In the new demonstration, both public and private operators provided dial-a-ride and handicapped services, and their performances were compared. The demonstration also included a unique funding strategy that shifted responsibility to the local towns served by dial-a-ride vehicles. The purpose of this evaluation is to determine how well the demonstration achieved these objectives: increasing transit coverage, improving transit service reliability, increasing vehicle productivity, and improving service for transit dependent. This report evaluates the results of the demonstration including the implementation process, the level of service provided to users, the demand response, and the services' operating efficiency. The implications of the Rochester experience are summarized for the benefit of localities interested in implementing similar services. An epilogue section documenting activities that have occurred since the demonstration ended is also included. This study consists of three separate volumes. Volume 1 contains an executive summary of the more significant demonstration findings. Volume 2 (available soon) provides a detailed description and analysis of the Rochester demonstration. Volume 3 (available soon) contains the technical appendices, including operating records, surveys, survey results, and promotional materials. (UMTA)

Newman, DA Holoszyk, M
Systan, Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-NY-06-0048-81-1, Oct. 1980, 44p

Contract DOT-TSC-1416

ORDER FROM: NTIS

PB81-187981

32 334535
PAY-AND-RIDE CARPOOL: A NEW CONCEPT IN COMMUTER RIDESHARING

The two prevalent carpooling systems--shared driving and shared riding--require that all program participants should have a common origin and destination and common departure and return times. However, in a situation such as that of a university, where the schedules of students change every three months and time they spend at the university is not the same each day of the week, matching the time and origin-destination needs of commuters is almost impossible. A "pay-and-ride" carpool concept proposed for use on the campus of the University of Central Florida is described. In the proposed system, carpool pickup stops would be located along the roads within 1 km of commuters' residences. Riders would wait at these stops and drivers passing by bound for the same destination would pick up the waiting riders after adequate verification of their identity. In such a program, both drivers and riders would belong to the same organization. Riders would pay coupons to the driver as their share of the cost of a one-way ride. Each pickup stop would have a number, and matching pickup stops would be located at the destination point for return travel. The results of opinion surveys conducted in the summer of 1979 and the winter of 1980 at the

University of Central Florida concerning the acceptability of such a program are reported. Fifty-nine percent of those interviewed stated that, if such a program were instituted, they would be willing to participate in it. (Author)

This paper appeared in *Transportation Research Record No. 778, Paratransit 1980.*

Mohan, S Schrader, GF (Central Florida University) *Transportation Research Record No. 778, 1980, pp 1-7, 6 Fig., 1 Tab.*

ORDER FROM: TRB Publications Off

DOTL JC

32 334538

RECENT DEVELOPMENTS IN THE REVISION OF TAXI REGULATIONS IN SEATTLE AND SAN DIEGO

The nature of major taxi regulatory changes implemented in Seattle and San Diego during 1979 and the preliminary results of such changes are discussed. The changes substantially reduced fare and entry controls while retaining safety and insurance requirements. These changes are significant because taxis in most U.S. cities have operated under conditions of regulated fare and entry for 40 years or more. The reasons why major regulatory revision took place in these cities are complex and difficult to attribute any single cause. Some prominent reasons were the "progressive" nature of the San Diego and Seattle City Councils and the desire to avoid frequent hearings on fare increases and other time-consuming regulatory matters. The generally unfavorable image of taxis in both cities did not aid the industry's vehement opposition to these regulatory changes. The implementation process involved the taxi industry, elected officials, and licensing and regulating authorities. The conditions of the taxi industry in both cities immediately prior to regulatory revision are described, and the revision process is examined. Explanations are offered as to why regulatory revision occurred in these cities, and the short-term and possible long-term impacts of the revisions are explored. Although the results are tentative, they should be helpful to those evaluating the desirability of regulatory changes in other cities. (Author)

This paper appeared in *Transportation Research Record No. 778, Paratransit 1980.*

Colman, SB (Smith (Wilbur) and Associates) *Transportation Research Record No. 778, 1980, pp 19-24, 3 Tab., 3 Ref.*

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32 334539

SUBSIDIZED SHARED-RIDE TAXI SERVICES

Issues associated with the recent development of subsidized shared-ride taxi (SRT) service are analyzed based on a study of experience in California, where subsidized SRT has already become the predominant form of demand-responsive transportation. One set of issues concerns service provision and includes the institutional reasons for contracting, competition for contracts, contractual arrangements and their effects, and the cost-efficiency of subsidized SRT. A second major set of issues concerns the consequences for taxi firms of becoming public transit providers and includes legal implications, operational changes, labor-management relations, the impact of subsidization, and the effects of contracting on firms' financial situation and future plans. The issue analysis provides the basis for a discussion of the policy implications of California's experience with SRT. (Author)

This paper appeared in *Transportation Research Record No. 778, Paratransit 1980.*

Teal, RF Marks, JV Goodhue, RE (California University, Irvine) *Transportation Research Record No. 778, 1980, pp 25-32, 11 Ref.*

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32 334540

EVALUATION OF THE COMMUTER COMPUTER VANPOOL PROGRAM

An evaluation of the Los Angeles area multiple-employer vanpool program called Commuter Computer Vanpool is presented. The purpose of the study is to describe how the program works and to provide an evaluation of past performance and input for future policymaking. Three years of experience in marketing the program have produced several important findings: (a) The ridesharing market does not include all commuters but is composed of several specialized segments that desire certain services, (b) the most critical

element in making a vanpool program successful at worksites is commitment to the program by top management, and (c) participants in the program are predominantly former ridesharers and live approximately 35 miles from work (one way). The program has been a mechanism for increasing vehicle efficiency rather than getting people out of single-occupant vehicles. The decision to vanpool is found to be not entirely an economic choice in that it is more strongly influenced by psychosocial pressures than by economic ones. (Author)

This paper appeared in *Transportation Research Record No. 778, Paratransit 1980.*

Valk, PJ (Commuter Transportation Services, Incorporated) *Transportation Research Record No. 778, 1980, pp 32-38, 4 Fig., 3 Tab., 4 Ref.*

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32 334541

KNOXVILLE BROKERAGE DEMONSTRATION: A RETROSPECTIVE VIEW

Results of an extensive evaluation of the Knoxville transportation brokerage demonstration, the first metropolitan, multimodal implementation of the brokerage concept, are presented. The demonstration involved the establishment of the Knoxville Commuter Pool, an organization that sought to identify and match transportation demand and supply among a variety of users and providers. Primary emphasis was on service to two market segments: commuters and social service agencies. Although the Knoxville experiment in brokerage was very successful in achieving institutional changes conducive to the growth of shared-ride modes, its impact on travel behavior was quite limited. Nevertheless, the flexibility inherent in the brokerage concept may be a key in the search for better solutions to transportation problems. Continued research in this area, as well as the rising cost and decreasing availability of energy, may significantly increase the impact of future brokerage organizations on their communities. (Author)

This paper appeared in *Transportation Research Record No. 778, Paratransit 1980.*

Juster, RD (Multisystems, Incorporated) *Transportation Research Record No. 778, 1980, pp 38-44, 2 Fig., 1 Tab., 11 Ref.*

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32 334563

FARE CALCULATION FOR METERED RIDE SHARING VEHICLES

An analytical relationship is presented which expresses more accurately the metered taxi fare as a function of both the distance traveled and the time elapsed through meter incrementing. The analytical framework is used to derive further relationships among parameters of shared ride service. The application of such an approach is also evaluated regarding automated fare calculation for exclusive ride taxi and shared ride transit in advance of a trip (when the distance and time for the trip can be reliably estimated). In the application, reliable distance and time estimates are obtained from a data base originally generated from geographic and travel data files developed by metropolitan organizations, and continuously enhanced through trip data collection.

Ghahraman, DE (Megatest Corporation); Au, T Baumann, DM *ASCE Journal of Transportation Engineering Vol. 107 No. 2, Mar. 1981, pp 105-117, 5 Ref.*

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

32 334584

ATTITUDES TOWARD RIDE-SHARING--3M CENTER CASE STUDY

The research study described was undertaken at the University of Minnesota through the Center for Urban and Regional Affairs, to investigate reasons behind the apparent lack of success in the carpooling program, as opposed to the success in the vanpooling program. The objective of the survey was to determine how different types of commuters differ in their attitudes toward ride-sharing.

Plum, RA (Minnesota University, Minneapolis); Edwards, JL *Traffic Quarterly Vol. 34 No. 2, Apr. 1980, pp 287-304, 3 Ref.*

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

32 335191

**CHARACTERISTICS OF DALLAS, TEXAS, TAXICAB PATRONS:
RESULTS OF A 1977 SURVEY**

This paper presents the results of a survey of taxicab riders in Dallas, Texas. Besides a socioeconomic profile of the taxi ridership, differences and similarities among certain identifiable groups are also given. For this analysis, taxicab riders are first classified into two basic groups: residents and nonresidents. Resident taxicab patrons are further divided into three categories: transportation disadvantaged, middle-income persons, and the affluent. The sex, race, income, trip purposes, and availability of alternative modes of transportation of these different groups are compared. Respondents to the questionnaire were asked whether they would have taken the trip if the fare were higher by specific amounts. The resulting sensitivity of demand to higher fares is analyzed by income and trip purpose. Finally, the paper reports the responses regarding alternative transportation modes. Significant differences are noted between residents and nonresidents. (Author)

This paper appeared in Transportation Research Record No. 784: Providing Transportation Services for the Elderly and Handicapped.

Eisenberg, MA Barker, WG (North Central Texas Council of Governments) *Transportation Research Record* No. 784, 1980, pp 7-12, 2 Fig., 2 Tab., 9 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

32 335197

**COMPARISON OF FINDINGS FROM PROJECTS THAT
EMPLOY USER-SIDE SUBSIDIES FOR TAXI AND BUS TRAVEL**

Experiments with user-side subsidies began about four years ago. The Urban Mass Transportation Administration Service and Methods Demonstration program has funded a series of projects and monitored others already in operation to determine the workability of user side subsidies in different settings as they are applied to different forms of public transportation. Results from 13 applications of user-side subsidies as a means of improving the mobility of transit-dependent persons are presented. Examples of public and private providers, paratransit and fixed-route services, small to medium-sized cities, and limited (target market) eligibility, including a variety of subsidy levels, payment mechanisms, and fare policies, are discussed and examined. Generalizations are made, where possible, about administrative policies, fare-discount strategies, and project impacts. (Author)

This paper appeared in Transportation Research Record No. 784: Providing Transportation Services for the Elderly and Handicapped.

Kendall, D (Information Resources, Incorporated) *Transportation Research Record* No. 784, 1980, pp 45-52, 1 Tab., 10 Ref.

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32 335816

**INNOVATIONS IN THE REGULATION AND OPERATION OF
TAXICABS**

This paper reviews a number of recent innovations in the regulation and operation of taxicabs in U.S. cities. The paper discusses the growing involvement of various levels of government in public transportation programs which affect the taxicab industry, and identifies the opportunities and problems created for the industry by this increased government activity. Innovations in the types of public transportation services which can be provided by taxicabs are discussed first, followed by a review of the administrative procedures which can be employed to involve taxicab companies in publicly funded programs. Proposals for changes in the regulations governing taxicab services and prices are discussed next, with particular attention to significant regulatory changes which have been implemented in U.S. cities in recent years. Finally, innovations in the technology of taxicab operations are reviewed, including improvements to vehicles, computerized dispatching techniques, and procedures and equipment for computing fares for taxicab services. (Author/TRRL)

Kirby, RF (Urban Institute) *Transportation (Netherlands)* Vol. 10 No. 1, Mar. 1981, pp 61-86, 1 Tab., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253915)
ORDER FROM: ESL

DOTL JC

32 335817

**CHANGES IN REAL INCOMES AND THE DEMAND FOR
TAXICABS**

This paper comments on the possible future of the taxicab industry within the context of a familiar economic-growth model. The future capability of the taxicab industry to check increases in real costs is shown to be an important determinant in the industry's long-term viability. More importantly, the effect of rising real incomes on the demand for taxicabs is postulated also to have a strong effect on future demand. The strength of this effect and the exact position of the taxicab in the "transit tree" have important implications not only for the future demand for taxis but also for the more traditional modes of public transport.(a) (TRRL)

Williams, DJ (Sydney University, Australia) *Transportation (Netherlands)* Vol. 10 No. 1, Mar. 1981, pp 51-59, 2 Tab., 19 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253916)
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32 338222

VANPOOLING: GO VIA VAN

Vanpooling at TVA began in June 1974 as a demonstration project in Knoxville. In conjunction with the Knoxville TVA Employees Credit Union, six vans were leased to serve employees who lived in area without public transit. Currently there are 656 vans owned by the employee credit unions and operating throughout the Tennessee Valley. By the end of 1980, the van fleet will probably exceed 675 vehicles and serve all major office locations. It is expected that there will be 1,000 vanpools in operation by 1983. The vanpooling project is continuing to grow both in number and in scope and has demonstrated its suitability for and adaptability to, a variety of employee commuting situations. The report explains how the TVA vanpool program is organized, operated, and financed.

Tennessee Valley Authority TVA/OMS/PS-81-1, Jan. 1981, 42p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-183980

32 341173

**PROPOSED FARE POLICY FOR ADVANCE-RESERVATION BUS
SERVICE**

This paper reviews the present fare policy of the advance-reservation bus service in Barnstable County, Massachusetts, examines several alternative fare policies, and, finally, proposes a new policy. The present fare policy allows individuals to ride an unlimited number of times at a flat rate for any purpose during a three-month period. Four alternative fare policies are described. The alternative proposed for implementation would charge riders on the basis of the number of trips taken and the length of each trip. Reduced rates would be available for elderly or handicapped persons and for those who made group trips. Riders would be sent bills at the end of each month like telephone bills—the trips and miles traveled would be detailed as long-distance calls are. These invoices would be prepared by the existing computer system, which currently maintains complete client listings and generates detailed drivers' schedules. The cost of this minicomputer system, including hardware and software, was about \$50,000. The development of the billing and invoicing system would cost an additional \$5500. The paper also recommends further research into alternative fare policies, including their effects on travel behavior, revenue generation, and subsidy requirements. Other recommended topics are alternative mechanisms for implementation of such fare policies, such as sale of tickets, punch passes, manual invoicing, and (as proposed) implementation as a component of a comprehensive computerized management information system.

This paper appeared in TRB Record 791, Transportation Finance, Equity, and Cost Allocation.

Warren, RP Rogers, AD (Cape Cod Regional Transit Authority); Collura, J (Massachusetts Institute of Technology); Beliveau, R (Crosbro Incorporated) *Transportation Research Record* No. 791, 1981, pp 5-10, 2 Fig., 1 Tab., 4 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

32 341275

AN ANALYSIS OF THE POTENTIAL FOR DYNAMIC RIDESHARING IN A LOW-DENSITY AREA

This report reflects the view that there is a significant reserve of capacity in the highway private automobile system that could be tapped through ridesharing. The authors suggest that, within limits, not only can the transportation system adapt to travel patterns, but travel patterns can be adapted to the transportation system and this adaptation can take place within the constraints established by patterns of our daily activities. It is also suggested that implementation of a ridesharing program such as described in this report would be simple and relatively risk-free. This research deals with activity patterns and their relation to travel needs in a rural area in eastern Connecticut (10-town Windham Planning Region). Of specific interest is the commonality of trip-making and the flexibility of activity patterns in both spatial and temporal terms. After identifying activity patterns, the research examines the inherent flexibility of these patterns. The potential for ridesharing is quantified using a series of scenarios defined by a set of assumptions regarding such items as participation rate, period of simulation and operational characteristics. The simulation using either the status quo occupancy or 4-person carpools reveals a broad range between a minimal reduction in vehicle miles of travel (3 to 4 percent) given in existing attitudes and the maximum reduction in vehicle miles of travel (40 percent). The results suggest that it would be reasonable to expect reductions between 12 and 25 percent given the degree of willingness to participate evidenced in the questionnaire response. (UMTA)

Davis, CF Groff, WH Steahr, TE
Connecticut University, Storrs, Urban Mass Transportation
Administration, (CT-11-0001) Final Rpt. UMTA-CT-11-0001-81-1,
June 1981, 142p

ORDER FROM: NTIS

PB81-229379

32 342930

STARTING UP. HOW TO RUN A COMMUNITY MINIBUS. A COMPREHENSIVE GUIDE. SECOND EDITION

This guide was written to assist groups running their own vehicles and for those who are thinking of getting involved. It is aimed at showing what resources are needed, how and where to get them, and exactly what the venture involves. It covers the aspects of vehicle selection, costing (at September 1980 prices), organization (adoption of a constitution, to register or not), sources of funds, operation of minibus and day-to-day organization, legal aspects, and custom-built vehicles. (TRRL)

Taylor, J Armitage, R
Starting Up Community Transport Monograph Oct. 1980, 39p, Figs.,
Tabs., Photos., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 256238)

ORDER FROM: TRRL

32 343577

RIDESHARING: A PRACTICAL TRANSPORTATION ALTERNATIVE

The report discusses ridesharing as an energy efficient mode of transportation. Broadly defined, ridesharing means two or more individuals traveling by a common mode of transportation. This report focuses on vanpooling, a form of ridesharing which enables 7 to 14 passengers to share rides to and from their work sites. The first section of the report highlights the various types of vanpools in operation across the country. Three types of vanpool programs exist: employer-based vanpools, third-party vanpools and employee owned and operated vanpools. That section is then followed by a summary of federal involvement in ridesharing. After that, the actions that various states have taken to encourage ridesharing are discussed. The last section of the report summarizes ridesharing efforts in New York, concluding with a number of recommendations aimed at rapidly increasing the number of vanpools in the state.

Prepared in cooperation with the New York Legislative Commission on
Critical Transportation Choices.

Derrick, P Stathakis, K Komansky, F
New York State Legislature May 1981, 60p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-220014

32 343582

PARATRANSIT HANDBOOK: A GUIDE TO PARATRANSIT SYSTEM IMPLEMENTATION VOLUME I-PARTS 1-3

The Paratransit Handbook has been developed as a guide to aid public officials, planners, system operators, and interested community groups in planning, designing, implementing, operating, and evaluating integrated paratransit systems. The Handbook represents a compendium of techniques and experience drawn from existing Dial-A-Bus and shared-ride taxi paratransit systems. Five interrelated sections contained in two volumes comprise the Handbook.

See also PB81-222135. n

Bellheimer, JW Lave, RE Jones, P Fratessa, C Newman, D
SYSTAN, Incorporated, Urban Mass Transportation Administration,
Transportation Systems Center, (UMTA-MA-06-0054) Final Rpt.
DOT-TSC-UMTA796VOL-1, Feb. 1979, 443p

Contract DOT-TSC-1392

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-222127

32 343583

PARATRANSIT HANDBOOK: A GUIDE TO PARATRANSIT SYSTEM IMPLEMENTATION VOLUME II-PARTS 4 AND 5

The Paratransit Handbook has been developed as a guide to aid public officials, planners, system operators, and interested community groups in planning, designing, implementing, operating, and evaluating integrated paratransit systems. Volume II, Part 4, Service Components, Regulations, Analytical Procedures, and Sources (SCRAPS) contains detailed information to complement the planning and design process. Volume II, Part 5, The Appendices, also includes references, a glossary, summaries of individual system characteristics, and other technical material.

See also PB81-222127. n

Billheimer, JW Lave, RE Jones, P Fratessa, C Newman, D
SYSTAN, Incorporated, Urban Mass Transportation Administration,
Transportation Systems Center, (UMTA-MA-06-0054) Final Rpt.
DOT-TSC-UMTA796VOL-2, Feb. 1979, 365p

Contract DOT-TSC-1392

ACKNOWLEDGMENT: NTIS

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PB81-222135

32 343633

ECONOMIES OF SCALE IN PARATRANSIT: SPECIAL SERVICE AGENCIES AND TAXICAB COMPANIES

Transportation planners have become interested in forms of paratransit service that have developed without direct government involvement, namely, special transportation services and taxi services. Both services have the potential of providing a viable, reasonably priced transportation service to the elderly and handicapped population. The purpose of this study was to test whether economies or dis-economies of scale exist in the delivery of special transportation service or taxi service. The study addresses the following questions: (1) do average costs decrease with increases in ridership that are due to increasing the number of riders or special groups served within an area, and (2) do average costs decrease with increases in ridership that are due to increasing the service area. Data was collected from special service agencies and taxicab companies in the Chicago metropolitan area. The samples were subdivided by service characteristics, and average costs were compared. Cost models were developed using regression analysis.

Robins, L Pagano, AM McKnight, C
Illinois University, Chicago, Urban Mass Transportation Administration
Final Rpt. UMTA-IL-11-0028-81-2, May 1981, 95p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-214082

32 343720

PARK-AND-POOL FACILITIES SURVEY RESULTS AND PLANNING DATA

The report presents the results of a Park-and-Pool survey undertaken at selected locations around the San Antonio and Houston, Texas, metropolitan areas. This information should prove useful in a number of different ways

including: the identification of various improvements which could be made in order to better meet the needs of area commuters; and the planning and design of future Park-and-Pool facilities.

Sponsored in part by Texas State Dept. of Highways and Public Transportation, Austin.

Bullard, D Christiansen, DL Fitzgerald, AV
Texas Transportation Institute, Federal Highway Administration, Texas
State Department of Highways & Public Transp Res Rpt.
TTI-2-10-74-205-13, FHWA/TX-81/23, Feb. 1981, 56p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-231383

32 343858

BUS ANNUNCIATOR SYSTEM

As a means of saving energy while minimizing the need for passenger cars, vans, and trucks in the Oak Ridge Y-12 Plant, buses are provided which operate along approximately 6 miles of in-plant roads. A bus annunciator system was developed, fabricated, and installed which reduces the waiting time to near zero. The system consists of three separate devices: (1) an ultrasonic transmitter attached to the side of the bus, (2) a solar-powered ultrasonic receiver and radio-frequency transmitter at roadside, and (3) a receiver-annunciator interfaced with building public address systems. The prototype has been tested in only two areas of the Y-12 Plant, but a coded transmitter and receiver make it possible to cover the entire plant. In full operation, approximately 12 roadside units would be employed to give an average of about 2 to 3 min advance notice to personnel in buildings and offices along the two bus routes inside the Y-12 Plant. (ERA citation 81:025757)

Carver, DW Duncan, MG
Oak Ridge National Laboratory, Department of Energy Y-2244, June
1981, 13p

Contract W-7405-ENG-26

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

DE81024942

32 344429

THE INDIANAPOLIS EXPERIENCE WITH OPEN ENTRY IN THE TAXI INDUSTRY

During the early 1970s the City of Indianapolis reversed a long-standing policy of closed entry into the taxi industry by redistributing many of the existing permits. This report is an account of the Indianapolis experience with open entry. It is based upon discussions with both Indianapolis officials and members of the taxi industry. The authors state that there are two lessons that may be learned from the Indianapolis experience: (1) adding new owners into a highly competitive supply-rich market is beneficial neither to the public nor to the taxi operators; and (2) the results of an open entry action are likely to be far different in the long run than in the short run.

Gilbert, G Gelb, PM
De Leuw, Cather and Company, Urban Mass Transportation
Administration, Transportation Systems Center Final Rpt. UM-
TA-MA-06-0049-8015, Sept. 1980, 28p

Contract DOT-MA-06-0049

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-242463

32 345205

TAXICABS: THE OTHER SIDE OF TRANSPORTATION

The study of para-transit generally and taxicabs specifically is a relatively new phenomenon in transportation studies. Falling public transport patronage and an increasing awareness of pollution and congestion have forced transport regulators to seek new alternatives in urban transit. This paper explores the traditional views that the taxicab is not a significant transporter compared to more traditional modes, and that it is mainly used by the wealthy, and finds them lacking. Data presented testify to the importance of the taxicab industry and point to the fact that significant numbers of users are likely to be economically inactive and/or representative of the lower end of the income scale. This finding is based on an examination of available Australian and US data. The findings raise the questions as to

whether transport subsidies designed to support the disadvantaged are finding their mark and the need for government subsidy of the taxicab industry. The evidence presented points also to the paucity of data and lack of research into this aspect of the transportation field (A). (TRRL)

Williams, DJ (Sydney University, Australia); Scorgie, ME (La Trobe University) *Australian Road Research* Vol. 11 No. 1, Mar. 1981, pp 17-24, 8 Tab., 46 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250812), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

DOTL JC

32 345239

THE TAXI INDUSTRY-PRIVATE ENTERPRISE IN PUBLIC TRANSPORT

This paper was presented at session 5: Regulation Versus Competition in the Eighties. The secondary private enterprise operator faces problems, which force him to compete with the primary public transport oriented system, instead of working as a complement to that system. Outmoded regulations stand in the way of progress, but is deregulation the answer? World transport systems are changing to accommodate the different needs of the individual. The fuel conscious society is beginning to place more importance on transport alternatives, as private motorists are finding it increasingly difficult to compete with transport systems which are being progressively updated and hence becoming more efficient, as witnessed in the modernisation of the Japanese rail system. Australia must not and cannot be left behind. It is crucial that Australia keep pace with the changing world emphasis. To do this, it is necessary to critically analyse existing transport systems. Future recommendations will result as a consequence of this analysis. (Author/TRRL)

Papers from the 6th Australian Transport Research Forum, Brisbane, October 22-24, 1980.

Collins, G (New South Wales Taxi Council)
Queensland Metropolitan Transit Authority, (0313-6655) 1980, pp
265-277, Figs., Tabs., Photos., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250632), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

32 345268

EXPERIMENTS IN PUBLIC TRANSPORT [EXPERIMENTEN IN HET OPENBAAR VERVOER]

This article deals with experiments in public transport. Brief descriptions are given of former and present experimental systems in the Netherlands, such as buxi, lijntaxi (linetaxi) in Amsterdam and sneek, buurtbus (community bus) and bustaxi. More fully treated are the streekbuxi (regional buxi) and the belbus (dial a ride system). The streekbuxi is accepted as a new kind of public transport after an experimental period of two years in Drenthe. The results of the belbus experient after one year are positive. Final conclusions will be drawn at the end of the experimental period in November 1981. In the Netherlands solutions are aimed for which can be realized with small financial investments. An exception is the rather expensive bustaxi-project in Friesland. Reactions indicate interest in the new kinds of public transport. [Dutch]

Deogt, PM (Studiecentrum Verkeerstechiek); Knegt, RB (Agv
Adviesgroep Voor Verkeer En Vervoer)
Secretariaat Verkeerskundige Werkdagen Conf Paper May 1981, pp
585-596

ACKNOWLEDGMENT: TRRL (IRRD 255864), Institute for Road Safety Research

ORDER FROM: Secretariaat Verkeerskundige Werkdagen, P.O. Box 163, Driebergen-Rijsenbur, Netherlands

32 345417

PARATRANSIT: A COMMENTARY

"Paratransit" describes the transport organizations, technologies, and services that lie somewhere between conventional and personal transit in price and quality. These include dial-a-ride, demand-responsive transit, unconventional bus services, collective or shared-ride taxis, subscription transit services, car and van pools, transit clubs, and a variety of special

transport arrangements aimed at specific, underserved client groups, such as the aged or handicapped. Paratransit, with its emphasis on appropriate organization and appropriate technology, heralds a return to a freer play of market forces. Paratransit services in advanced capitalist countries and third world nations are contrasted. The potential benefits of a reciprocal transfer of organizations and technology are considered.

Rimmer, PJ (Australian National University, Canberra) *Planning* Vol. 12 No. 8, 1980, pp 937-944, 32 Ref.

ORDER FROM: American Society of Planning Officials, 1313 East 60th Street, Chicago, Illinois, 60637

DOTL JC

32 345440

RIDESHARING AND THE DATABASE MANAGEMENT SYSTEM
Lawrence Livermore National Laboratory has operated a ridesharing program since 1977. As the volume of recordkeeping and information tracking for the program became more extensive, the need for an easily altered and operated database system became apparent. The following report describes the needs of the ridesharing program and how their database management system answers those needs.

Taasevigen, D
Lawrence Livermore National Laboratory Tech Rpt. UCRL-86543, Aug. 1981, 14p

Contract W-7405-ENG-48

ACKNOWLEDGMENT: Energy Research Abstracts
ORDER FROM: NTIS

DE81-028651

32 345466

A DIAL-A-RIDE BUS-AN INDISPENSABLE CONCEPT [DER RUFBUS IST NICHT MEHR WEGZUDENKEN]

The dial-a-ride bus service in the eastern Lake Constance region is the largest operator of dial-a-ride systems in the world. Up to now some 700000 passengers have been carried (1600 per week day), the growth rate amounts to 30% to 150% (Sundays). The first extension of the area served has covered the suburb of Friedrichshafen. The second from 1.11.1979 linked the neighbouring town of Markdorf. The attractiveness of the system made possible tariff increases; numerous suggestions for improvements to eliminate weaknesses in the system are under consideration. The bus system which has been installed now for over two years can now be regarded as indispensable. Political decisions are required. (TRRL) [German]

Omnibus-Review Vol. 30 No. 2, 1979, pp 738-740, 6 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 312639), Federal Institute of Road Research, West Germany
ORDER FROM: Verlag Heinrich Vogel, Kreuzstrasse 14, 8 Munich 2, West Germany

32 345467

PUBLIC TRANSPORT ON DEMAND IN URBAN AREAS [LES TRANSPORTS COLLECTIFS "A LA CARTE" EN ZONE URBAINE]

This article presents the results of experiences with transport modes (link between public and private transport) which have been developed in urban areas in order to facilitate the movement of citizens between their homes and different destinations where they carry out their vocational activities, or leisure activities. It describes successively: car pools in the United States; the connecting vehicle between the airport and hotels in the USA; the shared taxi system in Istanbul and in the Paris region; the mini bus multi-service system in the United Kingdom. These different proposed solutions offer a certain number of advantages: they are complementary to other modes of transport; they reduce the energy consumption, cut down on pollution and environmental impact; they create fresh employment. (TRRL) [French]

Bendon, MP *Moniteur des Travaux Publics et du Batiment* No. 2, Jan. 1981, pp 43-45, 4 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 110688), Central Laboratory of Bridges & Highways, France
ORDER FROM: Bureau Central d'Etudes pour les Equip d'Outre-Mer, 15 Square Max Hymans, Paris 75015, France

32 345742

VEHICLE SHARING FOR THE JOURNEY TO WORK BY OFFICE EMPLOYEES [OPTIMALNO DIMENZIONIRANJE ARMIRANOBEKONSKIH PRESJEKA]

This paper outlines some spatial variations in the incidence of vehicle sharing for the journey to work among office workers at a number of locations in Britain. The contribution of occupation status and related factors to the variability in vehicle sharing is considered with reference to four case study offices and in relation to the use of private hire buses at one establishment. It is concluded that the original, local-specific, empirical evidence presented in the paper confirms the apparent lack of a universal pattern in vehicle sharing. (Author/TRRL)

Daniels, J (Liverpool University, England) *Transportation Research, Part A: General* Vol. 15A No. 5, Oct. 1981, pp 391-398, 1 Fig., 5 Tab., 11 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257365)

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DOTL JC

32 345744

SOME CHARACTERISTICS OF BUSES' TRIP TIMES DURING DOORSTEP SERVICE

This paper aims mainly at highlighting some important characteristics of buses' loading times when doorstep service is offered. Results of a field study on a real-life bus system are presented. The data collected from the field study are used in formulating two empirical models which can be used to estimate the expectation and variance of bus loading times during doorstep service. (a) (TRRL)

Adebisi, O (Ahmadu Bello University, Nigeria) *Transportation Research, Part A: General* Vol. 15A No. 5, Oct. 1981, pp 359-361, 1 Fig., 2 Tab., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257370)

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DOTL JC

32 345927

THE ONTARIO SHARE-A-RIDE PROGRAM

The Ontario share-a-ride program is designed to achieve widespread use of car and vanpooling across the province of Ontario. The paper describes the three phases of the program: study, demonstration, and broadscale implementation. A number of preliminary results are presented from the car and vanpool demonstrations being carried out at the head office of the Ministry of Transportation and Communications. These results show a 10% and substantial cost savings for the participants in the vanpool program. A cost comparison is made between the 20% increase in pooling activity and substantial cost savings for the participants in the vanpool program. A cost comparison is made between the total costs of operating carpools and vanpools and of providing bus service in which buses are shown to be four times and the average car five times as expensive as a vanpool. The data is used to perform a benefit analysis for creating new car and vanpools and to calculate benefit/cost ratios for the ongoing pilot projects at the Ministry. Potential community and social benefits from the creation of each new car and vanpool are shown to total \$800 and \$4000 a year, respectively. Including personal benefits and subtracting time costs brings the total benefits per pool to approximately \$2500 and \$7700 respectively, with individual cost savings of \$1000 to \$1300 per year per person. (TRRL)

Dalton, P Harmelink, M Smith, D Wong, J (Ontario Ministry of Transportation & Communic, Can) *RTAC Forum* Vol. 3 No. 2, 1981, pp 30-33, 6 Tab., 6 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257649), TRRL

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

32 345960

EARLY RESPONSES TO TAXI REGULATORY CHANGES IN THREE CITIES

Taxi regulatory changes and preliminary responses to them in San Diego, California; Portland, Oregon; and Seattle, Washington, are discussed. The full effects of the regulatory and industry changes are being evaluated. Each city relaxed its entry restrictions in some way; all provided for increased latitude in rate setting, but the specific provisions have varied. The impetus for regulatory revision was generally similar--to transfer the responsibility for regulating entry and establishing rates from the city government to the

marketplace. The regulators hope to produce a greater range of improved taxi services by increasing competition and providing for flexible rate structures. Implementation of the new regulations and the earliest responses in terms of local industry size and rate structures relate to conditions in the local setting. Problem areas identified during the implementation phase are highlighted, and a number of transferable implications that suggest themselves to other regulatory entities are presented. Findings of the analyses of the effects of the regulatory changes on the supply of and demand for taxi services are anticipated soon. (Author)

This paper appeared in Transportation Research Record No. 818, Design of Public Transport Services.

Gelb, PM (De Leuw Cather, Canada, Limited) *Transportation Research Record* No. 818, 1981, pp 19-26, 5 Tab.

ORDER FROM: TRB Publications Off

DOTL JC

32 345961

RETROSPECTIVE VIEW OF DIAL-A-RIDE SERVICE IN ROCHESTER, NEW YORK

For one year, the Rochester-Genesee Regional Transportation Authority (RGRTA) offered dial-a-ride service to the general public in four suburbs under two different institutional arrangements. The public operator, Regional Transit Service, and a private operator, Paratransit Enterprises, each provided service in two communities. They also provided demand-responsive service to the elderly and the handicapped throughout Rochester. This unique arrangement was part of the Rochester community transit demonstration, an outgrowth of the earlier Rochester integrated transit demonstration, both projects funded by the Urban Mass Transportation Administration Service and Methods Demonstration program. The community transit demonstration was specifically designed to test cost-effective demand-responsive transit strategies. RGRTA sought competitive bids from paratransit operators and asked communities to fund a share of the operating deficits for postdemonstration services. Thus, the demonstration made it uniquely possible to compare service levels, ridership, and costs for public and private dial-a-ride that served both the general public and the elderly and the handicapped. By the end of the demonstration, three of the four communities found that they could not afford to continue paratransit services by using local subsidies. One town, however, developed an innovative funding strategy and supported dial-a-ride services for five additional months. By 1980, no general market dial-a-ride services were operating, although the cost-effectiveness of private operation was successfully demonstrated. Today, RGRTA supports privately operated paratransit services for the elderly and the handicapped throughout the county. The activities of the demonstrations are reviewed and implications are derived that may be useful to others considering implementing demand responsive transit service. (Author)

This paper appeared in Transportation Research Record No. 818, Design of Public Transport Services.

Newman, DA (SYSTAN, Incorporated); Sharfarz, D (Rochester-Genesee Regional Transportation Auth); Abkowitz, M (Rensselaer Polytechnic Institute) *Transportation Research Record* No. 818, 1981, pp 26-33, 1 Fig., 1 Tab., 5 Ref.

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32 346343

ASSESSMENT OF TAXICAB FLEET OPERATION IN NEW YORK CITY

A preliminary assessment of the impacts resulting from incorporation of flywheel energy storage systems into automotive fleets in a large metropolitan city is described. Specifically, the case of taxicab fleet operation within New York City is examined. Based upon available taxicab operational data, a leveled life-cycle cost comparison between a standard internal combustion engine vehicle in present use as a taxicab and a projected hybrid flywheel-internal combustion engine vehicle (taxicab) has been generated. Energy conservation and environmental benefits are discussed and potential institutional barriers to rapid deployment of flywheel energy storage systems are identified. The results obtained from this study generally emphasize the value of incorporating flywheel energy storage systems into future vehicles designed for taxicab use. (ERA citation 06:028932)

Mechanical, magnetic, and underground energy storage 1981 annual contractors' review meeting, Washington, DC, USA, 24 Aug 1981.

Krupka, MC Jackson, SV
Los Alamos Scientific Laboratory, Department of Energy LA-UR-81-2177, CONF-810833-2, 1981, 7p

Contract W-7405-ENG-36

ACKNOWLEDGMENT: NTIS

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DE81028779

32 348390

WORKING PLAN FOR THE YEARS 1981-1983 [ARBETSPLAN FOER AAREN 1981-1983]

This report is the working plan of a new Swedish organisation, Public Transport Drafting Committee (KTB) for the period 1981-1983. The duties of the KTB are (1) to follow and analyse the development of public transport in Sweden and abroad, (2) to coordinate development and experimental activities, (3) to provide information on development. The work is mostly directed towards practical demonstrations and full scale projects performed together with traffic companies and municipalities. The report is a research project catalogue. (TRRL) [Swedish]

Kollektivtrafikberedningen Monograph No. 1981:6, 1981, 44p

ACKNOWLEDGMENT: TRRL (IRRD 258815), National Swedish Road & Traffic Research Institute

ORDER FROM: Kollektivtrafikberedningen, P.O. Box 1339, Solna, Sweden

32 348405

PARATRANSIT SERVICES THE CHALLENGE OF THE 1980S

This paper discusses the current definitions for paratransit and describes the evolution of paratransit from the early dial-a-ride systems of the 1970's to a "family" of paratransit services available as challenging planning options for the 1980's. The dial-a-ride systems generated a great deal of interest in the whole subject of paratransit. Some systems were so successful in building up transit usage that the increased demand permitted the substitution of fixed-route transit. Others generated interest in doorstep service for handicapped persons. Still others that were unsuccessful led to a search for other types of services such as carpooling and vanpooling that might work better in higher density areas. The fact that, with few exceptions, these systems tended to be more costly for public transit systems to operate led to greater interest in privatization, and particularly the potential for share-ride taxi services. The challenge to transit planners of today is described as the process of selecting the most appropriate techniques from a multiplicity of paratransit options that can be used to maximize transit usage while using both energy and financial resources efficiently. (Author/TRRL)

Atkinson, WG (Manop Services Limited) *RTAC Annual Conference Preprints* Vol. 1 Sept. 1981, pp F27-44, 1 Fig., 24 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258380), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

32 348407

TAXI STUDY 1981 [TAKSIEN YHTEISLIKENNEKOKKEILUN SEURANTATUTKIMUS 1981]

The 1981 taxi study is a follow-up of a before-after study of the consequences of some improvements in the taxi traffic system in the Helsinki area. The first part was completed in 1979. At the beginning of 1981 an experiment was made to find out the changes in travel standards and taxi services due to an extension of the transport licencing areas of taxis. (TRRL) [Finnish]

Helsinki Metropolitan Area Co-operative Council Monograph No. B 1981/6, May 1981, 43p, 14 Fig., 18 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 258701)

ORDER FROM: Helsinki Metropolitan Area Co-operative Council, Sankotajankatu 1, Helsinki 52, Finland

32 348795

THE BEVERWIJK TAXIBUS [TAXIBUS IN BEVERWIJK]

There is a new development in the Dutch cab world. Based on the so-called theater cab, a firm in Beverwijk launched a similar service to and from a weekly flea market. It was converted into a daily service radiating from the local railway station, but also picking up passengers at other points. This required dispensation from existing bye-laws, but the system works well

causing less harm to local bus services than profit for the user. (a) (TRRL)
[Dutch]
Hendriks, R. *Verkeerskunde* Vol. 32 No. 11, Nov. 1981, pp 528-529, 3
Phot.

ACKNOWLEDGMENT: TRRL (IRRD 259274), Institute for Road Safety
Research

ORDER FROM: Dutch Touring Club ANWB, Wassenaarseweg 220, Box
2200, The Hague, Netherlands

33 324835

THE RURAL TRANSPORT EXPERIMENTS. PROCEEDINGS OF A SYMPOSIUM HELD AT THE TRANSPORT AND ROAD RESEARCH LABORATORY, CROWTHORNE, ON 8 NOVEMBER 1979

Rural Travel and the Market for Public Transport in Rural Areas (Coe, GA and Fairhead, RD); Rural Shared Hire-cars: A Comparative Assessment of Their Potential (Watts, PF); Demand-responsive Bus Services in Rural Areas (Balcombe, RJ); Community Transport (Balcombe, RJ and Dredge, AS); Dual-purpose Transport (Lugton, J); Summary and Conclusions (Balcombe, RJ). (TRRL)

Transport and Road Research Laboratory Monograph SR 584, 1980, 108p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 248815)

ORDER FROM: ESL

33 329592

THE ASSESSMENT OF NEEDS FOR RURAL PUBLIC TRANSPORT

The report discusses the findings of a study, commissioned by Dyfed County Council, into the need for rural public transport. Much of the work of county councils on rural transport has been directed towards short-term gains to be made by bus network rationalisation to avoid major reductions in level of service. A review of rural transport needs was made necessary by the intention of central government to support rural bus services by subsidies but only where social needs have been demonstrated. The first phase of the study was concerned with a series of discussions held with groups of residents including elderly persons and those without daily access to private transport. The second phase was concerned with confirming these transport needs by consultation with local community representatives. Conclusions provide a detailed definition of public transport needs of rural areas according to population groups. It is suggested that county councils should deploy available resources to meet as many as possible of the defined primary and secondary transport needs as a matter of policy. (TRRL)

Peat, Marwick, Mitchell and Company Monograph Mar. 1980, 145p, Figs., Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 250069)

ORDER FROM: Peat, Marwick, Mitchell and Company, 80 Goswell Road, London WC1V 7DB, England

33 330752

RURAL TRANSPORT EXPERIMENTS: COLSTERDALE CAR SERVICE

The Colsterdale car service was a commercially operated shared hire car scheme. Part of the experimental area had a weekly bus to Ripon, but it did not conveniently serve Masham, the nearby town. The car service offered all the residents of the area a daily connection with a Ripon bus in Masham. During the second phase of the scheme a connection with the weekly Bedale bus and a daily additional departure from Masham was offered. The service operated reliably, but patronage was low. During the second phase it doubled to, on average, five one way trips per week. Car ownership was high and lifts catered for most requirements at the site, leaving only a scattered residual demand. Many of the car journeys were for shopping and social visits and most would have been made somehow in the absence of the service, and only about one-tenth of trips resulted in an extra bus journey. The low demand resulted in little car sharing, poor vehicle utilisation, and consequently poor financial performance. During the second phase of the scheme direct revenue covered 20 per cent of total costs, with indirect generated revenue on the connecting bus service equivalent to roughly a further 8 per cent of costs. (Author/TRRL)

Transport and Road Research Laboratory Monograph SR589, 1980, 16p, 2 Fig., 7 Tab., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 251398)

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33 330753

RURAL TRANSPORT EXPERIMENTS: HACKFORTH AND DISTRICT CAR SHARING SERVICE

The Hackforth and district car sharing service was set up in North Yorkshire in October 1978 as part of the government's programme of rural transport experiments (rutex). Lifts were permitted anywhere within the experimental area (which consisted of three neighbouring parishes) and to a limited

number of destinations outside it, which were chosen so that the service did not compete with bus services in the district. Drivers were paid at two different mileage rates, one for journeys they would have made anyway and a higher rate for special journeys. An average of 3 one-way trips were made each week of which over a third were to provide connection with a bus service. The demand was small compared with the existing level of lifts obtained in non-household cars of about 340 trips per week. The cost of running the service in the first nine months of operation was ,5.61. The small demand makes it clear that only a voluntary car scheme could satisfy it economically. Users who were interviewed after one year of operation were pleased with the service offered which reflects the hard work and enthusiasm of the local volunteer co-ordinator and committee. (Author/TRRL)

Transport and Road Research Laboratory, (0305-1315) Monograph SR594, 1980, 15p, 3 Fig., 4 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 251399)

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33 331059

EVALUATION OF ALTERNATIVE TRANSIT ROUTING CONFIGURATIONS IN A HYPOTHETICAL LOW-DENSITY AREA. ABRIDGMENT

The provision of fixed-route transit services in low-density suburban areas poses significant problems for urban communities. Traditionally, fixed-route bus service has been provided to these areas as an extension of the radial system in the core city. However, little information exists that would guide the selection of a certain pattern under a given set of conditions. As energy continues to be in short supply, the question of extensions of fixed-route service to low-density areas may become more pressing. This paper discusses the intrinsic service characteristics of six alternative routing patterns in a hypothetical low-density area. Costs (determined from vehicle miles traveled), coverage area, passenger travel time, and competitiveness with the walk mode are the performance measures used to evaluate each routing pattern. The results indicate that different types of routing configurations do have different implications with respect to these performance measures. No single pattern was found to satisfy all service objectives equally well. Therefore, it is necessary for decision makers to assign priorities to different service characteristics and then to make the necessary trade-offs between those characteristics to arrive at a decision that meets community objectives. (Author)

This paper appeared in Transportation Research Record No. 761, Public Transportation Planning.

Thelen, KM (Knoxville-Knox County Metropolitan Planning Comm);

Chatterjee, A Wegmann, FJ (Tennessee University, Knoxville) *Transportation Research Record* No. 761, 1980, pp 53-56, 2 Fig., 2 Tab., 5 Ref.

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DOTL JC

33 331090

EVALUATION OF VARIOUS APPROACHES TO PROVIDING PUBLIC TRANSPORTATION SERVICE IN AREAS LESS THAN 200,000 POPULATION

The study was divided into three phases. The first two phases were carried out simultaneously, while the third phase involved a synthesis of findings. Phase I identifies the geographic, social, and economic characteristics of Texas cities relevant to mass transit use. The cities were then classified according to the observed characteristics, to provide assistance in choosing from among the available options. The pertinent characteristics were identified through a regression analysis of census data. The classification was made by using the statistical technique factor analysis. The research was limited to cities with at least 10,000 population in 1970. Cities smaller than this are unlikely to have sufficient demand to warrant transit service and they generally lack the administrative capacity to initiate public service in a new field. The different types of transit-paratransit alternatives suitable for Texas cities were identified in a second phase. Information on the operating, managerial, legal, and economic aspects of the alternatives was also assembled. The alternatives examined were conventional fixed-route bus, jitney, Dial-A-Ride, subscription bus, vanpooling and carpooling, taxi and shared taxi, and, briefly, bicycles. In the third phase, the characteristics of the cities identified in Phase I were matched with the characteristics of the transportation systems described in Phase II. The phases were synthesized through a matrix which gives a rating of each transit option for each type of city. General guidelines for estimating costs and revenues were also developed in this phase. (Authors)

Black, A Walton, CM Ellison, R Derr, G
Texas University, Austin, Texas State Department of Highways & Public
Transp. (Res Rpt. 1051-1F) Final Rpt. Aug. 1980, 205p, Figs., Tabs.,
86 Ref., Apps.

Contract Res Stdy 3-10-761051

ORDER FROM: Texas University, Austin, Center for Transportation Re-
search, Austin, Texas, 78712

33 331120

BRITISH RAIL GOES LIGHTLY IN RURAL AREAS

The trial of the experimental British Rail Lightweight Railbus Vehicle (LEV1) on the line between Ipswich and Lowestoft is designed to provide user reaction before the railbus enters service in rural areas. The aim of the LEV project is to provide a low cost replacement for diesel multiple fleet. The LEV1 is based on two national bus bodies mounted back-to-back on an underframe. The lightweight design and high power-to-weight ratio provides performance with fuel economy. A similar lightweight railbus is described, based on the National 2 bus body, being developed by Wickham of Ware, Herts., for the Federal Railroad Administration. British Rail is intending to market such lightweight rail vehicles worldwide for use on mass transit systems.

Acton, P *Transport* Vol. 1 No. 5, Nov. 1980, p 21, 1 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 252474)

ORDER FROM: City Press, Fairfax House, Colchester, Essex, England

33 334042

TRANSPORT MOBILITY IN INTERURBAN AREAS: A CASE STUDY APPROACH IN SOUTH OXFORDSHIRE

Transport mobility is examined within the context of one particular interurban area which itself is typical of many "rural" areas in England and Wales. Part of the analysis is concerned with an estimation of consumer preferences for mode and policy alternatives and the methodologies used are outlined. This type of case study approach is then linked to the demands of policy makers and a total-welfare approach is suggested for the provision of "rural" services, including transport. Finally, certain priorities for further research are noted and conclusions are drawn about the usefulness of the case study approach. (Author)

Banister, D (University College London, England) *Regional Studies* Vol. 14 No. 4, 1980, p 285, 2 Fig., 3 Tab., Refs.

ORDER FROM: Pergamon Press, Incorporated, Maxwell House, Fairview Park, Elmsford, New York, 10523

33 334107

DYFED ESTABLISHES ITS TRANSPORT NEEDS

The article describes a study carried out by Dyfed CC to establish the transport needs of rural areas. The need for public transport can be evaluated in terms of what is required to avoid hardship to individuals and to maintain the well-being of a rural population. The definition of transport needs developed by Peat, Marwick, Mitchell & Co. is based on population groups needing access to facilities or centres of activity. Transport needs can be judged by evidence of travel patterns and transport problems. Three main types of evidence were used to define public transport needs of rural areas: evidence of local residents; travel patterns of a rural population; and evidence on views and priorities of local council representatives. It was concluded that transport needs should be defined as primary and secondary classes of need which are detailed. The approach to the definition of rural transport needs is capable of wider application and adaptation to similar areas. (TRRL)

Winfield, RC Dodd, A (Dyfed Company); Robertson, DM (Peat, Marwick, Mitchell and Company) *Transport* Vol. 1 No. 5, Nov. 1980, p 17, 1 Fig., 1 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 252473)

ORDER FROM: City Press, Fairfax House, Colchester, Essex, England

33 334135

PUBLIC SPIRIT FUELS THIS VILLAGE BUS

The setting up of an experimental bus, serving five small villages, and its operation without the involvement of an established operator is described. It is run by a team of volunteers under the provisions of the Transport Act 1978. The operating area of the bus service is not isolated and it retains conventional services; the community bus fills in the gaps. It has been

arranged so that the county council purchased the vehicle and the parish operating group determined schedules, fare levels, recruited volunteer drivers and arranged maintenance. A total of 32000 km were travelled in the first year, giving a three year life for the vehicle and an approximate running cost of 2.5p per km, which compares favourably with many conventional bus services. It is estimated that the overall net cost to the county council for the two year experimental period will be 10p per passenger. It is considered regrettable that with the phasing out of the new bus grant, the burden of initial and replacement costs will jeopardise similar new and existing schemes. The scheme is very demanding on volunteers' time, but one of the greatest incentives to the safe operation of the scheme is that all the volunteers live within and are well known by the community they serve. (TRRL)

Childs, R Saffell, C (Nottinghamshire County Council) *Surveyor* Vol. 155 No. 4610, Oct. 1980, pp 6-8, 1 Fig., 1 Tab., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 252696)

ORDER FROM: ESL

DOTL JC

33 334419

MEETING THE TRANSPORT NEEDS OF PERSONS IN RURAL AREAS: THE BRITISH EXPERIENCE

This paper examines the rationale for public transport subsidies in rural areas, by a critical review of the policies pursued by different County Councils, and detailed studies which have sought to define transport need. The dominance of the motor car as a means of personal mobility is most marked in rural areas where its traditional advantage (flexibility) is maximised and its main disadvantage (congestion) is minimised. Public transport has been consequently in severe decline and since 1968 has required specific subsidy to support its operation. The paper reviews the development of policy directed to determining and resolving "transport need". It is pointed out that much work carried out has not been specifically oriented to this approach, but has concentrated on the more tactical aspects of operational efficiency and quasioeconomic subsidy criteria. Research specifically directed to determining "need" is outlined. While it is possible to show considerable mobility deprivation, in which the key factor is undoubtedly car availability, it has proven impossible to date to establish any objective set of standards of transport needs. Current policies of the counties are then examined, revealing a wide range of approaches which are either arbitrary or economic in concept. It is concluded that much research still remains to be carried out in this area, and the requirement for an acceptable standard of "social need" remains the most outstanding issue in public transport planning today.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Kilvington, RP (Loughborough University of Technology, England)
Organization for Economic Cooperation and Devel, European
Conference of Ministers of Transport Conf Paper Volume 1, 1980, pp
288-297, 4 Tab., 6 Ref.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

33 334519

CONSUMER BEHAVIOR TOWARDS FUEL EFFICIENT VEHICLES. VOLUME II

Initiatives in public transit such as the light rail systems in Calgary and Edmonton, fuel shortages in the United States and world-wide fuel price increases have focused a new level of attention and expectation on Public Transit Systems. This situation is true of the Small Communities in British Columbia. Since 1974 British Columbia has shown a major initiative in the planning and funding of non-metropolitan systems. These initiatives were substantially increased in 1979 with the formation of the Urban Transit Authority. The Authority's planning work has met with enthusiasm and has resulted in numerous requests for basic information to facilitate the understanding and the monitoring of transit systems. Other requests involve information required to assess the impact of municipal land-use decisions on transit systems. With this background, the Guidelines for Transit Planning in B.C.'s Small Communities have a dual purpose; first, they identify the major community and operational variables affecting bus systems; second, they give direction or specific guidelines to mold these variables to increase system quality and productivity. Geographically the guidelines are directed to British Columbia municipalities with populations in excess of 5,000

people. Although the content may be of interest and of use to component municipalities of Metro Vancouver and Metro Victoria, it is not directed to the particular issues and concerns of these centres. As with any planning document, the Guidelines will have a wide audience; however, they are specifically directed to persons involved in a technical or professional capacity with the design and implementation of new transit systems or with the planning and ongoing operation of existing systems. (Author)

Urban Transit Authority of British Columbia Sept. 1980, 58p, 30 Fig., 14 Tab., 2 App.

ORDER FROM: Urban Transit Authority of British Columbia, 814 Courtney Street, P.O. Box 610, Victoria V8W 2PC, British Columbia, Canada

33 334718

REGIONAL PUBLIC TRANSPORT: COACH OR RAILCAR

[Transports collectifs régionaux: autocar ou autorail]

The author uses two examples in which projected costs were studied in detail. Taken from the public transport plan for the central region in France, these examples illustrate a method of modal choice. The comparative study demonstrates that in fact coach and railcar when appropriately utilised, are rarely competitive. Each has its own field of use, characterised by distance, number of users, and quality of the routes. Added to this, the comparison of transport costs shows that these two modes are more interdependent than rival. [French]

Villeneuve, M *TEC-Transport Environment Circulation* No. 37, Nov. 1979, pp 6-11, 3 Fig., 1 Tab., 3 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 105982), Central Laboratory of Bridges & Highways, France, Institute of Transport Research

ORDER FROM: Association pour Developpement des Techniques TEC, 11, Place Adolphe Chérioux, 75015 Paris, France

33 335411

TECHNIQUES FOR ANALYZING THE PERFORMANCE OF RURAL TRANSIT SYSTEMS: PERFORMANCE INDICATORS AND POLICY EVALUATION IN RURAL TRANSIT. VOLUME II

The evaluation process in transit operations is analyzed, and control strategies and performance indicators for rural transit evaluation are proposed. A simulation technique to represent the demand-supply-resource interactions within the transit structure is developed. The simulation model uses demographic data and transit system characteristics as inputs, and forecasts resulting transit performance through time. The demand sector of the model uses previously developed and validated disaggregate demand functions. The supply and resource developed and validated disaggregate demand functions. The supply and resource sectors use information obtained from transit managers and transit case studies in rural New England communities. This research offers a planning tool to be used by management and funding agencies to assist in rural transit program management. (Author)

Stephanedes, YJ
Dartmouth College, Department of Transportation Final Rpt. DOT/R-SPA/DPB-50/8024, Oct. 1980, 196p, Figs., Tabs., Refs., 5 App.

Contract DOT-OS-80006

ORDER FROM: NTIS

33 335711

IMPLEMENTATION PLANNING OF INTEGRATED TRANSIT SERVICES FOR A SMALL URBAN AND RURAL AREA. EXECUTIVE SUMMARY

This research focuses on tasks for taking technically feasible preliminary transit options to a local community and translating these plans into an implementable program. This planning phase, referred to as implementation planning, addresses the following planning considerations: Financial Planning; Management and Organization; Institutional Roles; Regulatory Reforms; and Citizen Participation. The specific problem addressed concerns an evaluation of the requirements for implementing transit alternatives in a low density area and securing a community consensus. To incorporate the realities of a complex public transportation planning process, this research project is tied closely to the current public transportation improvement program of Charlottesville and Albemarle County, Virginia. This study includes two elements that are reported in separate volumes of the final report. Volume I describes the financial planning and organizational structures that are necessary to implement integrated transit services

in a small and rural area and Volume II evaluates system alternatives through public participation and group interaction by using a completed preliminary plan to focus community interest in public transit. This study reviews the primary organizational alternatives that are appropriate for delivering comprehensive areawide transportation. The long term solution was shown to be the transportation district. A description of a prototype district is given that evolves from a planning and administrative body to the total operation. The transit preferences of citizens, elected officials, and transit operators in the community were determined in a workshop and a series of interviews that were related to the characteristics of 18 urban and 25 rural transit route alternatives. The preferences were adjusted to reflect the future effects of a status quo scenario, a scenario favoring transit, and one not favoring transit. The urban and rural transit systems were selected by the evaluation model with respect to technical and financial constraints. The transit system improvements which were specified by the evaluation model compared very favorably with actual transit recommendations made by local officials. (UMTA)

Demetsky, MJ Hoel, LA Stone, JR
Virginia University, Urban Mass Transportation Administration Final Rpt. UMTA-VA-11-009-81-1, UVA/529159/CE80/101, Sept. 1980, 8p

Contract VA-11-0009

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PB81-193195

33 335712

IMPLEMENTATION PLANNING OF INTEGRATED TRANSIT SERVICES FOR A SMALL URBAN AND RURAL AREA. VOLUME I: RESOURCE, INSTITUTIONAL AND ORGANIZATIONAL ANALYSIS

This research focuses on tasks for taking technically feasible preliminary transit options to a local community and translating these plans into an implementable program. This planning phase, referred to as implementation planning, addresses the following planning considerations: Financial Planning; Management and Organization; Institutional Roles; Regulatory Reforms; and Citizen Participation. The specific problem addressed concerns an evaluation of the requirements for implementing transit alternatives in a low density area and securing a community consensus. This research project is tied closely to the current public transportation improvement program of Charlottesville and Albemarle County, Virginia. In this study, the resource requirements for a comprehensive public transportation system for the Charlottesville-Albemarle Area were examined. Data on existing local transit operations were used to show unit cost and staff requirements for different services. Also, the systems were studied to provide a way to estimate subsidy requirements for expansion of service. Sources of Federal and State aid that are available to non-urbanized areas for the provision of public transportation and social service transportation were summarized to show the practical solution to the operating deficit problem. The report reviews the primary organizational alternatives that are appropriate for delivering comprehensive areawide transportation. The long term solution was shown to be the transportation district concept. A strategy for establishing a transportation district in the Tenth Planning District of Virginia was modeled after the operational principles and goals of the Tidewater Transportation District Commission (TTDC), incorporating to the intent possible, TTDC's particular planning and operational policies. Also a description of a prototype district is given that evolves from a planning and administrative body to the operator. (UMTA)

Demetsky, MJ Lantz, KE, Jr
Virginia University, Urban Mass Transportation Administration Final Rpt. UMTA-VA-11-0009-81-2, UVA-529159/CE80/101, Sept. 1980, 82p

Contract VA-11-0009

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PB81-193203

33 335713

IMPLEMENTATION PLANNING OF INTEGRATED TRANSIT SERVICES FOR A SMALL URBAN AND RURAL AREA. VOLUME II: COMMUNITY REVIEW AND EVALUATION

This research focuses on tasks for taking technically feasible preliminary transit options to a local community and translating these plans into an implementable program. This planning phase, referred to as implementation planning, addresses the following planning considerations: Financial Planning; Management and Organization; Institutional Roles; Regulatory

Reforms; and Citizen Participation. The specific problem addressed concerns an evaluation of the requirement for implementing transit alternatives in a low density area and securing a community consensus. To incorporate the realities of a complex public transportation planning process, this research project is tied closely to the current public transportation improvement program of Charlottesville and Albemarle County, Virginia. In this report, a model is developed to facilitate public participation in the evaluation of public transportation system alternatives. The model addresses the related problems of community participation in: 1) selecting the most preferred combination of service alternatives with respect to the technical, financial, institutional, and other constraints; 2) establishing transportation service priorities with respect to future scenarios; and 3) developing a timetable for their implementation. The combination of these three related problems allows their interactions to be studied and tradeoffs to be specified. In addition, the evaluation model is oriented to computer-interactive applications with group of citizens in a participatory planning process. It permits the systematic use of subjective data inputs from lay persons and decision makers as well as the more analytical inputs from transportation planning professionals. The model is applied to the current problem of improving public transportation service in Charlottesville and Albemarle County, Virginia. The transit preferences of citizens, elected officials, and transit operators in the community were determined in a workshop and a series of interviews and were related to the characteristics of 18 urban and 25 rural transit route alternatives. The preferences were adjusted to reflect the future affects of a status quo scenario, a scenario favoring transit, and one not favoring transit. The urban and rural transit systems were selected by the evaluation model with respect to technical and financial constraints. The transit system improvements which were specified by the evaluation model compared very favorably with actual transit recommendations made by local officials. (UMTA)

Stone, JR Hoel, LA
Virginia University, Urban Mass Transportation Administration Final Rpt. UMTA-VA-0009-81-3, UVA/529159/CE80/101, Sept. 1980, 150p
Contract VA-11-0009
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PB81-193211

33 336189
RURAL TRANSPORT EXPERIMENTS: STAIR SERVICE

Detailed information about the planning, design and operation of the Stair shared hire car service, one of the Government's rural transport experiments in Scotland, is reported. The experiment involved a shared hire car (a 5-seater saloon), running on Tuesdays and Thursdays as a demand-responsive feeder service. Bus connections were possible from 3 villages to which the shared hire car ran. Results of surveys carried out prior to the introduction of the experiment and during its operation are recorded. No other services operated in this area and attention is paid to the new demand and revenue generated on existing public transport by passengers who previously travelled by other modes. Most passengers were women, half of whom did not have a private vehicle available during the day. Shopping dominated trip purposes. (Copyright (c) Crown Copyright 1980.)

Also pub. as ISSN-0305-1315.

Transport and Road Research Laboratory TRRL SR618, 1980, 25p

ACKNOWLEDGMENT: NTIS
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PB81-142424

33 343334
RURAL ISSUES IN CONNECTICUT: BUILDING AN AGENDA FOR THE GOVERNOR'S RURAL DEVELOPMENT COUNCIL

In order to provide a more clearly articulated agenda of rural issues in Connecticut and to provide background information needed to help improve the targeting and coordination of State and Federal programs available to rural areas, the Office of Policy and Management (OPM) undertook a comprehensive review of rural issues and programs. The report contains issue papers which define the specific policy context in each issue area, the present programmatic responses to needs and relevant options and recommendations for consideration.

Sponsored in part by Farmers Home Administration, Washington, DC.

Connecticut Office of Policy and Management, Farmers Home Administration Tech. Rpt. Feb. 1981, 82p

ACKNOWLEDGMENT: NTIS
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PB81-202194

33 343335
DIRECTORY OF TECHNICAL ASSISTANCE AVAILABLE TO RURAL AREAS

In order to provide a more clearly articulated agenda of rural issues in Connecticut and to provide background information needed to help improve the targeting and coordination of State and federal programs available to rural areas, the Office of Policy and Management (OPM) undertook a comprehensive review of rural issues and programs. The document contains federal, state, and regional programs of technical assistance available to small communities in Connecticut.

Sponsored in part by Farmers Home Administration, Washington, DC.

Connecticut Office of Policy and Management, Farmers Home Administration Tech. Rpt. Feb. 1981, 262p

ACKNOWLEDGMENT: NTIS
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PB81-202186

33 345109
A PUBLIC TRANSPORTATION NEEDS STUDY FOR THE LOW DENSITY AREAS IN A FIVE-STATE REGION IN THE MIDWEST (IOWA, KANSAS, MISSOURI, NEBRASKA, AND OKLAHOMA)

This report is concerned with the Public Transportation Planning Process for low density areas. The study area is the five-state Midwestern region of Iowa, Kansas, Missouri, Nebraska, and Oklahoma, referred to in the report as the target region or the Midwest. The main research objectives of the study are to: 1) study the performance characteristics of transit systems in the target areas and compare these with the characteristics of corresponding systems in other regions of the United States; 2) develop a planning methodology for estimating the amount of travel for public transportation and evaluating alternative transit systems for low density areas in general and for the target region in particular; and 3) utilize the views and input from local officials and transportation agency personnel in deriving such a methodology for their use. This report outlines a systematic approach by which travel demand for rural public transportation as well as the selection of appropriate public transportation systems to meet rural travel patterns can best be determined. The report is in three parts: Part I deals with demand and need assessment methodologies; Part II is concerned with operational and technological issues and presents system evaluation methodologies; and Part III outlines the main conclusions and recommendations. Based on the findings, the major conclusions of this study are that there are two mutually exclusive groups of transit clientele: a group who "needs" the service and another group who "demands" the service. Therefore, the method of estimating actual travel by these groups should be considered separately, although they jointly constitute the overall estimated ridership and a methodology which can incorporate the estimation of all components of travel requirements for rural public transportation within the framework of incremental analysis would be useful. (FHWA)

Lee, J Tamakloe, EKA Mulinazzi, T
Kansas University, Urban Mass Transportation Administration Final Rpt. UMTA-KS-11-0001-81-2, Apr. 1981, 152p

Contract KS-11-0001

ORDER FROM: NTIS

PB82-116906

33 345213
RURAL TRANSPORT EXPERIMENTS: RURALINK SERVICE

The Ruralink service was part of the government's programme of rural transport experiments (RUTEX). It provided a bus service between Dalmellington and the Cumnock/New Cumnock area, including Ballochmyle Hospital, all in the Cumnock and Doon valley district in the Strathclyde region. The service was operated by Western SMT Ltd, using a 14-year old 27-seat bus, from 11 April 1978 to 30 June 1979. It provided return journeys between Dalmellington, Cumnock and Ballochmyle on Tuesdays, Wednesdays, Thursdays and Sundays. A postbus service was originally planned for the experiment, but when this proved impracticable, Western SMT were contracted to provide the service. At the same time the scope of the experiment was enlarged by tailoring the service more to the requirements of hospital visitors. The service was unconventional in that

there were three optional diversions from the regular route, which were made on request; this arrangement was used about three times a week, and worked well. Although the service was well suited to the needs of people without cars making hospital or social visits, overall demand averaged only 210 passengers per week, and revenue covered less than 20 per cent of costs. (a) (TRRL)

Transport and Road Research Laboratory, (0305-1315) Monograph SR 665, 1981, 26p, 3 Fig., 13 Tab., 1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257060)
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33 345214 RURAL TRANSPORT EXPERIMENTS: SOUTH AYRSHIRE HOSPITAL TRANSPORT SERVICE

The South Ayrshire hospital transport service was part of the government's programme of rural transport experiments (RUTEX). It was a voluntary car scheme designed to take patients and visitors from the villages of Crosshill, Kirkmichael and Straiton to hospitals and other medical facilities in Ayr and further afield. It was run by volunteer organisers, who made arrangements for people (who could not conveniently travel by bus) to be taken by one of a pool of volunteer drivers. The drivers were private motorists, who were paid an allowance of 8p per mile; passengers paid fares to the organisers. During the experimental period (10 July 1978-30 June 1979) the service provided 33 single and 33 return trips. Most of the passengers were elderly, and few had access to private transport. Although the scheme catered for only a small minority of hospital trips in the area, it was appreciated as a valuable aid to those who used it. The total cost of the service was L90, about one-third of which was recovered from fares. Such schemes, where they can be organised, appear to be the most economical way of catering for the low, sporadic demand for hospital trips in rural areas. (a) (TRRL)

Transport and Road Research Laboratory, (0305-1315) Monograph SR 666, 1981, 30p, 6 Fig., 13 Tab., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257061)
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33 345251 WORKS BUS SERVICES TO TWO INDUSTRIAL ESTATES IN NORTHAMPTON

This report concerns a study of transport arrangements to two Northampton industrial estates where, in the absence of an adequate conventional stage bus network, various forms of works service play an important role in providing transport: the work aimed to improve understanding of their operation. There were many services, each one confined to employees of a single company and, with one exception, loss-making. The nature of the demand for them was different from that noted previously in more rural locations: to take account of this an existing demand model was recalibrated. The recalibrated model was subsequently used to investigate several means of improving cost efficiency. While, in theory, these seemed likely to be effective they turned out to be unattractive to the companies concerned; the reasons are discussed. Overall findings highlight the need for effective advice to be given at an early stage to employers setting up their own services, particularly in view of the probable continued decline of conventional stage bus services. (Author/TRRL)

Tunbridge, RJ
Transport and Road Research Laboratory, (0305-1315) Monograph Supplement Rpt SR 664, 1981, 20p, 3 Fig., 6 Tab., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257062)
ORDER FROM: TRRL

33 345725 SUCCESSFUL RURAL BUS TRANSPORT EXPERIMENT [EXPERIMENT MET DE STREEKBUXI GESLAAGD]

In order to investigate the possibilities for introducing new forms of low frequency public transport in sparsely populated areas, an experiment was carried out in the north eastern part of the Netherlands. The experiment concerned low occupancy and low frequency bus lines. The buses were scheduled on a once every two hours frequency. A description is given of the transport volume and the opinions of the population. It is concluded that the low frequency bus lines are favourably judged by their users. A continuation of the bus lines is proposed. (TRRL) [Dutch]

Polder, W (Adviesgroep Verkeer En Vervoer, Utrecht) *Nederlands Transport* Vol. 33 No. 1, Jan. 1981, pp 24-27, 3 Tab., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 257469), Institute for Road Safety Research

ORDER FROM: TIJL Periodieken BV, P.O. Box 737, Amstelveen, Netherlands

33 346179 A PUBLIC TRANSPORTATION NEEDS STUDY FOR THE LOW DENSITY AREAS IN A FIVE-STATE REGION IN THE MIDWEST (IOWA, KANSAS, MISSOURI, NEBRASKA, AND OKLAHOMA)

The research objectives of the study are to (1) study the performance characteristics of transit systems in the target areas and compare these with the characteristics of corresponding systems in other regions of the United States; (2) develop a planning methodology for estimating the amount of travel for public transportation and evaluating alternative transit systems for low density areas in general and for the target region in particular; and (3) utilize the views and input from local officials and transportation agency personnel in deriving such a methodology for their use. This report outlines a systematic approach by which travel demand for rural public transportation as well as the selection of appropriate public transportation systems to meet rural travel patterns can best be determined.

See also PB82-116906.

Lee, J Tamakloe, EKA Mulinazzi, T
Kansas University, Urban Mass Transportation Administration Exec.
Sum UMTA-KS-11-0001-81-1, Apr. 1981, 6p

Grant DOT-UMTA-KS-11-0001

ACKNOWLEDGMENT: NTIS
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PB82-116898

33 348442 COUNTY POLICIES HINGE ON BUS U-TURN DECISION

The importance of an announcement that an independent bus company is to be allowed to compete with a National Bus Company subsidiary, Cumberland Motor Services, in Whitehaven is discussed. Although originally refused a road service licence by the Northern Traffic Commissioners, Yeowart Coaches has been given permission to operate a stage carriage service after an appeal verdict in their favour. The decision is said to have set a precedent which could have far reaching implications for the country and raises questions concerning the relationship between urban and rural bus services. The article examines the arguments presented in the case and evaluates the problem of deciding where the public interest lies. (TRRL)

Davies, P (Nottingham University, England) *Surveyor* Vol. 158 No. 4662, Oct. 1981, pp 17-19, 1 Phot., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258863)
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DOTL JC

33 348453 SCENARIOS AND STRATEGIES FOR PUBLIC TRANSPORT IN RURAL AND URBAN AREAS [SCENARIOS EN STRATEGIEEN VOOR HET OPENBAAR VERVOER IN STREEK EN STAD]

A compact study was made into the financial problems of urban and regional public transport in the next four years and into the indication of alternative solutions of it. The starting point was the intention of the Netherlands national government to realize savings of governmental expenses by such solutions. The results of the study are presented in parts I and II of the report. Regional and urban public transport can satisfy the requirement of decreasing governmental expenses by very strong measures. It is impossible however in that case to satisfy the increasing demand for public transport by the consumer. In a time of decrease of prosperity public transport can and must fulfil an additionally heavy task, but the government cannot give the extra money. Therefore the possibilities of holding the shortages of public transport constant for the next four years are studied. Three scenarios are described. Part III of the study describes another strategy in which the shortages of public transport are considered to be frozen at the same level as that of 1981. This can be reached by means of the scenario which is called "dive into one's own heart". (TRRL) [Dutch]

Koninklijke Nederlandse Vereniging Trans Ondernem Monograph Mar.
1981, 74p, 1 Fig., Tabs.

ORDER FROM: Koninklijke Nederlands Vereniging Trans Ondernem, Bezui-
denhoutseweg 56, The Hague, Netherlands

PB 19138

ACKNOWLEDGMENT: TRRL (IRRD 258640), Institute for Road Safety
Research

34 316872

ACCESS AND MOBILITY OF DISABLED PERSONS, WITH SPECIAL REFERENCE TO TRANSPORT AND PUBLIC BUILDINGS [Accessibilit  del minorati fisici alle infrastrutture, ai trasporti e agli edifici pubblici]

This is the first part of a study devoted to the problems of access and mobility for physically disabled people, with special reference to transport and public buildings. Measures described and illustrated include: signs and legends, specially designed crossings and underpasses, special provisions in private and public transport vehicles and infrastructures (stations, car park, etc), public buildings such as museums, town halls and other municipal buildings, cinemas and theatres etc. The problem is discussed in its urban and suburban context in an overview which includes an examination of air and maritime travel with regard to disabled persons. (TRRL) [Italian]

Cosulich, P. Ornati, A. *Strade* Vol. 81 No. 1185, July 1979, pp 273-301, 9 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 246876)

ORDER FROM: Permanent International Assoc of Road Congresses, Via Andreani 4, Milan, Italy

DOTL JC

34 323050

TRAVEL AND THE HANDICAPPED. BIBLIOGRAPHY

The bibliographic data are presented under the following headings: transport problems, public transport provision and policy, transport systems-planning and design, United States transport systems, vehicle design and adaptation, special transport, passenger behaviour, personal mobility/pedestrians, the disabled and traffic, travel and the elderly, disabled drivers, air travel, architectural barriers, latent demand, bibliographies, bulletins and available equipment, government publications and legislation, guides, handbooks and pamphlets, miscellaneous. (TRRL)

Morris, A. Gazely, D.

Loughborough University of Technology, England, (0026-8536) Monograph May 1977, 60p, Refs.

ACKNOWLEDGMENT: TRRL (IRRD 247612)

ORDER FROM: Loughborough University of Technology, England, Department of Transport Technology, Loughborough LE113TU, Leicestershire, England

34 325110

TRAVEL AND THE HANDICAPPED. REPORT NO 2. AN INVESTIGATION INTO THE BEHAVIOUR DURING TRAVEL OF SELECTED HANDICAPPED PERSONS

The aim of this study, which formed part of a larger programme of research concerning travel and handicapped persons, was to observe the behaviour of a small number of handicapped subjects using different modes of transport. A total of five subjects took part in the study: two wheelchair users, a spastic, an elderly person and a non-impaired mother, who travelled with her child and a pushchair. Each subject was observed while negotiating a pre-chosen route involving travel by foot, taxi, train and, in one case, by invalid tricycle. A filmed record of performance en route was taken for analytical purposes. The data presented in this report is mainly descriptive. The barriers, obstacles and inconveniences encountered by the subjects are outlined in relation to the design and service features of the transport systems under study. The results provide useful indications of some of the problems facing different handicapped persons during travel. (Author/TRRL)

Gaze, DJ. Morris, A.

Loughborough University of Technology, England Monograph Feb. 1977, 31p, 2 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 249410)

ORDER FROM: Loughborough University of Technology, England, Department of Transport Technology, Loughborough LE113TU, Leicestershire, England

34 329654

ENVIRONMENTAL EFFECTS UPON THE MOBILITY OF OLDER PEOPLE

This is a study of environmental determinants of mobility among older people, comparing mobility behaviors and attitudes among residents of two cities of similar size but markedly different in physical characteristics including size, shape, topography and climate, as well as distribution of

facilities and services. Respondents were representative samples of 709 retired people in San Antonio, Texas, and 899 residents of San Francisco, California, aged 65 and older. Predictions of behavior and attitude based upon similarities and differences in environmental variables were confirmed. The data support the conclusion that urban environments strongly affect the mobility of their older residents and suggest that the design of cities can have a major and beneficial effect upon the quality of life in later years. (a) (TRRL)

Carp, FM (Wright Institute) *Environment and Behavior* Vol. 12 No. 2, June 1980, pp 139-156, 6 Tab., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250281)

ORDER FROM: Sage Publications Limited, 28 Banner Street, London, England

34 330663

AN EVALUATION OF MAKING RAIL TRANSIT SYSTEMS ACCESSIBLE TO HANDICAPPED PERSONS. A NATIONAL SUMMARY OF COST ESTIMATES

Section 321 of the Surface Transportation Assistance Act of 1978 required this study of rendering rail transit and commuter systems accessible to handicapped persons. Estimates of capital and operating costs were developed for rapid transit, light-rail and commuter rail modes, along with estimates of the demand for such service on light-rail and commuter operations and the benefits of such accessibility. An increased ridership of 0.6 percent was estimated annually for commuter and light-rail modes with costs per trip ranging from \$3 to more than \$50 and the average between \$10 and \$40. Operators predicted operating and capital costs of up to \$11.4 billion over 50 years; a consultant estimated about half this amount.

Transportation Systems Center, Urban Mass Transportation Administration Apr. 1980, 83p, 5 Tab., 6 App.

ORDER FROM: GPO

34 330766

CAN I GET THERE? PUBLIC TRANSPORT OPTIONS IN THE 1980'S FOR PEOPLE WITH DISABILITIES. FINAL REPORT TO THE WORKING PARTY ON TRANSPORT FOR THE DISABLED IN GREATER MANCHESTER

Comparisons made of the provisions for disabled travellers in Manchester with those of the rest of the country show the same inadequacies. The study was conducted by questionnaires to 982 voluntary organisations and letters to the research team in response to requests in local papers. Individual case studies were carried out and discussions held with the local passenger transport executives. Results showed that a clearer definition of public transport operator responsibilities was required together with a better co-ordination of the use of "special" transport. Transport pools should be formed with voluntary organisation vehicles. The standard public transport system should be made more accessible to the less severely disabled by modifications to existing stock and appropriate design standards for new vehicles. Staff and passengers need effective education and training regarding the needs of the disabled. An "on-call" special public transport system, using purpose-built vehicles, is required for the severely disabled. Anomalies and inadequacies in the present method of legislation need to be rectified. Government legislation must also be reinforced by financial backing. (TRRL)

The Spastics Society Monograph July 1979, 66p, 10 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 251577)

ORDER FROM: The Spastics Society, 62 Bridge Street, Manchester, England

34 331221

TRANSPORTATION FOR THE ELDERLY: HAPPY FACES ON A MARTA BUS

Basically, the MARTA program of transportation for the elderly rested on three major predispositions: Federal requirements; the referendum proposal whose passage brought MARTA into being; and essential elements in MARTA's organizational philosophy. These predispositions also required energizing catalysts to get the MARTA program moving, as presented in this report. This case study focuses on two aspects of MARTA bus service for the elderly. First, the case reflects how one public program came into being--from concept, through alternatives, and finally how it evolved as defined by specific policies and regulations. Secondly, the case also reflects on processes that led to successfully meeting some problems of the elderly, but not all of those problems. (UMTA)

Proehl, CW, Jr
Georgia University, Athens, Urban Mass Transportation Administration,
(GA-11-0006) UMTA-GA11-0006-81-13, July 1979, 20p

Contract GA-11-0006

ACKNOWLEDGMENT: UMTA
ORDER FROM: NTIS

PB 81-157448

34 331398

TRANSPORT OF SCHOOL CHILDREN. THE SCHOOL BUS AND SCHOOL BUS-STOPS [DER SCHUELERTRANSPORT. SCHULBUS UND SCHULBUSHALTESTELLEN]

The object of the ideas represented in this report is to improve the existing situation connected with the transport of school children. All those responsible for road safety should be involved in a re-thinking process in favour of the weakest road-user, the child. The long term aim of the work is to reconsider the status of children (pedestrians) in road traffic, in such a manner that success will be achieved by considering the weakest road users not in a sense of "opposition" but of "partiality". Typical of the present situation is the fact that danger in the protected areas is seen, legally, not from the child's but from the driver's viewpoint. This is proven by the statistics: in the 1.523 million road accidents in 1977, 69548 children were involved, of whom 44567 were slightly injured, 23627 severely and 1354 were killed. The danger in the particularly hazardous areas of school bus stops whilst children are waiting for buses and during periods when children are leaving both buses and bus stops must be brought to the attention of drivers by the erection of signs and traffic separation and above all by a re-thinking process. In this process, for example, the driver must learn, within the framework of his training, that protected zones for pedestrians should be respected and new protected areas for pedestrians (children) must be brought into being at the expense of their own progress. The present report goes into the operational safety of school buses and bus stops. In summary there are drafts of legal changes or supplements for the consideration of school bus stops as intermediate bus stops. (TRRL) [German]

Schmitt, G
Kreisverwaltung Ahrweiler Monograph Nov. 1979, 40p, Figs., Photos.

ACKNOWLEDGMENT: TRRL (IRRD 312314), Federal Institute of Road Research, West Germany
ORDER FROM: Kreisverwaltung Ahrweiler, Schutzpolizeiinspektion, Altenahr, West Germany

34 331851

ELDERLY AND HANDICAPPED ACCESSIBILITY ON THE WASHINGTON, D. C. METRO: SOME LESSONS LEARNED

This paper presents selected results of a recently completed one year project designed around a case study of the Washington, D. C. Metropolitan Area rapid rail system (METRO). The objective of the research was to determine if the METRO subway is usable by the elderly and handicapped. This determination reflects upon the sufficiency of the design criteria instituted to insure accessibility by this population.

Coleman, DM (Howard University); Graye, ES *Journal of Advanced Transportation* Vol. 14 No. 2, 1980, pp 185-196, 24 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

34 334024

FEDERAL ASSISTANCE FOR PROGRAMS SERVING THE HANDICAPPED

This is a directory of programs for the handicapped most of which provide assistance to the handicapped or people working with or for them. Some programs serve a larger segment of the population, but are mandated to spend a certain percentage of funds for serving the handicapped. Medical research programs which have implication in the field of handicaps are listed by title, as are programs of the Urban Mass Transportation Administration which is committed to facilitate mass transportation systems that can be used by handicapped individuals. Programs are presented in four categories: formula grants to states, project grants, direct payments, and nonfinancial assistance. A subject index and an index on applicant eligibility are provided. Since funding through formula grants must be explored with the administering state agency, selection of the most important state agencies serving the handicapped have been included. A listing of resources for funding

information and a small selection of bibliographic references to the numerous books in the funding field are also included.

Department of Education No. E-80-22001, Sept. 1980, 242p

ORDER FROM: GPO

34 334286

AN ASSESSMENT OF WHEELCHAIR LIFT BUSES IN WESTCHESTER COUNTY, NEW YORK: EXECUTIVE SUMMARY

This is the executive summary of an interim report covering the first of a two-year study of rear-door lift-equipped bus operations in Westchester County, New York. Westchester County operates 105 lift-equipped Advanced Design Buses (GMC/RTS Models) that have been in service since 1979. The county's bus system is operated by 16 private bus companies and provides county-wide service through 56 transit routes and 14 PLT (Personalized Local Transit) routes. Thirty-two of the county's 56 regular bus routes are served exclusively by lift-equipped buses. The allocation of buses to routes is such that each of the 32 routes is "fully accessible." Westchester County has also decided to make the lift available to passengers with baby carriages, shopping carts, bulky cartons, bicycles, as well as to wheelchair-confined persons. This report describes the experiences to date with the use of lift-equipped buses in the county. The wheelchair-confined person ridership has been low, but the county is developing programs to encourage usage. There have been mechanical problems with the lift that manufacturer is trying to correct. The author states that a true demand of transit ridership by handicapped cannot be ascertained unless the difficulties in accessing the bus stops are removed. Bus drivers experience difficulties in aligning the rear door with the curb at bus stops because bus stops are frequently occupied by other vehicles. Operators feel that it is too early to tell about the impact of the lift buses on operating costs, although they experienced lower maintenance costs due to the new buses replacing the older ones. (UMTA)

Falocchio, JC
Polytechnic Institute of New York, Urban Mass Transportation Administration Intrm Rpt. UMTA-NY-11-0023-81-1, Oct. 1980, 10p

ORDER FROM: NTIS

PB81-187940

34 334287

AN ASSESSMENT OF WHEELCHAIR LIFT BUSES IN WESTCHESTER COUNTY, NEW YORK

This is an interim report covering the first of a two-year study of rear-door lift-equipped bus operations in Westchester County, New York. Westchester County operates 105 lift-equipped Advanced Design Buses (GMC/RTS Models) that have been in service since 1979. The county's bus system is operated by 16 private bus companies and provides county-wide service through 56 transit routes and 14 PLT (Personalized Local Transit) routes. Thirty-two of the county's 56 regular bus routes are served exclusively by lift-equipped buses. The allocation of buses to routes is such that each of the 32 routes is "fully accessible." Westchester County has also decided to make the lift available to passengers with baby carriages, shopping carts, bulky cartons, bicycles, as well as to wheelchair-confined persons. This report describes the experiences to date with the use of lift-equipped buses in the county. The wheelchair-confined person ridership has been low, but the county is developing programs to encourage usage. There have been mechanical problems with the lift that manufacturer is trying to correct. The author states that a true demand of transit ridership by the severely handicapped cannot be ascertained unless the difficulties in aligning the rear door with the curb at bus stops because bus stops are frequently occupied by other vehicles. Operators feel that it is too early to tell about the impact of the lift buses on operating costs, although they experienced lower maintenance costs during this period, since the new buses replaced the older ones. (UMTA)

Falocchio, JC
Polytechnic Institute of New York, Urban Mass Transportation Administration Intrm Rpt. UMTA-NY-11-0023-81-2, Oct. 1980, 104p

ORDER FROM: NTIS

PB81-187957

34 334401

BETTER PLANNING FOR THE TRANSPORTATION DISADVANTAGED SPECIAL RESEARCH PROBLEMS

This paper consists of a critical examination of the existing pertinent research which has been done on the physically handicapped. It also introduces a

disaggregate research concept for discussion. Furthermore, specific problems related to the methodology of surveying this extremely difficult target group are to be dealt with. Until now, we have been confronted with the fact that due to errors made in forming random samples, determining addresses and inadequate survey instruments, as well as samples which were too small and non-comprehensive analysis of data, such distortions in results appeared that one has to assume that most of the empirical data is incorrect. In view of the increased, and frequently very costly, political attempts to better transportation offers and thus improve mobility, these empirical deficits are a cause for concern. The time has come when one must ask oneself if one does not need an empiricism which is relevant for planning, even if it is expensive, in order to examine the task, breadth and structure of future measures taken to improve mobility.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Mettler-Meibom, B Brog, W (Socialdata GmbH)
Organization for Economic Cooperation and Devel, European
Conference of Ministers of Transport Conf Paper Volume 3, 1980, P
1667, Tabs., 16 Refs.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite
1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

34 334583

**TRAVEL BEHAVIOR AMONG ELDERLY NONUSERS OF
REDUCED-RATE TRANSIT SERVICE**

The Transportation Remuneration Incentive Program (TRIP) as a statewide public transportation program designed to provide discounted bus or taxicab transportation to low-income, elderly or handicapped residents of West Virginia through a voucher system is outlined. The study was carried out to determine those aspects of travel behavior among this group that related to their lack of participation in TRIP.

Cohen, SH (West Virginia University); Hyde, JL *Traffic Quarterly* Vol.
34 No. 2, Apr. 1980, pp 271-286, 13 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

34 334620

**RESEARCH PROJECT ON "SCHOOL BUS TRAVEL" NEARLY
COMPLETED [FORSCHUNGSPROJEKT "SCHULBUSFAHREN"
VOR DEM ABSCHLUSS]**

This paper presents the results of a research project on "school bus travel" which was initiated at the institute for primary school teachers at the University of Bamberg at the beginning of the current year. This demonstrates that school bus travel is by no means as problem-free for the primary school children involved as is often assumed. The negative effects include physical and mental strain, a shortening in the leisure time available to the child each day which should not be underestimated, and additional moments of danger in traffic, all factors which form a significant part of the price which children must pay for the journey to school. (TRRL) [German]

Zeitschrift fuer Verkehrserziehung Vol. 30 No. 2, June 1980, pp 33-34

ACKNOWLEDGMENT: TRRL (IRRD 312312), Federal Institute of Road
Research, West Germany
ORDER FROM: Verkehrsblattverlag Dr Borgmann, Hohe Strasse 39, 4600
Dortmund 1, West Germany

34 334668

**WISCONSIN MANUAL TO COORDINATE ELDERLY AND
HANDICAPPED TRANSPORTATION SERVICES IN RURAL AND
SMALL URBAN COUNTIES**

This manual has been prepared for use by local officials and staff to assist in the development of coordinated county-wide transportation services for the elderly and handicapped (E&H). It is intended for use in the coordination of both specialized and public transportation in the predominantly rural counties of Wisconsin. The manual is a product of the development of coordination plans in three counties in Wisconsin: Chippewa, Eau Claire, and Rock Counties. The manual shows how to prepare a plan for the development of specialized transportation services in rural and small urban counties. The process assumes for its starting point the existing services for E&H persons within county-based service areas, and it incorporates an assessment of these services in terms of their efficiency and

effectiveness. The assessment of efficiency is based on the measurement of five ratios of operating characteristics which are compared with ratios from similar services throughout the country. Likewise, three measures of effectiveness are compared with appropriate nationwide measures. These assessments help to determine the need for better coordination or more service. The manual describes steps to improve coordination, and it includes methods and guidance for projecting costs and ridership, managing financial affairs, and implementing new or revised services. This report provides a bibliography and appendices with materials used in the assessment of the need for coordination, of alternatives, of developing a financial plan, and of implementing the service. (UMTA)

Knapp, SF Worthington, H Burkhardt, JE
Ecosometrics, Incorporated, Urban Mass Transportation Administration,
(WI-09-8004) UMTA-WI-09-8004-81-1, Dec. 1980, 276p

ORDER FROM: NTIS

PB81-197865

34 334866

THE OWNERSHIP AND USE OF CARS BY ELDERLY PEOPLE

This report describes and explains present patterns of car availability and use among the elderly, and the role of different forms of transport in their daily travel. The main sources of data are the national travel survey and a survey of old people in Guildford. Comparisons are made between elderly people and younger adults. Levels of car availability and use vary within the elderly population according to personal and household circumstances. Past patterns of growth in car ownership and licence-holding and those changes associated with ageing which lead people to give up their cars are also strong influences on car availability. Data on the process of giving up cars and current levels of car availability among the people who will be elderly by 2001 are used to suggest levels of car availability among the elderly in 2001. It appears that while there will be substantial increases in car availability among the elderly, the overriding influences of health and financial circumstances will limit car availability so that at least half of the elderly population will be living in households without a car and will therefore be largely dependent on walking and some form of public transport for meeting daily requirements.(a) (TRRL)

Hopkin, JM
Transport and Road Research Laboratory, (0305-1293) Monograph
TRRL LR 969, 1981, 53p, 9 Fig., 23 Tab., 32 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253526)
ORDER FROM: ESL

34 334891

**IMPROVED TRANSPORTATION SERVICES TO THE ELDERLY
AND HANDICAPPED IN NORTHERN VIRGINIA--PHASE 1.
RESOURCE INVENTORY AND BARRIER IDENTIFICATION.
SUMMARY REPORT**

This study inventoried and examined the transportation resources currently available to the region's (Northern Virginia) elderly and handicapped population and identified the statutory, attitudinal, financial and administrative barriers which inhibit specialized transportation providers from participating in a coordinated transportation network. The first phase of the study discusses the legislative history, and the fragmentation and duplication of services resulting from the manner in which these services have been provided. Coordination activities are listed and the barriers inhibiting coordination between agencies are summarized. This phase also included a resource, inventory and barrier identification survey, the findings of which are reported. The specialized services, the types of agencies, the clientele, and vehicle features are mentioned. A series of performance measures to assess the efficiency and effectiveness of individual providers are examined, as well as the statutory and programmatic restrictions limiting the provision of transportation to the elderly and handicapped. Data are also presented on past and present coordination activities and willingness to participate in such arrangements. The major findings of the study are summarized, the general conclusions and recommendations are presented, and areas for future research are suggested.

Northern Virginia Planning District Commission 1980, 50p, Tabs., 2
App.

ORDER FROM: Northern Virginia Planning District Commission, 7309
Arlington Boulevard, Suite 300, Falls Church, Virginia, 22042

34 335192

DEVELOPMENT OF DESIGN STANDARDS FOR PUBLIC TRANSPORTATION SERVICES FOR THE TRANSPORTATION HANDICAPPED IN LARGE URBAN AREAS

This paper is concerned with the analysis of transportation variables from the viewpoint of the elderly and handicapped. The purpose of this analysis was to develop a set of functional design parameters that are responsive to the travel needs of transportation-handicapped persons. The transportation variables considered in this paper include walking distance, waiting time, service reliability, availability of seats in waiting areas and/or in the vehicle, safety, accessibility of vehicles and/or system, and fare. User interviews were obtained from a pool of riders of a specialized transportation service (Easyride) that operates in Manhattan's Lower East Side. Each measure of a transportation variable was rated by the interview sample by using a semantic scale, and tolerable (acceptable) levels for each variable were identified for each of six groups of age-handicap categories. The service design standards that emerge from this study recognize that the locomotive capabilities of elderly and handicapped persons differ according to the severity of handicap. These travel needs are identified for each level of transportation handicap considered and are quantified in terms of the suggested design guidelines. (Author)

This paper appeared in Transportation Research Record No. 784: Providing Transportation Services for the Elderly and Handicapped.

Falocchchio, JC (Polytechnic Institute of New York) *Transportation Research Record* No. 784, 1980, pp 13-20, 14 Fig., 2 Tab., 2 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

34 335193

PREDICTIVE MODELS OF THE DEMAND FOR PUBLIC TRANSPORTATION SERVICES AMONG THE ELDERLY

Models for accurately predicting the travel demands of the elderly are in their infancy. After reviewing the advantages and disadvantages of disaggregate behavior models and of aggregate models, this paper reviews a series of specific aggregate demand models that include service specifications. Both urban and rural models are developed. The results of ordinary least-squares and two-stage least-squares regression methods are compared for their predictive capabilities and agreement with previous findings; both formats are found to have some advantages. Specific models combine high predictive capabilities with generally accepted elasticities of the component variables. These models are ready for immediate application. (Author)

This paper appeared in Transportation Research Record No. 784: Providing Transportation Services for the Elderly and Handicapped.

Lago, AM Burkhardt, JE (Ecosometrics, Incorporated) *Transportation Research Record* No. 784, 1980, pp 21-27, 5 Tab., 17 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

34 335194

COST AND PRODUCTIVITY OF TRANSPORTATION FOR THE ELDERLY AND HANDICAPPED: A COMPARISON OF ALTERNATIVE PROVISION SYSTEMS

This paper reports on one part of a comprehensive study of 56 specialized transportation providers throughout the United States. Cost and productivity data for three different classes of providers (social service agencies, private contractors, and transit authorities) are presented. Such data were examined for their policy implications for systems currently in operation and proposed coordination and brokerage efforts. A distinction was made between "perceived" costs (items in the budget that require a monetary outlay) and "actual" costs (a more comprehensive account of the required resources for service provision). Such distinction helped explain seemingly irrational choices made by the providers studied and assisted in the determination of an "average" transportation budget for specialized services by major cost items. A comparison of the unit costs experienced by different providers revealed some uniformities: (a) the systems that have the highest productivities operate in dense areas and achieve a mix of group subscription and individual demand-responsive trips, (b) the separation of ambulatory from nonambulatory clients can lead to substantial economies, (c) it is not as clear that contractual agreements offer lower costs when hidden costs are accounted for, and (d) social service agencies are becoming increasingly more expert in the provision of transportation and in many cases have lowered their costs over time to a competitive level. On the basis of these findings,

present and planned systems should stress the integration of group and individual trips and the separation of clients by level of service required in order to maximize efficiency. (Author)

This paper appeared in Transportation Research Record No. 784: Providing Transportation Services for the Elderly and Handicapped.

Pio, A (Twin Cities Metropolitan Council) *Transportation Research Record* No. 784, 1980, pp 27-34, 4 Tab., 3 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

34 335195

IMPACTS OF ALLEGHENY COUNTY'S ACCESS PROGRAM

Access is a countywide door-to-door transportation system for the elderly and handicapped in the Pittsburgh, Pennsylvania, area that is conducted under the Service and Methods Demonstrations Program of the Urban Mass Transportation Administration (UMTA). Access is managed for UMTA and the Port Authority of Allegheny County (PAT) by Multisystems, Inc., a private company that acts as central broker of transportation for human service agencies and for individual elderly and handicapped persons. The service is provided under contract through the use of vehicles operated by a mixture of existing private for-profit carriers and nonprofit agencies. Each provider is assigned a specific service area, and all requests for service in that area are normally handled by that provider. The broker can also arrange backup service whenever necessary. The Access program, including a description of the service, the delivery network, and implementation issues, is discussed. The fare system is described, including the zone structure, the use of scrip coupons to pay for service, the agency billing system, and the user-side subsidy program sponsored by PAT for those who cannot use the fixed-route transit system. The broker's role in managing funds to pay for service on a vehicle-hour basis is also described. Impacts on agencies, individuals, carriers, and the quality and cost of service are discussed. Service statistics for the first eight months of service are presented. (Author)

This paper appeared in Transportation Research Record No. 748: Providing Transportation Services for the Elderly and Handicapped.

Forstall, KW (Multisystems, Incorporated); Roszner, ES (Access Transportation Systems Incorporated); Letky, TV (Port Authority of Allegheny County, Pa) *Transportation Research Record* No. 784, 1980, pp 34-38, 3 Fig., 1 Tab.

ORDER FROM: TRB Publications Off

DOTL JC

34 335196

LOCAL RESPONSES TO MEETING THE TRANSPORTATION NEEDS OF THE HANDICAPPED: THE EXPERIENCES OF SIX TEXAS CITIES

The attempts of six Texas cities to meet the transportation needs of handicapped citizens by making extensive use of existing community transportation providers are described. An analysis of these experiences reveals that intuitive solutions to providing cost-effective services for handicapped riders are often simplistic. In particular the analysis found that (a) contracting with an existing provider is only cost-effective if the provider is asked to perform traditional services and not innovative ones, (b) contracting with an existing provider can only generate cost savings if a city is willing to trade off direct control and supervision for lower unit costs, (c) dedicated services (vehicles and drivers) can provide a high level of service but often at high unit costs, (d) segregating riders who require minimal assistance from those who require extensive assistance can reduce costs if different providers are used for each group, and (e) every limitation on rider eligibility and contract service provision generates the need for additional administrative staff, which can significantly increase unit costs. The experiences of the six Texas cities suggest that solutions to the problem of devising transportation services for special groups depends on careful analysis of the capabilities of existing community providers; a firm understanding of the trade-offs between levels of service, cost, and control; and some hard decisions about what level of transportation service a community expects and to which special groups it should be delivered. (Author)

This paper appeared in Transportation Research Record No. 784: Providing Transportation Services for the Elderly and Handicapped.

Rosenbloom, S (Texas University, Austin) *Transportation Research Record* No. 784, 1980, 39-45, 3 Tab., 1 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

34 335834

THE USE OF THE UNDERGROUND SYSTEM BY PEOPLE WITH IMPAIRED MOBILITY

The terms of reference of the study are outlined, and a definition is given of those travellers whose mobility is handicapped. The scope of the existing underground system is described, and a list of disability organizations is presented together with their views on the problems confronting handicapped travellers. Details are given of the characteristics of specific disabilities and their consequences. Detailed measurements and observations were made at 8 underground stations representative of typical situations to be found throughout the system as a whole, so as to highlight the problems facing handicapped people. Suggestions are made for improvements.

Penton, JH (Penton & Smart)
London Transport Executive Monograph Sept. 1976, 68p, Figs., Photos.,
16 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254535)
ORDER FROM: London Transport Executive, 55 Broadway, London SW1H
0BD, England

34 337137

CONCEPTUAL STUDY OF HANDICAPPED FACILITIES FOR NEW SUBWAY STATION DESIGNS

The report investigates conceptual designs for seven different types of subway stations and determines design modifications that need be incorporated into each design in order to ensure accessibility by elderly and handicapped persons into these stations. The seven conceptual subway station "designs" are architectural schematics depicting different configurations for mezzanines, trainrooms, escalators, and other features, the locations of which are dictated by geotechnical, economic, and right-of-way restrictions. Because these designs are conceptual and not final, a "concept-evaluation" of each station type is made to improve upon the relative locations of the handicapped facilities shown. The impact of the proposed new modifications on station costs is stated along with a cost estimate of implementation. The modifications prescribed herein address two categories of handicapped persons, namely, semi-ambulatory and wheelchair users.

See also PB-268894.

Collins, W Hampton, D
Hampton (Delon) and Associates, Urban Mass Transportation
Administration, (UMTA-DC-06-0182) Final Rpt. UMTA-DC-06-
0182-80-1, Sept. 1980, 62p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-178485

34 337302

321(B) RAIL RETROFIT EVALUATION-LIGHT AND COMMUTER RAIL SYSTEMS: SUMMARY REPORT. VOLUME I

The objectives of this 321 (b) Rail Retrofit Evaluation are: (1) to develop all costs (capital and operating over a 50-year period) of making all UMTA funded light and commuter rail systems accessible to handicapped persons; (2) to develop solutions to accessibility problems in sufficient detail to estimate associated costs, and to determine technical and operational feasibility; (3) to estimate the transportation demand for these accessible services, and the benefits of these services to handicapped and other persons, in sufficient detail to comment on cost effectiveness. This report summarizes accessibility solutions and cost estimates for 25 light rail and commuter rail systems on a systemwide and national total basis. Documentation on costing methodology, criteria, and proposed vehicle modifications is included. The report includes an errata sheet describing corrections subsequent to reviews by transit agencies and handicapped representatives.

Crain, JL
Crain and Associates, Urban Mass Transportation Administration, (UM-
TA-CA-06-0125) Final Rpt. UMTA-CA-06-0125-80-1, Dec. 1980, 421p

Contract DOT-UT-90026

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-187148

34 342141

ACCESSIBLE PUBLIC TRANSIT--A HISTORY AND OVERVIEW OF ACCESSIBLE TRANSIT PROVISION IN THE UNITED STATES

This overview of transit provisions for the disabled from approximately 1970 through 1980, examined various interest groups (including transit providers, government agencies and manufacturers of transit equipment) and the emerging patterns that account for the inadequacy of the transit available to the disabled. It is shown where obstacles are occurring and how divergent interests, creating different objectives and planning mechanisms, have deterred adequate provision of accessible transit. The history of activism by the disabled, the subgroups within the disabled community, their transit needs and political involvement, laws concerning accessible transit provision, and the technology associated with accessible transit are covered. The survey of 24 paratransit systems showed that paratransit provisions available to the disabled was far below that available to other members of society. The study found that data being used to document the cost effectiveness of paratransit is grossly inaccurate.

Meier, H
United Cerebral Palsy Association of San Francisco 1981, 54p, 9 Tab., 2
App.

34 342500

REHABILITATION ENGINEERING SOURCEBOOK AND SUPPLEMENT

This manual references problems of the handicapped, listed by type of activity. For each problem, a paragraph-entry identifies the barrier presented, then a potential solution, usually technological. The solution statements specify characteristics of the devices, their developmental status, and names and addresses of suppliers and/or manufacturers. The solutions are consumer-oriented, including those which make it possible for the handicapped to drive automobiles.

On deposit in: National Rehabilitation Information Center; NTIS, PB
numbers 82-110180 and 82-110172; ERIC Document Reproduction Service
(P.O. Box 190; Arlington, Va., 22210)

Institute for Information Studies 1981, n.p.

ACKNOWLEDGMENT: Institute for Information Studies
ORDER FROM: Institute for Information Studies, 400 North Washington
Street, Falls Church, Virginia, 22046

34 342502

HANDICAPPING AMERICA: BARRIERS TO DISABLED PEOPLE

This book argues that America handicaps disabled persons by designing inaccessible facilities, equipment and programs. Aside from the rights thus denied to the disabled, the economic, human and moral costs which result are documented. The national policies and practices which hinder accessibility are cited, and the role of accessibility standards is reviewed. The author advocates comprehensive and consistent review of design and practice to restructure activities and the environment to accommodate the handicapped. With respect to transportation, he calls for a national policy to mandate accessibility of public transport, buttressed by enforcement powers in the hands of the U. S. Department of Transportation.

Bowe, FG
Harper and Row Publishers, Incorporated 1978, n.p.

ORDER FROM: Harper and Row Publishers, Incorporated, 10 East 53rd
Street, New York, New York, 10022

34 342503

PROPOSED MINIMUM GUIDELINES AND REQUIREMENTS FOR STANDARDS FOR ACCESSIBILITY AND USABILITY OF FEDERAL AND FEDERALLY FUNDED BUILDINGS AND FACILITIES BY PHYSICALLY HANDICAPPED PERSONS

This regulation is issued by the Architectural and Transportation Barriers Compliance Board as minimum guidelines and requirements for standards for accessibility and usability of Federal and federally funded buildings and facilities by physically handicapped persons. The guidelines and requirements provide a basis for the issuance of consistent and improved accessibility and usability standards issued by the four Federal standard-setting agencies, the General Services Administration, Department of Housing and Urban Development, Department of Defense and United States Postal Service, under the Architectural Barriers Act of 1968, as amended. Technical provisions encompass human data; walks, floors and accessible routes;

parking and passenger-loading zones; ramps and curb ramps; stairs; handrails; elevators; platform lifts; entrances; doors; windows; toilet and bathing facilities; drinking fountains and water coolers; controls and operating mechanisms; alarms; tactile warnings; signage; telephones; seating, tables and work surfaces; assembly areas; and storage. Other parts of the rule address: purpose, applicability, definitions, and relationships with other standards and laws; and the scope of the rule's applicability to new construction, additions, alterations and leased buildings. The technical provisions are accompanied by diagrammatic illustrations.

Federal Register Aug. 1980, n.p.

ACKNOWLEDGMENT: Architectural and Transp Barriers Compliance Board
ORDER FROM: GPO

34 342504

SPECIFICATIONS FOR MAKING BUILDINGS AND FACILITIES ACCESSIBLE TO AND USABLE BY PHYSICALLY HANDICAPPED PEOPLE

An American National Standard developed by consensus of those concerned with its scope and provisions, the 1980 specifications replace and supersede previous editions and supplement other American National Standards. The specifications present means by which accessibility and usability of buildings and facilities can be achieved, and are recommended for adoption and enforcement by authoritative agencies. Technical standards are presented for elements and spaces of both public and private buildings and facilities, and are accompanied by diagrammatic illustrations. An appendix supplies information to support understanding of the standards and their bases.

American National Standards Institute, Inc A117.1, 1980, n.p.

ACKNOWLEDGMENT: American National Standards Institute, Inc
ORDER FROM: American National Standards Institute, Inc, 1430 Broadway, New York, New York, 10018

34 342505

A STUDY ON MAKING TRANSPORTATION FACILITIES ACCESSIBLE TO THE HANDICAPPED AND ELDERLY

The study presents a classification scheme for vertical circulation devices, a classification scheme for fixed facilities, a station questionnaire for recording barriers and a transit user scenario which considers psychological as well as physical barriers. It is recommended that these aids be used to computer-catalog all transportation fixed facility barriers and all potential solutions to these barriers as well as computer-analyze the matching of barriers and specific solutions. Existing vertical circulation devices which, to date, have not been used in mass transit facilities (typical use is home environment) have been studied in detail. They are grouped according to their specific mode of operation and their potential for use is discussed. Prices are included. Vertical circulation devices currently used in transportation facilities, their assets and shortcomings are detailed. A scheme is presented for comparing all devices against an idealized set of specifications. New concepts for vertical circulation are grouped into ramp, stair, escalator and elevator devices. The concepts are designed to stimulate creative design approaches to the problem. Conclusions center around the applicability of existing vertical circulation devices, the aspect of human engineering, problems related to various devices, and improvements concerning escalators and elevators. A partial list of manufacturers and developers of shaftless elevators, wheelchair elevators, stairway platform lifts and stairclimbing wheelchairs is presented in Appendix A. Appendix B is a bibliography and Appendix C is preliminary specifications for selected devices (modified escalator, platform stair lift and escalator riding wheelchair).

Study conducted by the Franklin Institute Research Laboratories has conducted a study for the Urban Mass Transportation Administration.

Dougherty, EJ DeBenedictis, JA
Franklin Institute Research Laboratories Rpt. F-C3956-1, 1974, n.p.

Grant PA 06-0031

ORDER FROM: Franklin Institute Reserch Laboratories, 20th and Benjamin Franklin Parkway, Philadelphia, Pennsylvania, 19103

34 342506

FIRL SPECIFICATIONS FOR MAKING MASS TRANSIT ACCESSIBLE TO THE ELDERLY AND HANDICAPPED

This document is a draft specification for mass transit facilities and equipment, including vehicular equipment. The specification draws upon other such standards and an exhaustive review of literature, as well as the

Institute's experience and source documents. Emphasis is placed upon satisfying user needs. Consideration is given also to constraints upon operators, manufacturers and designers. Cost-effectiveness formed another basis for each specification. An appendix presents suggestions and guidelines for implementation of the specification.

Dougherty, EJ
Franklin Institute Research Laboratories Rpt. F-C3956-A, 1974, n.p.

ORDER FROM: Franklin Institute Research Laboratories, 20th and Benjamin Franklin Parkway, Philadelphia, Pennsylvania, 19103

34 342507

PROVISIONS FOR ELDERLY AND HANDICAPPED PEDESTRIANS: VOLUME 1. EXECUTIVE SUMMARY

Investigations were carried out in order to isolate the problems and hazards experienced by elderly and handicapped pedestrians, the results expressed in typological form, were prioritized, and some of the high priority environmental problems became the focus for later stages of the research. Curb ramp criteria and tactile surface materials were evaluated and the results incorporated into countermeasures which were field tested. The priority accessible network as a conceptual approach to barrier free urban areas has been developed; and a methodology for establishing the network is described.

This volume is the first of a series: the others are Vol. 2, FHWA-RD-79-2; Hazards, Barriers, Problems and the Law. Vol. 3, FHWA-RD-79-3; The Development and Evaluation of Countermeasures. FHWA-RD-79-6; A Manual for Developing a Priority Accessible Network.

Templer, JA
Georgia Institute of Technology, Federal Highway Administration Final Rpt. FHWA-RD-79- 1, Jan. 1979, 46 p

Contract DOT-FH-11-8504

ACKNOWLEDGMENT: Georgia Institute of Technology
ORDER FROM: NTIS

34 342508

PROVISIONS FOR ELDERLY AND HANDICAPPED PEDESTRIANS: VOLUME 2: HAZARDS, BARRIERS, PROBLEMS AND THE LAW

Ten categories of handicapped pedestrians are identified. Four of these categories report 71% of vehicular and non-vehicular accidents involving the target group; and 82% of the accidents occurred on walks/corridors, at street crossings, at curbs and curb ramps, and on stairs. A survey was conducted in 5 cities to determine the problems experienced by elderly and handicapped pedestrians. A typology of barriers and problems has been generated. A review of Federal, State and Local legislation treating accessibility is set out.

This volume is the second in a series, and the others are: Volume 1, FHWA-RD-79-1; Executive Summary. Volume 3, FHWA-RD-79-3; The Development and Evaluation of Countermeasures. FHWA-IP-80-8; Development of Priority Accessible Networks.

Templer, JA
Georgia Institute of Technology, Federal Highway Administration Final Rpt. FHWA-RD-79- 2, May 1980, 209p

Contract DOT-FH-11-8504

ORDER FROM: NTIS

34 342509

PROVISIONS FOR ELDERLY AND HANDICAPPED PEDESTRIANS: VOLUME 3: THE DEVELOPMENT AND EVALUATION OF COUNTERMEASURES

Several Laboratory studies are described: firstly, an evaluation of various curb ramps; secondly, tactile surfaces for environmental cueing for the visually impaired; and thirdly, a compilation of the dimensions of wheelchairs currently available. Modifications aimed at eliminating certain environmental barriers were constructed in five cities and evaluated. These countermeasures include curb ramps, widened sidewalks, refuge islands, crosswalk markings, and a vehicle turn prohibition.

This volume is the third in a series, and the others are: Volume 1, FHWA-RD-79-1; Executive Summary. Volume 2, FHWA-RD-79-2; Hazards, Barriers, Problems and the Law. FHWA-IP-80-8; Development of Priority Accessible Networks.

Templer, JA
Georgia Institute of Technology, Federal Highway Administration Final Rpt. FHWA-RD-79- 3, May 1980, 325p

Contract DOT-FH-11-8504
ORDER FROM: NTIS

34 342513
BUS USE BY DISABLED ARTHRITICS: FUNCTIONAL REQUIREMENTS

Twenty-five rheumatoid arthritic patients were studied to determine the extent of independence and functional requirements necessary to use public bus transportation in Philadelphia. To measure the extent independence, a functional assessment scale was developed that evaluates 19 bus activities, each according to a four-point scale. Of the 11 subjects who stated that they used the public bus prior to admission, only 4 were found to be able to use the public bus independently at the time of evaluation. Ascending, descending and motion activities provided considerable difficulty for the sample population. Functional requirements of boarding and disembarking the bus are described in detail.

Rosenthal, D Boblitz, MH (Moss Rehabilitation Hospital, Philadelphia); Rao, VR (Emory University, Atlanta) *Archives of Physical Medicine and Rehabilitation* Vol. 58 May 1977, p 4, 1 Tab.

ORDER FROM: American Congress of Rehabilitation Medicine, 30 North Michigan Avenue, Chicago, Illinois, 60602

34 342514
HUMAN DIMENSION AND INTERIOR SPACE: A SOURCEBOOK OF DESIGN REFERENCE STANDARDS

The authors' intent is to suggest design standards for "interior spaces," based upon anthropometrics. They present a comprehensive series of tables which identify the dimensions of humans by finely-drawn age groups. A set of standards for accommodating human beings' movements and activities is presented, arranged by type of "activity-space." Standards are thus suggested for sitting, residential, office mercantile, eating and drinking, health-care, leisure, public and audio-visual spaces and activities. The ranges for the standards reflect the ranges of human dimensions identified in the tables. For some standards, a subset of standards to accommodate the handicapped (especially wheelchair-users) is presented. The sources for human-dimension tables are exhaustively documented, but those for dimensions of the handicapped are only mentioned in passing.

Panero, J Zelnik, M
Watson-Guption Publications 1979, n.p.

ORDER FROM: Whitney Library of Design, 1515 Broadway, New York, New York, 10036

34 342517
ACCESSIBLE BUILDINGS FOR PEOPLE WITH WALKING AND REACHING LIMITATIONS

This volume reports on empirical research conducted to develop recommendations for revisions of ANSI 1971 standards, using technical criteria. The research endeavored to remove confusion generated by conflicts among findings of prior research, to provide research where none had been carried out, and to determine differences in optimal conditions for people with different disabilities and different degrees of disability. The work started with an extensive review of literature, which resulted in a separate report, *Access to the Built Environment: A Review of Literature* (HUD, 1978). Tests were conducted in two phases, using some 201 disabled subjects and a few able-bodied subjects. In Phase 1, performance ranges were tested at 15 stations; in Phase 2, functional tests were tested at 18 stations. The tests were conducted in a laboratory setting, using mockups of public and residential "environments." Findings are reported as ranges of performance ability, with recommendations for standards to be adopted. Test subjects were chosen to represent ambulatory, semi-ambulatory and non-ambulatory persons with limitations of movement, stamina and balance. To identify and verify disability level, a diagnostic interview was followed by a validation procedure at the laboratory. Subjects were recruited from rosters of local organizations and through media announcements, with diagnostic interviews administered by CCCORD. The subjects were requested to perform, using the laboratory equipment at a test station. Altogether, about 2,300 individual tests were carried out. Measurements of the performance were taken at pre-determined points of information.

Steinfeld, E Schroeder, S Bishop, M
Department of Housing and Urban Development Tech Rpt.
HUD-PDR-397, Apr. 1979, n.p.

ORDER FROM: GPO

34 342518
TRANSPORTATION NEEDS OF DEAF PEOPLE

A survey among deaf persons in Washington D. C. and New York City is reported, emphasizing the problems which those persons encounter in using public transportation. Questionnaires were distributed by mail, with a return rate of about 50%. Responders are characterized in terms of sex, age, income and travel behavior. Findings show that most barriers are easily overcome by the hearing-impaired in use of public transportation, and countermeasures are recommended to reduction of other problems.

Winakur, I (Gallaudet College)
Department of Transportation Final Rpt. DOT-05-50110, May 1977, n.p.

ORDER FROM: Marine Technology Society, 1730 M Street, NW, Washington, D.C., 20036

34 342524
TRAVEL BY THE ELDERLY AND HANDICAPPED

This paper, through the analysis of information gathered on the national level and from various localities, summarizes those economic, social and modal service conditions which affect the travel behavior of the elderly and handicapped. It defines the elderly and handicapped and gives an estimate of the size and extent of the overlap existing between the two groups. General characteristics of the elderly and handicapped are presented including economic and employment status, family size and degree of auto availability. The trip-making characteristics as exhibited by the elderly and handicapped are discussed; purposes and frequencies, choice of mode, time and length of trips made by the elderly and handicapped are reported and analyzed in relation to the background conditions experienced by these two groups.

Zabinski, RJ
New York State Department of Transportation Intrm Rpt Prelim Res Rpt 128, Aug. 1977, n.p.

ORDER FROM: New York State Department of Transportation, Planning Research Unit, State Compus, Building 4, Albany, New York, 12232

34 342526
THREE TYPES OF "MAPS" FOR BLIND TRAVEL

The ability of blind travelers to use tactual and aural guides over a route was studied. The 29 subjects were students in their third of four weeks of a course for training in use of guide dogs. Materials included "portable maps" designed as tactual symbols and maps as well as taped travel information, together with other diagrammatic materials. The study notes that the blind travelers were successful in use of the "maps".

Leonard, JA Newman, RC *Ergonomics* Vol. 13 1970, pp 165-179

ORDER FROM: Taylor and Francis Limited, 4 John Street, London WC1N 2ET, England

34 342533
A WHEELCHAIR RESTRAINT SYSTEM. FOR HANDICAPPED DRIVERS AND PASSENGERS

A motorized wheelchair tie-down system has been developed for use in vehicles by the wheelchair bound driver or passenger. This system provides for automatic securement of the wheelchair to the vehicle by operation of an electrical switch. The design also provides a way of anchoring the seat belt to the wheelchair without loading the wheelchair frame with occupant restraining forces during a crash. Sled impact tests using a 50th percentile male cash dummy demonstrate that this device provides effective restraint of the wheelchair even when all the occupant restraint is provided by a lap belt only. More effective occupant protection is provided if an upper torso belt is used in conjunction with this system.

Schneider, LW (Highway Safety Research Institute); Tenniswood, DN (Creative Controls, Incorporated)
Canadian Medical & Biological Engineering Society Proceeding 1980, pp 360, Figs.

ORDER FROM: Canadian Medical & Biological Engineering Society, ATTN: Dr Milner; C/O NRCC; Room 183, Bldg M-50, Ottawa, Ontario K1A 0R8, Canada

34 342536
ANNUAL REPORT OF PROGRESS, APRIL 1978-MARCH 1979: ORIENTATION A MOBILITY PROJECTS

The report reviews work in the institute's core area of research--sensory aids for the blind and visually-impaired. Current projects initiated work in two

areas for enhancing ease and safety of foot travel by blind persons. These are: (1) analyzing the role of environmental information in the orientation and mobility of blind travelers (this includes noting any systematic differences between good and bad travelers); and (2) developing methods of measuring and recording orientation and mobility performances which are accurate, reliable, relatively easy for the observer to use, and which can be rapidly decided. Three additional research projects initiated in the area of orientation and mobility are development and evaluation of a speech module for elevators, development and evaluation of "talking lights" as visual-sign substitutes, and evaluation of an ultrasonic-tactile mobility aid.

Research Supported in part by the Rehabilitation Services Administration

Brabyn, JA Loughrough, W
Smith-Kettlewell Institute of Visual Sciences Prog. Rpt. Mar. 1979, n.p.

ORDER FROM: Smith-Kettlewell Institute of Visual Sciences, Rehabilitation Engineering Center; 2232 Webster Street, San Francisco, California, 94115

34 342541

RAPID RAIL RETROFIT EVALUATIONS

A two-part study, required of the Secretary of Transportation by the Congress, estimates the costs of, and comments on the desirability of, making rail systems accessible to handicapped persons. The Section 321(a) report estimates capital and operating costs over a 50-year period for rapid transit systems now in existence, excluding new systems which incorporate accessibility features. The Section 321(b) report presents similar estimates for light and commuter rail services. Results are presented by system, and include several totals for each: (1) the consultants' totals under the study guidelines; (2) the operators' totals under the study guidelines; (3) the operators' totals considering additional needs which they identify; and (4) the consultants' totals as estimated without the restraints of the study guidelines. Moreover, each of the four results is divided into two estimations--one for retrofitting of key stations only (as specified in DOT's "Section 504 Regulation"), and one for all stations of the system.

This report was required under Section 321 of the Surface Transportation Assistance Act of 1978, by DOT to Congress.

De Leuw, Cather and Company, Crain and Associates, Urban Mass Transportation Administration, Transportation Systems Center, Dynatrend, Incorporated Final Rpt. CA060125801, No Date, n.p.

ORDER FROM: NTIS

34 342542

LOS ANGELES DOWN TOWN PEOPLE MOVER HANDBOOK OF GUIDELINES FOR ACCESSIBILITY TO ELDERLY AND HANDICAPPED PEOPLE

This set of guidelines describes means for building accessibility features into the proposed downtown people-mover in Los Angeles. In detail, and with accompanying discussion of rationale and implications, items ranging from door-handles to system-wide safety are presented. The discussions present categorizations of the handicapped population, and reviews of the barriers created by various functional disabilities of the handicapped. The approach is synergistic, relating features to individual disabilities and to handling all handicapped categories. Appendices include an analysis of local regulations, and a review of the provisions for accessibility in various fixed-guideway systems.

Urban Mass Transportation Administration, Synergy Consulting Services CA-09-7003, Nov. 1980, n.p., Apps.

ORDER FROM: UMTA

34 342543

ACCESSIBLE BUILDINGS FOR PEOPLE WITH SEVERE VISUAL IMPAIRMENTS

In a companion study to empirical research on accessibility of buildings for people with walking and reaching limitations, the problems and abilities of people with severe visual impairments were tested and analyzed. The study's purpose was to investigate the types of problems with orientation and mobility which visually-impaired persons encounter in architectural settings, then to design and test potential solutions. Testing encompassed three phases: (1) subjects walking through an existing campus-building route, with notation of problems encountered; (2) tests of subjects' abilities to detect the presence of textural strips of various configurations and types; and (3) subjects walking through an existing campus-building route containing textural strips. The findings of the study are presented as support for development of relevant 1980 ANSI standards. It was concluded that

experienced and trained visually-impaired travelers can effectively use tactile warning strips.

Steinfeld, E
Department of Housing and Urban Development Final Rpt. HUD-PDR-397, Apr. 1979, n.p.

ORDER FROM: GPO

34 342927

TRANSPORT AND THE SEARCH FOR WORK: A STUDY IN GREATER MANCHESTER

A survey of 129 unemployed people was conducted in three areas of Greater Manchester in the autumn of 1978, and a follow-up survey took place in January 1979. The research was a case study which examined access to employment opportunities for unemployed people and the role of transport in their search for work. It compared people of similar socio-economic characteristics living near the city centre and in a suburban council house estate. Age, unemployment duration, skills, area of residence and the availability of transport influenced job search behaviour and problems; although propensity to find a new job was affected by skills, age and unemployment duration, it was not, apparently, affected by area of residence or availability of transport. Obviously scarcity of suitable job vacancies in the north west was the main problem for many people. However some experienced difficulties in travelling to look for work, mostly because of the cost of transport. It is suggested that some form of assistance with the cost of using public transport while travelling to look for work would be beneficial for some unemployed people. In the areas studied, such help could be of particular importance to those living in the suburban council house estate, unskilled people, and the long-term unemployed. (Author/TRRL)

Hedges, B Hopkin, JM
Transport and Road Research Laboratory, (0305-1315) Monograph SR 639, 1981, 30p, 4 Fig., 1 Tab., 26 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 256374)

ORDER FROM: TRRL

34 343784

TRANSPORTATION OF THE ELDERLY: A REVIEW OF RESEARCH PROJECTS, STUDIES AND TECHNICAL ASSISTANCE RESOURCES

Chapter 1 consists of a chronological survey of the literature, and discusses the various issues relating to transportation for the elderly over a 10-year period, beginning in 1970. Chapter 2 focuses on specific methods and information services in developing or modifying a program of transportation for the elderly. Chapter 3 focuses on recent developments in transportation for the elderly and on longstanding unresolved problems such as the lingering insurance barriers discussed in the White House Workshop on Transportation Insurance. Chapter 4 includes the bibliographic citations of the research reports, studies, and technical assistance resources reviewed in the report.

Franklin Institute Research Laboratories, Administration on Aging 61 DHHS/PUB/OHDS-81-201, June 1980, 42p

Contract DHEW-105-79-3010

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-229254

34 344415

THE ACCESSIBLE FIXED-ROUTE BUS SERVICE EXPERIENCE

The research report discusses the operator and user experience with lifting devices on regular bus transit services that facilitate the entry and exit of wheelchair users and semi-ambulatory passengers. The study draws data mainly from experiences at sites of Service and Methods Demonstration sponsored projects where detailed operational data have been recorded. The report also estimates the cost of such services.

Casey, RF
Transportation Systems Center, Urban Mass Transportation Administration Intrm Rpt. DOT-TSC-UMTA-81-28, UMTA-MA-06-0049-81-7, May 1981, 36p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-238990

34 344837

TRANSPORTATION AND THE ELDERLY: A SELECTED BIBLIOGRAPHY

The bibliography brings together relevant literature prepared by individuals, private organizations, research institutions, and Government agencies concerned with transportation and the elderly. Citations have been selected which, except in a few instances, were published since 1976 in the United States in the English language. Publications cited in the bibliography include monographs, local and State agency sponsored studies, Government and research reports, journal articles, and bibliographies. The bibliography includes approximately 475 citations which are organized into eleven major categories. The categories are not mutually exclusive and many publications cited under one category heading may be used under another category heading. Each publication was included under a specific category in relation to the apparent emphasis of the material in the document.

Franklin Institute Research Laboratories, Administration on Aging
DHEW/PUB/OHDS8120160, Sept. 1980, 55p

Contract DHEW-105-79-3010

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-230369

34 345207

TRANSPORT FOR THE ELDERLY AND THE HANDICAPPED

The author discusses the rationale underlying the provision of transport for the elderly and the handicapped, the characterization of the travel patterns of the elderly and the handicapped, the principal means of transport which the elderly and the handicapped use in urban areas and their advantages and disadvantages from an economic, social and ergonomics point of view. (TRRL)

Ashford, NJ (Loughborough University of Technology, England) *Applied Ergonomics* Vol. 12 No. 2, June 1981, pp 87-92, 4 Tab., 23 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 256592)

ORDER FROM: ESL

34 345216

TRANSPORT FOR THE DISABLED PERSON. A SELECTED BIBLIOGRAPHY

This bibliography presents material on the provision of transport facilities for the elderly, the blind and the physically handicapped. The references are arranged by country and include GLC Research Library shelf marks. (TRRL)

Murphy, M

Greater London Council Monograph Oct. 1980, 7p

ACKNOWLEDGMENT: TRRL (IRRD 257097)

ORDER FROM: Greater London Council Library, County Hall, London SE1 7PB, England

34 345221

A SURVEY OF TRAVEL PATTERNS OF THE ELDERLY

This paper was presented at Session 3: Community Development. The shire of Sherbrooke is located in the foothills of the Dandenong ranges some fifty kilometres east of Melbourne. By nature of its terrain, the area is ill-suited to conventional public transport. At the same time, however, there is a large population of elderly residents who may have need of public transport services. In an effort to obtain some substantive data on the travel patterns and needs of this elderly population, a class of postgraduate students from the Department of Civil Engineering at Monash University designed, conducted and analysed a home interview survey with 72 elderly households in April 1979. This paper describes the survey and presents the results of the analysis. In general, it is shown that such elderly persons travel less than a typical family household, and that a special sub-group of these elderly residents would make use of a personalised public transport service if provided (A). The number of the covering abstract of the forum is IRRD no. 250625.

Papers from the 6th Australian Transport Research Forum, Brisbane, October 22-24, 1980.

Richardson, AJ (Monash University, Australia)

Queensland Metropolitan Transit Authority, (0313-6655) 1980, pp 123-141, 1 Fig., 8 Tab., Photos., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250648), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

34 345245

LOW CAPITAL IMPROVEMENTS IN ACCESS TO PUBLIC TRANSPORT FOR THE DISABLED

This paper was presented at session 3: Community Development. Growing concern in the community has been expressed to provide better transport service to the physically and mentally handicapped, despite trends to reduce deficit spending public transport. This paper relates the results of a research program carried out in the Sydney region that included 1,700 disabled persons and identified key problem areas and potential improvements of a low capital cost nature. (Author/TRRL)

Papers from the 6th Australian Transport Research Forum, Brisbane, October 22-24, 1980.

Adam, W (Planning Workshop Proprietary Limited)

Queensland Metropolitan Transit Authority, (0313-6655) 1980, pp 143-156, Figs., 2 Tab., Photos., 6 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250626), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

34 345728

A PROGNOSIS FOR THE TRANSPORT OF THE HANDICAPPED [EEN PROGNOSE VOOR HET VERVOER VAN GEHANDICAPTEN]

A study on the transport of handicapped people in the new town of Almere resulted in data which can be used for other towns as well. This article gives some background information on this study and an analysis of the prognosis on transport demand. Transport costs were estimated for 1985 and 2010, using adapted buses with and without special attendants and ALTEV, the alternative transport system especially designed for the handicapped.(a) (TRRL) [Dutch]

Vanma, HJJ *Verkeerskunde* Vol. 32 No. 8, Aug. 1981, p 369, 17 Tab., 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 257484), Institute for Road Safety Research

ORDER FROM: Dutch Touring Club ANWB, Wassenaarseweg 220, Box 2200, The Hague, Netherlands

34 345962

BARRIERS TO COORDINATION: IRRATIONAL OR VALID OBJECTIONS?

Part of a large study that focused on coordination of transportation resources in programs designed for the elderly is presented. The study attempted to determine the conditions under which local agencies and providers resisted coordination attempts and to evaluate the validity of their objections rather than simply styling them as "barriers." The study sought to identify the situations in which coordination models might offer more benefits than costs to participants and the conditions under which local agencies correctly and incorrectly assessed these outcomes. Legitimate objections to transportation coordination that actually arose in the 30 sites visited or surveyed and in recent research are identified and ways in which coordination proponents can objectively appraise those objections and, when appropriate, overcome them are suggested. When analysts and planners are certain that coordination in any community is the most sensible and efficient long-run approach to transportation delivery, they must be willing to provide time, money, and professional resources to convince local participants of this outcome and to help agencies cover costs. In addition, planners and analysts must recognize and address the very legitimate concerns that human-service agencies have about the quality of transportation services they wish delivered to their clients. (Author)

This paper appeared in Transportation Research Record No. 818, Design of Public Transport Services.

Rosenbloom, S (Texas University, Austin) *Transportation Research Record* No. 818, 1981, pp 33-39, 9 Ref.

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34 346292

PENTAP TRANSIT DEPENDENT STUDY: A STUDY OF THE SOUTHERN PACIFIC PENINSULA SERVICE AND THE TRANSIT DEPENDENT COMMUNITY

The perceptions of transit dependent persons regarding Southern Pacific service and how it should be improved were remarkably consistent. Most persons who use the Southern Pacific, whether transit dependent or not, ride the trains to get to work. Transit dependent persons, however, frequently use the SP to visit friends. Transit dependent persons cited lack of information about the Southern Pacific as the most frequent reason for not using the trains. The study recommendations are grouped around three major issues identified by the Committee.

Metropolitan Transportation Commission Final Rpt. Dec. 1978, 68p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-105321

34 346293

MINORITY TRANSPORTATION NEEDS ASSESSMENT PROJECT

The Minority Transportation Needs Assessment Project (MTNAP) has as its goals the identification of minority residential locations and the assessment of the unique transportation needs (e.g. needs related to language barriers, low automobile ownership and inadequate transportation services) of ethnic minority groups in the Nine County Bay Region. The MTNAP project addresses four basic questions: (1) What are the major minority populations and special interest groups in the S.F. Bay Region; (2) Where are the minority population groups, organizations and agencies located; (3) What are the unique transportation needs of these minority groups; and (4) How can these minority transportation needs be considered more extensively in the planning process.

Prepared by Jefferson Associates, Inc.

Metropolitan Transportation Commission Final Rpt. June 1978, 89p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-105313

34 346307

STATE OF WEST VIRGINIA DEVELOPMENT PLAN FOR THE TRANSPORTATION REMUNERATION INCENTIVE PROGRAM (TRIP)

The program is designed to achieve three major goals: (1) it will help meet the transportation needs of elderly and handicapped people with low

incomes, (2) it will provide the transportation industry with customers and revenues needed to keep transportation functioning, and (3) it will provide and promote new and improved transportation services all across the State. A statewide network of transportation systems (providers) has been planned for development over a three year period on a regional basis. The transportation systems planned include the use of regularly scheduled buses operating on the primary road network to bring people to major health services, food shopping centers, and social services. Smaller feeder vehicles will cover the secondary roads bringing people from the hollows and remote areas to a primary route where a transfer will be made to the primary route bus. The feeder vehicles will respond to specific prearranged requests, providing a home pick-up or drop-off. The combined primary/feeder system will provide maximum outreach of transportation services on a cost effective basis.

Prepared by RRC International, Inc., Latham, NY.

West Virginia Department of Welfare, Community Services Administration OEO-LN-2354, May 1974, 562p

Grant OEO-30113G-73-01

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-102013

34 346514

RESEARCH AND DEVELOPMENT ON TRANSPORTATION FOR THE MOBILITY DISADVANTAGED: A FRAMEWORK AND RESULTS

Transport Canada's role in the area of transportation for the mobility disadvantaged has centered on a research and development program which covers all modes of transportation. This program was introduced in 1972 in response to an increase in public awareness of the needs of the disadvantaged and the ensuing demand for equal access to public services. The program has consisted of four major areas of research and development: (1) information acquisition and dissemination, (2) policy support and coordination, (3) systems research and development, and (4) technology research and development. The purpose of the report is to provide an indication of the directions taken by the Urban Transportation Research Branch in its research and development program for the mobility disadvantaged, to review the results of this program and to outline possible future directions.

Lea (ND) and Associates Limited, Canadian Surface Transportation Administration TDC/TP-2028, Mar. 1979, 59p

ACKNOWLEDGMENT: NTIS

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PB81-239550

41 322100

THE CONFLICTS WHICH ARISE IN FOLLOWING A SET OF TRANSPORTATION OBJECTIVES IN A MAJOR CENTRAL AREA

This paper attempts to group together policies which can be used in the development of a transportation policy into self-contained packages and tries to isolate certain objectives which, if carried out, would have an opposite effect on the majority of the other objectives. The first stage is to draw up a list of the objectives of the transport plan and investigate possible means of achieving these objectives. The conflicts between the various measures envisaged for the implementation of each objective are highlighted by the drawing up of a table. It is possible, by inserting a "+" for positive effects, a "-" for negative effects and a 0 for no change in the appropriate columns, to identify the opposing factors. The most common aims at this point are either to favour one specific objective to the exclusion of all others, or to attempt to gain the most benefits generally for the least disbenefits. The author favours the latter approach and suggests a solution which uses a further table excluding those options negatively affecting more than two of the other objectives in the table. It is clear that, although each objective on its own is worthwhile, it cannot be adopted without considering its effect on the others. (TRRL)

Gruen, PJ (West Yorkshire Metropolitan County Council) *Institution of Municipal Engineers, Journal of* Vol. 107 No. 5, May 1980, pp 130-136, 2 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 248465)

ORDER FROM: Institution of Municipal Engineers, 25 Eccleston Square, London SW1 V1NX, England

41 323118

SOME THOUGHTS ON THE EFFECTS ON AUSTRALIAN URBAN TRANSPORT OF STRUCTURAL ECONOMIC CHANGE

This paper briefly reviews the existing Australian situation in respect of urban person and freight transport. It identifies those aspects likely to be sensitive to structural economic change and related changes. Extent of such sensitivity is discussed using such empirical evidence as is available. In particular the paper examines the possible effects on urban transport of such factors as changes in the demographic structure, changes in energy, institutional and political change, and technological change, as well as structural economic change. (a) (TRRL)

Ogden, KW (Monash University, Australia); Arnaouti, C *Environment and Planning A* Vol. 12 No. 4, 1980, pp 409-425, 2 Fig., 8 Tab., 9 Phot., 24 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 247704)

ORDER FROM: Pion Limited, 207 Brondesbury Park, London NW2 5JN, England

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41 324370

STRATEGIC PLANNING IN THE JOHANNESBURG METROPOLITAN (JOMET) AREA. 1. STUDY DESIGN

This paper introduces the statutory requirements and recommendations for transport planning in South Africa and describes the physical, social and transport structure of the JOMET area. The overall study design is covered in some detail, with particular emphasis on two elements that have considerably improved the effectiveness of the study: sketch planning (strategies) and the scenarios approach. This is followed by a description of the base-year surveys undertaken, together with key trip-making statistics such as trip generation rates, modal split, trip lengths, time profiles and general socio-economic statistics. The paper describes the public involvement programme related to the JOMET strategies. It is concluded that the study design has proved to be extremely effective and could well prove to be a useful model of current transport planning practice in a developing country. (Author/TRRL)

Stanway, RA (Stanway Edwards Associates, South Africa); Green, MJ (Transportation Planning Associates, England); Ferreira, LJA (Leeds University, England) *Traffic Engineering and Control* Vol. 21 No. 5, May 1980, p 270, 7 Fig., 7 Tab., 11 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 248103)

ORDER FROM: ESL

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41 324478

SHORT-TERM TRANSIT POLICIES AND DOWNTOWN REVITALIZATION

Short-term downtown transit policies such as fare-free zones and special fares for shoppers can benefit retail business and thus contribute to revitalizing the urban core. These benefits result either from improved access to downtown shopping facilities, thus increasing effective demand, or from an improved image of the downtown area, thus increasing supply or desirability. This paper compares the two kinds of effects with regard to the downtown share of total retail sales in the metropolitan areas for sample U.S. cities, and concludes that the supply-side factors (relative attractiveness of downtown retail business) are more important. These findings support the argument that transit policies for downtown areas should be geared to improving the overall appearance of those areas. Ernst's conclusion is consistent with experience to date in the United States regarding urban transit policies. (Urban Institute)

This abstract appeared in the Urban Institute Publications in Urban Affairs.

Ernst, UFW

Urban Institute URI No. 28500, 1979, 29p

ORDER FROM: Urban Institute, 2100 M Street, NW, Washington, D.C., 20037

41 324560

TOWARDS THE MAXIMISATION OF TRANSPORT OPPORTUNITIES IN REGION 14

The time and size of the study demanded there be a concentration upon certain aspects of the transport environment. The chosen area was the mobility status of those who do not drive nor have access to cars for all or many of their day to day journeys. The emphasis of the recommendations is on using existing resources rather than developing new modes. The rail, tram and particularly the bus services are the areas looked to first before alternatives are considered. There is discussion on other transport modes such as the "dial-a-bus" type, but they are mainly seen as feeders or local services reinforcing a recommended regional network made up by conventional transport types. Problems of public transport movement are very apparent in journeys of east-west type; city access through its pre-eminence as the employment and retail centre and centre of the railway network is far easier. The disjointed road system between municipalities is brought about to some extent by the varying terrain and water courses. An outstanding feature is the correlation between good public transport and active urban areas. There is an apparent link between municipal residential policies and the viability of public transport. (TRRL)

McNamara, B

Regional Organizations of Council Monograph July 1978, 145p, Figs., 5 Tab., 12 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 239667)

ORDER FROM: Regional Organizations of Council, Civic Drive, Greensborough, Victoria, Australia

41 324674

FORMULATING AN URBAN PASSENGER TRANSPORT POLICY: A RE-APPRAISAL OF SOME ELEMENTS

The aim of this article is to consider the appropriateness of the dominant role of speed improvements and congestion reduction, with particular reference to the total urban system. An alternative operational principle, accessibility to opportunities (ato) is proposed as a preferred reflection of the primary economic objective of efficiency in resource allocation. The call for the alternative emphasis is reinforced by an accumulation of evidence that tends to question many of the assumptions used to justify the emphasis of earlier research. The prime assumptions under dispute are: (I) cross elasticities within the modal competition sub-sector, *ceteris paribus*, are greater than between transport sub-sectors and between a transport sub-sector and other sectors; (II) travel time in a mode choice context, defined in a linear dimension, is considered by planners as the most important variable in the overall transport decision; (III) human activities, such as employment and entertainment, within an urban area concentrate towards the centre. This critique introduces interrelationship of travel decisions (i.e. choices of frequency, destination, mode and route) and urban form, the management of congestion, the potential for multi-trip and multi-purpose journeys, and the constancy of the travel time and transport expenditure budgets. It is assumed that existing living densities will continue and are consistent with individual preferences. (TRRL)

Hensher, D (Macquarie University, Australia) *Australian Economic Papers* Vol. 18 June 1979, pp 119-130, 27 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 239805), Australian Road Research Board

ORDER FROM: Adelaide University, Australia, North Terrace, Adelaide, South Australia 5001, Australia

41 324789

INDICATORS OF URBAN ACCESSIBILITY: THEORY AND APPLICATION

The concept of accessibility and its related indicators have been in use for a long time, with still diverging interpretations of their significance and formulation. In this paper, a review is made of various existing theoretical bases, with special emphasis on recent behavioural approaches. It is suggested that this theoretical framework now allows a better appraisal of accessibility indicators, and precise recommendations are proposed for their practical formulation and use. Various examples are given, especially for disaggregate analysis where a calculation "for a given person" is proposed instead of the conventional calculation "by a given mode". Finally, the relations between accessibility and trip rate are examined; from a study made in French cities, it is suggested that accessibility is a powerful determinant of trip rate. (Author/TRRL)

Koenig, JG *Transportation* Vol. 9 No. 2, June 1980, pp 145-172, 8 Fig., 2 Tab., 16 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 249260)

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DOTL JC

41 325108

TRANSPORT SYSTEM MANAGEMENT IN SAN FRANCISCO: AN ASSESSMENT

The paper reports the results of a transportation corridor study. The emphasis in the study is in transportation system management (TSM) policies although some capital intensive alternatives are also considered. The results suggest that currently popular TSM policies in USA, even when augmented with capital intensive changes, have only marginal impacts on modal choices. These currently popular policies, high occupancy vehicle priority lanes, improved bus and express bus service, increased feeder bus service and so forth, appear to confer benefits to well to do suburbanites but do not improve the transportation of urban dwellers. Another interesting result is that if user costs were increased to cover the full costs of transportation the transit fares for low income people would increase ten percent and the increase for urban dwellers would be about 20 percent. Interestingly, there would be no change in bus fares for either group. However, for high income travellers and suburbanites the increase in transit fares would be in excess of 100 percent. Thus, the current fare structure is inequitable making the low income people and the urban dwellers to pay a much larger share of their transportation costs than the often well to do suburbanites. (Author/TRRL)

Talvitie, A (State University of New York, Buffalo) *Transportation Planning and Technology* Vol. 6 No. 2, 1980, pp 65-74, 2 Fig., 6 Tab., 1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 248840)

ORDER FROM: ESL

DOTL JC

41 325649

TRANSPORT AND THE INNER CITY

Chapter 1: "transport technology and the changing role of inner city areas: an historical perspective" studies the complexity of transport/urban form relationship in the core-dominated city and the dispersed city. Chapter 2: "energy constraints and changing technology: implications for inner city areas" examines the impact of energy constraints on mode of travel and total transport consumption. Recommendations for future research are put forward and evolution in transport technology is discussed. In chapter 3: "transport problems of inner city residents", a study is conducted of the recent trends in travel to work within British cities (changing pattern and length of travel-to-work trips, and changes in the mode of travel to work), mobility constraints upon low skilled workers, accessibility to work problems of inner city residents. The latter point is considered in the light of the American and British context. Chapter 4 considers the past, present and future role of transport planning and pricing policies in influencing urban spatial organization. (TRRL)

Gillespie, AE (Newcastle upon Tyne University, England)

Social Science Research Council Monograph Rept No 3, Jan. 1980, 80p, 4 Fig., 15 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 249754)

ORDER FROM: Social Science Research Council, Hamilton House, 1 Temple Avenue, London EC4Y 0BD, England

41 329024

TRANSPORTATION AND THE CITIES

The purposes of the seminar were two: first, to evaluate how far conclusions and recommendations adopted by the first seminar have been accepted by governments and implemented in practice and, in doing so, to learn what lessons have been learned; second, to provide opportunities for further intergovernmental exchange of information and experience related to comprehensive approaches to planning and to management of urban transportation. The seminar dealt with the following specific topics: (1) the changing role of transportation; (2) urban transportation, policies, and objectives; (3) institutional competence, legislation, financial, and other socioeconomic measures to guide transportation developments; (4) community relations and citizen involvement in urban transportation planning and programming; (5) planning measures to promote a balance among traffic and transportation modes with special regard for the human scale; and (6) urban transportation research policies, planning, and assessment of technology.

Report on the Seminar (2nd) on the Role of Transportation in Urban Planning Development held in Washington, DC on June 13-19, 1976. Color illustrations reproduced in black and white.

National League of Cities, Urban Mass Transportation Administration 1976, 83p

Grant DOT-UMTA-DC-96-0007

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-154163

41 329168

IMPACT OF DEMOGRAPHIC AND MIGRATION TRENDS ON FUTURE TRAVEL IN METROPOLITAN AREAS

Transportation investment policies for the 1980's will be based on the expected changes in travel demand. The magnitude of travel demand (number of trips, miles of travel), the location of demand (city, suburb, rural, northeast, south etc.) and the mode of travel (transit, auto, bicycle, etc.) depends upon population, households, household characteristics, employment location, energy supply, and the cost of travel and other factors. Economic, demographic, migration, energy use and transportation trends observed during the 1970's are identified. Projections of demographic factors and resulting transportation demands are made to the year 2000. Issues are identified which could affect DOT investment policies during the next decade. These issues include continued large population growth in areas having suburban densities, the difficulty of providing added highway capacity or efficient transit service in suburban locations, possibility of sporadic interruptions of gasoline supply, demand for housing in multi-unit structures exceeding supply and continued increases in the operating costs of public transit.

Prepared in cooperation with Urban Inst., Washington, DC.

Spielberg, F Andrie, SJ Ernst, U Kemp, M

SG Associates, Incorporated, Asst Secretary for Policy & International Affairs Final Rpt. DOT-P-30-81-01, Dec. 1980, 210p

Contract DOT-OS-90050

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-173601

41 329677

AN INTERACTIVE STRATEGIC MODEL OF TRANSPORT COSTS AND METROPOLITAN POPULATION DYNAMICS

This paper presents an exploratory model of the population redistribution process in metropolitan areas. A set of ten differential equations developed from logistic growth theory describes the dispersal of population from an urban area into two encompassing concentric zones. These outward flows give rise to changes in the commuting flows by mode as well as changes in the modal mix of journey-to-work trips within the urban area. The model

is calibrated for greater London and the south-east standard region of England between 61 and 1976, and various possible pricing scenarios are tested to examine the population trajectories up to 1991. The results illustrate the feasibility of dynamic process-descriptive models in urban analysis, but also suggest an integrated programme of research and model-building as part of this development. (a) (TRRL)

Varaprasad, N (National University, Singapore) *Environment and Planning A* Vol. 12 No. 9, Sept. 1980, pp 1009-34, 10 Fig., 5 Tab., 12 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250265)

ORDER FROM: Pion Limited, 207 Brondesbury Park, London NW2 5JN, England

DOTL JC

41 330281

TRANSPORT PRICING POLICY AND METROPOLITAN POPULATION REDISTRIBUTION

The study discusses the effects of the changing structure of transport pricing in the process of population redistribution in urban development. Theoretical and modelling frameworks are provided so that these changes can be evaluated in a dynamic and interactive manner. The model developed marks a departure from disaggregated conventional models of urban structure and shows versatility and flexibility in simulating a variety of external conditions. A second model, based on kinetic theory and time-oriented accounting frameworks, has also been developed in parallel with the logistic model described. This alternative model has as key concepts-house vacancies, travel costs and traffic congestion in defining the relative attractiveness of zones. (TRRL)

Cordey-Hayes, M Varaprasad, N
Cranfield Institute of Technology, England Monograph Cranfield CTS
Rpt 16, May 1980, 36p, 11 Fig., 1 Tab., 42 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 251097)

ORDER FROM: Cranfield Institute of Technology, England, Center for Transport Studies, Cranfield, Bedfordshire, England

41 331019

ALTERNATIVE WORK SCHEDULES: IMPACTS ON TRANSPORTATION

This synthesis presents information on implementation of staggered and flexible work hours and compressed workweeks and on the impacts of such measures on highways, transit systems, and ride-sharing programs. Alternative work schedules can be used to manage transportation demand by shifting commuters away from the peak hours and by reducing the number of days that people need to travel to work. Evaluations of large-scale variable work hours programs show that peak-hour bus loads and automobile arrivals at parking garages decrease 10 to 20 percent, and peak-hour automobile traffic volumes on major approaches to work centers are reduced by 5 to 10 percent. Staggered and flexible work hours result in reduced travel times, reduced load factors, and thus less crowding on transit and less waiting time for elevators in buildings. It appears that flexible hours programs have a positive effect on transit and carpool use. Theoretical analyses indicate that compressed workweeks can significantly reduce peak-period work trips and congestion although there may be negative effects on carpooling and transit ridership. Implementation of an alternative work schedule program begins with the determination that there is a congestion problem that could be alleviated by shifting transportation demand to less congested periods. After commitments are obtained from public and private organizations, a lead agency should be established, preferably the same one that is coordinating ridesharing. The following implementation steps are suggested: (a) high-priority employment locations; (b) obtain support for feasibility studies; (c) conduct work schedule and transportation surveys of employers; design work rescheduling plans; (e) obtain management decisions to implement; (f) provide implementation assistance; (g) evaluate impacts; and (h) refine and extend the program.

NCHRP Synthesis of Highway Practice No. 73, Nov. 1980, 54p, 30 Fig., 25 Tab., 31 Ref.

ORDER FROM: TRB Publications Off

41 331219

WHATEVER HAPPENED TO SOS? COMMUNITY CONFLICT AND TRANSIT DEVELOPMENT

This report deals with the planning and development of the East Line in Decatur, Georgia, which presented an array of events and situations that

impacted on both Decatur and MARTA. Controversy over saving historic Sycamore Street, known as Save Old Sycamore (SOS), is explained and resolution of the conflicts are detailed. The responses of the local government, the business community, and neighborhood groups were variable. Periods of community support for MARTA were followed by controversies over the location and impact of the rail line and Decatur Station. This variability presented significant problems for the Authority, which had to push for timely completion of the East Line. (UMTA)

Almy, TA Proehl, CW, Jr
Georgia University, Athens, Urban Mass Transportation Administration,
(GA-11-0006) UMTA-GA11-0006-81-11, July 1979, 25p

Contract GA-11-0006

ACKNOWLEDGMENT: UMTA

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PB81-157422

41 331358

IMPACT OF TRANSPORTATION ON THE CENTRAL BUSINESS DISTRICT

The article examines two conceived dimensions that capture the essence of the dynamic interdependency between transportation and the welfare of the central business district (CBD). The role of changing transportation technology and its impact on the rise and fall of CBDs is discussed within the context of an evolutionary dimension. The impact of transportation on the CBD is examined from a functional perspective that includes: an evaluation of the current status of and need for the different modes of CBD transport (walking, automobile, and transit), and a discussion of the interaction between the transportation system and economic, political, cultural, and social activities within the CBD.

Robertson, KA (State University of New York, Purchase) *Traffic Quarterly*
Vol. 34 No. 4, Oct. 1980, pp 523-537, 21 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

41 334049

HUMAN FACTORS IN TRANSPORT RESEARCH; VOLUME 1: VEHICLE FACTORS; TRANSPORT SYSTEMS, WORKSPACE, INFORMATION AND SAFETY; VOLUME 2: USER FACTORS: COMFORT, THE ENVIRONMENT AND BEHAVIOR

These volumes provide coverage of the work being carried out throughout the world in this branch of man-machine investigations. Contents: Vol. 1: Maritime ergonomics; Aviation ergonomics; Heavy goods vehicles and vehicle safety; Transport for the elderly and handicapped; Passenger travel terminals; etc. Vol. 2: Passenger comfort; Vehicle vibration and noise; Seating and posture; Driver behaviour; etc.

Proceedings of the International Conference on Ergonomics and Transport, Swansea, September 1980.

Osborne, DJ Lewis, JA
Pergamon Press, Incorporated, (0 12 523801 0) 1981, v.p.

ACKNOWLEDGMENT: Maxwell Scientific International

ORDER FROM: Pergamon Press, Incorporated, Maxwell House, Fairview Park, Elmsford, New York, 10523

41 334054

LOS ALAMOS MASS TRANSIT SURVEY

A survey was conducted of 389 voters in Los Alamos County to determine whether they favored a mass transit system in the county, and if so, how they preferred to finance it. The data indicated that such a system was favored by 83% of the sample and that the majority of voters (66%) would vote for a property tax increase to purchase the equipment for the system. Respondents were also given four methods of financing the operation and maintenance of the system, and asked to state whether they favored or opposed each. About 80% of the respondents did not want an assessment method (fee of \$10.00 per month per household with unlimited rides) or a sales tax alone (57% opposed) to be used for the operation and maintenance of the system. The method of fares was favored by 66%, with the fare of .50, per one way ride being the most popular. About 57% of the respondents preferred that fares be a base rate plus zone increment. When asked about the method of sales tax plus fares as the system of financing the operation and maintenance, a slight majority (58%) said they were in favor of this

option. When respondents were asked to state which of the four options they most preferred, fares received about 44% of the responses, followed by sales tax plus fares, with about 36%. Over 77% of the sample indicated that they would use such a system, 96% of them for five days or less a week; however, over 57% said they preferred a full service bus system with weekday, weekend, and holiday service. (Author)

Blackwell, PJ
New Mexico University, Albuquerque No Date, v.p., Tabs., Apps.

ORDER FROM: New Mexico University, Albuquerque, Institute of Applied Research Services, Albuquerque, New Mexico, 87131

41 334136

DO WE NEED "NEEDS"?

Studies to determine transport "needs" in forms of public transport could be largely irrelevant and an alternative approach to public transport is required. A new approach must be based on the provision of good accessibility to a wide range of activities, promote a more equitable distribution of incomes, minimise the contribution from public funds, improve incomes and working conditions of transport employees, promote road safety, improve the environment, conserve oil and promote land use objectives. These broad aims have been incorporated into an appraisal method known as busmodel, designed to run on a low-cost microcomputer. Standard bus company management information and market analysis type origin/destination data are utilised in the model. "Need" does not have to be defined because the policy maker decides what social cost/benefit ratio is required from a given public expenditure. Weights are given to the benefits to be given to different passenger groups such as the aged and schoolchildren. Busmodel is then used to derive the optimum combination of services, service levels, fares and subsidies for a given set of criteria. (TRRL)

Buchanan, M Lewis, K *Surveyor* Vol. 155 No. 4614, Nov. 1980, pp 8-10, 1 Fig., 2 Phot., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252697)
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41 334195

COMPONENTS OF CHANGE IN URBAN TRAVEL

Home-interview travel surveys in two upstate New York areas-Buffalo and Rochester-were conducted in the early 1960s and repeated in the early 1970s. An analysis of the changes in travel and household characteristics for both areas shows some surprising patterns as well as many that support the current theories of urban growth. Travel increased 8 percent and 37 percent in Buffalo and Rochester, respectively, over an 11-year period. However, average trip rates and trip lengths remained relatively constant over time, whereas automobile-ownership levels, number of households, and average travel time increased. In general, the increase in person kilometers of travel over time resulted primarily from an increase in the number of households rather than from increasing trip rates or lengths. The theory that travel-time budgets are stable holds for travelers and, to a lesser extent, for households. New highway construction does not appear to have generated large numbers of new trips but has had a greater impact on trip origins and destinations. Analyses of various stratifications of the data showed generally similar results.

This paper appeared in Transportation Research Record No. 775, Travel Demand Models: Application, Limitations, and Quantitative Methods.

Cohen, GS Kocis, MA (New York State Department of Transportation)
Transportation Research Record No. 775, 1980, pp 42-47, 6 Tab., 11 Ref.

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41 334656

SOME RELATIONSHIPS BETWEEN RESIDENTIAL LOCATION, TRAVEL MODE AND INCOME IN MELBOURNE

For residential areas in Melbourne, relationships are examined between measures of personal and family income, social characteristics of local populations, housing costs, accessibility to public transport and to jobs, and modes of travel to work. It is found that mode of travel for the journey to work is strongly differentiated from area to area, with car use particularly associated with poor accessibility to jobs by public transport for men, and with walking distance from public transport for women. Car use is further associated with areas of high socio-economic status and with populations early in the family life cycle. Changes in house prices seem currently to be

reflecting the changed relative convenience of different residential locations consequent upon changes in the costs of private motoring. The time lags involved in these house price changes and other social ecological effects remain uncertain. These time lags are important, as they determine the time frames within which ameliorative measures can be implemented to counter unwanted effects (A). (TRRL)

King, RJ (Melbourne University, Australia) *Australian Road Research* Vol. 10 No. 4, Dec. 1980, pp 10-20, 5 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250476), Australian Road Research Board

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41 335035

JOB LOCATION AND THE JOURNEY-TO-WORK: AN EMPIRICAL ANALYSIS

This paper presents and estimates a single equation model designed to explain the job-location behaviour of individuals living in a multi-centred metropolitan area. The model is tested separately for heads of households and non-heads of households, as well as for the total working population, in order to isolate differences in commuting behaviour between primary and secondary wage earners. The relationships are estimated from 1971 census, cross-section data using least squares multiple regression. The results of the location equation indicate that wage gradient variables are important determinants of job location for heads of households. On the other hand, non-heads are rather insensitive to the wage gradient. Rather, contrary to the decisions of heads, the job-location choices of non-heads are strongly influenced by socio-economic attributes, notably occupation, family size and age. Clearly, job-location decisions of primary wage earners (usually the household heads) are influenced by earnings-maximizing considerations while secondary earners (non-heads in general) put more weight on other socio-economic factors. The results also suggested that there is a hidden cost associated with uneven directional growth in the Toronto CMA. It is suggestive that urban planning strategies should reflect consideration of the greater desire or need for accessibility on the part of secondary wage earners (non-heads) and the need to balance residential and job opportunities at the extending margin of the urban area. (TRRL)

Gera, S Kuhn, P (Economic Council of Canada) *Socio-Economic Planning Sciences* Vol. 14 No. 2, 1980, pp 57-65, 1 Tab., 20 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253200)

ORDER FROM: Pergamon Press, Incorporated, Maxwell House, Fairview Park, Elmsford, New York, 10523

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41 335036

AN EMPIRICAL MODEL OF RESIDENTIAL LOCATION AND THE JOURNEY-TO-WORK IN A METROPOLITAN AREA

This paper presents and estimates a single equation model designed to explain the residential location behaviour of individuals living in a multi-centred metropolitan area. The model for heads of households and non-heads of households is tested separately, as well as the model for the total working population, in order to isolate differences in commuting behaviour between primary and secondary wage earners. The relationships are estimated from 1971 census, cross-section data using least squares multiple regression. The data pertain to the Toronto census metropolitan area (cma) and sixty-three designated zones therein. The estimation results reveal that although location-rents prove to be significant in the individual's residential location decision-making process, their effect was limited to discouraging those employed in or near the central business district (CBD) from living close to work. The existence of secondary employment centres did not have the same significant effect in bidding up location-rents. Furthermore, contrary to the standard theory, the results suggest that residential location decisions are made in response to the availability of collective residential opportunities and workers' preferences for specific residential attributes rather than by reference to the "transportation cost-housing cost" trade-off. Among the socio-economic variables, age of the worker is found to be most significant in affecting journey-to-work distance. The results provide some evidence that non-heads are, to a certain extent, more sensitive to urban structural constraints in their commuting behaviour. (TRRL)

Gera, S (Leeds Polytechnic, England); Kuhn, P (Economic Council of Canada) *Transportation Research. Part A: General* Vol. 14 No. 2, 1980, pp 18-19, 2 Fig., 25 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253201)

ORDER FROM: Pergamon Press, Incorporated, Maxwell House, Fairview Park, Elmsford, New York, 10523

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41 335286

RAIL PASSENGER SERVICE AND SOCIAL NEEDS

In contrast to the nationalized rail service available in European countries, where passenger trains prove their energy- and cost-effectiveness, US private enterprises lose money on passenger service even though the return to urban centers will make rail transportation more feasible than automobile use. Railroads declined in the US in the late 1950s, when service was discontinued and the function was turned over to the airways and highways. Federal attempts to equip and route Amtrak fail largely because it is required to make a profit. Reforms to revitalize Amtrak should include a new infrastructure that will shift to electrification for heavily-traveled lines and dedicated rights-of-way; reopening the short-line and commuter runs that connect small towns; and a reduction of the top-heavy management structure. Cooperative arrangements with city, state, and regional agencies should make a national rail system manageable. The commitment to a national rail service should involve government support of stations and trackage as well as a positive relationship with the educational and industrial sectors.

Greisman, HC *Institute for Socioeconomic Studies. Journal* Vol. 5 No. 4, 1980, pp 63-76, 23 Ref.

ORDER FROM: Institute for Socioeconomic Studies, Airport Road, White Plains, New York, 10604

41 335633

TRANSPORT AND SOCIETY. THE ROYAUMONT SYMPOSIUM, 26-27 APRIL 1978 [TRANSPORTS ET SOCIETE. COLLOQUE DE ROYAUMONT, 26-27 AVRIL 1978]

This symposium represents the first social and scientific evaluation of the 5-year programme of research on the socio-economic aspects of transport. There were 3 workshops: the first: "transport and socio-economic aspects" was devoted to the socio-political aspects of the transport of people. The second: "transport, space and way of life" analyses journeys and mobility as active parts of community life. The third: "freight transport and socio-economic developments" examines the consequences of the present economic crisis on the organization and operation of transport. [French] ATP Socio Economie des Transports.

Economica, (0150-2336) Monograph 1980, 731p, Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 111029), Institute of Transport Research, Central Laboratory of Bridges & Highways, France
ORDER FROM: Economica, Rue Hericart 49, Paris, France

41 335710

EVALUATION HANDBOOK FOR TRANSPORTATION IMPACT ASSESSMENT

This Evaluation Handbook has been developed to assist project managers and contractors responsible for evaluating urban deployment demonstration projects sponsored by the Office of Technology Development and Deployment (UTD) of the Urban Mass Transportation Administration (UMTA). It is designed to help ensure compatibility among the evaluations conducted by the UTD Program Offices, and has been prepared in a modular loose-leaf format so that it can be easily updated to reflect current evaluation experience. The Handbook is organized into six major chapters: The Introduction; The Evaluation Process; Impacts; Data Collection; Data Analysis; and Validity and Transferability. The Handbook provides guidance for: 1) planning the evaluation of urban demonstration projects; 2) establishing project objectives and specifying evaluation criteria; defining variables, designing surveys, and collecting data; using statistical tests and mathematical models to analyze data; identifying and countering threats to validity; improving the transferability of findings; and preparing evaluation reports. Although this Handbook has been prepared specifically for UMTA's UTD Program Offices, its potential applicability extends beyond the evaluation of UMTA-sponsored transit demonstrations to the evaluation of any type of transportation innovation. (UMTA)

Billheimer, JW Trexler, RR
Systan, Incorporated, Urban Mass Transportation Administration Final Rpt. UMTA-IT-06-0203-81-1, D166-6, Dec. 1980, 280p

Contract DOT-UT-90019

ORDER FROM: NTIS

PB81-192155

41 335815

CHANGES IN PERCEIVED TRAVEL COST AND TIME FOR THE WORK TRIP DURING A PERIOD OF INCREASING GASOLINE COSTS

This study was designed to examine the relationship between actual and perceived values of cost and time for the work trip and to examine how perceptions have changed over a period of dramatically increased travel costs. Variations in the relationship between perceived and actual values were examined as a function of situational and attitudinal variables. Two telephone surveys were conducted one year apart (fall 1978 and fall 1979). On the next working day following a survey, a research assistant recreated the respondent's work trip, recorded time values and used distance measures, car type information and parking costs to compute travel cost. The first survey revealed that most auto users were unable to articulate dollars-and-cents driving costs for the work trip, but auto users in the second survey were able to provide fairly accurate cost estimates. Dramatic changes in fuel prices between surveys is probably the main reason for the change in driving cost awareness. Auto users were also asked to rate relative costs of driving a car compared to using the bus for the work trip. These ratings showed that auto users tended to underestimate driving costs relative to bus costs, but this tendency decreased from the first to the second time period. Commuters in all modal groups at both time periods tended to overestimate travel times. Perception of travel time varied as a function of mode, perceived comfort (for car users), and perceived convenience and number of transfers (for bus users). (Author/TRRL)

Henley, DH Levin, IP Louviere, JJ (Iowa University); Meyer, RJ (Carnegie-Mellon University) *Transportation (Netherlands)* Vol. 10 No. 1, Mar. 1981, pp 23-34, 1 Fig., 3 Tab., 14 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253914)

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41 335836

THE GLASGOW RAIL IMPACT STUDY

The Glasgow rail impact study is a study of the effects of two rail improvements in the Glasgow area; the modernization of the underground, and the linking of the railway systems north and south of the Clyde by the Argyle line, which allows through journeys and provides new stations in the city centre. The rail improvements opened for passenger traffic in the winter of 1979/80. The study, which is being conducted by the Scottish Development Department, TRRL and Martin and Voorhees Associates, aims to assess the impact of the investment, including the social effects on different sectors of the population and to measure the effect of the changes in the transport system. The results from the study will be directly relevant to SDD, British Rail and greater Glasgow PTE in developing the best use of the new facilities, to central government in guiding future investment decisions, and to TRRL in research into forecasting methods. The main data source for the study is a series of "before" and "after" surveys covering households in the corridor affected by the new services, passengers on bus, rail and underground, and users of a range of activities including shopping, hospital visiting and outpatients, leisure and recreation, and employment.(a)

Presented at Transportation Planning Practice. Proceedings of Seminar M of the PTRC Summer Annual Meeting, 7-10 July 1980.

Gentleman, H (Scottish Development Department); Mitchell, CG Walmsley, DA Wicks, J (Martin & Voorhees Associates)
Transport and Road Research Laboratory, (0305-1315) Monograph TRRL Supp Rpt. SR650, 1981, 12p, 2 Fig., 2 Tab., 1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254322)

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41 335839

THE HOME-INTERVIEW IN THE PARK AND RIDE CORRIDOR STUDY [DE HUISENQUETE IN DE CORRIDOR-STUDIE PARKEER EN REIS]

The introduction of special p & r railway stations in the Netherlands is accompanied by before-and-after studies. This article reports on a home interview which was carried out in October, 1979 among 200 car drivers and 400 train passengers living in the corridor between Amsterdam and Den Helder. Some major conclusions: mode choice is only to a minor degree

subject to car competition within the households; delay by queues needs to increase considerably before car drivers will switch to public transport because of the fact that travel time on feeder services is so long. The authors give some suggestions on forecasting techniques and on the aspects and scores which are essential in the model. [Dutch]

Baanders, A Bronner, AE Vanner, AE Kroes, EP *Verkeerskunde* Vol. 32 No. 3, Mar. 1981, pp 114-117, 3 Fig., 4 Tab., 1 Phot., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254206), Institute for Road Safety Research

ORDER FROM: Dutch Touring Club ANWB, Wassenaarseweg 220, Box 2200, The Hague, Netherlands

41 341098

SPACE-TIME BUDGETS, PUBLIC TRANSPORT, AND SPATIAL CHOICE

This paper addresses the problem of access to urban facilities for housewives without cars, and the methodology of the Lund school is used to investigate the spatial constraints affecting access to and choice between a selected group of urban facilities in the city of Christchurch, New Zealand. To do this, the characteristics of the public transport system are investigated, and time-budget data used to specify typical windows of free time during a housewife's day. From there the potential action and activity spaces of individuals in four suburbs are delimited, and these are used in assessing the variations in access to and choice between facilities in these suburbs. Finally, the social impact of the current bus provision in the context of the social structure of the city is raised as a policy issue. (Author/TRRL)

Forer, PC Kivell, H (Canterbury University, New Zealand) *Environment and Planning A* Vol. 13 No. 4, Apr. 1981, pp 497-509, 8 Fig., 24 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254152)

ORDER FROM: Pion Limited, 207 Brondesbury Park, London NW2 5JN, England

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41 341101

ANALYSES OF HOUSEHOLD TRAVEL ACTIVITIES BY INFORMATION STATISTICS

The travel times of various types of activities by a sample of Vancouver households are analyzed using a mutual information statistic. The basic objective of these analyses was to isolate those household factors influencing the consumption of travel. The advantage of the mutual information statistic over the normally used parametric statistics is that nominal variables such as stage in life cycle and marital status may be analyzed along with ordinal and ratio scale variables. The variables describing households are first analyzed and the information redundancy describing households are first analyzed and the information the use of a maximally weighted tree. Cluster analysis is used to develop clusters of households with similar travel time consumption profiles and the information statistic is used to identify the most important household descriptor variables. The method of analysis described in the paper is particularly useful for transport systems analysis where nominal and ordinal variables are frequently encountered. (a) (TRRL)

Neale, JL (Bell Canada Limited, Canada); Hutchinson, BG (Waterloo University, Canada) *Transportation Research. Part A: General* Vol. 15A No. 2, Mar. 1981, pp 163-171, 4 Fig., 5 Tab., 14 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254155)

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41 341182

EVALUATION BY INDIVIDUALS OF THEIR TRAVEL TIME TO WORK

Modelers of transportation-related decisions have often drawn the distinction between "objective" measures of attributes used to describe the transportation system and individuals' perception and evaluation of these attributes. Only a few studies have been made, however, of the relation between these objective and subjective assessments. Individuals' satisfaction with the length of the work trip is examined, primarily with the aim of establishing the nature of the relation and its stability across different groups of travelers. The study is based on data collected in a home interview survey of residential location choice conducted in outer suburban Melbourne during 1978 and 1979. A number of broader issues are addressed, including implications for modeling and policy. (Author)

This paper appeared in TRB Record 794, Household Activities and Consumer Perspectives.

Young, W (Monash University, Australia); Morris, JM (Australian Road Research Board) *Transportation Research Record* No. 794, 1981, pp 51-59, 12 Fig., 3 Tab., 12 Ref.

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41 341286

MEASURING COMMUNITY REACTION TO URBAN TRANSPORTATION IMPACTS USING VON NEUMANN-MORGENSTERN UTILITY THEORY

This paper attempts to measure the impacts of urban transportation system improvements or changes on the community. The community's perceptions of the impacts are represented by its utilities (or disutilities) over various ranges of values of the multiple attributes representing these impacts. The utility technique used in the evaluation is based upon Von Neumann-Morgenstern (VN-M, 1947) utility theory, and is applied using Raiffa's (1970) fractile method. The paper specifically applies the technique to model the perceptions of five subgroups within a community to the impact of a new light rail transit system that is being incorporated in the transportation system of the city of Calgary. Results of the modeling indicate explicitly how the community changes its perception over ranges of values of the attributes evaluated. Biases of various subgroups within the community over these attributes are also shown. Statistical tests indicate that aggregated utility perceptions can represent the utility perceptions of the individual subgroups quite reasonably. (Author/TRRL)

Bee, CK Sargious, MA (Calgary University, Canada) *Transportation Planning and Technology* Vol. 6 No. 4, 1981, pp 263-272, 12 Fig., 3 Tab., 13 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254249)

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41 342369

THE SHAPE OF THE 1980S: DEMOGRAPHIC, ECONOMIC, AND TRAVEL CHARACTERISTICS

Forecasts of economic and demographic conditions are the base for all forecasts of travel demand. During the 1970s many changes were observed in the demographics of the nation. This paper reviews the trends in pertinent demographic measures and projects the directions of these measures through the 1980s. The objective is to determine how transportation demand is likely to change. (Author)

This paper appeared in Transportation Research Record No. 807, Travel Demand Forecasting and Data Considerations.

Spielberg, F (SG Associates, Incorporated); Weiner, E (Office of the Secretary of Transportation); Ernst, U (Urban Institute) *Transportation Research Record* No. 807, 1981, pp 27-34, 11 Fig., 1 Tab., 12 Ref.

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DOTL JC

41 342372

VALIDITY PROBLEMS IN EMPIRICAL ANALYSES OF NON-HOME-ACTIVITY PATTERNS

Validity problems of empirical data have been neglected to a large extent in the transportation planning field. This paper illustrates the impact that choice of survey method has on the validity of the data. It shows that the recorded data depend directly on the method selected for obtaining them. An uncritical application of survey methods is not justifiable and, in fact, can lead to incorrect survey results. Basic research in the area of empirical survey methods is long overdue. An international exchange of experiences in this regard is considered most beneficial, as illustrated by this paper. The exchange of information and insights is often hampered because the survey methods used for specific investigations tend to be inadequately documented. This deficiency makes subsequent assessment of data validity very difficult, if not impossible. Furthermore, the use of such data without consideration of the underlying survey method is dangerous. The paper cites examples where the results of analyses can be manipulated by means of different survey methods. Greater efforts should be made to integrate data collection with the research effort performed on the basis of these data. (Author)

This paper appeared in Transportation Research Record No. 807, Travel Demand Forecasting and Data Considerations.

Meyburg, AH (Cornell University); Brog, W (Institute for Empirical Social Research) *Transportation Research Record* No. 807, 1981, pp 46-50,

7 Tab., 8 Ref.

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41 343172

ON THE MOBILITY OF PEOPLE LIVING IN THE PARISIAN SUBURBS. MOBILITE DES HABITANTS DE LA BANLIEUE PARISIENNE

The problem of modeling the mobility of people, considering their overall needs for urban transportation in function of their activities and of their socio-economic environment, is approached statistically. Travel behavior is described for a sample of 1600 people polled by questionnaire. The coding and multidimensional analysis techniques employed are explained and shown well-adapted to the complexity of the phenomena studied. Six factors which differentiate the travel behavior of people are indentified. The sample group is then classified into nine subgroups of mobility which are subsequently typified and hierarchically arranged. A time-space structured estimation of demand on public transportation can thus be obtained.

Lefoll, Y Molina, JM

Ecole Nationale Supérieure des Telecommunications, National Aeronautics and Space Administration Final Rpt. ENST-C-80004, Oct. 1980, 17p

ACKNOWLEDGMENT: NTIS

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N81-24997/1

41 345366

THE REDISTRIBUTIVE IMPACT OF TRANSIT SERVICES FINANCING

Concern over the increasing financial problems of mass transit and the search for new sources of revenues generated this study. This study focuses on the question of who are the financial providers and the primary beneficiaries of public transit. The redistributive impacts of public transit are important not only because they concern the income groups that pay vis-a-vis the income groups that benefit, but also because the distribution of costs and benefits are often a source of political conflict. The purpose of this report is to compare the socioeconomic profiles of these groups considering a transit investment, service change or financial mechanism. This report presents an up-to-date literature survey of the sources of transit financing (both single and multiple sources). It then examines "who pays" from each financing source. Using data from the Consumer Expenditure Survey and the public finance literature, this burden (incidence) is explored and analyzed. The primary beneficiaries of transit are identified and classified, and the relationship between different fare policies, subsidies, and their impact on families at different income levels is examined. The report suggests a framework for determining the redistributive impact of a transit investment, service change or financing mechanism. The report states that choosing a financing source or replacing one with another will affect the profile of who pays. Most sources place a relatively greater burden on the poor (particularly transit fares). By comparing the profiles of who pays with who benefits, redistribution can be inferred, and the knowledge used to minimize adverse impacts. This report contains a list of references and conclusions. (UMTA)

Rock, SM

Illinois Institute of Technology, Urban Mass Transportation Administration. (IL-11-0029) Final Rpt. UMTA-IL-11-0029-81-1, Sept. 1981, 168p

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PB82-126814

41 345410

IMPROVING THE TRANSIT-DEVELOPMENT PLANNING PROCESS

The transit-development-planning guidelines formulated in this research are designed to involve citizens and decision-makers in the planning process. The approach used is geared toward small urban and rural-area systems rather than larger urban areas. Objectives the plan is oriented toward achieving are obtained through direct contacts with the public. Decision-makers are afforded the opportunity to examine incremental service benefits and their costs, to make an informed choice. Greater local support for transit is a likely by-product, as citizens and their leaders acquire a better understanding of the issues and options pertaining to transit service in their community.

120

Forkenbrock, DJ (Iowa University Iowa City) *Traffic Quarterly* Vol. 35 No. 3, July 1981, pp 359-369, 2 Fig., 17 Ref.

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41 345416

MOTIVATIONS AND BARRIERS TO RIDERS' ACCEPTANCE OF BUS TRANSIT

To determine why consumers use or do not use bus transit systems, a representative sample of middle-class Boulder, Colo., women shoppers who had access to the city's bus system was surveyed. Some 213 usable responses were obtained out of 397 questionnaires mailed. Survey results showed that consumers did not ride the bus to go shopping because it was too complicated to use. Bus routes, bus identification, and bus stops were perceived to be difficult to understand. Those consumers who frequently used the bus system did so because it was more compatible with ecological concerns than using a car. The extent to which these findings can be generalized with previous studies on the motivations and barriers to riders' acceptance of bus transit is discussed.

Schwartz, MB (Miami University, Ohio) *Transportation Journal* Vol. 19 No. 4, 1980, pp 53-62, 6 Tab., 5 Ref.

ORDER FROM: American Society of Traffic and Transportation, 547 West Jackson Boulevard, Chicago, Illinois, 60606

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41 345418

SOCIO-ECONOMIC CHARACTERISTICS OF TRANSIT RIDERS: SOME RECENT EVIDENCE

Socio-economic data on transit riders representing a survey of 18,000 randomly-selected households confirms that the poor, elderly, minorities, and women are relatively dependent on mass transit and account for a significant share of the ridership. Statistics summarizing the income distribution by travel mode, travel purpose, trip length, mode and time of day, and ethnic/racial background are presented in tables. Other tables compare trip distance and mode by race, sex, and age group. The data reveal that the service provided for disadvantaged groups is often the least subsidized, raising questions of equity. If carefully targeted direct-to-user subsidies were directed at groups with the least mobility, they would be more effective than general transit subsidies.

Pucher, J Hendrickson, C McNeil, S *Traffic Quarterly* Vol. 35 No. 3, July 1981, pp 461-483, 8 Tab., 17 Ref.

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41 345419

BEHAVIORAL DETERMINANTS OF RAPID-TRANSIT PATRONAGE: WHY DON'T MORE PEOPLE RIDE BART TO WORK

This study examines why the modern Bay Area Rapid Transit (BART) system had only a very marginal impact on modal choice in the San Francisco Bay Area. In contrast to initially high expectations, BART carries only about 2.5% of the Bay Area's daily person-trips, and only less than 5% of person work-trips. In spite of the high investment of about 1.6 billion dollars, which produced a high-speed line-haul rail system operating at speeds equal to or superior to that of the automobile, and providing a luxurious ride BART did not lure the commuter out of his automobile. To make the analysis more workable, this study purposely restricted itself to the analysis of the work-trip. As such the study asks why people do not use BART to work. The rationale for studying only the worktrip is that the urban transportation problem manifests itself, for the most part, during peak periods of travel to and from work, and that transit is considered to be most effective during these periods. This study provided three general hypotheses as a framework for analysis of BART's low patronage: (1) A distorted view, by the commuter, of generalized cost by BART and other modes, leading to underestimation of automobile travel cost. (2) Multiplicity of activities associated with the work-trip, which do not lend themselves to a fixed rail system. (3) Acute mismatch among home, workplace, and BART routes, which makes BART an inconceivable alternative.

Adiv, A

California University, Berkeley PhD Thesis 1980, 442p

ORDER FROM: University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan, 48106

80-29,307

41 345929

THE INFLUENCE OF HOUSEHOLD INCOME ON THE CHOICE AND VALUATION OF TRANSPORTATION MODES

This paper presents an improvement to the traveller mode-choice model through the introduction of a weighted income variable representing the economies of scale in household consumption. Data from the 1968 metropolitan Toronto apartment survey and from the Ontario Ministry of Transportation and Communications calibrates the model by stratified income. Also presented are the results of statistical tests, as well as the assessment of alternative transportation policies relating to transit fare changes and level-of-service modifications. The analysis found that the value of travel time varied directly with weighted family income, the values for the metropolitan Toronto area ranging from \$3.33 to \$9.29/hour for annual incomes ranging from below \$5000 to over \$8000 per adult. Furthermore, the commuters were far more sensitive to changes in relative travel time than they were to relative travel cost. This elasticity of demand with respect to relative travel time was estimated to be 0.35, while the elasticity with respect to relative travel cost was 0.11. (TRRL)

Yeung, CCS (Liquor Control Board of Ontario, Canada); Rice, RG (Victoria University, Canada); Lambe, TA (Toronto University, Canada) *RTAC Forum* Vol. 3 No. 2, 1981, pp 14-21, 6 Tab., 17 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257651), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

41 345933

TRANSFER PENALTIES: ANOTHER LOOK AT TRANSIT RIDERS' RELUCTANCE TO TRANSFER

Two on-board surveys were conducted to determine how transit riders perceive transfers. The surveys were conducted before and after the imposition of a transfer in the middle of an existing bus route. Results of the surveys showed that riders perceive bus transit trips as significantly worse when the trip requires a transfer, even if transfer time is negligible. (a) (TRRL)

Horowitz, AJ Zloesel, DJ (Wisconsin University, Milwaukee) *Transportation (Netherlands)* Vol. 10 No. 3, Sept. 1981, pp 279-282, 2 Tab., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257955)
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41 345944

FLEXIBLE WORK HOURS AND MODE CHANGE: INTERPRETATION OF EMPIRICAL FINDINGS FROM SAN FRANCISCO

A series of surveys was conducted at four San Francisco Bay Area firms in 1979 to study the effect of flexible work hours on choice of mode for the work trip. Analysis of nearly 1200 individual responses showed consistent and statistically significant decreases in solo driving, even after mode changes that were estimated to be caused by 1979 gasoline shortfalls and skyrocketing energy prices were screened out. Individuals who changed to transit were found to be from generally lower-income households and thus susceptible to gasoline price increases; flextime further assisted their shift to transit by alleviating anxieties about being late for work due to unreliable transit service. These individuals frequently traveled during the off-peak hours, when seats were more readily available. Individuals who changed to ridesharing ranked congestion avoidance as high or higher than the ability to coordinate work schedules with fellow carpoolers (frequently a working spouse for employees at three downtown firms). Although there were diversions from ridesharing to transit, the net result was a statistically significant increase in ridesharing. The evidence from these four Bay Area firms strongly suggests that flextime is complementary to transit marketing and ridesharing promotions, although the next change in mode share is likely to be modest (less than 5 percent). (Author)

This paper appeared in Transportation Research Record No. 816, Transportation System Management--Parking, Enforcement, and Other Issues.

Jovanis, PP (Northwestern University, Evanston) *Transportation Research Record* No. 816, 1981, pp 11-19, 1 Fig., 9 Tab., 23 Ref.

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41 346113

RESPONSE OF WASHINGTON STATE RESIDENTS TO HIGHER TRANSPORTATION COSTS AND ENERGY SHORTAGES

The objective of this research was to examine the effects of higher transportation costs and energy shortages on the public's travel behavior patterns. Telephone interviews were conducted with 2,500 residents of the State of Washington. Residents of metropolitan, urban and rural areas were included. Travel to work, local travel, intermediate and long distance travel, recreational travel, use of public transit and vehicle ownership trends were topics covered in the interviews. The household's travel patterns two years prior to the interview, as well as current behavior and future plans were included.

Prepared in cooperation with Federal Highway Administration, Washington, DC.

Iverson, E Jacobson, R Limotti, B
Washington State Department of Transportation Inrm Rpt.
WA-RD-42.1, Aug. 1981, 133p

ACKNOWLEDGMENT: NTIS
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PB82-107343

41 346712

TRAVELER RESPONSE TO TRANSPORTATION SYSTEM CHANGES: SECOND EDITION

This second edition of the traveler response handbook provides a readily accessible, interpretive, contemporary documentation of the experience and insights gained from the application and analysis of various transportation system changes. A digest of the travel behavior findings derived from available literature has been prepared for each of 9 transportation system management topic areas. These are Pool/Bus Priority Facilities, Variable Work Hours, Pool/Transit Fringe Parking, Vanpools/Buspools, Transit Scheduling/Frequency, Bus Routing/Coverage, Express Transit, Transit Fare Changes, and Transit Marketing/Brokerage. Each topical digest begins with a listing of the types of system change included, followed by a "Traveler Response Summary" section which highlights the traveler response findings for the topic. The cross-referenced Handbook bibliography covers 16 additional specific system change and research topic areas: 25 low cost and capital intensive transportation system changes and related areas of investigation in total.

See also report for February 77, PB-265 830.

Pratt, RH Coople, JN
American Embassy, Federal Highway Administration Final Rpt.
FHWA/PL-81/015, July 1981, 408p

Contract DOT-FH-11-9579

ACKNOWLEDGMENT: NTIS
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PB82-129453

41 348398

THE ROLE OF STATISTICS CANADA DATA IN URBAN TRANSPORTATION PLANNING

This paper is divided into three major sections, with the first providing a brief review of published sources describing current experience with the 1971 census place-of-work data. The second section then describes the major criticisms of the data base, as they are typically stated. Particular attention is given to the use of census tracts as traffic zones. The third major section of the paper presents a unique application of the labour force travel-to-work supplementary survey to the development of a behaviourally-based disaggregate modal split model. This survey provides information on a reasonable sample of commuters in each of Canada's largest cities at the required level of detail to permit calibration of a disaggregate mode choice model. The calibration of a model for the city of Winnipeg is described. The paper concludes that the advantages of the two statistics Canada journey-to-work data bases for supplementing local urban transportation planning information are very substantial indeed. Given the valuable time series data base that will be generated with the collection of the 1981 work trip data, there is every need to take full advantage of the federal information and to develop procedures for maximizing its potential use in conjunction with the limited local transportation data base. (Author/TRRL)

McCoomb, LA (Transportation Development Centre); Rice, RG
(Toronto University, Canada) *RTAC Annual Conference Preprints* Vol. 1
Sept. 1981, pp B23-66

ACKNOWLEDGMENT: TRRL (IRRD 258366), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

41 348402

BUS PASSENGER WALKING DISTANCES AND WAITING TIMES: A SUMMER-WINTER COMPARISON

The results of this study demonstrated that measurement of bus passenger walking distances by means of tracing the exact path taken on large scale base maps, with the assistance of field surveyors is a fast and accurate method of determining walking distance distributions. Mean walking distances were found to be 322 and 329 metres for summer and winter conditions respectively. The 75th percentile was found to be 450 metres. Waiting times in winter were found to be less than those for summer for all ranges of headways. For headways under 600 seconds the average waiting time was found to be approximately one-half the headway. Beyond this point the use of this approximation will overstate the average waiting time which tended to 11 minutes for longer headways. Tests on the Calgary data showed that the assumption of random passenger arrivals is not valid. Detour factors were found to be greatest in suburban residential areas and smallest in industrial areas. On a city-wide basis detour factors were 1.18 and 1.24 for summer and winter respectively. The detour factor was found to decrease with increasing distance from the bus stop. For most bus passengers walking time exceeds waiting time. On a city-wide basis bus passengers were found to have an access component ratio of 55 percent walk and 45 percent wait in summer, and 65 percent walk and 35 percent wait in winter. (Author/TRRL)

Lam, W (Mansell Consultants); Morrall, J (Calgary University, Canada) *RTAC Annual Conference Preprints* Vol. 1 Sept. 1981, pp D39-60, 6 Fig., 7 Tab., 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258373), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

41 348797

MONITORING THE EFFECTS OF THE TYNE AND WEAR METRO

This report describes the studies which have been initiated by the Transport

and Road Research Laboratory to monitor the impact of a new rapid transit system, the Metro, on the metropolitan country of Tyne and Wear. The research is concerned with the effect of the transport changes on travel patterns, land use activities, property values, and pressure for development within the county. The extensive 'before' surveys are described. The first section of metro (Haymarket to Tynemouth) opened in August 1980 and limited monitoring exercises will continue until the system is fully operational in 1984. (A) (TRRL)

Miles, JC Mitchell, CG Perrett, K
Transport and Road Research Laboratory, (0305-1315) Monograph
NSR 6 80, 1981, 22p, 5 Fig., 1 Tab., 6 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 259018)

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41 348798

CHARACTERISTICS OF PUBLIC TRANSPORT DEMAND IN INDIAN CITIES

This report presents the results of surveys made in a number of Indian cities on the demand for public transport services. It is one of a series which presents the findings of a joint research project carried out over the two year period 1978-80 by the Transport and Road Research Laboratory (TRRL) and the Indian Association of State Road Transport Undertakings (ASRTU). Demand for all modes of public transport was monitored, including that for privately operated intermediate public transport (IPT) modes. Such services are widely operated in cities of the third world, either in competition with or complementary to conventional bus services. Surveys undertaken mainly took the form of passenger interviews. The results give an insight into the travel patterns and socio-economic characteristics of passengers using the various forms of public transport available for use in Indian cities. (A) (TRRL)

Maunder, DA Fouracre, PR Pathak, MG (Central Institute Of Road Transport, India); Rao, CH (Assoc of State Road Transport Undertakings, India)

Transport and Road Research Laboratory, (0305-1315) Monograph
NSR 709, 1981, 24p, 21 Tab., 11 Phot., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 259031)

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42 318508

INNOVATION IN PUBLIC TRANSPORTATION: A DIRECTORY OF RESEARCH, DEVELOPMENT AND DEMONSTRATION PROJECTS

This eighth annual directory contains descriptions of current research development and demonstration (RD&D) projects sponsored and funded by the Urban Mass Transportation Administration (UMTA) of the U.S. Department of Transportation. The intent is to make public information regarding UMTA's RD&D activities. The directory focuses on activity that took place in fiscal year 1979. Programs relate mainly to technology development and deployment, service and methods demonstrations, transportation planning and management; other studies relate to local transportation (Technical Studies) and special planning studies; and programs of policy development and research (including University Research and Training Grant Program). The appendixes provide information about federal research and development in urban mass transportation grants and contracts. The document also provides an index of agencies/contractors, a project index, and a subject index.

See also report dated 1978, PB80-130818.

Urban Mass Transportation Administration UMTA/MA-06-0086-80-2, 1979, 245p

ACKNOWLEDGMENT: NTIS
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PB80-204142

42 320247

TRANSIT OPERATIONS AND PLANNING STATUS RETRIEVAL SYSTEM

The system contains information on innovative transit services operating within urban and nonurban areas of the United States. This information includes project location, a brief project description citing major results (as available), the operating and funding agencies, project status, cost, and information source. The subfile of transit service modes and operations contains information on urban population, population density, metropolitan and regional planning organizations, transit operating agencies, primary transit modes, route miles for each mode, number of vehicles in service, and UMTA capital and technical studies grants. Information is added weekly and reviewed and/or updated quarterly. (TSC)

Hard copy is machine printed. Internal use only. System has query capability. Transit industry publications, directories, departmental news releases, Capital Grant and Technical Study Grant Awards, and contracts with UMTA regional representatives comprise the system input.

Urban Mass Transportation Administration Weekly No Date, n.p.

ACKNOWLEDGMENT: Transportation Statistical Reference File, TSC (247)
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JDA-25

42 322215

LAND USE AND TRANSPORT PLANNING: A TIME OF TRANSITION

Transportation planning is said to be moving away from its dependence on the aggregate forecasting procedures used in the 1960's and 1970's towards a broader-based approach in which a wider range of techniques will have a complementary role to play. New types of procedure will be introduced such as HATE (The Household Activity-Travel Simulator). This is a household-based survey technique that uses display equipment as part of a loosely structured in-depth group interview. It is designed to examine the role of travel in the daily lives of household members, and may be used to identify the ways in which participants might adapt their behaviour in response to a range of transport or land use policy measures. Sample sizes are small and the objective is to provide the planner with a breadth of qualitative and quantitative insight that may prove valuable in many different ways. Among the benefits of this broader approach are said to be its flexibility and adaptability and the greater ease of understanding of methods and findings by planners, politicians and the public. (TRRL)

Jones, P (Oxford University, England) *Planner* Vol. 66 No. 2, Mar. 1980, pp 37-39, 2 Fig., 2 Phot., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 248713)
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DOTL JC

42 322437

ESTIMATION OF DEMAND FOR WORKS BUS SERVICES

A travel-to-work survey of non-industrial workers at Aere Harwell is reported. The response rate was about 90 per cent. Forty-one per cent of respondents used works bus while 48 per cent used a car mode. Journeys were generally between 1 and 22 kilometres. The data collected were used to calibrate a demand model to estimate the probability of works bus use. The factors found to be most significant were distance to work, access distance to a works bus route, car availability and fare per kilometre. The model estimated total works bus patronage to within 1 1/2 per cent. On a route and stop basis the mean errors of estimation were 13 and 28 per cent respectively. The forecast fare elasticity was-0.3. To demonstrate the capability of the model as a planning tool it was used to calculate the numbers of workers needed in a works bus catchment area to ensure break-even operation. It was shown, for example, that for an average direct distance to work of 5 kilometres about 165 low-or 350 high-car-availability workers were needed within 1 1/2 kilometres of a works bus stop, and the fare was 3-4 pence per direct journey kilometre. For a 20 kilometre distance the corresponding figures were 50, 65 and 2 pence per direct journey kilometre respectively.(a) (TRRL)

Hale, DM Jackson, RL
Transport and Road Research Laboratory Monograph SR553, 1980, 14p, 3 Fig., 6 Tab., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 248505)
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42 324479

AN ASSESSMENT OF SHORT-RANGE TRANSIT PLANNING IN SELECTED U.S. CITIES

This study of short-range planning procedures used for transit services in Cincinnati, Boston, San Diego, Minneapolis-St. Paul, and Kansas City, Missouri, identified two major shortcomings in current transit planning procedures. First, institutional framework that standard planning processes provide is inadequate for short-range planning. Transit agencies themselves carry out most short-range transit planning, without considering options such as paratransit and traffic engineering improvements and with little independent review by other local and regional planners. Elected officials faced with short-range transit decisions have only transit agency recommendations to consider. The authors of this paper suggest that demonstration funding to selected metropolitan planning organizations (MPOs) would encourage the needed upgrading of short-range planning capability at both metropolitan and local levels. The second shortcoming revealed by this study is that performance measures used to assess transit services are geared to transit management needs rather than to comprehensive transportation planning goals. In addition to such management concerns as labor productivity, schedule adherence, and the effect of maintenance programs on bus availability, transit evaluations should measure subsidy cost per vehicle mile of travel reduced and per passenger trip mile produced. The authors recommend that problem-specific techniques be developed to deal with the varying aspects of the planning process. (Urban Institute)

This abstract appeared in the Urban Institute Publications in Urban Affairs.

Green, MA Olsson, ML
Urban Institute URI No. 28600, 1979, 82p

ORDER FROM: Urban Institute, 2100 M Street, NW, Washington, D.C., 20037

42 324858

ALBUQUERQUE TRANSPORTATION PROGRAM

This paper presents a brief description of the overall transportation programs of the City of Albuquerque. Transportation facilities, construction and operations are undertaken within several programs other than the city's own annual budget. These programs include the Federally assisted programs established by the Federal Aid Highway Act, the Urban Mass Transportation Act, the Municipal Arterial Program of the New Mexico State Highway Department, and the City of Albuquerque Capital Improvement Program.

Proceedings of the 17th Paving Conference, held at the University of New Mexico, Albuquerque, 1980.

Beck, EL (City of Albuquerque, New Mexico)
New Mexico University, Albuquerque

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

42 325310

PUBLIC TRANSPORT. PROCEEDINGS OF SEMINAR K HELD AT THE PTRC SUMMER ANNUAL MEETING, UNIVERSITY OF WARWICK, ENGLAND FROM 9-12 JULY 1979

The proceedings contain the following reports: Bus Purchasing Policies (Kirkland, W); The Location of Bus Garages (Niblett, R); Methods of Increasing Transit Ridership (Sale, JE); Pricing and Use of Monthly "Travelcard" Tickets on Urban Public Transport Systems (White, PR); Definition of the Time-Table Quality of Public Transport Services (Slagmolen, MH); Tertiary Public Transport and Public transport planning (Bailey, JM); Public Passenger Transport Plans--Their Effectiveness as a Planning discipline (Windfield, RC); Consumer Participation in Public Transport Planning: More Awareness, or Inauthenticity? (Snack, RB); Access to Bus Services by Social Groups (Morphyet, R); meeting the Needs or What We Do When We're Not on Our Holidays (Maw, J); Offering Better Services at a Lower Cost: The Experimentation of Nancy- Chateau-Salins (Roulet, JP); the Evaluation of Local Rail Passenger Services as Part of Public Transport Plans.

Planning and Transport Res and Computation Co Ltd Monograph P 181, 1979, 156p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 249755)

ORDER FROM: Planning and Transport Res and Computation Co Ltd, 110 Strand, London WC2, England

42 325666

VICTORIAN TRANSPORT STUDY : STAGGERED WORKING HOURS

The concept of staggered working hours and flexitime work schemes has potential for reducing the need for substantial public investment in the transport system which will be grossly under utilised if only used for peak hour traffic, and as a means of reducing peak hour congestion in metropolitan and urban areas. Capital tied up in public transport facilities, such as trams, trains and buses, to cater for extremely short peak periods in suburban travel represents a large proportion of the total capital investment by the public authorities in transport. The full utilisation of that equipment is very low indeed, possibly less than 25 hours per week and the need for its availability and use for peak hour traffic represents a very severe financial impact on the business of public transport in Victoria. Relevant submissions made to the study are summarised, and a recent report by the Victorian Division of the Australian Institute of Urban Studies is discussed in some detail. The potential benefits of implementing further staggered working hours and flexitime work schemes are significant enough to warrant positive encouragement of them. Recommended initiatives that the government could take to encourage further staggered working hours and flexitime schemes are included in the report. (TRRL)

Victoria Ministry of Transport, Australia Monograph 1980, 16p, 2 Fig., 1 Tab., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 239854), Australian Road Research Board

ORDER FROM: Victoria Ministry of Transport, Australia, 570 Bourke Street, Melbourne, Victoria, Australia

42 329128

RECENT DEVELOPMENTS IN URBAN TRANSPORTATION, FOLLOWUP REPORT OF THE NATO/CCMS URBAN TRANSPORTATION PILOT STUDY

In recognition of the increasing dependence of cities on efficient transportation which preserves urban amenities, the Urban Transportation Pilot Study was proposed by the United States at the 1972 Spring CCMS Plenary Meeting. The Study was approved in February 1973. Projects included in the Pilot Study were: (1) Urban Travel Forecasting; (2) Demand Systems (Dial-A-Bus) Evaluation; (3) Bus Priority Systems; (4) Urban Goods Movement; and (5) Evaluation of Short Distance Transport Techniques. Reports on the five projects were published and distributed in 1975-76. Developments in U.S. cities during the period 1975-77 were summarized in a report prepared by the U.S. Department of Transportation in October 1977. The follow-up report incorporates that material and also describes developments in the other countries participating in the Pilot Study since the initial reports were issued.

Department of Transportation Mar. 1978, 81p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

42 329506

WORK RESCHEDULING AND TRAFFIC RELIEF: THE POTENTIAL OF FLEX-TIME

This report contains results of research conducted in San Francisco concerning the use of flex-time. Correlations are made between flex-time and trip scheduling, between flex-time and choice of transportation mode, and between flex-time and traffic congestion. From the individual commuter's point of view, flex-time saves time, is more comfortable, provides more reliability of transit, provides greater self-reliance, and allows for sharing of commuting costs. From the employer's point of view, flex-time creates: increased productivity and improved morale; less absenteeism; reduced turnover, training and recruitment costs; reduced congestion on elevators and at plant gates; and fewer grievances associated with disciplining tardiness. The report also contains a case study of the use of flex-time at Metropolitan Life. Staggered hours require employees to arrive at a fixed time of their choice within a prescribed interval; whereas, flexible work hours allow employees to choose their own work schedules and vary them somewhat from day to day. Research in San Francisco and evidence from Seattle, Washington and Ontario, California suggest that flex-time has the following advantages over staggered work hours: flex-time is based on choice, not on compulsion; many employees arrive at work dramatically earlier, producing the intended impact of the most ambitious staggered hours plan; employees want flexible hours and an increasing number of employee unions and associations are bargaining for them; employers frequently report increased productivity and reduced absenteeism--incentives for companies to make the effort required to introduce flex-time; and flex-time comes in many forms so it can be tailored to suit companies with different business operations and management philosophies. On the other hand flex-time is not suited to the work environment of many small businesses and most manufacturing plants; therefore, staggered hours would probably prove more effective in those circumstances.

Jones, DW, Jr Harrison, FD (California University, Berkeley);

Jovanis, PP (Northwestern University, Evanston) *Public Affairs Report* Vol. 21 No. 1, Feb. 1980, 10p, 2 Fig., 2 Tab., 37 Ref.

ORDER FROM: Institute of Governmental Studies, 109 Bernard Moses Hall, Berkeley, California, 94720

42 330396

PUBLIC TRANSPORT IN THE CAR SOCIETY [Kollektivtrafiken i bilsamhaellet]

This report studies a travel survey implemented by the Swedish National Central Bureau of Statistics in 1978. It structures vital results from the travel survey into a frame of transport policy aspects where balancing between public transport and own car transport is put into focus. Long term travel consumption is stimulated by urban sprawl and separating work places and dwellings. These trends are made possible by widespread car ownership (50% of single persons and 90% of married couples owns a car in Sweden). Work trips constitute 37% of the total number of trips but only 21% of transportation output. Recreational trips correspond to 29% total trip number but 45% of transportation output. Earlier estimates give higher rates for work trips and lower for recreational purposes. In cities work trips are more often made by public transport but this partly leads to low rates for walking and cycling. 59% of school trips are made by public transport making them constitute 15.6% of total number of public transport trips. The number of car passengers for work trips nearly equals that of work trip public transport passengers. This makes ride sharing nearly as important as public transport. Generally speaking low use is made of public transport except in big cities. Improvements would therefore become costly (without giving more revenue). Those who prefer going to work in their own car are often saving a lot of time which makes public transport unattractive to them. (TRRL) [Swedish]

Asp, K Lundin, O

National Swedish Road & Traffic Research Institute Monograph VTI Rapport NR166, 1980, 115p, Figs., 15 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 25493), National Swedish Road & Traffic Research Institute

ORDER FROM: National Swedish Road & Traffic Research Institute, Fack, S-581 01 Linköping, Sweden

PB81-162364

42 330829

MODAL SPLIT MODELS BASED ON CAR AVAILABILITY: THE APPLICATION OF SUCH MODELS IN STUDIES OF MEDIUM SIZED TOWNS

The paper examines the difficulties of applying a modal split model based on car availability in transportation studies of medium sized towns. These urban populations are generally less than 100000 and represent areas where there are no serious deterrents to car use. These modelling difficulties are illustrated by analysing data from two transportation studies carried out in Kent. The awareness of the deficiencies described in the traditional car ownership modal split models has led to the adoption of car availability models. (TRRL)

Donald, RG (Merseyside Cc) *Transportation Planning and Technology* Vol. 6 No. 3, 1980, pp 149-158, 5 Tab., 18 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252129)
ORDER FROM: ESL

DOTL JC

42 331060

TIME STABILITY OF ATTITUDES TOWARD TRANSIT USE IN THE ORLANDO, FLORIDA, URBANIZED AREA. ABRIDGMENT

Early attempts at modeling transit use in the Orlando, Florida, Urban Area Transportation Study (OUATS) assumed that the rather low use of the area's inadequate transit system would continue into the future. Direct generation of modal split and the forecast of automobile person trips locked the area into forecasts of low transit use both in the original study in 1965 and in the first update of OUATS in 1970. In 1973, this shortcoming in the travel-forecasting procedures used in the area was corrected. A mode-share model was developed from expressions found in the Minneapolis area and calibrated to conditions in the Orlando area determined through a transit-attitude survey conducted in 1973. The questionnaire used in this survey was designed to provide input into a mode-share model so that future patronage of alternative transit systems could be determined. In 1978, another survey was accomplished as a part of an update to OUATS. This survey was designed to duplicate the earlier survey to the maximum extent possible. This duplication included attempting to question the exact respondent reached in 1973. The intent of the duplication was to allow for a validation of the modal-split relationships developed from the original survey. Although this validation is important, particularly to the Orlando area, there are other questions to which these results can be applied. A basic assumption of the urban transportation planning process is the stability of trip characteristics over time. Other studies have shown mixed results, and generally these studies are limited to trip-generation expressions. The results in the Orlando area indicate that those relationships that might be used in modeling mode use do remain stable over time, at least for the purposes of short-range planning (three to five years). This is particularly significant when the time frame of the two studies in Orlando is considered. The results of the two surveys also imply that there is stability over time in mode-choice attitudes, even over a period when significant changes occurred in socio-economic factors generally related to mode choice. These results would therefore also tend to support similar stability in other areas over longer periods of time. This could be particularly important to other areas that might be considering updating existing mode-choice surveys. (Author)

This paper appeared in *Transportation Research Record* No. 761, Public Transportation Planning.

Willis, CO Jr (Comsis Corporation); Lee, JW (Tipton Associates Incorporated), *Transportation Research Record* No. 761, 1980, pp 56-58, 4 Ref.

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42 331259

SIMPLIFIED APPROACH TO DOWNTOWN TRAVEL SIMULATION

This paper analyzes the relation between downtown land use and travel based on a series of major generator surveys conducted in downtown Providence, Rhode Island. Trip rates obtained at nine buildings were applied to inventories of floor space and employment to provide a picture of daily trips to the city center. The surveys found 0.8 primary central business district (CBD) destinations/employee for work trips, 3.0 primary CBD nonwork destinations/1000 Sq feet of office-building floor space, and 9.7 destinations/1000 sq feet of major retail floor space. This results in some

54,700 primary destinations in the CBD on a typical weekday (7:00 a.m.-6:00 p.m.). A small-sample home-interview survey, conducted in 1970, identified 54,100 destinations in a 24-h period. Additional studies of a greater mix of downtown land uses in other cities are suggested to further refine and validate the assumptions and methodology. (Author)

This paper appeared in *Transportation Research Record* No. 767, Travel Impacts of TSM Actions.

Levinson, HS *Transportation Research Record* No. 767, 1980, pp 26-31, 2 Fig., 8 Tab., 3 Ref.

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42 334141

PLANS FOR PUBLIC TRANSPORT

The author discusses structure plans, local plans, transport policies and programs (tpp's) and public transport plans (ptp's) in terms of their effectiveness in the improvement and development of public transport systems. He concludes that the preparation of lengthy, technical and complicated documents of the like of structure plans, transport policies and programmes and public transport plans are extremely expensive-far more costly than most people realise. Such documents are of very limited significance in producing a good transportation system. Effective planning is usually based on practical experience of implementation and not upon vast studies and costly public participation. Monies saved by the abandonment of unnecessary procedures could be used on practical experiments. (TRRL)

From the book entitled "Urban Planning and Public Transport."

Collins, BT
Construction Press Limited 1979, pp 34-39, 4 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 252785)

ORDER FROM: Construction Press Limited, Lunesdale House, Hornby, Lancaster LA2 8NB, England

42 334153

INTRODUCTION TO AGGREGATE DATA ANALYSIS BY USING UTPS: UMATRIX

The effectiveness of any transportation planning operation depends largely on its ability to acquire, manipulate, and present data. The Urban Transportation Planning System program UMATRIX, a powerful data manager, provides the transportation planner with capability in summarization, modification, and display of data. As numerous examples ranging from simple data preparation to application of complex travel-demand-forecasting models demonstrate, the UMATRIX user can access a variety of data forms and can accomplish analytical chores that have been difficult and time consuming. UMATRIX's ease of operation provides an effective and flexible tool for the transportation planner. (Author)

This paper appeared in *Transportation Research Record* No. 771, Advances in Urban Transportation Planning.

Dial, RB Quillian, LF (Urban Mass Transportation Administration)
Transportation Research Record No. 771, 1980, pp 17-22, 5 Fig.

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42 334190

STRATEGY STUDIES FOR URBAN TRANSPORT IN THE NETHERLANDS

A strategy study is described that was undertaken in the Netherlands in order to develop and test transport policies. The transport context was that of the decline of the traditional Dutch bicycle mode, since trip distances have increased, and the growth of car use, which has led to more-dangerous and congested traveling conditions. Promotion of bicycling and public transport and restraint of car use were therefore policy objectives. In the most recent study completed for preparation of policies for the early 1980's, a demand model was employed that used disaggregate data from the Amsterdam area collected in 1976. Several different strategies were investigated for shifting traffic from car to bicycle or public transport. Particular care was taken to ensure that policies tested were both technically and economically feasible. The findings indicate a number of interesting policy considerations. Aggregate study tests showed a considerable sensitivity to bicycle disutility; i.e., quicker or more-pleasant conditions caused a considerable shift toward the mode. Changes in the quality of public transport did not generally show much potential increase in demand, with the exception of one area of deficiency in Amsterdam in which improvements in the network produced

a 10 percent increase in public transport use but car traffic decreased only 2 percent. The study indicated that an important influence on car use might be the introduction on an extensive scale of company buses, vanpools, and other similar arrangements. The economic feasibility of this option was not tested, however. The results of the study have to be looked at with some care, given some doubts as to the explanatory power of the models used. It is hoped that in future strategy studies a model can be used that will be based on a real understanding of the decision processes.

This paper appeared in Transportation Research Record No. 775, Travel Demand Models: Application, Limitations, and Quantitative Methods.

Ruhl, A (Ministry of Transp & Public Works, Netherlands) *Transportation Research Record* No. 775, 1980, pp 17-21, 11 Ref.

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42 334213

COMMERCIAL DATA SOURCES FOR URBAN TRANSPORTATION PLANNING

Under current pressures to improve file quality, increase multiple use, and reduce cost, a number of metropolitan planning organizations (MPOs) have resorted to the use of commercial data, particularly that from Dun and Bradstreet and R.L. Polk and Company. The purpose of this research, sponsored jointly by the Federal Highway Administration (FHWA) and the Urban Mass Transportation Administration (UMTA), is to assess this trend. MPOs, transit agencies, and other data users in 12 metropolitan areas were interviewed about their experience with the data. Users generally reported satisfaction with the commercial data but also noted some problems and limitations. Nevertheless, the research concluded that a commercial data source, on its merits, will be selected by an increasing number of MPOs. The choice must depend on local circumstances. Under some circumstances, commercial sources may be less expensive, more current, and more quickly available. Such sources provide comparisons with other time points, subareas, or urban areas; offer computer graphics; serve multiple functions; or have fewer confidentiality limitations. Commercial data sources are competitive with other sources such as primary surveys, the U.S. Census, or state employment security files. Recommendations are made for (a) more adequate FHWA and UMTA guidelines for household and employment files, (b) definitive tests of commercial sources with traditional sources, (c) staffing by FHWA and UMTA to implement the first two recommendations, (d) central purchase of Dun and Bradstreet establishment files for all metropolitan areas, and (e) additional commercial services from R.L. Polk and Company. (Author)

This paper appeared in Transportation Research Record No. 779, Transportation Information Systems: Applications and Uses.

Stuart, RC (Virginia Polytechnic Institute & State University) *Transportation Research Record* No. 779, 1980, pp 1-6, 1 Ref.

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42 334378

MODELLING THE IMPACT OF ALTERNATIVE TRANSPORT STRATEGIES UPON SOCIAL GROUPS

A model has been developed which represents the inter-relationships between transport, housing, population, employment, shopping and land. It has been designed to permit the testing of the effects of planning policy, for example changes in the monetary cost of travel and urban redevelopment and has been tested on the city of Leeds, using three social groups so that differential impacts can be examined. In the paper two particular uses of the model are considered. Firstly the effects of changing transport costs upon the city in terms of the location of stock and activities and the effects on three social groups in terms of money and time spent on travelling are examined. The effects of increase in transport costs from the model are compared with results based upon the assumption that the location of population and employment are not responsive to changes in transport cost, as in the conventional transport demand model. Then the effects of six land use-transport policy sets are examined in terms of the impact upon urban morphology, and the opportunities and travel behaviour of the three social groups. The effects are compared with the objectives of the strategies. The paper is concluded with an assessment of the validity of this type of approach and consideration of future research in this field.

World Conference on Transport Research, Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Mackett, RL (Leeds University, England)

Organization for Economic Cooperation and Devel, European Conference of Ministers of Transport Conf Paper Volume 3, 1980, p 1989, 9 Tab., Refs.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

42 334379

AN EMPIRICAL ASSESSMENT OF TRIP DISTRIBUTION MODELS

Simulation experiments are described in which observed work trip tables are compared with trip tables constructed by introducing known random errors into the cells of the observed tables using a range of goodness of fit measures. These experiments show that the traditional goodness of fit measures used such as the coefficient of determination and chi-square are completely unsuitable. It is concluded that the phi-statistic from information theory and the sum of the squares of the trip interchange residuals are the best goodness of fit statistics to use and that these could also be used as calibration criteria. The performance of various forms of the gravity model in explaining the spatial interactions between places of residence and places of work observed in the 1971 Census of Canada for a range of CMAs are examined. Various forms of trip end constraint and trip end stratification are explored and it is shown that the best performance that can be obtained is equivalent to a randomly introduced error in the trip interchange magnitudes of from 75 to 100 percent. The performance of various forms of the gravity model at different spatial scales are described using a 100 percent sample of the journey to work obtained in Edmonton, Alberta. The shifts in parameter magnitude and the changes in model performance with zone size are described and these results confirm the observations made with the Census data which is an 11% sample. An analysis of the residuals of the Edmonton model shows that the primary source of error is the timing of development and that longitudinal models are required to capture these effects. It is concluded that cross-sectional type trip distribution models are completely inadequate for modelling spatial interaction behaviour. Longitudinal models are required in which trip interchange constraint strata are identified to reflect the development regimes that have occurred throughout the life of an urban area.

World Conference on Transport Research, Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Sikdar, PK Smith, DP Hutchinson, BG (Waterloo University, Canada)

Organization for Economic Cooperation and Devel, European Conference of Ministers of Transport Conf Paper Volume 3, 1980, pp 2040-56, 5 Fig., 3 Tab., Refs.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

42 334380

THE SCOPE FOR THE USE OF SIMPLIFIED MODELS IN TEACHING TRANSPORT PLANNING

This paper suggests that in one additional area, that of teaching transport planning, there are important opportunities for the use of simplified models. This paper broadly suggests that students of transport planning would benefit from experience of computer programming on a big-machine and from the opportunity to use a pocket calculator to obtain a sense of the first order effects--but without being swamped by the computational techniques or the difficulties with the computer system. At both levels it is argued that there is a role for simplified models or approaches. In research based on the work of the late R. J. Smeed, and in the wider field of continuous models for representing the spatial characteristics of transport, it appears that there is scope for exploring the data and model relationships at the heart of the land use and transport interaction in a teaching framework. The use of simplified models may also be seen as a design exercise rather than a teaching exercise. There is also an important development by Ortuzar and Willumsen of continuous model techniques to the scale of requiring a big computer to run and yet retaining the essence of a simplified approach and the depth of the conventional four step package. The computer package is termed GUTS and is an example of gaming-simulation in the transport planning field. Without prejudice to the case of using simplified models in an operational role, this paper recommends that the continuous type of model has a future for use in educating the potential transport planner. It may well be the case that the design process and alternative plan generation process would benefit

from the equilibrium of transport supply and demand approach of Smeed and from the gaming simulation approach of Ortuzar and Willumsen in addition to their educational role.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Rice, P (Imperial College, England)
Organization for Economic Cooperation and Devel, European
Conference of Ministers of Transport Conf Paper Volume 4, 1980, pp
2248-64, 2 Fig., Refs.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite
1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

42 334396
TRANSFERABILITY OF EUROPEAN TRANSPORTATION
INNOVATIONS TO THE UNITED STATES

This paper relates many European transportation innovations to changes occurring or contemplated in the United States. Five areas of innovation are treated specifically: central city traffic rerouting and restraint, integrated transit, high occupancy vehicle priority treatment, coordination of transportation and land use, and residential neighborhood traffic restraint. The paper explores the process undergone by the DOT and the cities to achieve this transfer to American soil. Europe and the U.S. are compared and contrasted for a variety of topics including: the planning process; political, institutional and environmental roadblocks to implementation; public participation; role of the business community; and methods of financing. Case studies are presented for several of the major projects such as the Boston auto restricted zone, San Francisco's fare coordination project, Dade County's rail station area design development program and Cambridge's proposed "woonerf."

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Simkowitz, HJ (Transportation Systems Center)
Organization for Economic Cooperation and Devel, European
Conference of Ministers of Transport Conf Paper Volume 3, 1980, pp
1504-18, 2 Ref.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite
1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

42 334408
POLICY APPRAISAL AND DECISION MAKING FOR BUS
OPERATIONS-THE BUSMODEL APPROACH

BUSMODEL is a general demand and cost model for a publicly owned bus undertaking. The objective of bus policy is taken to be that of maximising the (weighted) sum of passengers' benefits (their consumer surplus), benefits to the general public (financial profit from the bus undertaking) and other benefits (to bus employees, other road users, etc.). The BUSMODEL estimates the consumer surplus of passengers directly from a description of the disaggregated structure of demand. Demand can be disaggregated by origin-destination zone pair, time of day/week and person type or by service or service group. A standard "shape" of the demand functions is used, which is calibrated by reference to base date information on fares, services and passengers together with estimates of fare and service elasticities, etc, future inflation, and trends. With this demand model, the effects of varying fares and services on patronage and passengers' benefits can be estimated. Together with a parallel (though simpler) model of costs, forecasts for, and cost-benefit appraisals of, alternative fare and service policies are derived. In addition, given further assumptions regarding the benefit-financial cost ratio which is required at the margin, and/or constraints on the available subsidy, BUSMODEL can calculate the set of fares and service frequencies which maximise the objective function described above. Once calibrated, BUSMODEL is run on a (relatively) cheap micro-computer. Managers/policy makers input their preferred assumptions regarding policy (fares, service, financial constraints) and key parameters (demand elasticities, trends and costs, etc), and the required results are output on a color TV or printer.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Buchanan, M Lewis, K (Buchanan (Colin) and Partners)
Organization for Economic Cooperation and Devel, European
Conference of Ministers of Transport Conf Paper Volume 2, 1980, pp
1055-70, 3 Fig., 10 Ref.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite
1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

42 334415
COOPERATION WITH CITIZENS IN OPERATIONAL
PLANNING OF NEW TRANSPORTATION SYSTEMS

A model is being developed which is intended to ensure that those affected by planned changes can be allowed for in the planning and decision stages to a greater extent than at present. The model was tested in practice in three case studies on new technologies in local transport. The case studies consisted of 6 phases: preparatory work by city council and administrative departments; exhibition of new technologies in local transport; opinion surveys on general attitudes to public participation; simulation of operation conditions in making fundamental decisions on new transport technologies; simulation of guideway routes for new local transport technologies; and participation by bus users in the test operation of a new bus system. The application of this model for participation and its transference to fields other than local transport will facilitate the necessary modernization of the economy and society, and ensure that this occurs in cooperation with, and not against the will of, the general public.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Krampe, G Weiler, U (Battelle-Institut EV, West Germany)
Organization for Economic Cooperation and Devel, European
Conference of Ministers of Transport Conf Paper Volume 1, 1980, pp
171-188

ORDER FROM: Organization for Economic Cooperation and Devel, Suite
1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

42 334447
THE DEMAND FOR PUBLIC TRANSPORT, REPORT OF THE
INTERNATIONAL COLLABORATIVE STUDY OF THE FACTORS
AFFECTING PUBLIC TRANSPORT PATRONAGE

This report analyzes the very large body of information available on the many different factors which affect the demand for public transport and draws conclusions which have a direct applicability to transport planning. This information refers very largely to studies carried out in developed western countries, and primarily to urban bus services; nevertheless the findings have considerable application to rail transport and rural areas also, and to the problems of developing countries. The findings of the study are organized under the following headings: public transport in a social context; present trends in public transport; methodology, models and data; the sociological approach to transport planning; effects of income and car ownership and other background factors; effects of fares; effect of quality of service; effect of land use and intensity of activities; effect of transportation policies on patronage. The costs of transit operations; interaction of supply and demand. The members of the working group came from the United Kingdom, Australia, Canada, France, the Federal German Republic, the Netherlands, New Zealand, Sweden and the USA.

Webster, FV Bly, PH
Transport and Road Research Laboratory Monograph 1980, 358p,
Figs., Tabs., 352 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252840)
ORDER FROM: TRRL

42 334531
EVALUATION OF TRANSPORTATION SYSTEM MANAGEMENT
STRATEGIES. ABRIDGMENT

The construction of a transportation system management evaluation framework that can be easily integrated into the current urban transportation planning process and that can be adapted to previously established institutional arrangements within medium-sized metropolitan areas is discussed. The scope of this project was two-fold. On the one hand the study involved the development of a general evaluation framework that could be adapted to specific metropolitan areas. On the other hand, the project encompassed the testing of a framework that could be adapted to specific metropolitan areas. For this testing, the evaluation framework was partially applied within one case-study area: the Omaha-Council Bluffs metropolitan area, which encompasses portions of Nebraska and Iowa. Based on the general investigation and the specific case study, a program was then developed to implement the evaluation framework within a metropolitan planning organization. (Author)

This paper appeared in Transportation Research Record No. 770, Urban Systems and Traffic Evaluations.

Lima, PM (Nebraska University, Omaha) *Transportation Research Record* No. 770, 1980, pp 10-13, 8 Ref.

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42 334796

WORLDWIDE RESEARCH AND URBAN TRANSPORTATION ISSUES

The author discusses the changes in urban transportation planning towards balanced transportation systems.

Horn, BE (Organization for Economic Cooperation and Devel) *Traffic Quarterly* Vol. 35 No. 1, Jan. 1981, pp 21-42, 10 Ref.

ACKNOWLEDGMENT: EI

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42 334844

TRANSPORT CHOICES FOR URBAN PASSENGERS. MEASURES AND MODELS

The report is the result of a study carried out in 1978 and 1979 on methods to describe and influence modal split. Experts from twelve OECD member countries participated to review the international state-of-the-art in this field which is gaining in prominence due to the economic, environmental and energy constraints of urban transport. The report presents some of the alternative strategies for influencing modal split and describes available measures and some of their possible effects (chapter I). Chapter II presents the results of a survey regarding the aims, measures taken or envisaged to modify modal split, the type of investigations carried out (including data collection), the effects obtained and the achievement of the aims. The survey was carried out on the basis of thirty-two practical examples provided by national delegates. In chapter III a short historical overview of existing urban transport models is given with special emphasis on the modal split models. The chapter deals with the different types such as elasticity models, aggregate (zonal) models and disaggregate models. A critical evaluation of models is given in chapter IV with emphasis on the limitations of the modelling process and the validity of models for prediction. Practical experience of modelling and data requirements are also discussed in this chapter with reference to some of the examples described in chapter II. From considerations of the need for a more comprehensive understanding of urban travel behaviour chapter V examines the future research fields regarding the possible development of modal-split models, also taking into account the subjective factors which govern travellers' selection of transport modes. Items such as interaction between modal split and other components of transport modelling procedures, inertia effects, land use/transport interactions and behavioural variables are also discussed. Chapter VI presents the conclusions and recommendations of the group regarding improvement of modal-split models and their ability to describe the effects of certain measures which influence the relative use of transport modes. (Author/TRRL)

Organization for Economic Cooperation and Devel Monograph Sept. 1980, 121p, Figs., Tabs., 146 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252779)

ORDER FROM: Organization for Economic Cooperation and Devel, Suite 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

42 334853

VARIATION OF TRAVEL TIME BUDGETS AND TRIP RATES IN READING

Travel data for a sample of over 3000 households in the reading area in 1971 were used to compare the effect of household location relative to the town centre on household weekday travel time budgets and trip rates. Both were found to be linearly dependent on household size, giving mean values of about 60 min and 3.0 trips per person per day, with some dependence on household car ownership. When households were grouped according to type, household location was found to have little effect on either measure of travel. The similarity of the results was largely due to the spatial uniformity of trip time throughout the survey area, averaging 20 min per trip. Separate modal values were 15 min for walk trips, 15 min for pedal cycle trips, 20 min for car driver and passenger trips, and 25-29 min for bus passenger trips. Individual household time budgets for the same type of household were a

little more variable than the corresponding trip rates, and the mean values were therefore a little less reliable. Further work is planned to examine the spatial uniformity of person time budgets and trip rates for different types of person. (Author/TRRL)

Downes, JD Morrell, D (Transport and Road Research Laboratory) *Transportation Research. Part A: General* Vol. 15A No. 1, Jan. 1981, pp 47-53, 10 Fig., 1 Tab., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252813)

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DOTL JC

42 334854

INDIVIDUAL TRAVEL TIME BUDGETS

The hypothesis of a stable daily travel time budget for different population groups is investigated using cross-sectional data drawn from the national travel survey and two surveys conducted in reading during the early nineteen seventies. In addition, consideration is given to variations in the time spent travelling on different days of the week. At sample level the means and frequency distributions of travel time show little variation between weekdays. At the level of the individual however, the correlation between daily travelling times is weak. Average values are found to be sensitive to stratification by several socio-economic and demographic background variables but the variation surrounding measures of central tendency is characteristically high. (Author/TRRL)

Prendergast, LS Williams, RD (Cambridge University, England) *Transportation Research. Part A: General* Vol. 15A No. 1, Jan. 1981, pp 39-46, 5 Fig., 5 Tab., 18 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252814)

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42 334864

THE ELASTICITIES OF PASSENGER DEMAND FOR BUS SERVICES: A CASE STUDY IN TELFORD

The substantial changes in bus fares and service levels which were introduced in Telford, Shropshire, on 1 April, 1978 provided a suitable context in which to estimate elasticities of bus passenger demand using data collected in special surveys before and after the implementation of the changes. The study found evidence that shopping trips by bus had been redistributed between the various shopping centres in Telford in response to changes in relative fares and service levels. When a method of estimating elasticities which eliminated redistribution effects was used, fare elasticities for shopping trips were estimated to lie in the range -0.58 to -0.80. Shopping seemed to be fairly insensitive to changes in service frequency, but elasticities with respect to a weighted combination of walking, waiting and in-vehicle time were estimated in the range -0.55 to -0.71. The surveys indicated that trips made for non-shopping purposes (approximately two-thirds of which were work and education trips) are generally less sensitive to fares than shopping trips. For these trips, fare elasticities ranged between -0.32 and -0.46. Elasticities for non-shopping trips with respect to buses per hour were between 0.29 and 0.37 while elasticities relative to the combined walk, wait and in-vehicle times varied between -0.43 and -0.76. (Author/TRRL)

Urquhart, GB Buchanan, CM (Colin Buchanan & Partners) Transport and Road Research Laboratory, (0305-1315) Monograph TRRL SR 641, 1981, 15p, 1 Fig., 2 Tab., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253523)

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42 334991

NEEDS-A NOTION MUCH MISUSED

The author suggests that social research techniques provide the only method of finding out how the present public transport system is used and how it is viewed. The investigation and monitoring of needs should be explained in any government guideline on methodology. Several aspects of need and the provision of public transport are discussed. It is suggested that the meaning and interpretation of need often results in unsatisfactory definitions. Need-based methodology is founded on three considerations: (a) the public service tradition in British transport; (b) the ample evidence of current need for public transport services; and (c) these needs will increase if future public policies fail to respond to them. Since needs are relative they should be defined with reference to standards or thresholds as to what is an acceptable level of service. Who are in need, and what standards or thresholds of

acceptability should be adopted, must be assessed from studies of the viewpoints of local residents, especially the elderly and disabled, public transport operators, teenagers, housewives and working adults. It is hoped that the government will take a long-term view of needs, rather than an expedient one based only on financial restraint. (TRRL)

Rawson, J (Martin and Voorhees Associates) *Surveyor* Vol. 156 No. 4652, Feb. 1981, pp 8-10, 3 Phot., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252957)
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DOTL JC

42 335087

TRANSPORTATION MODE CHOICE

This paper presents a dynamic model of transportation mode choice and evolution of public transportation service based on some simple assumptions of individual behavior and economic necessities for providing transportation service. Critical values are shown to exist for the fares charged, for the cost of providing service, for the demand and supply of transportation (and for other parameters) at which the system will bifurcate to different possible states of the system; critical thresholds must be reached in the quality of the network to observe its growth. Also shown is the role of history and the role that fluctuations in individual behavior and mode strategy play in the way the system structures, that is, in the evolution of the relative number of users of each mode and in the level of service obtained.

Proceedings of the International Conference of the Cybernetics Society, Cambridge, Massachusetts, October 8-10, 1980.

Kahn, D (Transportation Systems Center); Deneubourg, JL De Palma, A (Univ Libre de Bruxelles, Belgium)
Institute of Electrical and Electronics Engineers Proceeding IEEE 80CH1555-2, 1980, pp 156-160, 5 Ref.

ACKNOWLEDGMENT: EI
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42 335213

COMPUTER GRAPHICS FOR TRANSIT PLANNING: AN EMPIRICAL STUDY

This paper documents the results of a case study in which an interactive graphics system was applied to solve a bus transit design problem. The aim of the study was to gain insights into the applied use of the interactive graphics system and to assess its utility as a practical sketch-planning tool. The particular system used was the Interactive Graphic Transit Design System (IGTDS), and the problem to be addressed was the design of a bus system in the Southfield-Jeffries Corridor in southeast Michigan. The study consisted essentially of a data-base development phase and a system-application phase. The results of the case study are reported in terms of (a) the user requirements for data-base development, (b) the general on-line problem-solving experience by using IGTDS, (c) the efficiency characteristics of the IGTDS design process, and (d) the on-line times and costs associated with IGTDS operation. The major findings were that IGTDS was simple to use, that the application costs were relatively low in terms of both data-base development and system operation, and that the IGTDS design process was quite efficient in generating design solutions to the relatively complex bus transit problem (i.e., 81 designs in 24 h of on-line time). These findings suggest the strong potential of interactive graphics systems like IGTDS as practical and cost-effective sketch-planning tools. (Author)

This paper appeared in Transportation Research Record No. 787, Computer Graphics Applications.

Couture, MR (Transportation Systems Center) *Transportation Research Record* No. 787, 1980, pp 1-6, 4 Fig., 2 Tab., 8 Ref.

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42 335436

INSTITUTION-BUILDING AND EUROPEAN MASS TRANSIT: MYTHS AND REALITIES

An institution, as opposed to an organization, must create value for those who interact with it, and that value supersedes the mere technical function the organization performs. This paper is based on a 1978 study which examined aspects of mass transit systems in cities of various sizes in France, West Germany, England and Belgium. The study focused on notable characteristics in the planning, public policy, and financing of rapid transit

systems. The purpose of this paper is to describe the institution-building processes of the cities visited, as well as some of the more promising innovations being tried abroad that may inspire American mass transit managers in their attempts to gain public support through the institution-building process.

Curtis, EF (Northeastern University) *Transportation Journal* Vol. 20 No. 3, 1981, pp 23-36, 1 Fig.

ORDER FROM: Hein (William S) and Company, Incorporated, 1285 Main Street, Buffalo, New York, 14209

DOTL JC

42 335479

MILES TO GO: EUROPEAN AND AMERICAN TRANSPORTATION POLICIES

This book offers a broad range of perspectives, directions, and policy options for transportation planners and political practitioners. The author compares various modes of American transportation with those of three western European countries that have historically been faced with greater resource constraints in terms of energy use, environmental and land-use controls, and financial commitments. He concludes that resource constraints are moving America toward a more European-like need for social efficiency in transportation, and offers some fundamental policy principles based on the European experience to guide the transition.

Dunn, JA
Massachusetts Institute of Technology Press Vol. 6, 1981, 216p

ORDER FROM: Massachusetts Institute of Technology Press, 28 Carlton Street, Cambridge, Massachusetts, 02142

42 335787

ERICA: HE (SHE?) HELPS FILL BUSES AND UNCLOG STREETS

Continuing urbanization has created a nightmare of car clogged streets and air filled with nauseating pollution caused by the daily rush to and from centre cities. Despite many efforts to force more use of transit, results show that there is very little increase in transit ridership. Introducing Erica, the talking computer, may however, be a way to get people out of their cars and into buses, streetcars, and subways. The dial-a-ride system worked well on paper but seemed to falter greatly in practice, like so many other schemes. But this computer pilot project proposes to attract new riders by reducing waiting time, one of the most frustrating and negative aspects of using transit. (TRRL)

Bens, CK *Civic Public Works Magazine* Vol. 33 No. 3, Mar. 1981, p 14, 2 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 254196), Roads and Transportation Association of Canada

ORDER FROM: Maclean-Hunter Limited, 481 University Avenue, Toronto, Ontario M5W 1A7, Canada

42 335800

GOVERNMENT POLICY CHOICES AND PUBLIC TRANSPORT OPERATIONS IN SINGAPORE

Public transport in urban environments is usually emphasized since it inter alia helps to reduce private-car traffic and thus ease congestion. Yet public transport, especially the bus system, is increasingly faced with many problems in numerous cities because of such difficulties as recovering operational costs, reliability and efficiency of service, and poor standards of ridership comfort. Measures, such as the use of subsidies, have been introduced by many urban governments to sustain the public transport system, but the extent of their effectiveness varies. The Singapore government's approach to the public transport system is to intervene actively by revamping the poorly managed and heterogeneous group of public transport operations. Among the measures taken have been the progressive reorganization of the dozen operators into a single major operator (namely, the Singapore bus service or sbs), the active control by the government of that company's management and operation through the appointment of able bureaucrats to fill the top management and operational positions, the rationalization of bus routes, and the introduction of various supplementary schemes for private owners of school buses and other high-passenger-capacity vehicles to absorb part of the passenger demand during peak hours. The government's attitude that subsidies should not be extended to public transport while debatable has so far shown to be workable, and commuters are paying the "economic costs" of the journeys. Compared with

the period prior to reorganization, the public transport system can be considered as substantially improved in regard to extensive network spread, service frequency, vehicle reliability, and comfort. For the major (and main) bus operator, the Singapore bus service, continued upgrading and improvements are expected for, notwithstanding the decision on the introduction of the mrt, its operations will form the backbone of public transportation in Singapore. (Author/TRRL)

Chee-Meoww, JA (National University Of Singapore) *Transport Policy and Decision Making* Vol. 1 No. 2/3, 1980, pp 231-251, 6 Tab., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253906), Institute for Road Safety Research

ORDER FROM: Martinus Nijhoff Publishers, P.O. Box 22, Dordrecht, Netherlands

42 336056

DISTRIBUTION MODELS FOR THE JOURNEY TO WORK

The report describes two alternative approaches to modelling the distribution of work journeys for given locations of homes and of jobs. The first approach is the traditional one based on a deterrence function or a gravity model; the second is based on random utility theory, in which each individual chooses his home or workplace or both so as to maximize his perceived utility. (Copyright (c) Crown Copyright 1980.)

Also pub. as ISSN-0305-1293.

Tanner, JC

Transport and Road Research Laboratory TRRL-LR-951, 1980, 32p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-135147

42 337290

METHODOLOGY FOR URBAN RAIL AND CONSTRUCTION TECHNOLOGY RESEARCH AND DEVELOPMENT PLANNING

The Urban Mass Transportation Administration (UMTA) sponsored this R&D Planning Project to develop an improved return on the investment in rail and construction technology research and development. The objective of the project is to apply existing industrial technology toward reducing the operating and capital costs of rail transit systems. To assist in the evaluation, a data base, generated primarily from published data, was used for estimating the present capital and operating costs of various transit system elements. An evaluation model was developed which considered the rate of deployment of the research and development project, potential benefits, development time, and cost. An outline of an evaluation methodology that considered benefits other than capital and operating cost savings was also presented.

Sponsored in part by National Aeronautics and Space Administration, Washington, DC.

Rubenstein, LD Land, JE Deshpande, G Dayman, BJ Warren, EH

Jet Propulsion Laboratory, Urban Mass Transportation Administration, National Aeronautics and Space Administration, (UMTA-CA-06-0116) Final Rpt. JPL-PUB-80-83, UMTA-CA-06-0116-80-3, Aug. 1980, 164p

Contract DOT-UT-80015

ACKNOWLEDGMENT: NTIS

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PB81-185795

42 338230

TRAVEL TO WORK PATTERNS: A PRELIMINARY ANALYSIS OF SELECTED DATA FROM THE ANNUAL HOUSING SURVEY TRAVEL-TO-WORK FILE

The annual housing survey travel-to-work file has provided researchers and practitioners with an opportunity to describe the travel patterns of various socioeconomic and geographic population subgroups, and to explore the relationship between other transportation related variables. The report addresses twelve questions representing the following five topic areas: (1) travel-to-work patterns of selected groups including men, women, working wives, female household heads, residents of public and subsidized housing, residents of mobile homes, and residents of various size communities; (2) travel-to-work mode shift patterns of American workers; (3) the relationship between the perception and use of public transit; (4) the interrelationships of perceived neighborhood attributes and travel patterns; and (5) the

relationships between residential mobility and travel patterns. Both the 1975 national sample and the 1975-76 Atlanta, Chicago, and San Francisco SMSA samples were used.

Rohe, WM Stokes, M Zatarain, K Barbour, L
North Carolina University, Urban Mass Transportation Administration, (UMTA-NC-11-0009) Final Rpt. UMTA-NC-11-0009-81-1, Sept. 1980, 183p

ACKNOWLEDGMENT: NTIS

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PB81-181513

42 341100

A DECISION MODEL FOR EVALUATING TRANSIT POLICIES

Decision models that emphasize the relationship between control variables such as transit fares and performance measures like revenue and ridership can be of significant value to the transit manager's decision-making process. Since transit pricing has become a political issue, any transit fare model needs to examine the equity implications of proposed fare policies. To this end, the transit pricing decision model presented in this paper not only provides information on aggregate quantities such as revenue and ridership but more importantly, through use of the micro-simulation technique, facilitates analysis of the impact that various fare policies would have on selected groups of riders. The potential usefulness of the model is illustrated through an application to evaluate the impact of distance-based fare policies. The design of the model and supporting computer programs are, however, flexible enough to test a variety of fare structures and permit the model to be customized to a specific user's needs and data constraints. (Author/TRRL)

Ballou, DP Mohan, L (New York University, New York) *Transportation Research. Part A: General* Vol. 15A No. 2, Mar. 1981, pp 125-138, 3 Fig., 2 Tab., 13 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254154)

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42 341178

IMPLICATIONS OF THE TRAVEL-TIME BUDGET FOR URBAN TRANSPORTATION MODELING IN CANADA

The travel-time-budget concept, which examines regularities in the allocation of travel time in urban areas, is investigated. Previous analysis of three U.S. cities suggests that the daily travel-time budget is approximately 1.1 h/traveler. The objective of this research is to (a) verify the theory in Canada and (b) determine the practical implications for transportation planning. Analysis of home interview surveys in Calgary, Toronto, and Montreal supports the conclusions previously developed in the United States. A detailed analysis of the Calgary data indicates that the travel-time budget is not affected by such factors as mode of travel, trip purpose, automobile ownership, or location of residence with respect to the central business district. Several practical applications of the concept are developed, including a procedure for conducting an independent validity check of conventional travel forecasts. This process is very simple to conduct and allows forecasts to be verified by using a different model. The travel-time budget is also a useful tool for developing equilibrium travel forecasts. Equilibrium models relate travel demand to available capacity and may reduce the demand for nonessential trips during peak periods. Further research is recommended on the application of the travel-time budget to other aspects of urban travel forecasting, including traffic assignment, modal split, and evaluation of personal mobility. (Author)

This paper appeared in TRB Record 794, Household Activities and Consumer Perspectives.

Chumak, A (Calgary Department of Transportation, Canada);

Braaksma, JP (Carleton University, Canada) *Transportation Research Record* No. 794, 1981, pp 19-27, 5 Fig., 7 Tab., 10 Ref.

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42 341179

ANALYZING TRAVELER ATTITUDES TO RESOLVE INTENDED AND ACTUAL USE OF A NEW TRANSIT SERVICE

Traveler attitude data have been shown in the literature to be important in helping to predict the use of new transportation technologies or services. Reported prior intentions to use a new service often significantly overstate

actual use once the service has been implemented. Differences obviously exist between the processes of intention formation and choice. An analysis is described that explores the differences between behavioral intentions and actual use of a new transit service by using extensive attitudinal data collected before and after implementation of a new transit system in Danville, Illinois. Several econometric models were developed, and the results are analyzed and compared. Choice constraints are treated explicitly in the analysis. Among the major findings are that level-of-service perceptions such as "convenience" and "enjoyment" and general feelings or biases regarding different transportation modes are important determinants in forming both intentions and choices. However, significant differences were found in terms of the relative importance of these attitudinal factors in the choice and intention processes, and these differences are highlighted. (Author)

This paper appeared in TRB Record 794, Household Activities and Consumer Perspectives.

Couture, MR Dooley, TM (Transportation Systems Center) *Transportation Research Record* No. 794, 1981, pp 27-33, 3 Tab., 12 Ref.

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42 341180

UNDERSTANDING THE EFFECT OF TRANSIT SERVICE RELIABILITY ON WORK-TRAVEL BEHAVIOR

Research directed at understanding the impact of transit service reliability on work-travel behavior is described. The research focuses on the impact of service reliability in commuter decisions of modal choice and trip departure time. By working with the hypothesis that service reliability is an important attribute in explaining departure time and modal choice, measures of service reliability (tied in many cases to work-arrival-time considerations) are proposed that capture the impact of service reliability on work-travel decisions. The theory is subsequently tested empirically through the estimation of departure-time and modal-choice models by using data collected in the San Francisco Bay Area. Several interesting results emerged from the research effort. First, arrival-time considerations have an impact on departure-time choice and on modal-choice decisions as well. Second, the arrival-time variables are not highly correlated with existing explanatory variables, which implies that existing travel demand models may not have biased coefficients but will still yield inconsistent forecasts where policy changes alter existing correlations between arrival-time conditions and modal-choice decisions of commuters appear to be interrelated in a way that suggests that the problem should be structured as a nested rather than a joint choice. The implications of these results and research contributions are discussed, and directions for further research are proposed. (Author)

This paper appeared in TRB Record 794, Household Activities and Consumer Perspectives.

Abkowitz, MD (Rensselaer Polytechnic Institute) *Transportation Research Record* No. 794, 1981, pp 33-41, 1 Fig., 5 Tab., 19 Ref.

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42 341408

MODELLING THE IMPACT OF ALTERNATIVE TRANSPORT STRATEGIES UPON SOCIAL GROUPS

In this paper, the application of a model representing the impact of interaction between transport costs and the location of housing, population, job employment, shopping and land is described. Two particular uses of the model are considered. Firstly, the effects of changing transport costs upon people of different social status in terms of money and time spent on travelling are examined and compared with results based upon the assumption that the location of population and employment are not responsive to changes in transport cost, as in the conventional transport demand model. Secondly, the effects of six land use-transport policy sets are examined in terms of the impact upon urban morphology, and the opportunities and travel behaviour of the three social groups. The effects are also compared with the objectives of the strategies. (Author/TRRL)

MacKett, RL (Leeds University, England) *Transportation Planning and Technology* Vol. 6 No. 4, 1981, pp 233-243, 2 Fig., 9 Tab., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254251)

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42 341410

SHORT RANGE TRANSIT PLANNING IN CAIRO

This paper describes an approach to short-range planning that was developed to analyze and suggest improvements to the existing transit system serving metropolitan Cairo. The methodology is based on a corridor-by-corridor analysis which not only brings the scale of analysis down to a level which is necessary to address operational issues, but also results in a technology transfer strategy which allows the local planners to apply and test planning techniques in one corridor while more advanced techniques are developed for another. Procedures using the results of a system-wide on-board transit survey are developed to allocate the bus fleet to the existing bus network, identify new express services, and identify new direct services. Because the effectiveness of procedures used in short-range transit planning depends on the existence of accurate data, and given the resources required for a large-scale survey, the development of planning procedures based on a continuing monitoring program is also recommended. This paper concludes that although techniques using on-board surveys are limited in their applicability, the corridor-based approach to planning is sound. (Author/TRRL)

Meyer, M Wilson, N (Massachusetts Institute of Technology) *Transportation Planning and Technology* Vol. 6 No. 4, 1981, pp 211-220, 4 Fig., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254253)

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42 341556

MAJOR CROSS LONDON RAIL TUNNEL PROPOSED

Many of the transport problems now faced by London and its commuters have grown up over the past century because of a lack of coordination by many rival companies who drove lines as close as possible to central London with no consideration for future travel needs. British Rail has now thrown open for debate proposals to link both inter-city and suburban rail routes north and west of the capital directly with those south of it by a deep level rail tunnel which will traverse the city. The estimated 380-million-pound Sterling, 8-10km long twin tunnels have been recommended to reduce time spent by travellers who have to cross the congested central part of London to get from one main line station to another. The article discusses the proposal and its implications.

Renshaw, A *Tunnels and Tunnelling* Vol. 13 No. 1, Jan. 1981, p 10

ACKNOWLEDGMENT: EI

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42 341718

METROPOLITAN RAILWAYS: PRESENT CHARACTERISTICS AND FUTURE PROSPECTS

The paper reviews the main technical, operational and economic characteristics of metro systems in operation or planning around the world and attempts to arrive at some conclusions about their future prospects. First, metros are examined in their town planning context and their basic characteristics are correlated with some basic town planning elements such as population size and density. Whereas the existence of a metro system can be correlated with the size of the population, no clear patterns can be detected as regards the density or the form of the urban area. Several other points are illustrated concerning, for example, integration with other modes of public transport and protection of the environment. Secondly, a detailed presentation is made of collective statistics showing trends and tendencies around the world on network characteristics, rolling stock, "degree of sophistication", various operational characteristics, as well as fare structures and economic performance of metro systems worldwide. Finally, prospects for the future of metros are reviewed and it is stated that today these prospects are encouraging despite escalating costs of construction and operation. Approximately 60% of existing metros have work in progress on new lines or extensions of old ones, while 22 cities are planning to start work on metros for the first time. The elements in favour of metros that appear to balance the high costs of construction are the need to protect the urban environment, and the increased demand for daily movements along densely populated corridors. Two tables give details about the characteristics of existing systems and plans for future construction. In the appendix, an example is given of the kind of analysis needed to establish the "metro financing ability" of nine selected countries. (Author)

Giannopoulos, GA (Thessaloniki University, Greece) *Transport Reviews* Vol. 1 No. 1, Jan. 1981, pp 45-74, 11 Fig., 5 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254670)

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42 342365

DESIGN OF ZONAL SYSTEMS FOR AGGREGATE TRANSPORTATION PLANNING MODELS

The zonal system used to represent the spatial properties of urban areas is basic to all aggregate transportation planning models and has an important impact on their results. The current approach to design of zonal systems is essentially empirical and based on experience, local knowledge, and judgment. The results of this approach are probably neither optimal nor consistent among urban areas. For this reason, a systematic computer-based procedure for the generation of aggregated zonal systems was designed. The procedure consists of three parts: data treatment, design of the zonal systems obtained, and, the central part, the grouping algorithm that allows a complete hierarchy of zonal systems to be established. The objective function for this grouping procedure contains two components: the homogeneity of the population inside each aggregated zone and the minimization of intrazonal trips. A number of constraints on the aggregated zones are introduced to ensure that good zonal systems are developed that satisfy the requirements of the transportation planning process. These constraints include an adjacency constraint, a constraint on natural and person-made barriers, a shape constraint, a constraint on equal population and equal number of member zones inside each aggregated zone, and a constraint on total trips. The aggregation methodology was applied to two initial zoning systems of 42 and 522 zones in the city of Montreal. The results of these experiments show that the procedure is able to generate good zoning systems for transportation planning purposes. (Author)

This paper appeared in *Transportation Research Record No. 807, Travel Demand Forecasting and Data Considerations*.

Baass, KG (Montreal University, Canada) *Transportation Research Record* No. 807, 1981, pp 1-6, 13 Fig., 6 Ref.

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42 342373

TRANSIT TRIP DISTRIBUTION MODEL FOR MULTIMODAL SUBAREA FOCUSING

This paper describes the development of a model for distribution of transit person trips, separately from automobile trips, as an integral component of a multimodal subarea focusing methodology. The extension of subarea focusing to multimodal transportation planning is reviewed. The components of the multimodal transportation analysis process, particularly the interaction between disaggregate mode choice estimation and mode-specific trip distribution, are then described. Transit trip distribution model theory and design are then presented, featuring the simultaneous distribution of distinct transit trip classes. An analysis of observed travel patterns and subsequent transit assignment and, therefore, point to greater precision in assessing the effects of transit-oriented actions. (Author)

This paper appeared in *Transportation Research Record No. 807, Travel Demand Forecasting and Data Considerations*.

Howe, SM (PAWA, Incorporated); Gur, Y (Urban Systems, Incorporated); Kurth, DL (North Central Texas Council of Governments) *Transportation Research Record* No. 807, 1981, pp 51-57, 2 Fig., 3 Tab., 11 Ref.

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42 342935

TRANSPORTATION MODELS AND ANALYSIS. PROCEEDINGS OF SEMINAR P HELD AT THE PTRC SUMMER ANNUAL MEETING, UNIVERSITY OF WARWICK, ENGLAND, FROM 7-10 JULY 1980

The proceedings of seminar P contain the following papers: Some Theoretical Difficulties in Using Equilibrium Assignment in Signal-Controlled Road Networks (Heydecker, BG); Modelling Dynamic Junction Behaviour (Budd, AM and Mackenzie, J); The Effect of Spatial Detail on Equilibrium Assignment Results (Jansen, GRM and Bovy, PHL); Development and Application of a Park-and-Ride Model (le Clercq, F); Research on

Household Car Ownership (Bates, JJ Roberts, M); A behavioural Model of Household Ownership and Use of Motor Vehicles and its Application for Aggregate Forecasting (Ben-Akiva, M, Manski, CF and Sherman, L); Computing in Transport Planning in the 1980's: a US Perspective (Manheim, M, Gonzalez, S, Litinas, N and Salomon, I); Computing in Transport Planning in the 1980's: A British Perspective (Wootton, HJ); RHTM Trip Distribution Investigation (Kirby, HR, Gunn, HF, Murchland, JD and Whittaker, JC); RHTM Base Year and Future Year Trip Matrices (Case, DJ and Catling, I); Uncertainty-the Errors of the Forecast of an Inter-Urban Traffic Model (Ashley, DJ and Shewey, P); An Analysis of Airport Passenger Surface Access Mode Choice at a Major British Provincial Airport (Sheldon, RJ). (Continued on TRIS 342936).

Heydecker, BG Budd, AM MacKenzie, J Jansen, GRM Bovy, PHL Levy, PHLRM Bates, JJ Roberts, M Ben-Akiva, M Manski, CF Sherman, L Manheim, M Gonzalez, S Litinas, N Salomon, I Wootton, HJ Kirby, HR Gunn, HF Murchland, JD Whittaker, JC Case, DJ Catling, I Ashley, DJ Shewey, P Sheldon, RJ
Planning and Transport Res and Computation Co Ltd, (0143-4365)
Monograph P 198, 1980, 382p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 256241)

ORDER FROM: Planning and Transport Res and Computation Co Ltd, 109 Bedford Chambers, King Street, London WC2, England

42 342936

TRANSPORTATION MODELS AND ANALYSIS. PROCEEDINGS OF SEMINAR P HELD AT THE PTRC SUMMER ANNUAL MEETING, UNIVERSITY OF WARWICK, ENGLAND, FROM 7-10 JULY 1980

(Continued from TRIS 342936). Predictive Accuracy of British Transport Studies (Evans, SE and Mackinder, IH); Monitoring the Impacts of Transport Management Schemes on Travel Behaviour (Bowyer, DP); Life-Cycle Changes in Household Structure and Travel Characteristics (Downes, JD); Short-Run and Long-Run Effects of Gasoline Prices in Israel (Strauss, N and Ben-Yehoshua, H); Sensitivity of Car Use to Fuel Price: an Exploration Using the Lute Model (Bland, BH); Recent Advances in Activity-Travel Analysis (Clarke, MI, Dix, MC, Jones, PM and Heggie, IG); Time, Space and People's Behaviour Over Distance (Holzapfel, H); Defining Parameters of Activity Behaviour (Damm, D); Interrelationships Between Land Use and Works Transport in France (Gerardin, B); Interrelating Trip Generation, Residential Location and Urban Structure Through Statistical Analyses and Urban Economic Theory (Zahavi, Y, Golob, TF and Beckmann, MJ); Residential Location Preference Models Compensatory and Non-Compensatory Approaches (Young, W and Richardson, AJ). (TRRL)

Evans, SE MacKinder, IH Bowyer, DP Downes, JD Stauss, N Ben-Yehoshua, H Bland, BH Clarke, MI Dix, MC Jones, PM Heggie, IG Holzapfel, H Damm, D Gerardin, B Zahavi, Y Golob, TF Beckmann, MJ Young, W Richardson, AJ
Planning and Transport Res and Computation Co Ltd, (0143-4365)
Monograph P198, 1980, 382p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 256242)

ORDER FROM: Planning and Transport Res and Computation Co Ltd, 109 Bedford Chambers, King Street, London WC2, England

42 342937

PUBLIC TRANSPORT. PROCEEDINGS OF SEMINAR N HELD AT THE PTRC SUMMER ANNUAL MEETING, 7-10 JULY 1980, UNIVERSITY OF WARWICK, ENGLAND

The following papers were presented at the seminar: Adaption to the Withdrawal of Rail Passenger Services in Rural Areas (Hillman, M and Whalley, A); Effects of the Withdrawal and Reduction of Rural Bus Services (Oxley, PR); Central Influences in Local Government Transport Policy and Finance (Courtney, IJ); A Study of User Preference Between Trams and Buses (Dersjant, AW); the West Midlands Passenger Transport Executive Continuous On-Bus Survey: How the Data is Used (Haywood, PJ and Blackledge, DA); the Monitoring and Evaluation of a Concessionary Fares Scheme (Hamilton, TD); Through Ticketing in Tyne and Wear (Nash, PJ); the Public Transport Ticket: Some Research Conclusions From a Low-Priced Ticket Experiment in the Netherlands (Baanders, A); A Study of the Duo-Bus System in an Energy-Saving Environment (Koch, U); the Role of Taxis in a Provincial Town (Jackson, RL and Coe, GA); Bus

Planning Techniques: Some Issues and Directions (Bower, DP and Last, A); Computerised Methods for Evaluating Fixed-Route Public Transport Networks (Jansson, K); New Interactive Computer Methods for Public Transport Analysis (Andreasson, I). (TRRL)

Hillman, M Whalley, A Oxley, PR Courtney, IJ Dersjant, AW Haywood, PJ Blackledge, DA Hamilton, TD Nash, PJ Baanders, A Koch, U Jackson, RL Coe, GA Bowyer, DP Last, A Jansson, K Andreasson, I
Planning and Transport Res and Computation Co Ltd, (0143-4403)
Monograph P 197, July 1980, 157p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 256239)
ORDER FROM: Planning and Transport Res and Computation Co Ltd, 109 Bedford Chambers, King Street, London WC2, England

42 342938
TRANSPORTATION PLANNING PRACTICE. PROCEEDINGS OF SEMINAR M HELD AT THE PTRC SUMMER ANNUAL MEETING, 7-10 JULY 1980, UNIVERSITY OF WARWICK, ENGLAND

The following papers were presented at the seminar: the Glasgow Rail Impact Study (Gentleman, H, Mitchell, CGB, Walmsley, DA, and Wicks, J); The Bay Area Rapid Transit System (Crowell, BN); The Evaluation of Road Safety Publicity (Coleman, L and Frankham, J); Walking-the Neglected Transport Mode (Hillman, M and Whalley, A); A Method for Assessing the Risks in Making Transportation Investments Due to Sampling and Modelling Errors (Ramsey, B and Openshaw, S); The Role of the Transportation Planners in the 1980's (Charnock, D and Wilson, CO); Communications in the 1980's Between Transportation Planners, Elected Representatives and the Public (Sharpe, D); Computing for Transportation Planning and Communications in the 1980's (Wootton, HJ); The Role of the Do-Nothing Alternative in the Evaluation of Transportation Projects (Lane, JS, Grenzeback, LR and Kingham, RI); Transportation Planning in North Staffordshire-Theory and Practice (Morrish, DW); Surpass-A Consumer Surplus Based Economic Assessment Technique (Goodwin, R). (TRRL)

Gentleman, H Mitchell, CGB Walmsley, DA Wicks, J Crowell, BN Coleman, L Frankham, J Hillman, M Whalley, A Ramsey, B Openshaw, S Charnock, D Wilson, CO Sharpe, D Wootton, HJ Lane, JS Grenzeback, LR Kingham, RI Morrish, DW Goodwin, R
Planning and Transport Res and Computation Co Ltd Monograph P 196, 1980, 125p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 256409)
ORDER FROM: Planning and Transport Res and Computation Co Ltd, 109 Bedford Chambers, King Street, London WC2, England

42 343132
METRO ANNUAL REPORT 80

In 1980 Metro rail extended another 3.52 miles and three stations to Addison Road on the Blue Line for a total of 37.15 miles and 41 stations. Bus and rail ridership increased by 14.2 million trips in 1980 or 8.1 percent above the total for 1979. Over a two-year period beginning January 1, 1978, annual total transit trips have increased by 35.5 percent from 13.9 million in that year to 189.1 million trips in 1980. The journal describes bus garages and the Nicholson Lane Metrobus facility in Rockville, a prototype of a new generation in bus facility design.

Washington Metropolitan Area Transit Authority Tech. Rpt. Dec. 1980, 29p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-204166

42 343330
TRAVEL HABITS AND PATTERNS. 1974-APRIL, 1981 (CITATIONS FROM THE NTIS DATA BASE)

The bibliography is a compilation of references on U.S. travel patterns and habits covering mostly urban areas and their variety of transportation modes. The references deal with modal choices, energy use and energy conservation, transit rider behavior, ridesharing, car pool usage, paratransit and commuter services, work travel patterns, travel demand models, and forecasting. The bibliography also contains references on the travel patterns and travel habits of the elderly and handicapped persons. (This updated bibliography contains 272 citations, 23 of which are new entries to the previous edition.)

National Technical Information Service Apr. 1981, 281p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-805756

42 343572
INNOVATION IN PUBLIC TRANSPORTATION. A DIRECTORY OF RESEARCH, DEVELOPMENT AND DEMONSTRATION PROJECTS. FISCAL YEAR 1980

The report contains descriptions of current research, development, and demonstration (RD&D) projects sponsored and funded by the Urban Mass Transportation Administration (UMTA) of the Department of Transportation. This Directory focuses on activity that took place in Fiscal Year 1980, which began on October 1, 1979 and ended September 30, 1980. Section 6 of the Act pertains to research, development, and demonstration projects in all phases of urban mass transportation, which includes technology development and deployment, service and methods demonstrations, and transportation planning and management. Under Section 8 of the Act, funds are authorized each year to conduct local transportation planning studies, otherwise known as Technical Studies. A portion of these Technical Studies funds are also used annually for Special Studies to help local planning agencies and UMTA improve the quality of information used for local transportation planning. Section 11 of the Act authorizes a program of University Research and Training Grants. These grants are designed to contribute to UMTA's research and to stimulate professional growth in fields relating to transportation.

Transportation Systems Center, Urban Mass Transportation Administration UMTA-MA-06-0086-81-1, Apr. 1981, 274p

Contract UMTA-MA-06-0086

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-218364

42 344310
A DIRECTORY OF FEDERAL STATISTICAL DATA FILES

The Directory of Federal Statistical Data Files is designed to provide users information on the existence, location, and acquisition of data released by the Federal Government in machine-readable form. The Directory contains descriptive information on the availability and content of statistical and related files produced by Federal agencies. The Directory reflects an effort to integrate several broad-based catalogs and directories and individual agency sources of information through a centralized source. It is the first effort to implement a continuing comprehensive program to describe Federal agency statistical data files. Some files are included in the Directory, which in a strict technical sense, are not statistical. It is the intent that the Directory facilitate the process of locating and acquiring statistical and related files which are potentially applicable to quantitative analyses and decision-making processes. Accordingly, in addition to the more traditional statistical files, such as those including summary statistics, time-series, and microdata, files described in the Directory also include geographic and other types of reference files, administrative reporting data files, and selected files containing computer software.

Glimpse (Warren) and Company, National Technical Information Service, Department of Commerce Mar. 1981, 517p

Contract DC00-NS81SAC00177

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-133175

42 345206
URBAN TRANSPORT OPTIONS FOR AUSTRALIA

The chief factors which characterize urban transportation in Australia are reviewed together with the organisational patchwork which has evolved to plan and direct urban transportation. Important parameters which determine system operational characteristics and efficiency in the private and public sectors are delineated. Guidelines are given on selective planning options, always stressing the need to treat the urban structure and its transportation elements as an integrated system. Some details are given for an almost silent, pollution free, private urban vehicle. Necessary changes in our decision making machinery are discussed, together with the time frame needed for effective planning of viable, urban transportation systems. (Author/TRRL)

Penzias, W (New South Wales Institute Of Technology)
Institution of Engineers, Australia 1981, pp 360-369, 5 Fig., 9 Tab., 19 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250824), Australian Road Research Board
ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

42 345209

CALIBRATION OF MULTINOMIAL LOGIT MODELS OF MODE AND DESTINATION CHOICE

Multinomial logit models of travel mode and destination choice are calibrated using a disaggregate data base. Previous practice is extended to investigate the effects on model parameter values of socio-economic standardization of tripmaking households for the journeys to work, shop and recreation. These models are calibrated at the regional scale. Values of travel time and travel demand elasticities are presented, and compared with the findings of previous studies in this field.(a) (TRRL)

Southworth, F (Illinois University, Urbana) *Transportation Research. Part B: Methodological* Vol. 15A No. 4, July 1981, pp 315-325, 7 Tab., 18 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 256596)
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42 345210

THE SOCIAL COSTS OF TRANSPORTATION CONTROL PLANS

This paper presents the results of a research project which examined some of these issues by simulating the effects of various TCP proposals on work travel for Boston's north shore. A multinomial logit model of travel demand was used to predict traveler responses and changes in consumer's surplus. For transit improvement strategies, costs were computed with a process model. These models were employed to predict the monetized value of welfare losses and gains of the TCP strategies. Inferences about the effects of TCP on urban form were made based on the welfare change calculations. This analysis attempts to determine the costs of current political constraints which limit the set of feasible TCP strategies. (Author/TRRL)

Dunbar, FC (National Economic Research Associates, Inc) *Transportation Research. Part A: General* Vol. 15A No. 4, July 1981, pp 285-94, 1 Fig., 4 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 256598)
ORDER FROM: TRRL

DOTL JC

42 345225

SOME IMPROVEMENTS TO CURRENT PRACTICES OF ESTIMATING INDIVIDUAL TRAVEL CHOICE MODELS WITH EXISTING DATA

This paper was presented at Session 7: Modelling Workshop. Much money has been spent on the collection of comprehensive household travel (HIS-home interview survey) data in Australian cities which has in turn been used, and will continue to be used in the foreseeable future, for the estimation of travel demand models by transport planning authorities. The proliferation of multinomial logit (MNL) and other estimation/application packages also means that individual travel choice models will continue to be prominent. In this event it is worth ensuring that maximum value is obtained. Improvements to current individual travel choice modelling may be achieved in at least three aspects: first, if the Lancasterian paradigm of consumer behaviour is strictly followed and only characteristics of the transport system are included in the utility function, but the influence of different individual attributes is allowed for by appropriate market segmentation; second, if the unit of analysis adopted is the journey (ie the round trip from home back to home) and not the trip; third, if choice sets are carefully selected, which in the case of the MNL model could result in a hierarchical decision process for the journey-to-work modal choice. The Ballarat HIS data was used for the exercise and resulted in following current practices. (TRRL)

Papers from the 6th Australian Transport Research Forum, Brisbane, October 22-24, 1980.

Dumble, P Goschnick, S
Queensland Metropolitan Transit Authority, (0313-6655) 1980, pp 449-480, 3 Fig., 5 Tab., Photos., 39 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250636), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

42 345226

LATENT DEMAND FOR URBAN PUBLIC TRANSPORT

This paper was presented at session 9: Transport Planning and Demand Forecasting. Limited public capital has necessitated a shift in planners' concern from grand new transport systems to incremental plans. Data assembled to design the SATS system for Sydney is manipulated to identify corridors for system improvement on the basis of both absolute and relative response. Latent demand for public transport is estimated by projecting an "idealised" system for Sydney, such that a uniform relationship exists between private car travel times and transit times. The difference between patronage on the "idealised" system and the present system indicates significant latent demand in corridors with different functions and disparities in existing service levels (a). The number of the covering abstract of the forum is IRRD no. 250625. (TRRL)

Papers from the 6th Australian Transport Research Forum, Brisbane, October 22-24, 1980.

Morris, B (Urban Transit Authority Of New South Wales); Alt, M
Queensland Metropolitan Transit Authority, (0313-6655) 1980, pp 597-607, 7 Fig., Tabs., Photos., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 250645), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

42 345235

BENEFIT/COST ANALYSIS EFFICIENCY-EQUITY ISSUES IN TRANSPORTATION

The article explores the problem of the application of benefit/cost (b/c) analysis to public sector decision-making. Reference is made to the specific policy area of transportation and to public choice in general. Section 1 discusses the theoretical problems in the use of b/c analysis as a measure of efficiency while sections 2 & 3 discuss specific public project examples-the Bay Area Rapid Transit System (BART) and the Tennessee-Tombigbee waterway. Section 4 reviews the issue of equity as a factor in the b/c analysis, while section 5 presents conclusions regarding the use of b/c in public choice. Benefit-cost analysis as a primary basis for public decision-making is intended to insure the most efficient allocation of economic resources for public projects. (TRRL)

Sagner, JS *Logistics and Transportation Review* Vol. 16 No. 4, 1980, pp 339-371, 3 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 254127)

ORDER FROM: British Columbia University, Canada, Faculty of Commerce, Vancouver V6T 1W5, British Columbia, Canada

DOTL JC

42 345242

LOW COST FORECASTING USING EXISTING PUBLIC TRANSPORT PATRONAGE DATA

This paper was presented at session 9: Transport Planning and Demand Forecasting. Increased concern with improving the efficiency of urban transport via low cost management techniques has naturally focused more attention on the role of public transport. However, the development of demand forecasting methodologies appropriate to this scale of planning activity has not kept pace with the changing emphasis. This paper describes the development of a simple time series model of public transport patronage, based on ticket sales records, that can provide useful forecasting information. The fare and service elasticities produced from this model directly provide changes. The potential for future use in a sketch planning role is considerable, given the ease and low cost of model development (a). The number of the covering abstract of the forum is IRRD no. 250625. (TRRL)

Papers from 6th Australian Transport Research Forum, Brisbane, October 22-24, 1980.

Brown, H (Melbourne University, Australia); Singleton, D (Ove Arup Transportation Planning)
Queensland Metropolitan Transit Authority, (0313-6655) 1980, pp 631-644, Figs., 3 Tab., Photos., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250630), Australian Road Research Board

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42 345246

THE SUBSTITUTION OF TELECOMMUNICATIONS FOR TRAVEL

As a consequence of the cost and inconvenience of travel, particularly that undertaken by employees to get to and from their place of employment, the future shortages of energy, and the current and foreseen technological developments in telecommunications, a view is offered that there can be an effective telecommunications/ travel tradeoff. This view is expanded, principally by reference to existing relevant publications, most of them from the U.S., and a balance is sought between what is possible and what is desirable in such a tradeoff. (Author/TRRL)

Symposium on Computer Control of Transport 1981, Sydney, February 19-20, 1981.

Wilks, DF (Australian Telecommunications Commission)
Institution of Engineers, Australia No. 81/1, 1981, pp 56-61, 1 Tab., 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250624), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

42 345249

THE FUTURE OF RURAL RAILWAYS

This document contains the following papers: Opening address (Posner, M); The rural rail network (Keen, P); Social issues (Hillman, M and Whalley, A); A local authority perspective (Macklin, D); Technical and operational opportunities (Bradsbaw, B, Keen, P and Glassborow, D); Policy Options (Gwilliam, K). (TRRL)

Proceedings of a Conference held at Policy Studies Institute, London, 7 January 1981.

Stone, A Posner, M Keen, P Hillman, M Whalley, A MacKlin, D Bradshaw, B Glassborow, D Gwilliam, K
Policy Studies Institute Monograph Mar. 1981, 47p

ACKNOWLEDGMENT: TRRL (IRRD 257105)
ORDER FROM: Policy Studies Institute, 1-2 Castle Lane, London, England

42 345257

THE EVALUATION OF URBAN PUBLIC TRANSPORT PROJECTS

This paper reports on the evaluation of urban public transport projects as carried out by the Bureau of Transport Economics. Methods employed by the Bureau are orthodox, but also embody a number of features especially tailored to the urban public transport situation. They are discussed in sections on benefit-cost evaluation, economic content, pricing, financial analysis, evaluation approach, costs, benefits, base case and project case alternatives, brief comments on evaluation results, transport evaluations and urban objectives. This paper was originally presented to the Symposium on Urban Public Transport, University of Melbourne, September 1973. (TRRL)

Taplin, JH (Australian Department of Transport); McMaster, JC (Canberra College of Advanced Education, Australia); Webb, GR (Royal Military College, Duntroon, Australia)
Australia and New Zealand Book Company Monograph 1978, pp 80-88, Refs.

ACKNOWLEDGMENT: TRRL (IRRD 235004), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

42 345271

RECENT DEVELOPMENTS IN PUBLIC TRANSPORT [RECENTE ONTWIKKELINGEN BIJ HET OPENBAAR VERVOER]

This paper attempts to set out the strong and the weak points of public transport, based on its recognised principal functions. Possibilities for improvement offered by the new technical developments and the present-day tendencies of development in practice are discussed. Points are illustrated with the help of examples from other countries. Finally, the spot-light is

directed on the fields in the Netherlands in which joint exertion is desirable and also possible. (TRRL) [Dutch]

Deher, WF (Studiecentrum Verkeerstechneik, Netherlands);
Vaner, WF (Delft University of Technology, Netherlands)
Secretariaat Verkeerskundige Werkdagen Conf Paper May 1981, pp 617-641, 14 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 255866), Institute for Road Safety Research

ORDER FROM: Secretariaat Verkeerskundige Werkdagen, P.O. Box 163, Driebergen-Rijsenbur, Netherlands

42 345277

A COMPARISON OF PUBLIC TRANSPORT IN CITIES IN SOUTH EAST ASIA

Information from eight cities in Southeast Asia has been compared to examine, mainly from the user's viewpoint, the characteristics of different public transport modes. Classification of the available public transport modes was made according to fare level and method of operation. As a result, a distinction is made between mass transit modes- defined as having fixed routes-and personalised public transport (PPT) modes. With few exceptions, mass transit modes have low fares and PPT modes have high fares. In only one city, Chiang Mai in Thailand, is there a PPT mode which is widely used and for which fare levels are similar to mass transit fares. (a) (TRRL)

Case, DJ Latchford, JC (Jamieson Mackay & Partners)
Transport and Road Research Laboratory, (0305-1315) Monograph
NSR 659, 1981, 28p, 5 Fig., 6 Tab., 10 Phot., 8 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 256376)

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42 345360

TRANSIT INFORMATION SYSTEM AND EVALUATION CAPABILITY TO SUPPORT SUBAREA TRANSPORTATION PLANNING AND IMPLEMENTATION

The key features of a multipurpose information system and detailed evaluation capability to support transit system planning in the Dallas-Fort Worth area are summarized. The system was specifically designed to enhance a sophisticated subarea travel demand and evaluation technology so as to allow short-and long-range multimodal planning efforts to be conducted. The system was developed jointly by the North Central Texas Council of Governments, local transit operators, and a consultant. Essential transportation planning data are available on both a transit link and line basis, including supply, utilization, environmental, and financial performance measures. The use of the information system is illustrated by a case study example. (Author)

This paper appeared in Transportation Research Record No. 815, Improvements in Travel Monitoring and Data Aspects of the Energy Problem.

Ryden, TK Morris, M Roussere, P (North Central Texas Council of Governments) *Transportation Research Record* No. 815, 1981, pp 18-24, 2 Fig., 2 Tab., 10 Ref.

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42 345362

IMPACT OF TRAVEL SURVEY SAMPLING ERROR ON TRAVEL DEMAND FORECASTING. DISCUSSION

Alternative models of urban travel demand and the data used to estimate them are reviewed. The study focuses on the sampling error in origin-destination trip data and the impact that sampling error has on the estimation of a direct-demand travel model. High sampling errors in origin-destination trip data are found to significantly inhibit the performance of the direct-demand travel model. (Author)

This paper appeared in Transportation Research Record No. 815, Improvements in Travel Monitoring and Data Aspects of the Energy Problem.

Difiglio, C Disbrow, JA (Department of Energy); Heane, KE (Federal Highway Administration) *Transportation Research Record* No. 815, 1981, pp 31-41, 11 Tab., 11 Ref.

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42 345393

ON COMPETITION AND PRODUCT DIFFERENTIATION IN URBAN TRANSPORTATION: THE SAN FRANCISCO BAY AREA
This article considers Cournot-like competition among two public transit oligopolists (a rapid-rail system modeled on the Bay Area's BART, and a parallel bus system) in the presence of a competitively supplied third alternative. The oligopolists compete in both service quality and price, and do so myopically. With demand and cost data from the Bay Area numerically estimated equilibria are obtained and studied. The results indicate that: (1) with fares and product characteristics freely variable, neither mode need operate at a loss; (2) the rapid-rail mode can cover costs from the farebox even if the bus mode offers money-losing service; (3) the equilibria exhibit product differentiation, in sharp contrast to the presently observed situation.

Viton, PA (Pennsylvania University) *Bell Journal of Economics* Vol. 12 No. 2, 1981, pp 362-379, 2 Fig., 6 Tab., Refs.

ORDER FROM: American Telephone and Telegraph Company, 195 Broadway, Room 01-1940, New York, New York, 10007

DOTL JC

42 345399

INTEGRATION OF PUBLIC TRANSPORTATION MODES IN METROPOLITAN DADE COUNTY, FLORIDA

This paper describes the regional approach utilized by Metropolitan Dade County, Florida, in developing its unified transportation system which, when fully implemented, will consist of an elevated, conventional rail system; a feeder bus system; and an elevated downtown people mover system. The characteristics of system components, and certain problems encountered, at the policy-making and technical levels, in providing for their full integration are outlined. Emphasis is placed on difficulties due to technological differences of the fully automated DPM system and the conventional heavy rail rapid transit system presently under construction in Dade County.

Proceedings of Convergence 80, 30th Annual Conference of the Institute of Electrical and Electronics Engineers Vehicle Technology Society International Conference on Transportation Electronics, Dearborn, Michigan, September 15-17 1980. Session D-4, Paper 4.

Dyer, JA (Dade County Off of Transp Admin, Florida); Goodman, JS

Institute of Electrical and Electronics Engineers Conf Paper IEEE 80CH1601-4, 1980, 5p

ACKNOWLEDGMENT: EI

ORDER FROM: IEEE

42 345403

OPPORTUNITIES FOR IMPROVED COORDINATION BETWEEN RAIL AND OTHER PASSENGER MODES

Intercity rail, bus and other passenger travel modes have an essential mutually supportive role to play. A policy of intermodal coordination in line haul, feeder and terminal access functions will improve the quality of public transportation, encourage utilization of energy-efficient (bus and rail) modes of travel, and avoid costly duplication of transportation facilities. However, under rail-bus competitive contexts, it is difficult to identify those mechanisms which could be used to improve intermodal coordination. The objectives of research reported in this paper are: (1) to identify the problems of interface between passenger rail, intercity bus and urban transportation; (2) to delineate jurisdictional, institutional, policy and planning and other factors that are responsible for the lack of intermodal coordination; (3) to identify opportunities for improved coordination between rail and other passenger modes, particularly bus services, which could be made possible through federal-provincial efforts, e.g., intermodal terminals, feeder services, improved access to terminals.

Proceedings of the Institute of Transportation Engineers Sixth Annual Meeting: Inter-City Transportation and the Urban Scene, held April 22-24, 1981 in Victoria, British Columbia.

Khan, AM (Carleton University, Canada); Gelman, S (Science Council of Canada)

Institute of Transportation Engineers Conf Paper 1981, pp 309-332

ORDER FROM: ESL

42 345406

TRANSIT PLANNING IN GREATER VICTORIA

In 1980, the Capital Region Transit System was formed through Agreements between the CRD, UTA and MTOC. Under this new organization, the CRD is responsible for setting fares, planning services and local funding. The CRD began work in 1970 on the development of an ongoing transit planning program to ensure that efficient and effective transit services are provided. This program is structured according to three distinct levels of planning activity--Strategic Plans, Service Plans and Operations Plans. For the Strategic Plan many techniques were adapted from the Regional Transportation Planning program. Following approval of the Strategic Plan, analytical techniques and a system monitoring procedure have been developed. These techniques are now being implemented to facilitate the development of detailed Service Plans.

Proceedings of the Institute of Transportation Engineers Sixth Annual Meeting: Inter-City Transportation and the Urban Scene, held April 22-24, 1981 in Victoria, British Columbia.

O'Brien, WB (Capital Regional District, Victoria, Canada)

Institute of Transportation Engineers Conf Paper 1981, pp 369-386

ORDER FROM: ESL

42 345409

A MORE COMPREHENSIVE EVALUATION OF URBAN TRANSPORTATION IMPACTS

In recent years attempts have been made to develop more comprehensive techniques for evaluating transportation system improvements or changes. This paper attempts to combine these developments to form a comprehensive evaluation framework from the viewpoints of the users, the operators, and the urban community, with respect to the incorporation of a light rail transit (LRT) system in the South Corridor of the city of Calgary. A discrete choice model (Logit) is used to analyze the modal share of the transportation users, and change due to the LRT incorporation. The concept of consumer surplus is used to give an approximate users monetary benefit due to the new system. From the operators point of view, the Logit model's mode shift analysis gives an indication of change in revenue. Utility theory is used to construct utility curves of community reactions to impact factors due to the LRT system. Demand functions are derived from these curves, and again, an approximate monetary benefit or disbenefit is obtained. The final result is an aggregated or disaggregated comprehensive index comparing changes in benefit and cost due to the LRT system.

Proceedings of the Institute of Transportation Engineers Sixth Annual Meeting: Inter-City Transportation and the Urban Scene, held April 22-24, 1981 in Victoria, British Columbia.

Bee, CK (City of Edmonton, Canada); Sargious, MA (Calgary University, Canada)

Institute of Transportation Engineers Conf Paper 1981, pp 421-442

ORDER FROM: ESL

42 345411

ESTIMATION OF SOME IMPACTS OF THE BALTIMORE RAPID-RAIL SYSTEM

The dissertation assesses impacts of the Baltimore rapid-rail system before the system is built. The model is based on the monocentric urban theories of Muth and Mills; since Baltimore's Central Business District (CBD) is the largest employment center in the area, with much of the remaining employment scattered around the urban area, and as the proposed rail system will radiate from downtown (as do many of the current bus system's lines), use of such models is probably not too drastic a simplification. The model is intended to predict changes in residential rents and the flow of housing services due to the introduction of the rail system; in addition, a worker location equilibrium equation is derived from the model, and is specified in an estimable form. From this changes in worker location can be forecasted from transit improvements. (Employment and commercial sites are assumed fixed in the model; one is looking only at the residential side of the city.) Results from the model's solved reduced form indicate that the impact of the subway on worker location will not be massive; rather, for an approximately 20% decrease in travel time to the Central Business District, the number of workers in the corridor rises by about 20%. Results from the auto use and housing services reduced form equations are not considered to be as reliable however.

Jelavich, MS

Johns Hopkins University, Baltimore PhD Thesis 1981, 155p

ORDER FROM: University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan, 48106

81-06,630

42 345412

VARIABLES INFLUENCING TRANSIT USE

The study reported evaluates statistical data to test the relationship of six transit system-related variables to transit use. Each variable represents a criterion of transit service quality or coverage commonly assumed by planners to influence the use of a transit system speed, frequency of service, express bus service, route coverage, noncentral business district services, and transferring.

Weisman, M (San Francisco Municipal Railway) *Traffic Quarterly* Vol. 35 No. 3, July 1981, pp 371-383, 5 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

42 345414

LIGHT RAIL: WHERE THE ACTION IS

Light rail transit provides the operating benefits of fixed guideway transportation without the high capital cost of heavy rapid transit. The basic light rail concept can be modified to meet a particular city's circumstances. Light rail projects in Pittsburgh, Buffalo, Portland, and San Diego are examined. The status of the light rail proposal for the Denver area is discussed. Denver's Regional Transportation District recently demonstrated that a 73 mi at-grade light rail network would satisfy Denver's need for more cost-effective, less polluting transport. Various light rail vehicles are described. Advantages and limitations, possible variations, and significant advancements in light rail vehicle technology are discussed.

Kizzia, T Middleton, WD *Railway Age* Vol. 181 No. 18, Sept. 1980, pp 40-51, 2 Fig., 12 Phot.

ORDER FROM: ESL

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42 345420

THE WORLD IN TRANSIT

Indecisiveness as to the role of rail transit in national transportation policy over the past decade, and particularly starting in 1981, complicates long-range planning for U.S. transit agencies. Elsewhere transit funding and planning are more orderly so that world-wide there have been 12 new rail transit systems placed in service every five years since World War II. The 71 metro systems around the world have 2,079 route miles in operation; 51 of them are now building an additional 475 route miles. General observations on population size, funding, energy conservation, and economic value of rail transit systems are discussed. This is followed by tables giving statistical highlights of the existing systems.

Engel, AP Felix, F (Gibbs and Hill, Incorporated) *Railway Age* Vol. 182 No. 18, Sept. 1981, pp 39-56, 2 Fig., 7 Tab.

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DOTL JC

42 345425

TRANSIT'S ROCK AND HARD PLACE

Transit operators are faced with dilemmas over procurements and technology, but the author sees the greatest challenge for managers being the future of federal funding for capital and operating purposes. In any case, managers will be faced with the balancing of service levels within the constraints of revenue and operating expenses. There has been an incomplete transition of public transport from a private business to a community public service; in today's role there are benefits both for the user and for the community served. The support of such service from these segments needs to be resolved; the author insists this should not be done on an adversary basis. He also asks that technological horizons be dropped from the 20-30 year span, the norm over the past two decades, to 5 to 15 years in this period of financial stringency.

Gorman, FA (Port Authority Trans-Hudson Corporation) *Progressive Railroading* Vol. 24 No. 10, Oct. 1981, pp 39-44, 4 Phot.

ORDER FROM: Murphy-Richter Publishing Company, 20 North Wacker Drive, Chicago, Illinois, 60606

DOTL JC

42 345442

RAILROAD ENERGY STUDY: REGULATION. VOLUME 2: RAIL-PASSENGER TRANSPORTATION

The objectives of the study are to: provide a current, comprehensive, and accurate data base of railroad economic activity and energy consumption; describe planned and postulated expansion and the time frame of future developments; identify research and development needs related to improvements in energy utilization; and provide data that the federal government may use to determine its future role. This report identifies the institutions and reviews the general arrangements under which rail passenger transportation services are delivered by railroads and transit agencies in the United States. Attention is given to the many and varied agencies concerned with regulating, planning, constructing, equipping, operating, fare setting, financing, and subsidizing rail passenger services. (MCW)

SRI International Tech Rpt. DOE/CS/51176-T9, Mar. 1977, 26p

Contract AC03-76CS51176

ACKNOWLEDGMENT: Energy Research Abstracts

ORDER FROM: NTIS

42 345724

CALCULATIONS OF THE COST OF ALTERNATIVE SUBURBAN TRANSPORT SYSTEMS [KOSTENBEREKENINGEN MET BETREKKING TOT ALTERNATIEVE VERVOERTECHNIEKEN IN HET VOORSTADVERVOER]

This report presents the results of research into the cost of running suburban transport according to a number of alternative systems. The research is part of a multi-disciplinary research programme which also deals with aspects of environmental protection, but the present report is confined to the aspect of costs. Two variants are investigated; the reserved lane system and the ordinary road system without reserved lanes. The former is more expensive than the latter even with heavy passenger flows but according to the report a reserved lane may be desirable or even necessary for reasons other than financial ones. Within the reserved lane variant, the articulated trolley bus is cheaper than the express tram, with the passenger flows investigated but this in turn is cheaper than the conventional tram. However, with very heavy passenger flows the express tram would be the cheapest. In the variant without a reserved lane the articulated bus is cheaper than the standard bus even with moderate passenger flows; the articulated trolley bus is more expensive, but the difference decreases with an increase in traffic. All the results are presented subject to the limitations which accompany the exploitation variants concerned; the above conclusions therefore are not universally applicable but must be tested in any particular situation. All figures quoted in the report are based on the 1976 cost structure. (a) (TRRL) [Dutch]

Eygenbrood, WH Hilferink, PB Vanferink, PB (Econ Bureau Voor Het Weg En Watervervoer, Neth)

Ministerie van Volksgezondheid en Milieuhygiene Monograph NVL-HR-03-05, June 1980, 95p, 4 Fig., 29 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 257466), Institute for Road Safety Research

ORDER FROM: Ministerie van Volksgezondheid en Milieuhygiene, 8-12 Dr Reyersstraat, Leidschendam, Netherlands

42 345741

SOME REFLECTIONS ON JOURNEY TO WORK STUDIES IN SYDNEY, TORONTO, NEW YORK, (LONDON AND PARIS)

A number of detailed studies of the journey to work in major world conurbations using 1971 census data have now been reported. In some cases, simultaneous surveys of actual travel, rather than the normal travel obtained in censuses, have also been obtained. Various analysis techniques have been adopted for such studies, according to the type of questions being addressed. It is time to take stock, see what has been achieved, what lessons can be learnt from our successes, and our failures, and whether our understanding of the relationship between travel and city structure has been increased by such studies. (a) (TRRL)

Mogridge, MJ (University College, London) *Transportation Research. Part A: General* Vol. 15A No. 5, Oct. 1981, pp 399-405, 10 Ref.

ACKNOWLEDGMENT: TRRL (8110TR054E)

ORDER FROM: ESL

DOTL JC

42 345915

TIME SERIES ANALYSIS OF GLASGOW SUBURBAN RAIL PATRONAGE

The report deals with the time series analysis of passenger flows on the Glasgow suburban rail network; its objective is to establish a modelling framework for the assessment of the effects of operational changes to the system, and the emphasis has been placed upon obtaining accurate estimates of changes in patronage. Fares elasticities were estimated for eighteen flows; they covered a range from zero to -1.1, with a median elasticity of -0.48. No significant difference was found between elasticities for different ticket types, but some evidence was obtained that elasticities vary with distance from Glasgow. The application of the model is demonstrated by a set of case studies, including an analysis of the effects of the electrification of the Hamilton Circle in 1974, which had a marked effect on traffic. The report concludes that the time series analysis of ticket sales data can make a useful contribution to the assessment of the effects of operational changes. (A) (TRRL)

Stark, DC

Transport and Road Research Laboratory, (0305-1315) Monograph NSR 649, 1981, 32p, 8 Fig., 8 Tab., 2 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258200)

ORDER FROM: TRRL

42 345916

THE ROLE OF PUBLIC TRANSPORT IN NEW TOWNS. A BIBLIOGRAPHY AND RESEARCH GUIDE WITH SPECIAL REFERENCE TO RUNCORN, SKELMERSDALE AND TELFORD

The book presents a bibliography covering literature relating to an investigation of the role of public transport in the new towns of Runcorn, Skelmersdale and Telford. The bibliography is arranged in the following eight main sections: new towns (general); new towns (specific); transport and mobility (general); public transport; private motor transport; non-motorised travel; transport travel; research techniques and methodology; and, information sources. (TRRL)

Alpert, M Lesley, L

Liverpool Polytechnic, England Bibliog. Feb. 1979, 476p

ACKNOWLEDGMENT: TRRL (IRRD 258238)

ORDER FROM: Liverpool Polytechnic, England, Department of Town and County Planning, 53 Victoria Street, Liverpool, England

42 345921

AN ANALYSIS OF THE COMMUTER DEPARTURE TIME DECISION

Transportation planners and transit operators alike have become increasingly aware of the need to diffuse the concentration of peak period travel in an effort to improve gasoline economy and reduce peak load requirements. An evaluation of the potential effectiveness of strategies directed to achieve this end requires an understanding of factors which affect commuter trip timing decisions. The research discussed in this article addresses this particular problem through the development and estimation of a commuter departure time (to work) choice model. A number of conclusions were drawn based on the departure time model results and related analyses. It was found that work schedule flexibility, mode, occupation, income, age, and transportation level of service all influence departure time choice. The uncertainty in work arrival time and the consequences of various work arrival times may also be determinants of commuter departure time choice. The estimated model represents improvements over previous work in that it more explicitly considers work arrival time uncertainty and travelers' perceived loss associated with varying work arrival times, and additional socio-demographic factors which can potentially affect departure time choice. Furthermore, the estimated model includes consideration of transit commuters, in addition to single occupant auto and carpool work travelers. The conclusion of transit commuters represents a particularly important contribution for policy analysis, since the model could potentially be used to study the effect of service and employment policies on transit (TRRL)

Abkowitz, MD *Rensselaer Polytechnic Institute* Vol. 10 No. 3, Sept. 1981, pp 283-297, 5 Tab., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257954)

ORDER FROM: ESL

42 345922

CANADIAN TRANSIT SERVICES, DEMAND AND SUBSIDIES IN AN INTERNATIONAL CONTEXT

Since 1976 an international collaborative group on factors affecting public transport patronage has undertaken a comparative study of transit variables in nine participating countries, which include Canada. This paper compares Canadian experience with that of other countries, as found in the study. The primary focus of the study has been the impact on transit usage of fares, level of service in all its aspects, traffic policies, land use, automobile ownership, and income. To fully understand the policy implications of these relationships it was also necessary to examine the social context within which transit operates, research methods, and the relationship of the above variables to transit costs and subsidies. An international comparison is appropriate because of the similarities between transit related factors in the countries under review, which suggests that research findings are internationally transferable. Some results are available for other countries of relationships for which thorough studies have not been undertaken in Canada. Similar findings on fare and service elasticities and on the factors determining costs confirm those found in Canadian studies. With the aid of these it is possible to construct transit policies best suited to the political objectives selected. (TRRL)

Frayne, A (Transport Canada Research and Development Centre) *RTAC Forum* Vol. 3 No. 2, 1981, pp 22-29, 2 Fig., 3 Tab., 20 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257650), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

42 345928

FUNDAMENTALS OF TRANSPORT ECONOMICS

The book explains the use of simple, quantitative methods to solve problems in transport economics, and introduces the principles of economic analysis. Special attention is paid to the concepts and methods common to all forms of public enterprise. Actual case studies such as bus pricing and subsidies are used in order to make the relevance of theory clear. The topics covered include consumer behaviour, producers, welfare economics, pricing policy, economic evaluation and planning, queueing and regulation. (TRRL)

Glaister, S (London School Of Economics And Political Science)

Basil Blackwell Publisher Monograph 1981, 194p, Figs., Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 257893)

ORDER FROM: Basil Blackwell Publisher, 108 Cowley Road, Oxford, England

42 345936

EVALUATING EMPLOYER PROGRAMS ENCOURAGING THE USE OF ALTERNATE TRANSPORTATION MODES: TWO STUDIES

Since 1976, major Denver metropolitan area firms have been required to encourage employees to use mass transit, carpooling, bicycling, and other "alternate transportation modes" to commute to work. The encouragement programs of 36 firms were clearly associated with greater use of alternate transportation modes, with the portion of variance in alternate transportation use explained by differences in employer programs of approximately 15%. The effects of the programs on deterring alternate mode users from returning to solo driving are consistently weaker than their effects on persuading drivers to try alternate transportation modes initially. Recommendations for the conduct of alternate transportation encouragement programs are made, based on these and other results. In addition, two recommendations are made concerning the evaluation of encouragement programs: that aggregate percentage change in alternate transportation use should not be used as the sole measure of success, and that environmental variables such as the availability of and pressure for use of alternate transportation modes should be measured and controlled.(a) (TRRL)

McClelland, L (Hawaii Department of Transportation); Marks, MB Eidson, M Cook, SW (Colorado University, Boulder) *Transportation (Netherlands)* Vol. 10 No. 3, Sept. 1981, pp 247-256, 2 Fig., 1 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 257957)

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42 345940

URBAN TRANSPORT PLANNING

The ways in which transport systems have developed in cities indicates that governments act to meet immediate requirements rather than plan for the

future. In an attempt to overcome this problem, a comprehensive approach to planning for future land use and transport facilities has been developed and applied particularly in North America, Britain and Australia, and more recently in developing countries. The book discusses how the systems approach has been applied in the planning of multi-modal transport systems and shows how a city can be represented by land use zones superimposed with a transport network. By treating the urban area as a system, and recognising the interactions between land use, traffic and transport, the study shows how it is possible to predict future demand, how transport requirements can be determined, and how alternative plans are formulated and then evaluated. By illustrating the success of the theory when applied to city planning, the book provides a critical and comprehensive state of the art examination. (TRRL)

Black, J
Croom Helm Limited Monograph 1981, 248p, 37 Fig., 20 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 257900)

ORDER FROM: Croom Helm Limited, 2-10 Saint Johns Road, London, England

42 346053

INVENTORY OF EXISTING RESEARCH ON MASS TRANSIT [INVENTERING AV EXISTERANDE FORSKNING ROERANDE KOLLEKTIV PERSONTRANSPORT]

The main categories included in the report are: man and mass transit; housing and mass transit; mass transit systems; economic aspects; traffic trends. Both computer and conventional literature searches were made. The references were then examined and placed in one of the five categories listed above. It was determined that during the past 10 years the structure, standards, and environmental impact of the mass transit system have been examined in the greatest detail by traffic researchers. Examination of current research revealed that these same aspects of mass transit systems continue to dominate. Several suggestions are made for future studies. [Swedish]

Also pub. as ISSN-0347-6049

Kihlman, B
National Swedish Road & Traffic Research Institute VTI/MED-
DELANDE-226, 1980, 250p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-106618

42 346105

MBTA (MASSACHUSETTS BAY TRANSIT AUTHORITY) PASSENGER DEMAND ANALYSES, 1977

The study was undertaken for the calibration and analysis of the Massachusetts Bay Transit Authority (MBTA) passenger data to be used as an input to the main operational performance simulation model that is being developed. A survey was made of the number of passengers using the Highland Branch of the MBTA Green Line. All of the PCC streetcars on that line were to be replaced by new light rail vehicles within the year. Analysis of the data confirmed a "market share" theory for the stations and suggested that fairly sparse sampling could yield estimates of total passenger movement acceptable at the 90 percent confidence level.

See also PB82-101825.

Kwok, BS Jordon, LM
Transportation Systems Center, Urban Mass Transportation Administration Final Rpt. DOT-TSC-UMTA-80-45, UMTA-MA-06-0074-81-2, Aug. 1981, 47p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-101817

42 346132

URBAN DECENTRALIZATION AND THE ROLE OF PUBLIC TRANSPORTATION. EXECUTIVE SUMMARY

The study examines the implications for public transportation of decentralization of population and employment within the nation's urban areas. Five case studies are examined in detail in terms of growth patterns, land use policies toward growth and decentralization, and the types of public transportation projects planned or implemented. The case study urban areas are identified as follows: (1) Relatively Declining Urban Areas--Boston, MA, and Rochester, NY; (2) Maturing Sun Belt Growth--Atlanta, GA; and (3) Booming Urban Areas--Tampa, FL, and San Jose, CA. It was found that

most projects were planned with an incomplete or inaccurate understanding of decentralization patterns; were not usually in concert with land use objectives; and often reflected unrealistic expectations of what public transportation services can perform. The recommendations center around a reformulation of the relationship between land use policy and public transportation in the future. The report also presents recommendations for the future role of UMTA in the urban decentralization process.

See also PB82-114844.

Bloch, AJ Pignataro, LJ
Polytechnic Institute of New York, Urban Mass Transportation Administration UMTA-NY-11-0023-81-3, July 1981, 13p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-114836

42 346133

URBAN DECENTRALIZATION AND THE ROLE OF PUBLIC TRANSPORTATION

The overall purpose of the study is to explore the opportunities and difficulties that are likely to occur during the near-term if a transition is to be made in terms of the "future directions of public transportation." The study examines the recent transportation planning and implementation experience in a number of urban areas in order to discern how well urban America is prepared for a likely future scenario of continued population decentralization.

See also report dated Dec 78, PB-292 781, and PB82-114836.

Bloch, AJ Pignataro, LJ
Polytechnic Institute of New York, Urban Mass Transportation Administration Final Rpt. UMTA-NY-11-0023-81-4, July 1981, 100p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-114844

42 348004

ORGANIZING FOR EFFECTIVE RAIL SYSTEM PLANNING AND IMPLEMENTATION: THE METRO-DADE EXPERIENCE (ABRIDGMENT)

The transportation planning and implementation structure of Metropolitan Dade County, Florida (the Miami urbanized area), is described, and key characteristics that make it effective are discussed. Four unusual aspects of organization for effective planning and implementation of major transportation improvements combine to form a unique decision-making process. Metropolitan government permits Metro-Dade to plan and implement transportation projects and obtain local concurrences with a minimum of delay. A detailed Comprehensive Development Master Plan for staged development is unusually precise in locating major transportation improvements and has been adopted by ordinance, which gives it the force of law. The voting membership of the metropolitan planning organization (MPO) governing board is the same group of elected officials that form the Board of County Commissioners, Metro-Dade's governing body. A staff function of the county manager's office--the Office of Transportation Administration--has authority over the planning, coordination, implementation, and/or regulation of all modes of surface transportation in the county and directs the operation of public systems including Metrobus, Metrorail, the Downtown People Mover (DPM), and special transportation services. In addition, it provides the technical and professional staff for the MPO. This unique organizational structure makes it possible for Metro-Dade to build its 20.5-mile, 20-station stage 1 Metrorail system on a planning-to-opening schedule of less than 10 years and to coordinate it with all other modes. Construction of a 1.9-mile, 10-station DPM and doubling of the Metrobus fleet to 1000 vehicles will be completed to coincide with Metrorail's opening. (Author)

This paper appeared in Transportation Research Record No. 817, Rail Transit and Terminals.

Turner, CP (Metro-Dade Office of Transportation Administration) *Transportation Research Record* No. 817, 1981, pp 4-6

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DOTL JC

42 348009

ANALYSIS OF RAPID TRANSIT ACCESS MODE CHOICE

The application of the logit modeling methodology to the development of rapid transit access-mode-choice models that are transferable among

different stations in a system is described. Rapid transit stations are classified into groups by using discriminant analysis to test for common behavior at sites within groups and to verify differences in behavior among groups. Eighteen variables are used to define the physical nature and accessibility of the terminal and the socioeconomic structure of the surrounding area. Five station groups are identified: (a) central city; (b) dense residential; (c) predominantly residential, some commercial; (d) predominantly commercial, some residential; and (e) sparse residential and undeveloped land. Multinomial logit access-mode-choice models are described for the different station groups in the Bay Area Rapid Transit system. The modes considered are drive alone, kiss-and-ride, bus, carpool, and walk. An areawide model is compared with the station group models. The results show that models for classified station groups have coefficients that differ from each other and from a model calibrated with the data for all stations in all groups. These models, however, do not offer sufficient uniqueness to justify recommendations. More precise, detailed calibration data are needed to establish transferable models. (Author)

This paper appeared in Transportation Research Record No. 817, Rail Transit and Terminals.

Korf, JL Demetsky, MJ (Virginia Highway & Transportation Research Council); Benz, GP (Parsons, Brinckerhoff, Quade and Douglas, Inc) *Transportation Research Record* No. 817, 1981, pp 29-35, 2 Fig., 6 Tab., 6 Ref.

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42 348065

SUMMARY OF PROGRESS THROUGH 1981

The National Cooperative Transit Research and Development Program is a unique contract research effort designed to respond quickly and efficiently to the needs of UMTA and the transit industry through solution of near-term public transportation problems. Although the Transportation Research Board administers the Program, the research content is solely the prerogative of the Urban Mass Transportation Administration. The Program is one of applied (rather than basic) research, and every possible effort is made to help administrators and engineers put the findings to early use. Program policy ensures maximum exposure of the research while in progress in the hope that research results will, in fact, more quickly find their way into practice in the form of policies, procedures, specifications, and standards of the operating agencies. The major section of this report lists and outlines the progress of research projects in eleven areas: economics, finance, personnel management, alternatives analysis, system planning, route planning, impact analysis, vehicles, track and ancillary systems, general materials, energy efficiency, and the synthesis of information related to transit problems.

NCHRP Summary of Progress 1981, 14p, 3 Fig., 6 Tab.

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42 348399

MEASURES TO INFLUENCE URBAN MODAL SPLIT: THE RESULTS OF AN OECD INTERNATIONAL STUDY

This paper summarizes the findings of an OECD international study of the effectiveness of various measures to influence modal choice in urban areas, as well as the abilities of different analytical models to provide a priori estimates of the effects of different policies. Alternative policy measures are classified into seven major groups and include infrastructure changes, level of service changes, fare changes, private automobile restraints, institutional measures, marketing measures and urban spatial management. The relative effectiveness of these policy measures is then examined using information from thirty-two case studies in nine countries. The second part of the paper summarizes experience in the nine countries with various analytical techniques. These include zonal level logit models, disaggregate models and a number of simplified models including simple elasticity models. The paper concludes with a variety of suggestions regarding the most appropriate policy responses as well as providing some suggestions on model development. (Author/TRRL)

Hutchinson, BG (Waterloo University, Canada) *RTAC Annual Conference Preprints* Vol. 1 Sept. 1981, pp B3-21, 3 Tab., 1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258367), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

42 348404

EMME/2 AN INTERACTIVE GRAPHIC METHOD FOR ROAD AND TRANSIT PLANNING

Emme/2 is a multi-mode urban transportation planning method designed for interactive use. It is more comprehensive than other interactive graphic methods that have been developed to date. Emme/2 permits the user to obtain a wide variety of results, both in interactive graphic form and/or as a printed output. The main feature of the results is interactive comparison of scenarios with accompanying graphical display. While the main results pertaining to comparison of scenarios are related to link flows, origin/destination demands and service levels, a wide variety of other results may be accomplished by the use of the "user defined" data (e.g. comparison of predicted vs observed flows for calibration). (Author/TRRL)

Babin, A Florian, M James-Lefebvre, L Spiess, H (Montreal University, Canada) *RTAC Annual Conference Preprints* Vol. 1 Sept. 1981, pp D87-121, 19 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 258375), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

42 348406

NEW COMPUTER PROGRAMS IN PUBLIC TRANSPORT PLANNING [JOUKKOLIIKENTEEN UUDET SUUNNITTELUOHJELMISTOT]

The report deals with the computer programs developed for public transport planning. The following programs have been examined: UTPS, VOLVO, VBB. The main emphasis is laid on the VOLVO-system and its suitability for the Helsinki area. The VOLVO-system was tested and the results were reported and evaluated. The other systems have been studied only generally. As a special feature of the programs, their suitability for energy consumption calculations and network optimization were examined. (TRRL) [Finnish]

Helsinki Metropolitan Area Co-operative Council Monograph No. B 1981/7, May 1981, 100p, 7 Fig., 3 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 258700)

ORDER FROM: Helsinki Metropolitan Area Co-operative Council, Sähkötajankatu 1, Helsinki 52, Finland

42 348409

THE FUTURE OF URBAN TRANSPORT IN NORTH AMERICA

The implications for urban transport are examined in terms of automobility, urban public transport, road building, and the auto industry. Considerably more stringent fuel economy standards that encourage innovation are urged even though these may reduce auto ownership and use. Unless fixed route transit systems are already completed, public transportation expenditures should be focused on creating a capability to expand services rapidly, to adapt to rapidly changing travel demands, and to operate at this increased level for at least six months with no new fuel, equipment or parts. Both road building and auto construction are highly vulnerable activities for which there are only limited defences. Most notable in the auto industry is a catch-22 question that is fundamental to our future. Bigness is needed to finance the smaller, more economical cars; but bigness also means an inability to respond quickly to rapidly changing conditions. Thus, the very strengths needed to reduce the nation's dependence upon imported oil are also its weakest points if a sustained shortfall ever occurs. (TRRL)

Papers from the 9th IRF World Meeting, Roads Into the Future--Urban Transportation--TS6, held at Stockholm, June 1-5, 1981.

Clark, R (Government Of Canada, Canada) Svenska Vaegfoereningen 1981, pp 57-70

ACKNOWLEDGMENT: TRRL (IRRD 257867), National Swedish Road & Traffic Research Institute

ORDER FROM: Svenska Vaegfoereningens Foerlags AB, Box 27115, S-102 52 Stockholm, Sweden

42 348412

COMPREHENSIVE URBAN TRANSPORT SYSTEMS, AN IDEA WHOSE TIME HAS COME

Urban public transportation which went from bad to worse in the 1970's is caught in the squeeze of: escalating energy prices; reduced public expenditures; and, low performance and cost effectiveness. Correcting the latter has been grossly neglected in attempts to alleviate urban transport problems. And if a serious decline in urban transport services is to be avoided, utilizing

existing resources more efficiently is clearly necessary. While this is desirable for developed countries it is absolutely essential for the less developed. A meaningful effort to improve public transport however, should be deeper and more comprehensive than a conventional study. And the efforts should extend from transit company operations to the external urban environment in which public transport operates. The prime example of the application of the urban transport systems approach is the government of Pakistan's five year model urban transport systems project in Lahore, Pakistan, where a comprehensive "turn-key" project is being carried out by the Punjab urban transport corporation assisted by Volvo. Now in its second year this project promises to provide a significant test of this approach. (TRRL)

Papers from the 9th IRF World Meeting, Roads Into the Future--Urban Transportation--TS6, held at Stockholm, June 1-5, 1981.

Hansen, K
Svenska Vaegfoereningen 1981, pp 107-108, 3 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 257871), National Swedish Road & Traffic Research Institute

ORDER FROM: Svenska Vaegfoereningens Foerlags AB, Box 27115, S-102 52 Stockholm, Sweden

42 348413 CITY PASSENGER TRAVEL; YESTERDAY, TODAY, TOMORROW

This paper briefly examines the history and growth of the modern city with particular emphasis on the period from the industrial revolution. Two observations are made: the industrial revolution changed the very nature of the city, and developments in mass transport enabled cities to expand their size but with the city centre still serving as the principal commercial and entertainment areas. In more recent times the private motor car has led to a decline in the need for mass public transport and is also leading to a decline in the importance of the city centre. The result is that public transport which operates along fixed routes and fixed times is now uneconomic to operate and largely inefficient, requiring massive injections of public funds to maintain operations. The introduction of small hired electric vehicles offers a future solution for the problems of urban transport. These would provide a high degree of flexibility and personal convenience without the burden of the high cost associated with current public transport or the high pollution and space usage associated with private cars. These vehicles would also provide the desirable side benefits of increased safety and energy conservation. (TRRL)

Papers from the 9th IRF World Meeting, Roads Into the Future--Urban Transportation--TS6, held at Stockholm, June 1-5, 1981.

Loder, B (New South Wales Department of Main Roads, Australia)
Svenska Vaegfoereningen 1981, pp 149-162, 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257875), National Swedish Road & Traffic Research Institute

ORDER FROM: Svenska Vaegfoereningens Foerlags AB, Box 27115, S-102 52 Stockholm, Sweden

42 348415 TRANSPORTATION FOR PEOPLE IN MEDIUM-SIZED NORDIC URBAN AREAS

Nordkolt is a nordic study project dealing with future passenger traffic, principally public transport, in nordic urban areas of the order of size 20000 to 160000 inhabitants. Demands on the design of the traffic system should be based on the conditions, behaviour and wishes of the people. These demands should be weighed against the objectives and limited resources of communities. The mobility and safety of the weaker members of the community must be improved. This may demand the imposition of limitations on motor traffic, especially in the central parts of urban areas. The bus will probably become the dominant means of public transport. Organised forms of taxi and taxi-bus may be used to supplement the public transport and thus achieve travel times approaching those of the private car, but at a price which is higher than that for public transport. Organised sharing of transport costs by means of private car or bus-pooling may reduce the strain on the public transport system in times when private motor traffic is reduced as a result of increased running costs. In urban areas, traffic development may be planned to increase or decrease the traffic caused by private car usage. Studies in eight nordic urban areas have shown that reduced motor traffic improves conditions for pedestrians, cyclists and users of public transport, reduces accidents, diminishes noise and exhaust gases, improves town environments and lowers energy consumption. The total

costs of traffic are also reduced. However, people who previously travelled by car find that their travelling conditions have deteriorated. Businesses may also encounter problems if the reduced usage of private cars becomes nationwide. (TRRL)

Papers from the 9th IRF World Meeting, Roads Into the Future--Urban Transportation--TS6, held at Stockholm, June 1-5, 1981.

Sylvén, E (Chalmers University of Technology, Sweden)
Svenska Vaegfoereningen 1981, pp 189-204

ACKNOWLEDGMENT: TRRL (IRRD 257878), National Swedish Road & Traffic Research Institute

ORDER FROM: Svenska Vaegfoereningens Foerlags AB, Box 27115, S-102 52 Stockholm, Sweden

42 348417 THE FUTURE URBAN PATTERNS OF THE STOCKHOLM REGION

Stockholm is a small metropolis in world scale with less than 1,5 million inhabitants in the whole metropolitan area. It has, however, grown rapidly and has doubled the built-up area in a few decades. New dwelling districts, industrial parks, an underground system, motorways and bridges have been constructed and built in the same time as a complete reshaping of the city core has taken place. In accordance with Swedish tradition the municipal authorities have made up the plans, bought or expropriated the ground, conducted the implementation and co-ordinated the activities of private investors, co-operative and municipal housing companies. The process was here as in other parts of the industrialized world rather successful during the 50's and 60's but lost much of its impetus in the 70's. The fruitful amalgamation of the social democrat's welfare state ideas and the private firms' striving for effectiveness and profits was impeached by an increasing public opinion against large cities, economic growth, environmental damages and energy waste. Together with a trend break in migration, the energy price shock and beginning structural crises in the Swedish industry this started a period of uncertainty in city and regional planning and a number of experiments in public participation. After this decade of muddling through, it is now time for revival of the firm decisiveness of the 60's but with full acceptance of the limited economic resources. (TRRL)

Papers from the 9th IRF World Meeting, Roads Into the Future--Urban Transportation--TS6, held at Stockholm, June 1-5, 1981.

Wijkmark, B (Stockholm County Council, Sweden)
Svenska Vaegfoereningen 1981, pp 239-248

ACKNOWLEDGMENT: TRRL (IRRD 257882), National Swedish Road & Traffic Research Institute

ORDER FROM: Svenska Vaegfoereningens Foerlags AB, Box 27115, S-102 52 Stockholm, Sweden

42 348422 SYSTEMATIC URBAN TRANSIT PLANNING FOR THE 1980'S

The author highlights the important aspects of urban mass transit planning as it is practiced in several of the most successful regions in the world. Sequence of five decisions that need to be made carefully and systematically before the planning of the system is considered. These five major decisions are addressing the following questions: what transit modes would be included; what networks would be designed; what facilities and furniture the system would include; what level of operations would prevail; and what finances and funding would be arranged.

Tomazinis, AR (Pennsylvania University, Philadelphia) *Journal of Advanced Transportation* Vol. 15 No. 1, 1981, pp 21-31

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

42 348459 PLEA FOR A NEW CONCEPTUAL APPROACH TO PUBLIC TRANSPORT [PLAEDOYER FUER EINEN KONZEPTIONELLEN NEUANSATZ IM OEPNV]

The increasing financial burden on public budgets from public transport bears no reasonable relation to socio-economic benefits. Hence a re-orientation is necessary from a policy based on supply determinant public transport, to one based on demand. With increasing motorisation and a shift towards housing in rural areas, public transport is left to provide only a standby function to car transport. In addition an increase in attractiveness has not been able to prevent public transport losing its function as a "general" means of transport. The type and extent of the transport function

to be performed by public transport in future have to be reconsidered. The objective of public transport should no longer be to provide services over the greatest area possible with numerous frequently operated routes. A counter proposal to this is the concept of a special transport means provided by the public transport system co-ordinated to suit a definite group of users at certain times of the day and on certain days of the week. In this way the prescription of minimum standards of service for urban conurbations and rural areas has increasing significance. (TRRL) [German]

Niklas, J (Deutsches Inst fuer Wirtschaftsforsch, W Germany) *Schriftenreihe Deutschen Verkehrswiss Ges, R B Sem* No. 45, Jan. 1980, pp 127-135, 1 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 312660), Federal Institute of Road Research, West Germany

ORDER FROM: Deutschen Verkehrswissenschaft Gesellschaft E.V., Apostelnstrasse 11, D-5000 Cologne 1, West Germany

42 348463

POSSIBILITIES AND LIMITS OF AN OVERALL ECONOMIC ASSESSMENT OF THE SUCCESS OF PUBLIC TRANSPORT [MOEGLICHKEITEN UND GRENZEN EINER GESAMTWIRTSCHAFTLICHEN ERFOLGSWUERDIGUNG DES OEPNV]

Single economic profit and loss analyses show negative results for public transport. In this situation total economic success is taken into account increasingly as the criteria for evaluation of the high subsidies given to public transport. In addition to cost-benefit-analyses, social balance accounts or success analyses for service contracts for public transport are used. Success analyses based on pure operation-economics do not produce a sufficient basis of information on the overall economic performance of public transport. On the other hand they are capable of giving indications of weaknesses, errors and strong points in the service level. The success component of social benefits of public transport is basically adequate; in single cases however this criterion can turn into an instrument of manipulation. (TRRL) [German]

Aberle, G (Giessen University, West Germany) *Schriftenreihe Deutschen Verkehrswiss Ges, R B Sem* No. 45, Jan. 1980, pp 42-51, Refs.

ACKNOWLEDGMENT: TRRL (IRRD 312669), Federal Institute of Road Research, West Germany

ORDER FROM: Federal Institute of Road Research, West Germany, Bruhlerstrasse 1, Postfach 510530, D-5000 Cologne 51, West Germany

42 348465

TRANSPORT COMBINES AS AN OPPORTUNITY AND A PROBLEM [VERKEHRSVERBUENDE ALS CHANCE UND PROBLEM]

The growth in the urban areas, the economy and in the transport structure at the end of the 1950's and the beginning of the 1960's led to increased cooperation between public transport companies, which extended from tariff agreements to transport associations and transport unions. The aim was an increase in the attractiveness of public transport and an improvement in economy in public transport operation. The following activities were undertaken by the transport association: planning activities, drawing up of tenders, and of tariffs and of working operations, advertising and revenue distribution. However, limits were placed on these transport associations. Experience to date has demonstrated that the transport associations, in spite of some weaknesses, provide an exceptional and futuristic instrument of cooperation for dense urban areas. (TRRL) [German]

Pampel, F (Hamburger Hochbahn Ag, West Germany) *Schriftenreihe Deutschen Verkehrswiss Ges, R B Sem* No. 45, Jan. 1980, pp 62-73, 1 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 312671), Federal Institute of Road Research, West Germany

ORDER FROM: Federal Institute of Road Research, West Germany, Bruhlerstrasse 1, Postfach 510530, D-5000 Cologne 51, West Germany

42 348466

THE PROMOTION OF PUBLIC TRANSPORT RESEARCH BY THE MINISTRY OF RESEARCH AND TECHNOLOGY [DIE FOERDERUNG DER NAHVERKEHRSFORSCHUNG DURCH DAS BUNDESMINISTERIUM FUER FORSCHUNG UND TECHNOLOGIE]

The promotion of public transport research through the German Federal Ministry for Research and Technology ensures the future of the transport

sector, particularly in the light of the looming energy shortages. The promotion pursues two courses, namely improvement in conventional transport modes and the development of new transport technologies. This support, with the involvement of the Ministry, has amounted to increasing contributions since 1972. The bus is the main public transport carrier. The support of the Ministry concentrates, therefore, on the further development of the bus system. Also encouraged, however, is the further development of rapid transit systems, metropolitan railway systems and cabin railway systems. Overlapping the various systems is the basic research into the development of an efficient total transport system. In the coming years some of the most important programmes will move into the phase of operational demonstration and test operations. (TRRL) [German]

Goetz, RE Meyer, U *Schriftenreihe Deutschen Verkehrswiss Ges, R B Sem* No. 45, Jan. 1980, pp 101-110, Figs., Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 312672), Federal Institute of Road Research, West Germany

ORDER FROM: Federal Institute of Road Research, West Germany, Bruhlerstrasse 1, Postfach 510530, D-5000 Cologne 51, West Germany

42 348467

BEHAVIOUR-ORIENTATED MODELS AS THE BASIS OF URBAN TRANSPORT PLANNING [VERHALTENSORIENTIERTE MODELLE ALS GRUNDLAGE DER STADTVERKEHRSPANUNG]

In recent times an attempt has been made to use behaviour-orientated models as the basis of urban transport planning in addition to the already proven gravity models. Behaviour-orientated models combine traffic generation, traffic distribution and choice of transport mode as stages in the four stage algorithm into a single simulation sequence. Only route selection must be carried out separately for pragmatic reasons. The advantages of the behaviour-orientated models lie in the possibility of being able to quantify the effects of certain behavioural changes or changes in the structure of availability on traffic behaviour and traffic demand. (TRRL) [German]

Leutzbach, W (Karlsruhe University, West Germany) *Schriftenreihe Deutschen Verkehrswiss Ges, R B Sem* No. 45, Jan. 1980, pp 53-60, 4 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 312673), Federal Institute of Road Research, West Germany

ORDER FROM: Federal Institute of Road Research, West Germany, Bruhlerstrasse 1, Postfach 510530, D-5000 Cologne 51, West Germany

42 348468

STUDIES OF DEMAND ORIENTATED NETWORK GENERATION FOR PUBLIC TRANSPORT ON THE BASIS OF A PLANNING INFORMATION SYSTEM [UNTERSUCHUNGEN ZUR NACHFRAGE-ORIENTIERTEN NETZERZEUGUNG FUER DEN OEFFENTLICHEN PERSONENNAHVERKEHR AUF DER GRUNDLAGE EINES PLANUNGSINFORMATIONSSYSTEMS]

Public transport traffic networks arise out of route networks which have grown historically, which are enlarged by added or extended routes. The design of an attractive network requires a total examination of all relevant demands in a planning region. In this, a computer operated planning information system can provide help. It is shown how a planning information system can be introduced for the design of a transport flow network. First, a picture of the demand is required, which requires a merging of individual travel requirements into a transport desire line. The calculated structures are furthermore adapted to the actual road conditions by graphical methods, from which the final transport network results. To that end a multi-stage heuristic technique is worked out and tested. (TRRL) [German]

Klemt, WD

Technical University of Berlin, West Germany Monograph 1978, 204p, Figs., Tabs., Photos., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 312676), Federal Institute of Road Research, West Germany

ORDER FROM: Technical University of Berlin, West Germany, Fachbereich 20 (Informatik), 1000 Berlin 12, West Germany

42 348469

LINE PLANNING IN PUBLIC TRANSPORT [LINIENPLANUNG IM OEFFENTLICHEN PERSONENNAHVERKEHR]

In public transport the existing traffic lines are extended without alterations in the normal line plan. This planning leads to unnecessarily high journey

times and unattractive change processes, as well as to uneconomic multiple services. In order to avoid these disadvantages, network changes should be planned in a global fashion so that a demand-orientated alignment is ensured. To this end a mathematical computer controlled planning technique is developed taking into account capacity restrictions in the public transport system. These "desire line expressions" are divided into the phases desire line determination, line generation and evaluation of the line plans. On the basis of an example it is shown that this iteration technique for a simultaneous line planning is superior to the conventional planning approaches, because of the direct orientation towards the desire lines. A further advantage is that the capacity values "total line length" can be regarded as a model restriction from the beginning. (TRRL) [German]

Sonntag, H
Technical University of Berlin, West Germany Monograph 1977, 189p,
Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 312677), Federal Institute of Road Research, West Germany

ORDER FROM: Technical University of Berlin, West Germany, Fachbereich 20 (Informatik), 1000 Berlin 12, West Germany

42 348475

COMPETITIVE TRANSPORTATION SYSTEMS

Given an "adequate" network of roads, non-rationed fuel supplies, and current levels of car production rates and economic parameters, the vast majority of potential travellers would prefer an individual ground transportation mode over a mass transportation mode for most trip purposes, even if fuel prices would double or triple. It is suggested that the alternative to new roads on the one hand is transit, and this has to depend primarily on buses, and on the other hand walking and tightening up the city. But a bus system is a 16 to 20 km per hour system and there is no transit system that is going to change that significantly. This does not mean that transit developments should not be undertaken but it is important to recognize the basic issues and how they affect the significance of what is being undertaken. Transportation problems cannot be divorced from social aspects, and non-transportation type solutions or rather, approaches to mobility problems, can be very effective if applied with foresight, and can be a competitive element in the total system if people are educated to accept them. (a) (TRRL)

Kunn, ZJ (Zoltan Kunn Associates) *Inter-City Transportation and The Urban Scene* REPORT Apr. 1981, pp 404-420

ACKNOWLEDGMENT: TRRL (IRRD 258365), Roads and Transportation Association of Canada

ORDER FROM: Victoria University, Canada, P.O. Box 1700, Victoria, British Columbia, Canada

42 348477

DIRECTIVES FOR LEVEL OF SERVICE IN PUBLIC TRANSPORT IN HELSINKI

These directives for the level of service have been prepared to guide the route

and service planning of the public transport in Helsinki. The directives are needed for the purposes of physical planning as well and have been prepared to suit the existing public transport system and planning practices in Helsinki. Attention has also been paid to the future changes in the public transport system, e.g. the start of metro traffic. These directives will be further developed to make up for the shortfalls found in practice. It is also probable that, in the future, revisions will be needed to match the changes in general traffic policy. These directives will be reviewed and revised, when a need arises in connection with the revision of the objectives of the integrated municipal planning in the city (once in four years). (TRRL)

Tiittinen, T Vepsalainen, S Berghall, J *Helsinki City Transport* Monograph Dec. 1980, 5p, Tabs.

ACKNOWLEDGMENT: TRRL (IRRD 258725)

ORDER FROM: Helsingin Kaupungin Liikennelaitos, Iimalan Tori 1B, Helsinki 24, Finland

42 348506

MULTI-ASPECT STUDY ON POWER BETA IN GRAVITY MODEL FOR TRANSPORT ANALYSIS-ANALYSIS WITH REFERENCE TO INDUCED PASSENGER VOLUME, AND LOCAL PASSENGER FLOW CHARACTERISTICS

The author discusses the controversy in application of the model for estimation of an induced traffic volume and describes a study of variable range beta and factors causing the variation.

Miyata, H *Railway Technical Research Inst. Quarterly Reports* Vol. 22 No. 1, Mar. 1981, pp 6-9

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

42 348517

LOGIT ANALYSIS OF TRANSIT STATION ACCESS

Program's ULOGIT of The Department of Transportation's UTPS Package of Urban Transportation Planning Programs was applied to forecast rapid transit access mode choices. Critical practical and theoretical considerations and issues that associate with the development and utility of logit models of travel choices are examined to establish the assumption necessary to specify the model's structure. These points of investigation include data considerations, model features, choice theories, and model transferability. Rapid transit stations and access points and their associated data are stratified into groups to test hypotheses regarding the designation of common choice scenarios. Models of access modal choice behavior are then described and evaluated.

Proceedings of the International Conference on Computers in Civil Engineering, 1st, New York, New York, May 12-14, 1981.

Demetsky, MJ (Virginia University); Hoel, LA Korf, JL
American Society of Civil Engineers Conf Paper 1981, pp 1129-41

ACKNOWLEDGMENT: EI

ORDER FROM: ASCE

43 329597

BUDGET TRADE-OFFS ACROSS THE TRANSPORT SECTOR IN WESTERN AUSTRALIA

Rail, urban public transport and maritime capital works programmes all compete with each other, and with non-transport programmes, for funds. In contrast, road programmes in western Australia do not compete for funds at a state level. Whilst road design standards do not seem to affect the total expenditure on roadworks, design standards for other modes do influence the size of their programmes. Roadworks programmes do not have financial feedback into financial accounting reports, further reducing pressure to examine standards critically. Funds used to implement roadworks to high standards, in a non-trade-off environment, may yield a lower return than would investment in a competing mode, thus distorting resource allocation and operational patterns. (Author/TRRL)

Workshop on the Economics of Road Design Standards, Canberra 18-20 May 1980 Papers.

Bettison, GE Ker, IR (Western Australia Director General of Transport)

Bureau of Transport Economics, Australia May 1980, 7p, 1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 239871), Australian Road Research Board

ORDER FROM: Bureau of Transport Economics, Australia, Allara Street, Canberra, A.C.T. 2601, Australia

43 330082

LOCAL TRANSPORTATION GOALS AND FINANCING REALITIES: THE URBAN TRANSIT EXAMPLE

The financing of urban public transit has always been a challenging and problematic subject, but particularly so since the late 1960s when the deficit payments for existing systems grew substantially and the demand for new systems in other areas increased. The expansion of transit services or changes in fare levels are typically instituted to try to meet a wide variety of local, state, and federal goals, and funds from each level of government are usually involved. However, the most serious transit financing problems in recent years have generally occurred on the local level, where relatively small differences in local matching costs under various federal subsidy schemes frequently can overwhelm the selection process among transportation options. The paper discusses the nature of local transportation goals and how this matches up with the fiscal methods available locally and offers basic criteria by which the suitability of a local taxation scheme may be judged. The issues involved in the choice between the use of earmarked transportation taxes versus general revenues are also discussed. It is concluded that (a) local transportation projects must be planned more carefully and selected to match the true nature of the travel markets involved and (b) financing schemes should be designed to match benefits and patterns of tax burden and to minimize description in other local economic markets. (Author)

This paper appeared in Transportation Research Record No. 759: Critical Issues in Urban Transit Finance and Management.

Crowell, WH (Polytechnic Institute of New York) *Transportation Research Record* No. 759, 1980, pp I-6, 1 Tab., 23 Ref.

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DOTL JC

43 330083

TRANSIT FINANCING TRENDS IN LARGE U.S. METROPOLITAN AREAS: 1973-1978

From 1970 to 1978, total government subsidization of transit in the United States increased almost tenfold, from only \$540 million to \$5264 million. This burgeoning aid program has prompted significant changes in the nature of government assistance. There has been a marked shift among government levels in the responsibility for transit financing, and new tax mechanisms have been adopted, particularly at the local and regional levels, to raise additional transit funds. This paper documents these transit financing trends in detail and explores briefly the potentially significant impact of these trends on the overall equity, efficiency, and political feasibility of transit financing. On the basis of operating subsidy data collected from transit agencies in each of the 26 largest U.S. metropolitan areas and capital subsidy data for all urban areas provided by the U.S. Department of Transportation, two main conclusions were reached. First, the responsibility for transit financing has shifted to higher levels of government so that, in 1978, the federal government contributed 52 percent of the total subsidy. Second, there has been a very strong trend toward the use of uniform-rate regional taxes specifically earmarked for transit subsidization. (Author)

This paper appeared in Transportation Research Record No. 759: Critical Issues in Urban Transit Finance and Management.

Pucher, J (Rutgers University, New Brunswick) *Transportation Research Record* No. 759, 1980, pp 6-12, 6 Tab., 3 Ref.

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DOTL JC

43 330084

ALTERNATIVES ANALYSIS IN THE FINANCING OF MULTIJURISDICTIONAL PUBLIC TRANSPORTATION SERVICES

The challenge of welding several independent and geographically distinct political jurisdictions into a single transportation service has been beyond the grasp of many U.S. cities. The rewards of such a feat are tempting-- a wide-spread regional network of coordinated transportation service, an end to misaligned bus routes based on town boundaries rather than travel needs, and the economic advantage of spreading overhead costs such as the outlays for transit management and vehicle maintenance. Additional advantages include increased ability to attract federal dollars and a broader base for marketing of transportation services. Private bankrupt transit properties can be rescued and rationalized when several jurisdictions pool their financial resources. These benefits are offset, however, by the inherent problem of the public systems' requirement for public funding, and the subsidy must somehow be apportioned to the residents of separate and frequently competing political jurisdictions. Sharing the cost of the deficit is required but, in the nature of multijurisdiction areas, the units of government are independent and cannot commit one another to future action without recurring appropriations by the individual jurisdictions. The determination of a basis for distributing the subsidy requirements is a difficult and politically sensitive task. This report explores the manner in which eight cities addressed the problem of sharing costs. (Author)

This paper appeared in Transportation Research Record No. 759: Critical Issues in Urban Transit Finance and Management.

Kidder, AE (Syracuse University) *Transportation Research Record* No. 759, 1980, pp 12-20, 3 Tab., 1 Ref.

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43 330831

OPTIMAL TRANSIT SUBSIDY POLICY

The basic justification for transit subsidy is that such a subsidy is necessary, given substantial economies of scale, in order to permit fares to be set at a level which will result in reasonably efficient use of the service. Efficiency is not, however, merely a matter of the level of the fares but even more of the fare structure and pattern. Major changes in fare patterns are needed to permit reasonable efficiency of utilization to be attained, and full advantage derived from subsidy. Differentiation according to time and direction, as well as the distance of travel, is required. Ideally, competing modes such as the private automobile should be priced at marginal cost, differentially by time and place, and the subsidy should be derived from taxes on land values in the areas where such values are enhanced by the presence of transit service at low fares. In the absence of such conditions, fares should differ from marginal cost in ways that take into account the impacts of transit fare variations on auto traffic and congestion, and on the subsidy requirements and the adverse impacts of the taxes imposed to finance the subsidy. In addition to these economic efficiency considerations there may be added considerations of distributional impact and political acceptability, which may modify the optimal solution somewhat but should not greatly change the main outlines of the patterns to be recommended. (Author/TRRL)

Vickrey, W (Columbia University) *Transportation (Netherlands)* Vol. 9 No. 4, Dec. 1980, pp 389-409, 1 Tab., 3 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252131)

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DOTL JC

43 330832

TRANSIT SUBSIDIES AND REGULATION: LESSONS FROM THE ISRAELI EXPERIENCE

The Israeli transport sector, like those of many other countries is subject to complete government control with regard to fares, entry into the market, terms of operation and subsidies. It is unique, however, in that the fares charged are remarkably low and that the major transit mode, buses, is

operated by privately owned companies. This paper explores what makes this low level of fares possible and in doing so examines the principal characteristics of the sector. It shows that this phenomenon cannot be explained by the amount of subsidy given to the operators but must be attributed to other factors, mainly the efficiency in the production of the services, which is motivated by the profit maximization objective of the operators. The paper further argues that government policies regarding subsidy and regulation are generally inefficient as they cause misallocation of resources. (Author/TRRL)

Berechmans, J (Tel-Aviv University, Israel) *Transportation (Netherlands)* Vol. 9 No. 4, Dec. 1980, pp 369-388, 1 Fig., 5 Tab., 10 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252132)
ORDER FROM: Elsevier Scientific Publishing Company, P.O. Box 211, Journal Division, 1000 AE Amsterdam, Netherlands

43 330834
THE ROLE OF SUBSIDY POLICIES IN MODERNIZING THE STRUCTURE OF THE BUS TRANSIT INDUSTRY

Full reliance on conventional forms of bus transit for peak hour needs reduces industry productivity and creates major new subsidy requirements. Restructuring of transit is needed to enable paratransit integration and other innovations that can improve efficiency. This paper discusses the industry's long-term neglect of efficiency and describes subsidy policies that would promote necessary changes. (Author/TRRL)

Oram, RL *Transportation (Netherlands)* Vol. 9 No. 4, Dec. 1980, pp 333-353, 4 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 252134)
ORDER FROM: ESL

DOTL JC

43 330835
EFFECTS OF SUBSIDIES ON URBAN PUBLIC TRANSPORT

Because of a general trend of increasing costs of public transport operations and higher subsidies (in some cases accompanied by falling patronage) the European Conference of Ministers of Transport (ECMT) initiated a study of subsidisation and sought the help of the Transport and Road Research Laboratory. The study, in which eighteen countries took part, was concerned with the aims of subsidy, the sources and conditions attached to subsidy, trends in subsidies and the effect of subsidies on patronage, fares, service levels, costs and productivity. The qualitative information concerning the aims of subsidy was analysed in relation to the likelihood of achieving such aims, taking into account current experience of attempts to switch car drivers to public transport. The quantitative information on trends referred to public transport stage services covering where possible the entire country and relating to the period 1965-77; these data were supplemented by data from 59 cities in different parts of the world collected in the course of a TRRL-sponsored study of travel demand factors. The relationship between patronage and service levels, and between subsidies and various operating factors, including costs and productivity, were studied using regression analysis and the general conclusion reached was that although the major part of the subsidy paid was reflected by reduced fares and improved service levels there may well have been some leakage into higher unit costs and manning levels. (Author/TRRL)

Bly, PH Webster, FV Rounds, S *Transportation (Netherlands)* Vol. 9 No. 4, Dec. 1980, pp 311-331, 6 Fig., 4 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 252135)
ORDER FROM: Elsevier Scientific Publishing Company, P.O. Box 211, Journal Division, 1000 AE Amsterdam, Netherlands

43 331049
THE RUNAROUND: USER-SIDE SUBSIDIES FOR FIXED-ROUTE TRANSIT IN DANVILLE, ILLINOIS

A two-year Urban Mass Transportation Administration Service and Methods Demonstration (SMD) project in Danville, Illinois, tested the first application of the concept of the user-side subsidy to fixed-route transit for the general population. The Transportation Systems Center was responsible for evaluating the demonstration and contracted with Crain and Associates for this purpose. Service was provided by private contractors, who were selected on a competitive basis every four months. Payment to providers, which was based on the number of prepurchased tickets used by passengers to pay for rides and then turned over to the city, was intended to create an incentive for designing and providing good, efficient service tailored to the

existing demand. The system, called the Runaround, proved workable but administratively expensive. Only two providers participated, which indicated a lack of effective competition, although on most routes good service appears to have been supplied at a reasonable cost. The major provider adopted a very conservative negotiating position; the result was that payment was effectively on a fixed-price rather than per-passenger basis. Although unproductive service was dropped under the user-side subsidy arrangement, a full test of the concept's effectiveness has yet to be considered. (Author)

This paper appeared in Transportation Research Record No. 761, Public Transportation Planning.

Bloomfield, P Koffman, D (Crain and Associates); Bruno, LA (Urban Mass Transportation Administration) *Transportation Research Record* No. 761, 1980, pp 1-7, 2 Fig., 2 Tab., 2 Ref.

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43 331070
INCREASING COMMUTING BY TRANSIT AND RIDESHARING: MANY FACTORS SHOULD BE CONSIDERED

This report provides the Congress with information to use when it considers legislative and funding proposals directed at increasing commuters' use of mass transit and ridesharing. It suggests that, when deciding on authorizations and appropriations for transit expansion, the Congress should consider the potential effects of expansion on operating costs, deficits, and subsidies, and also that the Congress should consider providing separate Federal funding for ridesharing programs, rather than relying on the diversion of Federal-aid highway funds by State and local governments.

General Accounting Office CED-81-13, Nov. 1980, 82p, Apps.

ORDER FROM: General Accounting Office, Distribution Section, Room 1518, 441 G Stret, NW, Washington, D.C., 20548

43 331346
TRANSIT FARE BOX REVENUE AND PUBLIC SUBSIDY

The subjects discussed by the authors deal with the subsidization of transit as public policy, fare elasticities for public transportation facilities, ridership response to options for altered fare subsidies, and basic subsidy techniques in public transit.

Billingsley, RS Guseman, PK *Texas Transportation Researcher* Vol. 16 No. 3, July 1980, pp 3-4

ACKNOWLEDGMENT: EI
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DOTL JC

43 334362
IMPACTS OF URBAN MASS TRANSPORTATION ADMINISTRATION CAPITAL GRANTS PROGRAMS

The Urban Mass Transportation Administration (UMTA), created in 1964, administers a number of transit assistance programs for urban areas in the U.S., including capital grants, formula grants (funds for capital or operating needs), commuter rail assistance, and research, development, and demonstration grants. This paper focuses on the impacts of the following programs on urban mass transportation: (1) capital assistance grants; (2) Federal-aid urban systems grants; (3) Interstate transfers; and (4) the capital assistance portions of formula grants. (Author)

National Transportation Policy Study Commission, Iowa University No. 7, Jan. 1979, 54p, 1 Fig., 16 Tab., 48 Ref.

ORDER FROM: Iowa University, Institute of Urban and Regional Research, Iowa City, Iowa, 52242

43 334587
TRANSPORT PRICING AND COST RECOVERY SEMINAR. CANBERRA, 17-18 JULY 1979. PAPERS AND PROCEEDINGS

The seminar was conducted by the Commonwealth Department of Transport at the request of the Co-ordinating and General Transport Group of the Australian Transport Advisory Council. Papers presented include the following: 1) Comments on cost recovery (Hicks, SK, Stevenson, DG and Vance, JA); 2) Effect of pricing on operating budgets: deficits and cash flows (Pascoe, W); 3) Cost recovery in urban public transport (Scrafton, D and Starrs, M); 4) Efficient resource allocation: Theory and practice in the transport industries (Kolsen, HM); 6) Full cost recovery in one sector:

Implications for users, workers, governments and managements (Joy, S): 7) Direct and indirect (implied) subsidies in urban passenger transport (Queensland. Department of Transport); 8) Pricing and cost-recovery in transport: An overview drawing on seminar documents (Australia. Department of Transport); 9) Transport pricing and cost recovery: The main issues (Australia. Bureau of Transport Economics). (TRRL)

Hicks, SK Stevenson, DG Vance, JA Pascoe, W Scrafton, D Starrs, M Kolsen, HM Mills, G Joy, S
Australia Department of Transport Monograph Nov. 1979, 265p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 239604), Australian Road Research Board

ORDER FROM: Australia Department of Transport, P.O. Box 367, Canberra City, A.C.T., Australia

43 334890

REPORT OF GOVERNOR'S BLUE RIBBON COMMISSION ON TRANSPORTATION NEEDS AND FINANCING

Due to rising costs, decreasing revenues and a very large backlog of needs, only a small fraction of North Carolina's highways have been resurfaced and maintained, or straightened or improved. This Commission recommends that North Carolina provide immediate additional financial resources for the Highway Fund for the next two years sufficient to satisfy the resurfacing and maintenance needs, to match federal aid, and to continue the operations of the Department. Additional funds for cities and towns are also recommended. These recommendations provide only short-term relief. More aggressive measures will be required in the future. The Commission also recommended that aviation, bicycle, public transportation, and rail programs be given additional general fund support. This report discusses the present and future concerns of the North Carolina transport system, the financial crisis faced by North Carolina's highway fund, the operation of the transport network for the movement of people and goods, and the public, air and rail transportation policies.

Governor's Blue Ribbon Study Commission 1980, 20p

ORDER FROM: Governor's Blue Ribbon Study Commission, P.O. Box 26865, Raleigh, North Carolina, 27611

43 335631

SUCCESS OF INVESTMENT IN LOCAL PUBLIC TRANSPORT IN GERMANY

Since 1967, substantial public funds have been made available by federal and state governments for construction work to improve local public transport in towns and cities. This has made it possible to implement large-scale projects -such as underground and commuter railway systems-and a large number of smaller schemes designed to improve urban traffic conditions. The present article describes the initial situation as well as the statutory bases for improving traffic conditions in towns and cities, and presents a survey of the investment and construction work being done in local public transport. This is followed by an analysis of the transport improvements achieved so far as well as the consequences for urban planning and public policy in the social and labor market fields.(a) (TRRL)

Girnau, G Mueller, KW *Transport Policy and Decision Making* Vol. 1 No. 2-3, 1980, pp 253-265, 2 Fig., 7 Tab., 11 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253907), Institute for Road Safety Research

ORDER FROM: Martinus Nijhoff Publishers, P.O. Box 22, Dordrecht, Netherlands

43 335789

BUS SHELTERS MEAN A HEALTHY INCOME FOR TORONTO

Toronto's department of public works and Mediacom Industries Ltd have made an arrangement whereby Mediacom would manufacture, install and maintain bus shelters at their own cost for the privilege of displaying advertising. A percentage of the revenue from the advertising is given as commission to the city. There is no doubt that this arrangement is beneficial to the municipality. (TRRL)

MacLean, S *Civic Public Works Magazine* Vol. 33 No. 1, Jan. 1981, pp 20-21, 3 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 254199), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

43 335841

COST AND SUBSIDY ISSUES IN URBAN PUBLIC TRANSPORT

This paper was presented at Session 6a: Rail costs and operations. Over the next decade there is likely to be a growing demand for the extension of and quality improvements in urban public transport services. It is also likely that the already significant levels of deficit incurred by such services will further increase, heightening pressures for a reduction in services. It is suggested that a solution to this conflict will only be found by clearly identifying the social objectives to be met through the provision of such services. This will enable the costs of particular policies to be determined and provide a defensible and identifiable basis for the determination of fare and subsidy levels. An example of the type of cost analysis necessary is given in outline in the paper. Attention is drawn to a number of conclusions that are made possible by the analysis (a). The number of the covering abstract of the forum is IRRD no. 250625.

6th Australian Transport Research Forum, Brisbane, 22-24 October, 1980. Forum Papers Queensland, Australia.

Brown, HP (Melbourne University, Australia); O'Rourke, MC (Broken Hill Proprietary Company Limited)
Metropolitan Transit Authority, Queensland, (0313-6655) 1980, pp 359-376, 3 Fig., 3 Tab., Phots., 11 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250631), Australian Road Research Board

ORDER FROM: Metropolitan Transit Authority, Queensland, 230 Brunswick Street, Fortitude Valley, Queensland, Australia

43 337127

FINANCING URBAN PUBLIC TRANSPORTATION: A COMPARISON OF U.S. AND FOREIGN CITIES

The report examines how cities in other Western nations attempt to solve many of the same financing problems facing American urban public transportation systems. The study includes both a survey of the financing characteristics of 23 cities in other nations and intensive case studies of innovative financing mechanisms in 6 cities: London, Paris, Munich, Hamburg, Vienna, and Stockholm.

Wolman, H Reigeluth, G
Urban Institute, Department of Transportation Final Rpt. 1327-01, DOT-P-30-80-23, Apr. 1980, 172p

Contract DOT-OS-90071

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-170706

43 337878

REGIONAL FINANCING ALTERNATIVES FOR MASS TRANSIT. VOLUME I: SUMMARY

Increasing mass transit deficits and declining central city fiscal strength generated strong interest in regional taxation for transit. This report, volume 1 of 5 volumes, summarizes the other four volumes of the study and presents the results of two case studies regarding the distribution of tax burdens under alternative central city and regional financing systems. The main focus of the study is on regional or metropolitan-wide taxation to subsidize mass transit. The study examines an earnings tax, a sales tax, a property tax, and a surcharge to state income taxes, each levied on a central city and a regional basis in two case study areas--Atlanta and New York City.

See also Volume 2, PB81-188963. Portions of this document are not fully legible: Also available in set of 5 reports PC E13, PB81-188948.

McHugh, R Puryear, DL
Syracuse University, Urban Mass Transportation Administration, (UMTA-NY-11-0003) Final Rpt. UMTA-NY-11-0003-81-1, Oct. 1979, 56p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-188955

43 337879

REGIONAL FINANCING ALTERNATIVES FOR MASS TRANSIT. VOLUME II: ATLANTA CASE STUDY

Increasing mass transit deficits and declining central city fiscal strength generated strong interest in regional taxation for transit. The main focus of this study is on regional or metropolitan-wide taxation to subsidize mass transit. The metropolitan areas studied are Atlanta, Georgia, and New York,

New York. Both areas provide excellent comparisons for regional taxation. New York has no direct regional taxation and the majority of mass transit service exists within the central city boundaries. Atlanta, in contrast, has a regional transit tax and a regional service pattern for mass transit. This volume, volume 2 of 5 volumes, examines tax burdens in the city of Atlanta and the two metropolitan counties of DeKalb and Fulton. Burdens of earnings taxes, sales taxes, property taxes, and a state income tax surcharge are compared with each other as alternative tools for financing mass transit deficits.

See also Volume 1, PB81-188955, and Volume 3, PB81-188971. Also available in set of 5 reports PC E13, PB81-188948.

McHugh, R Puryear, DL
Syracuse University, Urban Mass Transportation Administration, (UMTA-NY-11-0003) Final Rpt. UMTA-NY-11-0003-81-2, Oct. 1979, 49p

ACKNOWLEDGMENT: NTIS
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PB81-188963

43 337880

REGIONAL FINANCING ALTERNATIVES FOR MASS TRANSIT. VOLUME III: NEW YORK CITY CASE STUDY

Increasing mass transit deficits and declining central city fiscal strength generated strong interest in regional taxation for transit. The main focus of this study is on regional or metropolitan-wide taxation to subsidize mass transit. The metropolitan areas studied are Atlanta, Georgia, and New York, New York. Both areas provide excellent comparisons for regional taxation. New York has no direct regional taxation and the majority of mass transit service exists within the central city boundaries. Atlanta, in contrast, has a regional transit tax and a regional service pattern for mass transit. This volume, volume 3 of 5 volumes, is a case study of the distribution of tax burdens in the New York City metropolitan area under alternative central city and regional tax systems. Earnings taxes, sales taxes, property taxes, and a state income tax surcharge are compared in terms of their tax burdens by income class. Comparisons are made for New York City and the counties of Nassau, Rockland, Suffolk, and Westchester.

See also Volume 2, PB81-188963, and Volume 4, PB81-188989. Also available in set of 5 reports PC E13, PB81-188948.

McHugh, R Puryear, DL
Syracuse University, Urban Mass Transportation Administration, (UMTA-NY-11-0003) Final Rpt. UMTA-NY-11-0003-81-3, Oct. 1979, 78p

ACKNOWLEDGMENT: NTIS
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PB81-188971

43 337881

REGIONAL FINANCING ALTERNATIVES FOR MASS TRANSIT. VOLUME IV: TAX BURDEN ESTIMATING PROCEDURES

This is the fourth of five volumes of the study on regional or metropolitan-wide taxation to subsidize mass transit. This report provides details of the procedures used in estimating and distributing tax bases across the incomes as well as among the jurisdictions of the metropolitan areas of Atlanta, Georgia, and New York, New York. The report also documents how a wide variety of data sources can be used to derive such allocations for income tax, earnings taxes, sales taxes, and property taxes. Not only does the report specify these data sources in detail but also describes the specific techniques in allocating taxes in the two case study areas of Atlanta and New York City.

See also Volume 3, PB81-188971, and PB81-188997. Also available in set of 5 reports PC E13, PB81-188948.

McHugh, R Puryear, DL
Syracuse University, Urban Mass Transportation Administration, (UMTA-NY-11-0003) Final Rpt. UMTA-NY-11-0003-81-4, Oct. 1979, 40p

ACKNOWLEDGMENT: NTIS
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PB81-188989

43 337882

REGIONAL FINANCING ALTERNATIVES FOR MASS TRANSIT. VOLUME V: CONSTRUCTION OF METROPOLITAN INCOME DISTRIBUTION FOR ATLANTA AND NEW YORK CITY

The main focus of this study is on regional or metropolitan-wide taxation to subsidize mass transit. This report, the fifth and final volume of the final

report, is essentially a technical appendix to the body of the final report; however, it does provide considerable detail on a procedure capable of combining and reconciling several sets of existing income data and distribution data so as to generate a more comprehensive definition of metropolitan area income than is currently available in any single published source. This volume describes the procedures used to estimate income distribution for the Atlanta, Georgia, and the New York City regions. The estimating procedures involve six steps: (1) aggregation of census income data from six sources into four sources that are comparable among the data sets used in this procedure; (2) distribution of income from these four sources across income classes; (3) use of an iterative technique to insure that these income imputations conform to the reported or estimated source and class totals for each area; (4) correction of census income distribution estimates for underreporting and for the exclusion of certain forms of earned income; (5) addition of capital gains income to census income; and (6) inclusion of the imputed value of owner-occupied housing. The operations stated may be employed to construct income distributions for the entire SMSA, for a central city, for the outside central city areas of the metropolitan area, and for other large individual jurisdictions within the SMSA.

See also Volume 4, PB81-188989. Also available in set of 5 reports PC E13, PB81-188948.

McHugh, R Puryear, DL
Syracuse University, Urban Mass Transportation Administration, (UMTA-NY-11-0003) Final Rpt. UMTA-NY-11-0003-81-5, Oct. 1979, 50p

ACKNOWLEDGMENT: NTIS
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PB81-188997

43 341174

INCOME EQUITY OF TWO TRANSIT FUNDING SOURCES

Currently, a number of funding sources are used to subsidize public transit. These originate at all levels of government, and their mix differs greatly among regions. Each source or combination has implications for equity that are often overlooked since each has a unique incidence, i.e., pattern of who pays by income group. The purpose of this paper is to examine the incidence of two commonly used sources: a sales tax and a motor fuel tax. Previous studies of the incidence of these taxes are not comparable; what is necessary is a single source of data on which to examine them. Suitable data to calculate incidence are available from the 1972-1973 Consumer Expenditure Survey of the Bureau of Labor Statistics, a comprehensive source of information on consumption expenditures by detailed items and income for 40,000 U.S. families. These data allow the relative percentage of income paid as sales or motor fuel tax to be calculated. The results indicate that both sources are regressive. Use of the S-index of progressivity for comparison suggests little short-run difference in income equity between the two (although exactly what items are subject to the sales tax can affect the results). The study points out that the equity impact of potential funding sources should be understood, available, and part of the decision-making process.

This paper appeared in TRB Record 791, Transportation Finance, Equity, and Cost Allocation.

Rock, SM (Illinois Institute of Technology) *Transportation Research Record* No. 791, 1981, pp 10-14, 2 Tab., 15 Ref.

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43 341713

TRANSIT FINANCING--AN OVERVIEW OF THE NATIONAL TRANSIT FINANCING PICTURE IN TERMS OF FEDERAL AND STATE FUNDING LEVELS, FARE STRUCTURES AND LOCAL REVENUE SOURCES

Total transit operating deficits are increasing. This paper presents an overview of the national transit financing picture for Mayors and other local officials, and discusses how cities are utilizing these available sources, how they are developing their transit fare structures, and what some cities are accomplishing in terms of innovative financing alternatives. The final section presents some conclusions on various new local funding sources, and raises policy questions on the roles state and federal governments should play in financing public transportation systems.

Milwaukee Regional Meeting, September 20-21, 1979.

United States Conference of Mayors, Office of the Secretary of Transportation DOT-P-30-80-34, Oct. 1980, 41p, 4 Tab., 2 App.

Contract DOT-OS-90011

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43 341714

MODELLING THE GEOGRAPHIC COMPONENT OF MASS TRANSIT SUBSIDIES

A framework is developed for evaluating the distributive effects of mass transit subsidies that explicitly considers the inherent spatial interdependencies of a transit system, particularly with regard to the nature of cities, and the politically and legally "fair" distribution of scarce public resources. The methodology is demonstrated by means of a simulated urban mass transit system, and a review is presented of previous models and approaches to the question of subsidies at all levels of scale. (a) (TRRL)

Hodge, DC (Washington University, Seattle) *Environment and Planning A* Vol. 13 No. 5, 1981, pp 581-599, 6 Fig., 3 Tab., 37 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254637)

ORDER FROM: Pion Limited, 207 Brondesbury Park, London NW2 5JN, England

43 344575

FINANCING URBAN TRANSPORTATION: LOCAL STUDIES. 1970-JULY, 1981 (CITATIONS FROM THE NTIS DATA BASE)

The financing of urban transportation in local areas is documented. Although these studies may be of interest to a number of metropolitan localities, they were originally prepared to study the fiscal planning of transit and travel systems for specific areas. Cities covered include Atlanta, New York City, Washington, DC., Philadelphia, Houston, Baltimore, San Francisco, Minneapolis, Milwaukee, and many smaller localities. Among the systems involved are rapid transit rail, bus, shared taxicab, dial-a-bus, dial-a-ride, and subway. Some attention is given to metropolitan airports. (This updated bibliography contains 211 citations, 21 of which are new entries to the previous edition.)

National Technical Information Service Bibliog. Aug. 1981, 219p

ACKNOWLEDGMENT: NTIS

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PB81-807877

43 344650

SOARING TRANSIT SUBSIDIES MUST BE CONTROLLED

Demand for transit operating subsidies is approaching crisis proportions. Transit systems received \$2.2 billion in Federal, State, and local government operating subsidies in 1978--the latest actual figure available. By 1985 more than \$6 billion per year may be needed. This report tells why the demand for transit operating subsidies is growing, what can be done to control subsidy growth, and what improvements are needed in the Federal transit operating assistance program. Transit systems must control costs and increase productivity if their subsidies are to be kept within acceptable limits. Transit systems must also adopt more realistic, efficient, and equitable fare policies. The Urban Mass Transportation Administration, which administers the Federal program, should help transit systems achieve these goals and should improve its administration of the Federal operating assistance program.

Report to Congress.

General Accounting Office CED-81-28, Feb. 1981, 103p

ACKNOWLEDGMENT: NTIS

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PB81-237174

43 345339

USE OF REVENUE SHARING FOR PUBLIC TRANSPORTATION IN RURAL AREAS

The purpose of this study is to explore whether rural towns and counties use part of their revenue-sharing funds to support public transit operations or other aspects of public transportation such as road construction and maintenance. This is of interest because the current demonstrations of public transportation programs in rural areas are supported mainly by federal demonstration funds from the Federal Highway Administration, and they face possible funding termination unless sufficient local financial support is forthcoming. This study is also of interest because of the impact of new legislation that makes broader federal assistance available to public transportation in nonurbanized areas. (Author)

This paper appeared in Transportation Research Record No. 813, Finance Issues: County Highways and Public Transit.

Kidder, AE (Syracuse University) *Transportation Research Record* No. 813, 1981, pp 6-10, 8 Tab.

ORDER FROM: TRB Publications Off

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43 345340

EXAMINATION OF REGIONAL TRANSIT COST ALLOCATION AMONG TOWNS: FIVE CASE STUDIES

The design and implementation of procedures now used to allocate regional public transit costs among towns are examined. The basis of this examination is a set of case studies of eight cost-allocation procedures being used in five New England regions--two in Maine and three in Massachusetts. These regions have different demographic and economic characteristics, types of transit service and regional organizations, and sizes of operations. The procedures examined employ variables such as passenger trips, passenger miles, vehicle trips, vehicle miles, and vehicle hours. The population served in the regions varies from 80,000 to 226,000. Three of the regions contain urbanized areas and all five regions include a large amount of rural area. Five of the eight procedures are used to allocate costs of demand-responsive services; the other three are for fixed-route services. The services in Maine are operated by private nonprofit agencies associated closely with human service agencies, whereas the services in Massachusetts are provided by regional transit authorities under contract with private bus companies and private nonprofit corporations. The eight operating budgets range from approximately \$86,000 to \$580,000, and the local shares of the operating deficit range from \$16,000 to \$64,000. The issues involved in the decision to select a particular procedure are illustrated. Major issues were found to be geographic characteristics of the region, types of transit service provided, and concerns of participating towns regarding an equitable basis of allocation. In addition, the manner in which these issues affected the initial choice and subsequent changes in procedures is reviewed, and a description of the experience of the regional agencies in the implementation of their procedures is given. The results of these case studies provide insight into the process of designing and implementing a procedure to apportion costs to towns that participate in a regional transit program. (Author)

This paper appeared in Transportation Research Record No. 813, Finance Issues: County Highways and Public Transit.

Collura, J Male, JW Mobolurin, A (Massachusetts University, Amherst) *Transportation Research Record* No. 813, 1981, p 10, 1 Fig., 1 Tab., 2 Ref.

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43 345344

FUNDING DADE COUNTY'S TRANSPORTATION IMPROVEMENT PROGRAM: THE CITIZENS' ROLE

Metropolitan Dade County, Florida, is currently implementing one of the most ambitious public transportation improvement programs in the United States. This program, which consists of a 20.5-mile elevated rapid transit system, a downtown people mover, and more than 1000 buses, is being funded by using bond funds passed by the voters of Dade County long before the current resurgent interest in public transportation. In many ways the success of the county's transportation improvement program is founded on the strong role citizens have had in supporting public transportation financing in Dade County. The 1970s brought citizen participation for funding transportation projects in metropolitan Dade County to the forefront. Two key referenda and thousands of citizens' meetings have provided clear direction for the county's future transportation system. Public officials and planners in Dade County were confronted with the realities of the past both nationally and locally in regard to the public's involvement in the planning of the major transportation projects. In the light of the experiences in cities in which there had been major delays or financial losses due to citizen opposition to planned transportation projects, Dade County approached the 1970s with the reality that the public must be fully involved in making funding decisions for the county's balanced transportation system. (Author)

This paper appeared in Transportation Research Record No. 813, Finance Issues: County Highways and Public Transit.

Wulkan, AC (Metropolitan Dade County, Transp Admin) *Transportation Research Record* No. 813, 1981, pp 26-28, 1 Tab.

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43 345345

PARTNERSHIP IN FUNDING PUBLIC TRANSIT: SEATTLE METRO

The Seattle Metro transit system is financed by an interesting combination of partners that includes the transit rider, the service-area resident, and the state. Although the transit rider contributes via the fares paid, the contribution from the other two partners is made available to the transit system by way of taxes levied by the transit agency. Both taxes--the retail sales tax and the motor vehicle excise tax--are available on an ongoing basis without being subject to any state or local jurisdictional appropriation process. Yields from these taxes are driven by the local economy and are anticipated to rise at least with inflation. This combination of local revenues is available to support both the operating and the capital needs of the system. This partnership in transit funding has proved to have been a very successful means of improving transit over the last decade. The combination of funding sources has provided both sufficient resources and sufficient flexibility to enable Seattle Metro to build a better-than-promised transit system. The reasons advanced a decade ago for the involvement of all three partners have become even more compelling. For this reason the Transit 1990 plan of Seattle Metro challenges each partner to provide the increased resources necessary to enable the system to continue to respond to the demand for transit service. (Author)

This paper appeared in Transportation Research Record No. 813, Finance Issues: County Highways and Public Transit.

Duiker, TE (Municipality of Metropolitan Seattle Metro) *Transportation Research Record* No. 813, 1981, pp 28-32

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43 345421

TRANSIT-CAR FINANCING: A BREAK THROUGH?

The Internal Revenue Code has been changed to make provision for the rolling stock of public transit entities, including both railcars and buses, to be eligible for accelerated depreciation by private entities that might enter into sale and leaseback arrangements with the operators of public transit services. Ability to write off for tax purposes in 5 years a railcar which has a 35-year useful life presents substantial leverage to corporations which are looking for ways to obtain depreciation advantages within their own tax structure. The effect of this change in tax law on the New York City Transit Authority is discussed; up to \$200,000 can be saved on a \$1 million car. NYCTA has bids for supply of 1,736 new transit cars in hand where the new funding can be applied. Already it has buses and commuter rail cars being delivered where the new depreciation is applicable. NYCTA President John Simpson makes observations on transit car procurement and on the problems which have plagued transit agencies recently.

Railway Age Vol. 182 No. 18, Sept. 1981, pp 29-32, 1 Phot.

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43 345463

THE FINANCING OF URBAN TRANSPORT UNDERTAKINGS IN AUSTRIA [ZUR FINANZIERUNG DER STAEDTISCHEN VERKEHRSBETRIEBE IN OESTERREICH]

The problems concerning urban transport and communal transport policies are described. Public transport, previously neglected in favour of private transport and subjected to long-term financial crises, has recently regained its significance for a number of reasons (better conditions of life in the towns, care of socially disadvantaged groups, protection of the environment, economic considerations). The results of an empirical survey of the economic situation (output data, expenditure, revenue) of the more important urban transport undertakings in Austria (Vienna, Graz, Linz, Salzburg, Innsbruck, Klagenfurt, Steyr, Wiener Neustadt) are described; the underground railway in Vienna is excluded. In order to achieve improvements in urban transport undertakings (higher personal use, preservation of transport services even with insufficient utilization and without increasing the fares) it is necessary to implement operational and organizational measures which can only be effected in association with the town authorities and with changed transport, financing and urban development policies. There follows an analysis of financing reforms in various western European countries, in which the formula "lower fares-continuous subsidies" has been given priority compared to that of "self-financing". Various taxation measures for meeting the applicable social costs are discussed and the formation of transport

associations is suggested. The following possible solutions are mentioned: higher demands by the public transport upon federal and provincial authorities, a more comprehensive transport policy with increased consultation and participation in decision making and the coordination of measures by the area corporations. (TRRL) [German]

Bauer, H Huber, W *Kommunale Forschung in Oesterreich* Monograph No. 46, 1979, 220p, 5 Fig., 16 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 309597)

ORDER FROM: Kommunalwissenschaftliches, Linzer Strasse 452, Vienna, Austria

43 345731

THE ORGANIZATION OF INTERURBAN PUBLIC TRANSPORT IN THE NETHERLANDS [DE ORGANISATIE VAN HET INTERSTEDELJK OPENBARE PERSONENVERVOER IN NEDERLAND]

In this study the organization of interurban public transport is the central theme. A clear distinction should be made between transport on long distances between big urban centres and so-called regional transport. In this study the latter is considered as the transport in rural areas and the transport between rural areas and cities. The main emphasis in this study is laid on regional transport. After a general introduction; the Commission for Transport Allowances; the system of allowances for bus services, for public transport and for recreational transport; the financial position; the current starting points regarding public transport for tariffs etc. are discussed. (TRRL) [Dutch]

Blonk, WA (Vrije Universiteit, Belgium) *Tijdschrift Voor Vervoerswetenschap* Vol. 17 No. 2, 1981, pp 111-126, 2 Tab., 7 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257054), Institute for Road Safety Research

ORDER FROM: Nederlands Vervoerswetenschappelijk Instituut, Treubstraat 35, Rijkswijk (Z-H), Netherlands

43 345735

PUBLIC TRANSPORT [TRANSPORTE COLETIVO]

This study deals with public transport financing in terms of an energy conservation policy. Vehicle costs, credit flow, interest charges, liquidation and insurance are discussed. An example is given of a transport company finance program for a given region. (TRRL) [Portuguese]

Lamounier, TA *Rumos do Desenvolvimento* Vol. 6 Aug. 1977, pp 23-25

ACKNOWLEDGMENT: TRRL (IRRD 257754)

ORDER FROM: Associacao Brasileira de Bancos do Desenvolvimento, Rua da Candelaria, 9-80 Andar, Rio de Janeiro, Brazil

43 345934

THE TRANSIT PLANNING IMPLICATIONS OF INCREASING FINANCIAL DEFICITS

The need for good public transit is generally accepted in most urban communities, this service being justified either as an alternative to other, more costly, transportation investment or as a contribution to the basic mobility needs of a large segment of the urban population. This public acceptance is reflected in the willingness of municipal and provincial governments in Canada to provide financial support for the operating and capital needs of urban public transit systems. Unfortunately, this public financial support has been provided at a time when inflation has been at a fairly high level, with the result that much of the money that was originally intended as an aid to service improvement has been absorbed by the existing transit services in their day-to-day operations. Analysis of these past trends, together with their associated socio-economic changes, suggests that in the future, an increasing proportion of government resources will have to be channelled into public transit simply to preserve the status quo. The case made by this type of argument is compelling and cannot be ignored. This simple extrapolation of past trends, however, ignores the potential impact of possible productivity improvements in the public transit industry. The control of the rate of increase of transit subsidies in the future, it is argued, is most likely to be made by the greater use of reserved rights-of-way, express services, sub-division planning controls and fare by distance systems rather than by new vehicle technology. (TRRL)

Bonsall, JA (Ottawa-Carleton Regional Transit Comm, Canada) *RTAC Forum* Vol. 3 No. 2, 1981, pp 94-100, 8 Fig., 1 Tab., 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257640), SO3 Abstracts and Newsletter

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

43 345939

TRANSIT POLICIES IN THE 80'S

Canadian transit policies for the next 10 years are analyzed. In all policies a very high level of subsidy is required. It was found that it is better to raise fares than to restrict service. Four policies were tested for Canada wide urban transit: continuation of recent trends; limiting total vehicle-miles of service to a 1% increase per year; fare increases of 2% per year; and fare increases of 2% per year and limiting subsidies to a 5% increase per year. All increases are in constant dollars. The last policy results in almost constant levels of ridership and vehicle-miles of service while still requiring considerable increases in operating subsidy to about 1.5 billion dollars for all of Canada by 1991. (TRRL)

Shortreed, JH (Waterloo University, Canada) *RTAC Forum* Vol. 3 No. 2, 1981, pp 80-88, 5 Fig., 3 Tab., 18 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257642), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

43 345984

NOTES ON GOVERNMENT SUBSIDISATION OF FERRY TRANSPORT

Governments in Norway, Scotland, Canada and the United States have been searching for simple methods of rationalising subsidies for ferry operations. In reviewing the various formulae that have been devised, this paper shows that not one formula serves the several objectives being pursued. In particular, the determination of the appropriate subsidy level (and the price and output that this implies) and the management of the transport operation have to be treated separately.

Rousche, L *Journal of Transport Economics and Policy* Vol. 15 No. 3, Sept. 1981, pp 233-242

ACKNOWLEDGMENT: British Railways

ORDER FROM: London School of Economics and Political Science, Houghton Street, Aldwych, London WC2A 2AE, England

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43 346038

AN ANALYSIS OF RAPID TRANSIT INVESTMENTS.

EXECUTIVE SUMMARY

The role that a new fixed rail transit facility plays in the 1980s is a question asked by many sectors. The public sector wants to be assured that its current co-objectives of capturing a share of the travel market and having a significant positive impact on land use are met. The private sector wants to be sure that all of the attributes associated with such development will come to function as it makes its investment decisions. The technical people (local and regional planners and operators) want to be assured that the public and private investment decisions are maximized. This study addresses the concerns of these groups and was designed with the following objectives: (1) to define the nature of the transit investment and to establish the private sector response; (2) to determine the interactive nature of policies (public sector and private sector) that may conflict with or reinforce the transit investment; (3) to define and use analytic techniques to measure the impact of the investment strategies; and (4) to apply the above to the case study of central business district (CBD) revitalization in Buffalo, New York.

See also PB82-105461.

Paaswell, RE Berechman, J Bogan, B McNally, M Parker-Simon, K

State University of New York, Albany, Urban Mass Transportation Administration Final Rpt. UMTA-NY-11-0022-81-1, July 1981, 11p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-105453

43 346039

AN ANALYSIS OF RAPID TRANSIT INVESTMENTS

The study examines the Buffalo, New York, Light Rail Transit (LRT) system now under construction. It shows clearly that, in a region of decline urban areas of the Northeast and North Central states, the economic and demographic indicators must be defined and used as planning constraints.

The report is organized to lead the reader through the critical parts of the analysis and clearly show how the impacts of investment are established and can be used. The report provides information that can be of use to public officials, planners, and private sector concerns.

See also PB82-105453.

Paaswell, RE Berechman, J Bogan, B McNally, M Parker-Simon, K

State University of New York, Albany, Urban Mass Transportation Administration Final Rpt. UMTA-NY-11-0022-81-2, July 1981, 115p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-105461

43 346060

SOUTHERN PACIFIC FARE SUBSIDY PROGRAM EVALUATION PROJECT

The report presents an evaluation of the Southern Pacific Passenger Fare Subsidy Program. The Southern Pacific Railroad (SP) operates passenger rail service in the San Jose-San Francisco corridor, catering primarily to peak period commuters traveling into San Francisco. Beginning in January 1978, the price of SP multiple-ride tickets was reduced by 30 percent. In addition, free feeder bus service was provided to SP stations in one of the three counties in the corridor. The evaluation addresses several issues of interest to federal government and policy-making agencies, the transit industry at large and the state and local agencies involved in the subsidy program.

Gelb, PM Colman, SB

De Leuw, Cather and Company, Transportation Systems Center, Urban Mass Transportation Administration, (UMTA-MA-06-0049) Final Rpt. DOT-TSC-UMTA-81-39, July 1981, 63p

Contract DOT-TSC-1409

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-108812

43 348011

GUIDELINES FOR ALLOCATING PUBLIC TRANSPORTATION COSTS AMONG TOWNS IN NONURBANIZED AREAS

A crucial question affecting the long-term viability of public transportation program in nonurbanized areas concerns the allocation of deficit costs among towns receiving service. An evaluation is presented of alternative cost-allocation procedures that include one or more of the following variables: population, property valuation, passenger trips, passenger miles, vehicles miles, and vehicle hours. The procedures are evaluated based on several criteria, including simplicity, data requirements, cost of use, and equity (or perceived fairness) of the allocations. The evaluation brings into perspective the need to make trade-offs among these criteria. Sensitivity analysis is therefore conducted to determine the relative differences in allocations depending on (a) the procedure, (b) the data sampling method, and (c) the cost assignment policy. Population, ridership, and cost data on two public transportation programs in nonurbanized areas of Massachusetts are used to conduct the evaluation. One service, operated in Barnstable County, is offered on a prearranged demand-responsive basis. The other provides fixed-route, fixed-schedule service to nine towns in Franklin County. (Author)

This paper appeared in Transportation Research Record No. 817, Rail Transit and Terminals.

Collura, J Canner, L Cope, D Gordon, S (Massachusetts University, Amherst); Mobolurin, A *Transportation Research Record* No. 817, 1981, pp 41-48, 6 Tab., 5 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

43 348457

EXPERIENCE WITH STANDARDISED EVALUATION OF INVESTMENT FOR TRAFFIC ROUTES FOR PUBLIC TRANSPORT SYSTEMS [ERFAHRUNGEN MIT DER STANDARDISIERTEN BEWERTUNG VON VERKEHRSWEGEINVESTITIONEN DES OEPNV]

The widening of the circle of promotion measures and financial bottlenecks has resulted in a need to grade construction projects financed by the state according to their urgency and to test them for their overall economic advantages. As a single system for gaining information and evaluation,

cost-benefit analyses are to be carried out for measures of considerable financial significance. In order to unify the computing methods, the German Federal Transport Minister has had standardised evaluation criteria developed for investment in traffic routes for public transport systems. Experience hitherto has shown that these methods of assessment represent a suitable instrument, which is in need of improvement and completion in some areas. Basically it is shown however that the results of such analyses produce a useful decision aid for establishing the realisation merit of a project, in addition to decisions on the priority order of several investment projects. However the decision itself must be left to the politician. (TRRL) [German]

Ebner, J (Ministerium Fuer Wirtschaft, West Germany) *Schriftenreihe Deutschen Verkehrswiss Ges. R B Sem* No. 45, Jan. 1980, pp 75-85

ACKNOWLEDGMENT: TRRL (IRRD 312657), Federal Institute of Road Research, West Germany

ORDER FROM: Deutschen Verkehrswissenschaft Gesellschaft E.V., Apostelnstrasse 11, D-5000 Cologne 1, West Germany

43 348464

STANDARDISED EVALUATION OF INVESTMENT IN ROUTES FOR PUBLIC TRANSPORT-A STATE-OF-THE-ART REPORT [STANDARDISIERTE BEWERTUNG VON VERKEHRSWEGEINVESTITIONEN DES OEFFENTLICHEN PERSONENNAHVERKEHRS-EIN SACHSTANDSBERICHT]

In order to ensure that investment provided for public transport through the

community transport financing laws is sufficient for economic requirements, cost-benefit analyses are carried out for each project. These profitability evaluations have in recent years been carried out with standardised evaluation criteria. Following some test-runs the evaluation method has been improved. For future investment policy public transport is preferred. The extension of public transport systems is to be financed from income from taxes on mineral oils. In future a greater use of bus systems is envisaged to provide adequate transport connections for rural areas. (TRRL) [German] Gleissner, E Schulz, HP (Federal Ministry of Transport, West Germany) *Zeitschrift fuer Verkehrswissenschaft* Vol. 51 No. 1, 1980, pp 17-24, 9 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 312670), Federal Institute of Road Research, West Germany

ORDER FROM: Federal Institute of Road Research, West Germany, Bruhlerstrasse 1, Postfach 510530, D-5000 Cologne 51, West Germany

43 349028

TRANSIT'S GROWING FINANCIAL CRISIS

The article summarizes the results of the U. S. General Accounting Office (GAO) review and suggests some actions that need to be taken if transit is to avoid serious financial problems.

Bonnell, JR (General Accounting Office) *Traffic Quarterly* Vol. 35 No. 4, Oct. 1981, pp 541-556, 12 Ref.

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

44 330701

THE URBAN TRANSPORT SYSTEM, POLITICS AND POLICY INNOVATION

This book is presented in three parts: part 1, The Politics, reviews the postwar history of urban transport policy and advances some propositions for ranking potential innovations according to their political feasibility. Part 2, The Problems, examines the criteria for evaluating the transport system in terms of problems such as energy, air pollution, safety, equity, congestion and urban sprawl. Part 3, The Options, discusses eight broad policy categories in terms of political feasibility and cost effectiveness. The options examined include: highway capacity expansion, the extension of fixed-route services, demand responsive transport, car pooling, traffic priorities for high occupancy vehicles, performance standard regulation for car manufacturers, direct consumer regulation, and price disincentives intended to curtail car travel and/or fuel consumption. (TRRL)

Altshuler, A Womack, JP Pucher, JR
MIT Press Monograph Feb. 1980, 558p, Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 251118)
ORDER FROM: MIT Press, 126 Buckingham Palace Road, London, England

44 331225

MARTA ACQUIRES THE ATLANTA TRANSIT SYSTEM; WHO ASSIMILATED WHOM, AND TO WHAT DEGREE

In 1971, an agreement was made with the Atlanta Transit System (ATS) and MARTA for the purchase of ATS, which was at that time, a privately-owned bus company. Basically, this case study addresses important questions about this MARTA acquisition. The questions focus on the character and degree of integration of the two initially-separate organizations. This case deals with this one subtle aspect of the ATS acquisition, whose resolution was anything but clear at the time of purchase, as the authors point out. Numerous questions relate to this target-aspect, but a few bare illustrations suffice to suggest the broader universe. Just how would ATS be absorbed into MARTA? In what ways, and in what degrees? This report discusses these issues in detail. (UMTA)

Miller, GJ Golembiewski, RT
Georgia University, Athens, Urban Mass Transportation Administration,
(GA-11-0006) UMTA-GA11-0006-81-17, July 1979, 36p

Contract GA-11-0006

ACKNOWLEDGMENT: UMTA
ORDER FROM: NTIS

PB81-157489

44 331228

ASSESSING ELECTORAL DEFEAT: NEW DIRECTIONS AND VALUES FOR MARTA

This case study report focuses on MARTA during the transition period, 1968-1971, which culminated in a successful referendum in November 1971 and propelled the Authority into complex engineering and construction projects. The report provides perspective on how MARTA turned the 1968 electoral defeat into success three years later. Three major sections introduce major features of this critical turnaround. First, the case reviews the 1968 Referendum. Second, attention is directed at MARTA's examination and assessment of the reasons for its failure. Third, the new emphasis and directions chosen by MARTA for its 1971 Referendum Plan are highlighted. (UMTA)

Almy, TA Hildreth, WB Golembiewski, RT
Georgia University, Athens, Urban Mass Transportation Administration,
(GA-11-0006) UMTA-GA-11-0006-81-2, July 1979, 23p

ACKNOWLEDGMENT: UMTA
ORDER FROM: NTIS

PB81-154783

44 331229

STRUCTURING INTERGOVERNMENTAL COORDINATION: MARTA AND THE CITY OF ATLANTA

This case study report addresses intergovernmental coordination between MARTA and the City of Atlanta. The report discusses how the City and the Authority established arrangements that would make it easier for MARTA to build its rapid rail system and Atlanta to protect the interests of its residents. The case provides one detailed perspective on one way that the street-level philosophy became institutionalized in the 1974 creation of

a MARTA Coordinator in City Hall. Four features of this Coordinator's position are discussed: (1) the origin of the position is traced from the idea to the reality; (2) the organization of the office is reviewed; (3) the Coordinator's role in facilitating the interchange between Atlanta and MARTA is examined; and (4) observations of MARTA and the City Staff on the usefulness of the position are presented. Also highlighted herein are the events pushing for coordination. (UMTA)

Almy, TA
Georgia University, Athens, Urban Mass Transportation Administration,
(GA-11-0006) UMTA-GA-11-0006-81-3, July 1979, 24p

Contract GA-11-0006

ACKNOWLEDGMENT: UMTA
ORDER FROM: NTIS

PB81-154791

44 334047

TRANSPORT POLICY; AN INTERDISCIPLINARY APPROACH

Following a statement of current political issues in transport at the local, national and international levels, existing theory relating location and movement to transport facilities is outlined. The connections between social and economic change and improved mobility are explored and historical examples discussed, including the 19th century extensions of settlement frontiers and 20th century urbanization. Political issues are translated into practical problems and the methodology required for a solution of these is developed, including the geographical representation of a transport system and its computational manipulation.

O'Sullivan, P
Pergamon Press, Incorporated, (0 7134 1657 2) 1981, 352p

ACKNOWLEDGMENT: Maxwell Scientific International
ORDER FROM: Pergamon Press, Incorporated, Maxwell House, Fairview
Park, Elmsford, New York, 10523

44 342112

TRANSIT BOARDS--COMPOSITION, ROLES, AND PROCEDURES

This Synthesis presents current practices relating to the composition and role of transit boards and suggests features of organization and interrelationships that may affect the activities of the board. These features include the intergovernmental relationships of the transit authorities (as special-purpose governments) with the general-purpose governments in the area, and the intergovernmental relationships of the board (as a citizen-oriented body) with the technical management personnel of the transit authority. Transit board members are usually appointed from the public by elected officials. The transit agencies also usually have a manager and/or executive director. The roles of both the board and the manager must be well defined to avoid conflicts. Agencies have suggested that the board should not be involved in daily problems of operating the system. It should also be taken into consideration that policies and planning are influenced by those with daily contact with the riding public, and that the complexity of bus operation and maintenance and the dependence on federal and state grants demand considerable technical knowledge of system operations. Many agencies use some form of contract management for operation of bus or paratransit systems. This relieves the agency of labor negotiations. The study also showed that (a) there is a need for reliable funding sources, (b) there are both advantages and disadvantages to each type of organizational structure, and (c) there are various methods for selecting board members.

NCHRP Synthesis of Highway Practice No. 75, May 1981, 24p, 2 Fig., 2 Tab., 20 Ref., 2 App.

ORDER FROM: TRB Publications Off

DOTL RP

44 345223

CONTRACT OPTIONS FOR PRIVATE ENTERPRISE BUS SERVICES

This paper was presented at Session 5: Regulations Versus Competition in the Eighties. In overseas countries, centralised transport authorities have for many years entered into contractual arrangements with privately-owned services to supplement publicly-owned networks. This practice will spread in Australia during the 80's. Victoria has already legislated to allow the State Minister of Transport to enter into contracts with private bus operators, and similar action has been foreshadowed in other states. This paper considers

the factors which must be taken into account in costing a transport service, and evaluates the options which exist for translating these into contract form. It notes methods used overseas and in Australia and suggests an alternative approach which recognises the differing cost elements in transport operation. Advantages and disadvantages of each contract format, applying to both operator and contractor, are briefly outlined to provide a basis for discussion of each (a). (TRRL)

Papers from the 6th Australian Transport Research Forum, Brisbane, October 22-24, 1980.

Schrader, MC (Bus Proprietors' Association (Vic))
Queensland Metropolitan Transit Authority, (0313-6655) 1980, pp 249-263, Figs., Tabs., Photos., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 250650), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

44 345252

PUBLIC PASSENGER VEHICLES ACT 1981. CHAPTER 14

The act defines and classifies in part 1 public service vehicles covering stage, express or contract carriages. Also covered is the organisation of traffic areas and traffic commissioners. Part 2 discusses general provisions relating to public service vehicles such as fitness, operators and drivers licences. Part 3 covers provisions relating to stage carriage services such as road service licences and trial areas. Part 4 includes modifications of requirements for the use of vehicles by educational and community bus services. Part 5 covers miscellaneous and supplementary provisions including finance, traffic areas, offences and legal proceedings, and inquiries. (TRRL)

Her Majesty's Stationery Office Monograph 1981, 81p

ACKNOWLEDGMENT: TRRL (IRRD 256762)

ORDER FROM: Her Majesty's Stationery Office, 49 High Holborn, London WC1V 6HB, England

44 345924

INTERMUNICIPAL TRANSIT COST-SHARING

Where several municipalities participate in one transit system and share the net costs of it, the lack of information contained in, or supporting the allocation formula may have an inhibiting effect on desirable development

of the system. Such a situation occurred on the south shore of Montreal shortly after the inception of the Montreal South Shore Transit Commission (MSSTC) in 1971. A flexible formula was defined in the legislation but the lack of information prevented its systematic application. A case study sponsored by Transport Canada, the Quebec Ministry of Transport, and the MSSTC developed a variety of service-based formulae which were tested, along with currently used formulae, from an equity and an efficiency point of view. A service-based formula emerged for recommendation. The formula was presented as part of an allocation method that is now being put to the test in small urban regions. (TRRL)

Fortin, G (Via Rail Canada, Incorporated) *RTAC Forum* Vol. 3 No. 2, 1981, pp 43-47, 4 Tab.

ACKNOWLEDGMENT: TRRL (IRRD 257647), SO3 Abstracts and Newsletter
ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

44 346129

TAXI REGULATORY REVISION IN SAN DIEGO, CALIFORNIA: BACKGROUND AND IMPLEMENTATION

Starting in January, 1979, the San Diego City Council revised its paratransit regulations and began issuing 6 new taxi permits per month. As of July, 1979, the ratio of new permit issuance was increased to 15 per month. Effective August 1, 1979, the Council replaced the standard rate of fare with a maximum rate, up to which operators may charge what they choose. Other regulatory changes included abolition of the public convenience and necessity certification requirement; provision for fixed route and shared ride services; specification of an appeals process for denial, suspension or revocation of permits; and standardization of licensing fees, insurance and reporting requirements for all paratransit vehicles. This report summarizes the historical background and implementation of these regulatory changes, compares the old and new regulations and describes the local taxi industry prior to the regulatory revisions.

Gelb, PM

De Leuw, Cather and Company, Urban Mass Transportation Administration, Transportation Systems Center Inrm Rpt. UM-TA-MA-06-0049-8016, July 1981, 224p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-113085

45 316864

REGIONAL AND URBAN LAND USE PLANNING-WILL THERE BE A NEED AND ROOM FOR TRAFFIC AND TRANSPORT IN THE FUTURE? [De Ordening van de Ruimte in Streek en stad; is er in de Toekomst nog Behoeftte aan de Ruimte voor Verkeer en Vervoer?]

Recent traffic and transport problems are caused by the higher standard of living which resulted in increased mobility and sub-urbanisation. In order to reach a solution an integral approach is imperative. Funds should be raised making additional investments in infrastructure possible. The role of public transport is emphasized as contributing to the solution of land use and traffic problems. (TRRL) [Dutch]

Klaassen, LH Bourdre, JA *Tijdschrift voor Vervoerswetenschap* Vol. 14 No. 4, 1978, pp 310-323

ACKNOWLEDGMENT: TRRL (IRRD 246617), Institute for Road Safety Research

ORDER FROM: Nederlands Vervoerswetenschappelijk Instituut, Treubstraat 35, Rijswijk (Z-H), Netherlands

45 322168

NEW TOWN. ENERGY LANDSAVING, PUBLIC TRANSPORT, TWO LEVEL LINEAR TOWN

This study concerns the relation between the three most important components of a city: people, buildings and traffic. The present unsatisfactory mixture of these three components is definitely a failure. Therefore it seems important to rearrange them to obtain a better result in economical, aesthetical, functional and social respects. The aim of the study is to find and elaborate a new city model accomplishing: low energy consumption in a city adapted to public transport, with a corresponding reduction of private cars; low land consumption through superimposition of a human town on top of a mechanical traffic town and through higher densities with less traffic as consequence; no conflicts between pedestrians and motor traffic by letting each kind of traffic move on separate levels; beauty and pleasantness. All ugly motor traffic attributes will be hidden and the sprawling effect of such traffic in conventional towns will disappear; and mix of functions will make the city more interesting. It will also diminish traffic, allowing some people to live close to their work. The subject will be treated in four consecutive parts: theoretical, practical, cost and evaluation. (TRRL)

Asplund, H Gonzalez, A
Lund University of Technology, Sweden Monograph 1979, 80p, Figs., 3 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 247651), National Swedish Road & Traffic Research Institute

ORDER FROM: Lund University of Technology, Sweden, P.O. Box 725, S-220 07 Lund 7, Sweden

45 325643

SUBDIVISION DESIGN GUIDELINES TO FACILITATE TRANSIT SERVICES

This report documents a study concerning the relationship between neighbourhood design and urban transportation. The two major tasks of the study were: (1) to investigate the design characteristics of existing neighbourhoods which might restrict or increase the cost of provision of local feeder transit service. (2) to develop design criteria and preliminary standards for the planning of new neighbourhoods which will facilitate the provision of local feeder transit service. It is the purpose of this research effort to discover the relationships between subdivision and neighbourhood designs and levels of service of urban public transportation that will lead to useful and practical guidelines which explicitly increase public transit use while maintaining the attractive features of subdivision design and planning. (TRRL)

Canada Mortgage and Housing Corporation Monograph Mar. 1979, 85 p. 26 Fig., 1 Tab.

ACKNOWLEDGMENT: TRRL (IRRD), Roads and Transportation Association of Canada

ORDER FROM: Canada Mortgage and Housing Corporation, Ottawa, Ontario, Canada

45 329707

DOCKLANDS ROADS-BIGGER IS NOT BETTER

The article evaluates future land use plans for the most economic form of transport for the docklands area of east London. With reducing dockland employment, proposed redevelopment is likely to require less labour. Residential development is also thought to be less than that forecast in the

strategic plan. Such arguments concerning future area development have proved the basis for opposing the proposed docklands southern relief road which, costing \$240 M, would have only caused congestion in approach roads. The decision to also cancel the \$300 M jubilee underground line was followed by a study of lower cost alternatives such as busways, trams and light railway systems. Future studies are to focus on what kind of development is really required for the area and how it can be achieved. (TRRL)

Bendixon, T *Architects Journal* Vol. 172 No. 34, Aug. 1980, pp 342-343, 1 Fig., 3 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 250349)

ORDER FROM: Architectural Press Limited, 9 Queen Annes Gate, London SW1, England

45 330362

A MODEL OF THE RELATIONSHIPS BETWEEN TRANSPORT AND LAND USE

This paper contains a verbal description of the components of a computer model of the relationships between transport and the spatial distribution of population, housing, jobs, employment, shopping and land. Transport is measured in generalised cost units for the private and public transport modes. The demolition and building of housing are calculated within the model, taking into account any known information. Economic activity is divided into twelve sectors, which are allocated to three groups according to the degree of locational response to changes in transport costs. In the model a distinction is made between infrastructure, represented by houses and jobs, and the allocation of people to them. The allocation procedure ensures that those who have not moved retain the same residential or employment location over time. The distinction between infrastructure and activities means that inequalities in their provision, for example vacant houses and jobs, are included. Land availability is taken into account in the location of activities. The equation system of model is solved using an iterative technique. After convergence a wide range of information is obtained, including the spatial distribution of population, housing and jobs, accessibility indicators, modal splits and time and money expenditures on travel. The paper is concluded by a description of the integration of all these topics and the behaviour of the model over time. (Author/TRRL)

MacKett, RC
Leeds University, England Monograph Working Paper 122, Oct. 1979, 28p, 2 Fig., 14 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 251069)

ORDER FROM: Leeds University, England, Institute for Transport Studies, Leeds LS2 9JT, West Yorkshire, England

45 331218

RELOCATING THE ELDERLY: SIX CASES OF MARTA'S IMPACT ON PEOPLE

This study directs attention to the personal reactions of selected individuals to a social process, which is the unexpected and involuntary relocation of the elderly to another residence. More specifically, this report traces the impact on older people in six cases, both individuals and couples, who were relocated by MARTA between 1973 and 1975. The authors point out that these six cases are not necessarily representative in any strict sense, but they do suggest the range and intensity of impacts that relocation can have on people. The report concludes that as a result of earlier experience, it appears that MARTA is more cognizant of individual preferences and that relocated households have played a more active role in relocation decision-making. (UMTA)

Rothman, NC
Georgia University, Athens, Urban Mass Transportation Administration, (GA-11-0006) UMTA-GA11-0006-81-10, July 1979, 16p

Contract GA-11-0006

ACKNOWLEDGMENT: UMTA

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PB81-157414

45 331230

THE MARTA RELOCATION APPEALS PANEL

This report discusses MARTA's Relocation Appeals Panel and its use to channel grievances. The report shows its impact on business and individuals and relates the experience and modification of the Appeals Panel by testing

procedures within MARTA and the courts. The Urban Mass Transportation Administration's (UMTA) role in the appeals process is also discussed. Basically, this case study details three sets of events: (1) the several mandates--federal and state laws, and federal agency regulations--that were going into effect and required some sort of a procedure for appealing relocation decisions; (2) the citizens' group that was rallying support among those to be relocated and urging resistance to all MARTA attempts to take property; and (3) the local group of lawyers that was questioning MARTA's settlement of the claims of relocated homeowners. These events helped to constitute the framework for the evolving development of MARTA policies and procedures for relocation. (UMTA)

Miller, GJ
Georgia University, Athens, Urban Mass Transportation Administration,
(GA-11-0006) UMTA-GA-11-0006-81-4, July 1979, 33p

ACKNOWLEDGMENT: UMTA
ORDER FROM: NTIS

PB81-154809

45 334142

PUBLIC TRANSPORT AND THE PLANNING OF RESIDENTIAL AREAS

This paper is mainly concerned with access to bus stops in residential areas and describes a study by the Transport and Road Research Laboratory, Crowthorne, Berkshire, which examines the trade-offs between: (1) walking distance to the route and the wait at the bus stop, i.e. The balance between route density and frequency; (2) walking distance along the route to the nearest stop and riding time on the bus, i.e. How widely bus stops should be spaced along the route; (3) walking distance to a more tortuous route which is designed to bring the bus closer to people's homes and the extra length of ride incurred as a result; and (4) fare and level of service under various financial constraints. Also considered is the effect of town type on bus usage and viability and the alternatives to bus travel, and a comparison is made between the component parts of trips (walk, wait, ride and cost) by different modes. (TRRL)

From book entitled "Urban Planning and Public Transport."

Webster, FV Bly, PH (Transport and Road Research Laboratory)
Construction Press Limited 1979, pp 64-76, 6 Fig., 2 Tab., 10 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252788)
ORDER FROM: Construction Press Limited, Lunesdale House, Hornby,
Lancaster LA2 8NB, England

45 334282

URBAN DEVELOPMENT AND REVITALIZATION: THE ROLE OF FEDERAL AND STATE TRANSPORT AGENCIES. EXECUTIVE SUMMARY

This report is a synthesis of a more extensive final report under the same title and report number UMTA-MA-11-0033-81-2. The purpose of this research is to examine the role that state transportation agencies have in urban development decision, identify the sources of leverage that these agencies have for influencing public/private decisions on urban development, suggest potential roles for state transportation agencies in urban revitalization, and recommend actions that federal agencies could take to encourage a more active relationship between transportation and urban development. This report summarizes the research results regarding the role of federal and state transportation agencies in encouraging urban revitalization. The urban development strategies in Massachusetts and Michigan were used as case studies to examine the role of transportation agencies in the overall process. Five categories of levers that state transportation agencies could use to direct development toward urban centers included: 1) reviewing project planning; 2) funding studies; 3) granting of permits; 4) influencing project planning process; and 5) providing facilities and services. It was found in both states that there was no overall policy direction for the use of these levers. This research report recommends steps to be taken by state transportation agencies to establish this policy guidance. This research report also identifies six sources of leverage at the federal level, namely: 1) articulation of federal policy; 2) creation of new programs; 3) influence in the planning process; 4) project evaluation; 5) establishment of priorities; and 6) use of research initiatives. Specific recommendations are made for each case. (UMTA)

Meyer, MD Gakenheimer, R Haven, P Hemily, B Ziering, E
Massachusetts Institute of Technology, Urban Mass Transportation
Administration, (CTS Report 79-13) UMTA-MA-11-0033-81-1, Dec.
1979, 37p

ORDER FROM: NTIS

PB81-186736

45 334283

URBAN DEVELOPMENT AND REVITALIZATION: THE ROLE OF FEDERAL AND STATE TRANSPORTATION AGENCIES. FINAL REPORT

The purpose of this research is to examine the role that state transportation agencies have in urban development decision, identify the sources of leverage that these agencies have for influencing public/private decisions on urban development, suggest potential roles for state transportation agencies in urban revitalization, and recommend actions that federal agencies could take to encourage a more active relationship between transportation and urban development. This report examines the role of federal and state transportation agencies in encouraging urban revitalization. The urban development strategies in Massachusetts and Michigan were used as case studies to examine the role of transportation agencies in the overall process. Five categories of levers that state transportation agencies could use to direct development toward urban centers included: 1) reviewing project planning; 2) funding studies; 3) granting of permits; 4) influencing project planning process; and 5) providing facilities and services. It was found in both states that there was no overall policy direction for the use of these levers. This research report recommends steps to be taken by state transportation agencies to establish this policy guidance. This research report also identifies six sources of leverage at the federal level, namely: 1) articulation of federal policy; 2) creation of new programs; 3) influence in the planning process; 4) project evaluation; 5) establishment of priorities; and 6) use of research initiatives. Specific recommendations are made for each case. (UMTA)

Meyer, MD Gakenheimer, R Haven, P Hemily, B Ziering, E
Massachusetts Institute of Technology, Urban Mass Transportation
Administration, (CTS Report 79-14) Final Rpt. UMTA-MA-11-
0033-81-2, Dec. 1979, 313p

ORDER FROM: NTIS

PB81-186744

45 334404

TRANSIT INVESTMENT AND ITS RETURNS

This paper identifies a number of issues that must be addressed to minimize the uncertainty in one particular type of urban investment--creation of a new public system. The public transit system is the public investment portion of a joint development process. The intent of the process, i.e., the type of return anticipated from the combined public (transit)-private (associated land use) investment, is to increase the economic vitality of the downtown area of a declining northeastern industrial city. For a number of pressing reasons, reinvestment in public transit in the U.S. seems propitious at this time (1979). This investment is to be made when the reasons for transit decline still are valid and show little signs of abatement. The success of joint development projects is then dependent upon both maximizing the investment strategies in the area of focus, and development strategies. Both of these areas of concern are addressed in this paper. A case study of Buffalo, N. Y. is chosen because of current Light Rail Transit development (approximately \$450 million, 215 million pounds) with reorganization of the transit system to focus on the Central Business District. This paper addresses issues related to joint development: (1) Can transit make a difference in downtown development? (2) What levels of investment must accompany such development? (3) What are the regional impacts of transit development, and can such developments help resolve intra-regional growth conflicts? The following and economic trends; (2) Retail and employment trends; (3) Private investment timetables associated with the public investment; (4) Detailed analysis of both population attitudes and decision maker attitudes towards transit related CBD development and regional conflicts.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Paaswell, RE (State University of New York, Buffalo); Berechman, J
(Tel Aviv University, Israel)
Organization for Economic Cooperation and Devel, European
Conference of Ministers of Transport Conf Paper Volume 2, 1980, pp
1226-43

ORDER FROM: Organization for Economic Cooperation and Devel, Suite
1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

45 334848

URBAN PLANNING AND PUBLIC TRANSPORT

This book is based on the proceedings of the urban planning and public transport conference held at the University of Nottingham, March, 1979. The book is divided into four parts: (1) town and city structure; (2) housing areas; (3) central areas; (4) industry and employment. (TRRL)

Cresswell, R (Wales University, United Kingdom)
Construction Press Limited Monograph 1979, 172p, Figs., Tabs., Photos., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 252783)

ORDER FROM: Construction Press Limited, Lunesdale House, Hornby, Lancaster LA2 8NB, England

45 335628

SOME LESSONS FROM THE WASHINGTON METRO

No new public transport system ever becomes realised simply as an exercise in engineering, nor as a result of a single political decision. No plan can be divorced from the specific land-use characteristics of the city, nor from the behaviour patterns and wishes of the inhabitants. The interaction of factors that are different in kind must have a crucial effect on the success or otherwise of a new system. The objective of this paper is to examine what lessons transportation planners may draw from looking at the history of the development of the Washington Metro, with particular reference to some of the complex interactions between political, economic and social factors, seen in combination with such factors ranging from land-use patterns to simple accidents of history. Such an approach does not lend itself to the drawing of tidy, "scientific" conclusions, for the building of a new metro cannot be regarded as a regularly recurring event in a stable isolated system. If, however, we are content with more modest inferences, perhaps from Washington we can learn something about the importance of timing in the evolution of plans, and the role of various factors in the plan-making process. We can make some limited inferences about the land-use impacts of a new metro, and the potential for two-mode journeys. Perhaps, too, the Washington Metro experience in provision for the disabled has lessons for transport planners. (Author/TRRL)

Truelove, P (Aston University, England) *Transport Policy and Decision Making* Vol. 1 No. 2-3, 1980, pp 121-132, 1 Fig., 2 Tab., 4 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253900), Institute for Road Safety Research

ORDER FROM: Martinus Nijhoff Publishers, P.O. Box 22, Dordrecht, Netherlands

45 335706

PERCEPTIONS OF TRANSIT-LINKED DEVELOPMENT IN MINORITY NEIGHBORHOODS: THREE CASE STUDIES

The objective of this study, using Atlanta, Georgia as the study site, was to examine the perceptions of diverse groups regarding the potential for transit-linked development in minority neighborhoods. Case studies were conducted in three minority neighborhoods. The neighborhoods were all on the nearly completed MARTA East-West fixed rail line. The focus of the study was the potential impact that a neighborhood transit station could have on the neighborhood's business district. Two techniques were used to collect the data for the study: 1) the plans and documents used in the development of the neighborhood transit station were analyzed to assess their impact on land-use in the neighborhoods under study and 2) interviews were conducted with leaders of business organizations, community groups, and developers and planners in reference to their perceptions of the business investment opportunities generated by transit-linked development. The perceptions of the different groups were compared to determine whether each group was supportive, opposed to, or indifferent in its attitudes toward the potential for transit-linked development in minority neighborhoods. Analysis revealed that improved land-use was a corollary objective of transit station development as reflected in the plans and documents studied. It was also found that all of the groups interviewed were optimistic about the potential for transit-linked development in minority neighborhoods. However, the planners and residents were more cautious about the prospects for transit-linked development than the businessmen and developers. It was also evident that those neighborhoods without effective business organizations would find it difficult to benefit from transit-linked development. (UMTA)

Jackson, N Earvin, L
Clark College, Urban Mass Transportation Administration UMTA-GA-11-0010-81-1, Jan. 1981, 28p

Contract GA-11-0010

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PB81-191579

45 342367

DEVELOPMENT AND EVALUATION OF A SYNTHETICALLY SELF-CALIBRATING GRAVITY MODEL

The development of an alternative to the quick-responses technique of using transferable parameters in trip distribution for small and medium-sized urban area is discussed. The proposed quick-response procedure involves an origin-zone-specific, self-calibrating gravity model in which the only input data required are the zonal productions and attractions, a zone-to-zone travel time matrix (skim tree), and the origin-zone terminal times. A travel time distribution determined from an origin-destination survey for internal trips is not needed for calibration. Tests conducted on three separate study areas indicated that the proposed model is able to reproduce trip patterns as accurately as the traditionally calibrated gravity model procedure based on origin-destination survey data. The accuracy was achieved by synthetic calibration of the model at the origin-zone level rather than at the aggregate level of the entire study area. Development of the proposed procedure was also based on the consideration that trip distribution is critically dependent on the spatial distribution of land use activities about each of the origin zones. This consideration was incorporated in the proposed procedure through the explicit measurement of the origin-zone-specific opportunity travel time distribution. The opportunity distribution for each origin zone was represented in the model by the origin-zone average travel time, computed from a gravity model trip distribution that has constant friction factors. From this initial key variable the final model was developed and to this the very acceptable results can be credited. (Author)

This paper appeared in Transportation Research Record No. 807, Travel Demand Forecasting and Data Considerations.

Mekemson, JR (Ohio State University); Sinha, KC (Purdue University)
Transportation Research Record No. 807, 1981, pp 15-20, 6 Fig., 2 Tab., 13 Ref.

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45 343604

A PLAN FOR DOWNTOWN TRANSIT AND JOINT DEVELOPMENT

The purpose of this report is to structure transit improvements that complement and reinforce a revitalization strategy for downtown Bridgeport. The specific objectives of the report were to: (1) explore a range of transit service improvements for downtown Bridgeport; and (2) maximize the impact of these service improvements by coordinating transit with the emerging economic development objectives for the downtown. The report illustrates that transit systems can play a major role in CBD revitalization when a combination of transit service improvements, streets, and pedestrian improvements are coordinated.

Prepared in cooperation with Cambridge Systematics, Inc., MA., Moore-Heder Urban Designers, and Economics Research Associates.

Burkhardt, R
Greater Bridgeport Transit District, Urban Mass Transportation Administration UMTA-CT-09-7001-79-1, Dec. 1980, 59p

Contract UMTA-CT-09-7001

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB81-209801

45 345219

TRANSPORT COST AND UTILITY FUNCTIONS FOR USE IN URBAN DEVELOPMENT MODELS

Until recently, accessibility measures used in urban development modelling have been regarded as arbitrarily defined indices. However, work by Neuburger (1971) has enabled accessibility to be interpreted in economic terms, as a measure of the consumer's surplus from travel. Given this new significance, various accessibility measures, derived from alternative travel demand functions, are examined and compared. Those derived from unconstrained travel demand functions are shown to have characteristics which make them unsuitable for use in land use and location modelling, whereas a variable called "centrality", which may be derived from a production-constrained negative exponential travel demand function, appears to be quite suitable. The new framework for accessibility enables trip

purpose and frequency and modal split, as well as destination choice, to be incorporated in a simple composite or aggregate "centrality" formula. Applications are indicated, for modelling the spatial distribution of residential densities and the locations of particular groups of households, industries or other activities in urban areas (Author/TRRL)

Patton, TA
Melbourne University, Australia Monograph RR/TRANS/07/1980,
1980, 37p, 2 Tab., 24 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250804), Australian Road Research Board

ORDER FROM: Melbourne University, Department of Civil Engineering, Grattan Street, Carlton, Victoria 3053, Australia

45 345238

LAND USE-TRANSPORT INTERACTION

It has been suggested that any transport planner who does not understand the relationship between an urban transport system, accessibility, population (residential) density and socio-economic variables must nowadays be considered somewhat naive. This is a rather unreasonable position to adopt, for it is unlikely that any group of professionals, including transport planners, fully understand the relationship. However, it should be expected that transport planning practice would reflect a concern for the relationship in the "solutions" which are implemented in response to perceived transport problems. The aim of this paper is to discuss and illustrate the nature of land use-transport relationships. The place of empiricism, theory, and mathematical models in the study of the interaction will be outlined. An illustrative application of an interaction model to an analysis of home-work linkage in Brisbane is presented together with brief details of a residential land value analysis. (Author/TRRL)

Grigg, TJ (Queensland University) *Institution of Engrs, Aust Queensland Div Tech Pap* Vol. 21 No. 7, Mar. 1980, pp 23-28, 8 Fig., 5 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250530), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

45 345336

LAND USE AND ENERGY INTENSITY

This paper summarizes the energy implications of urban land use in the metropolitan Toronto area. It identifies the transportation and nontransportation energy intensities of various land uses, assesses the effects of population density on energy consumption, and suggests measures to improve energy efficiency. The annual energy requirements of various land uses, including transportation energy, were manufacturing, 40 percent; residential, 35 percent; commercial, 19 percent; and other, 6 percent. The total annual energy consumption of various types of residential development was computed by adding the annual transportation energy consumed to the annual energy required to build and operate buildings. Composite annual energy requirements were single-family attached-504000 MJ/unit; single-family detached-376000 MJ/unit; walk-up apartment-284000 MJ/unit; and high rise apartment-216000 MJ/unit. Single-family residences consumed 50 percent more energy than did apartments on a per-unit basis. However, on a per-capita basis, apartments were found to be only 15 percent more efficient. Better land use planning to encourage compact urban development, increase residential densities, balance jobs and people, expand transit ridership, encourage ridesharing, and reduce per-capita space requirements would improve energy efficiency. These are desirable actions, especially in rapidly growing metropolitan areas. However, they appear difficult to achieve in view of public preferences and the incremental nature of implementing land use plans. Consequently, the greatest near-term gain in energy conservation probably will come from improving the operating energy efficiency of existing and new buildings and from improving transportation energy efficiency. (Author)

This paper appeared in *Transportation Research Record No. 812, Economic, Social, and Energy Effects of Highway Transportation.*

Levinson, HS (Connecticut University, Storrs); Strate, HE (Smith (Wilbur) and Associates) *Transportation Research Record* No. 812, 1981, pp 67-74, 4 Fig., 9 Tab., 12 Ref.

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45 345925

LAND USE AND METROPOLITAN TRANSIT

This paper examines the relationships of urban transit with land use, using published reports from various jurisdictions and empirical information from Ontario. The conclusions reached suggest that there are correlations between transit infrastructural investment, land use (such concepts as size, density, design and arrangement), and transit ridership. These findings, however, are so complex and variable from place to place that one must conclude that neither the physical design of transit systems nor the structural development of neighbourhoods alone will achieve meaningful transit goals. Transit must take its place as part of an overall urban transportation system, and only a broad range of mutually reinforcing initiatives, structural, socio-economic, and operational, will allow transit to realize its full potential. Major metropolitan areas in Ontario are examined to suggest what those initiatives might be and the limits to which they could support current and future transit objectives. (TRRL)

Nitkin, D (Ontario Ministry of Transportation & Communic, Can) *RTAC Forum* Vol. 3 No. 2, 1981, pp 34-42, 4 Fig., 5 Tab., 20 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 257648), Roads and Transportation Association of Canada

ORDER FROM: Roads and Transportation Association of Canada, 1765 St Laurent Boulevard, Ottawa, Ontario K1G 3V4, Canada

45 345963

EVALUATION OF ECONOMIC AND DEVELOPMENT IMPACTS OF MAJOR TRANSIT INVESTMENTS

Policymakers incorporate information on economic and development impacts in their evaluation of major transit investment alternatives, and there are good reasons for doing so. The information they use, however, is rarely suitable for evaluation. Deficiencies range from highly heuristic arguments that cannot distinguish one alternative from another. Claims regarding jobs, property values, and urban form, for example, are often spurious. Transportation planners tend to underestimate both the importance of economic and development impacts and the difficulties in evaluating them. The task is to formulate the empirical questions to focus on potential real benefits and to estimate the magnitude of the benefits in the specific case. Precise answers will never be obtained, but at least the analysis can be directed to the applicable concepts. (Author)

This paper appeared in *Transportation Research Record No. 820, Land Use and Economic Development.*

Lee, DB (Transportation Systems Center) *Transportation Research Record* No. 820, 1981, pp 1-5, 22 Ref.

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45 345968

EVALUATION OF TWO RESIDENTIAL MODELS FOR LAND USE ALLOCATION

The current thrust in transportation planning is to make greater use of manual and partly computerized techniques for providing quick-response travel estimation. In this context, land use models, which fuel the typical transportation models, are needed for small and medium-sized cities that operate on a small budget. The results of the evaluation of two operational residential land-use-allocation techniques most suitable for use in small and medium-sized cities are recorded. In an ex post facto test, both techniques were applied in a common setting and the U-statistic was used as a measure of performance. The results were excellent. (Author)

This paper appeared in *Transportation Research Record No. 820, Land Use and Economic Development.*

Khisty, CJ *Transportation Research Record* No. 820, 1981, pp 29-33, 3 Fig., 4 Tab., 4 Ref.

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45 346290

SANTA CLARA VALLEY CORRIDOR EVALUATION: PUBLIC PARTICIPATION PROGRAM

The purpose of the Santa Clara Valley Corridor Evaluation (SCVCE) was to develop regional guidelines for land use development and future transportation investments to the year 1990 in Santa Clara County. It was a four-phase study. The first two phases were devoted to gathering information concerning existing conditions, and determining issues of

regional significance. During the third phase, ten different land use and transportation alternatives were studied. During Phase IV, two land use and three transportation alternatives were analyzed to determine the final recommendations which were to be made by the technical staff. An extensive public participation effort was conducted which involved public officials, local staffs and citizen organizations in the review process.

Ybarra, J

Association of Bay Area Governments, Metropolitan Transportation Commission Final Rpt. Mar. 1979, 243p

ACKNOWLEDGMENT: NTIS

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PB82-105347

45 346291

SANTA CLARA VALLEY CORRIDOR EVALUATION: SUMMARY

The report has been prepared to assist local officials and citizens of Santa Clara County to determine the County's future course in transportation and land development. The report is also intended to ensure that in the process of making these important decisions, regional, county and local goals and policies remain consistent with each other. There are two major decisions to be made: (1) Development patterns--Where will future jobs and homes be located in the County; and (2) Transportation projects--How much and what kind of transportation service can or should be provided.

Association of Bay Area Governments, Metropolitan Transportation Commission Mar. 1979, 25p

ACKNOWLEDGMENT: NTIS

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PB82-105339

45 346672

INVESTIGATING THE RELATIONSHIP BETWEEN LAND USE PLANNING, TRANSPORTATION AND ENERGY CONSUMPTION

The objective of the study was to increase the understanding of the relationship among land use, transportation accessibility and energy consumption in an urban context. The issues addressed include: (1) How transportation accessibility and land use planning interact for increased energy conservation; (2) The role the public sector plays with regard to incorporating and integrating transportation, land use and energy conservation; and (3) The institutional and/or technical barriers for better integration of energy, transportation and land use considerations. The study combines an extensive literature survey in the subject areas with field case studies in five urban areas: Washington, DC; Baltimore, MD; Toronto, Canada; San Francisco, CA.; Miami, FL.

See also Volume 1, PB80-208424. Portions of this document are not fully legible.

Burgwald, B Cole, W Wagner, C

International Business Services, Incorporated, Asst Secretary for Policy & International Affairs Final Rpt. DOT/P-10-81-90, Jan. 1981, 143p

Contract DTOS59-80-C-0060

ACKNOWLEDGMENT: NTIS

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PB82-122185

46 324382

REPORT OF THE WORKING GROUP ON TRAFFIC RESTRAINT

This report describes the findings of a study designed to examine the effect and relative merits of alternative systems of restraint. Five basic systems of restraint have been studied using the city of Coventry as an example. The methods are: parking control, supplementary licensing, road pricing, cordon pricing and physical restraint. The effects and implications of restraint policies are divided into six aspects, each was studied by a specialist group. The six aspects were: the practicability of the restraint option, the costs and problems of implementation, the environmental effects, land use effects, the distribution of costs and benefits and the legislative implications and requirements. Throughout the study a TRRL based traffic model has been used to estimate the traffic changes which restraint might be expected to bring about. It is concluded that, in Coventry, which has little "through" traffic, comprehensive parking control would give reasonable restraint with low costs up to the mid 1980's. However, each city requires separate consideration and the study showed that there was inadequate knowledge of the restraining effect of congestion itself, and the likely response of travellers to restraint changes. (TRRL)

Department of the Environment, England Monograph Apr. 1975, 155p, Figs., Tabs., Photos.

ACKNOWLEDGMENT: TRRL (IRRD 247856)

ORDER FROM: Department of the Environment, England, 2 Marsham Street, London SW1P 3EB, England

46 330694

DOWNTOWN AUTO RESTRAINT POLICIES. ADOPTING AND IMPLEMENTING URBAN TRANSPORT INNOVATIONS

The article explains political and institutional opposition to car restraint measures. It is argued that these are "fragile" policy initiatives facing obstacles in (1) building political support, (2) securing approvals from decision-makers, and, (3) being implemented by public agencies. Although these problems affect any car restraint proposal, the feasibility of specific restraint measures is influenced by features of policy design, restrictions in force and requirements of state and law. It is concluded that in selecting a restraint option planners should evaluate political and administrative feasibility as well as the probable impact on transport and net benefits or costs.

Howitt, AM (Harvard University) *Journal of Transport Economics and Policy* Vol. 14 No. 2, May 1980, pp 155-167, 23 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 251105)

ORDER FROM: London School of Economics and Political Science, Houghton Street, Aldwych, London WC2A 2AE, England

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46 330695

DOWNTOWN AUTO RESTRAINT POLICIES: COSTS AND BENEFITS FOR BOSTON

The Boston metropolitan area was chosen as a case study in an analysis of benefits and costs of a number of measures designed to restrain car use and reduce congestion in the CBD. Policies examined all produce positive net benefits particularly during peak periods. Parking surcharges and area licence schemes generate the highest annual net benefits which would perhaps double over 10-20 years. The optimal parking surcharge, or licence fee, would reduce the number of cars entering Boston's central area by 15-35%. Key factors favourable to area restraint are high levels of downtown traffic congestion and a relatively difficult to expand highway system. (TRRL)

Gomez-Ibanez, JA Fauth, GR (Harvard University) *Journal of Transport Economics and Policy* Vol. 14 No. 2, May 1980, pp 133-153, 8 Tab, 21 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 251104)

ORDER FROM: London School of Economics and Political Science, Houghton Street, Aldwych, London WC2A 2AE, England

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46 334143

THE STRUCTURE OF TOWN AND CITY CENTRES

This paper is a brief survey of some major central area urban design concepts in the latter part of the 20th century. It deals mainly with the high technology megastructure solutions prior to the 1973 energy crisis but also indicates the direction of urban design after that time. The reason for the choice of mainly high technology solutions is that it was in this area that the

most exciting ideas for integrated transportation systems evolved. It may well be that their rejection was premature and that they could still point a direction towards the future. Urban areas reviewed are Brasilia (Brazil), Lijnbaan in Rotterdam (Holland), Cumbernauld and Runcorn (UK), Philadelphia (USA), and Tokyo Bay, Tokyo (Japan). The article concludes that it is possible for low and high technology urban design solutions to co-exist in any particular area according to their appropriateness. (TRRL)

From the book entitled "Urban Planning and Public Transport."

Gosling, D

Construction Press Limited 1979, pp 92-101, 2 Fig., 7 Phot., 10 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252790)

ORDER FROM: Construction Press Limited, Lunesdale House, Hornby, Lancaster LA2 8NB, England

46 334529

JOINT INSTITUTIONAL TRANSPORTATION SYSTEMS MANAGEMENT PROGRAM

In San Francisco, as in many cities, institutions located in residential neighborhoods outside the downtown business district generate traffic and parking conditions that pose concerns for area residents and for the institutions themselves. An approach to transportation systems management (TSM) undertaken by the city of San Francisco and a consortium of 14 major institutions in response to the transportation problems of institutions in urban residential neighborhoods is described. The objectives of the joint TSM program are to reduce automobile parking and traffic impacts by means of low-capital-cost measures such as ridesharing, public and private transit services, parking management, and marketing incentives and to foster economies of operation through the institutions' cooperative efforts. The successful implementation of TSM measures at three of the participating institutions demonstrates the validity of the approach and provides a means for the early evaluation of the total program. (Author)

This paper appeared in Transportation Research Record No. 770, Urban Systems and Traffic Evaluations.

Dietrich, WH Kennedy, MA (DKS Associates); Twichell, J (Twichell (Jon) Associates) *Transportation Research Record* No. 770, 1980, pp 1-3

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46 334570

MIDTOWN MANHATTAN CIRCULATION AND SURFACE TRANSIT STUDY AND DEMONSTRATION PROJECT

Low cost capital improvement techniques can be used to improve the efficiency of surface transportation systems as demonstrated in New York City. A project was undertaken to improve air quality in midtown Manhattan by redesigning vehicle usage and promoting transit. To assist in the evaluation of Midtown's surface transportation system, a conceptual model was developed with modal, operational and physical elements. All aspects of the movement of persons and vehicles were investigated and an overall circulation plan was developed. A number of projects were selected for demonstration to indicate the effectiveness of the various strategies in improving the efficiency of the transit system.

Kraft, WH (Edwards and Kelcey, Incorporated); Schwartz, SI *ASCE Journal of Transportation Engineering* Vol. 107 No. 2, Mar. 1981, pp 197-212, 2 Ref.

ACKNOWLEDGMENT: E1

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46 335210

IMPACTS OF MUNICIPAL PARKING-FEE INCREASES IN DOWNTOWN CHICAGO

The results of a study that investigated the impacts of substantial fee increases at Chicago's eight downtown city-owned parking facilities are reported. Changes in parking patterns were determined for each of the municipal facilities from data routinely collected by the Bureau of Parking and surveys of time-stamped parking receipts. The effects on parking fees and use at nearby privately owned facilities and on transit ridership were also explored by using data from surveys of parking tax returns submitted by commercial facilities, a historical review of their rate schedules, and discussions with private operators. The January 1978 fee increases stimulated a drop-off in overall use at each of the municipal facilities, although slightly more revenue was generated. Vehicles, usually driven by commuters,

that enter on weekdays before 9:30 a.m. and park all day decreased by 72 percent (this drop-off was still evident one year after the increase). Apparently, most parkers increased their use of transit rather than divert to other parking facilities. Because of the availability of space in the midday hours and new short-term fees that remained lower than those at nearby, privately owned facilities, short-term parking increased at the municipal facilities. These effects are consistent with the city's objectives for its central area--i.e., lowering peak-period congestion and pollution, providing parking space for business patrons, and increasing transit use. It is concluded that the restructuring of parking fees has potential benefits if parking is in short supply, if local government controls a major portion of the supply, and if good transit service is available. (Authors)

This paper appeared in *Transportation Research Record* No. 786, Parking.

Kunze, B Heramb, C Martin, T (Chicago Department of Public Works) *Transportation Research Record* No. 786, 1980, pp 21-30, 3 Fig., 4 Tab., 3 Ref.

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46 335211 EMPLOYER-SUBSIDIZED PARKING AND WORK-TRIP MODE CHOICE

The widespread practice of employer-subsidized parking is a significant but often overlooked determinant of mode choice for the journey to work. Experiences in several major cities are examined, and estimates are made as to how many of those who are offered employer-paid parking decide to drive alone to work rather than commute by other modes. It appears that approximately 20 percent of those who now drive alone and receive free parking would form carpools or begin using public transit if they were required to pay for parking at the workplace. This estimate is derived from comparisons of the behavior of commuters of similar characteristics who park free and who pay to park and from the results of the imposition of parking charges for parking formerly provided free. The major incentive for employers to provide free parking appears to be the fact that, as a fringe benefit, free parking escapes income taxation. Enforcing the reporting and taxation of its cash value, however, is a difficult and predictably unpopular task. Two policies intended to extend employer parking subsidies to work travel by modes other than the single-occupant automobile are recommended: tax-exempt travel allowances and carpool parking subsidies. Both policies could lead to significant increases in carpooling and transit use at very low or no public expense. (Author)

Pickrell, DH (Harvard University); Shoup, DC (California University, Los Angeles); Morin, DA *Transportation Research Record* No. 786, 1980, pp 30-39, 4 Tab., 18 Ref.

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46 342366 OPTIMAL PEAK-LOAD PRICING, INVESTMENT, AND SERVICE LEVELS ON URBAN STREETS--A NUMERICAL EXAMPLE

Socially optimal automobile tolls, bus fares, bus service levels, and street capacity can be determined by the use of an integrated peak-load pricing model. The objective of this paper is to develop such a model and to demonstrate the model's applicability and usefulness with regard to its implications for transportation policy. The model that is presented departs from previous ones in that it uses disaggregate travel demand models in order to derive empirically implementable pricing and investment rules for the provision of transit service. Our proposed model, as a whole, is concerned with maximizing the sum of the expected utilities derived by urban street travelers. Numerical results reveal that, given the cost and demand conditions posited, under all but the least-congested travel conditions considered, the travelers' welfare maximizing levels of automobile tolls far exceed those fees now collected by North American gasoline taxes and other automobile user charges. When the imposition of optimal automobile tolls appears impractical, the common practice of providing reserved bus lanes has much to recommend it, especially under the traffic and pricing conditions that prevail during peak hours in most North American cities. Given that automobile tolls are restricted to the gasoline tax, optimal provision of bus service implies mass transit subsidies, at least in peak hours. However, provision of reserved bus lanes would reduce substantially the travelers' welfare losses that result from subsidy reductions. (Author)

This paper appeared in *Transportation Research Record* No. 807, Travel Demand Forecasting and Data Considerations.

Khajavi, S (Toronto University, Canada) *Transportation Research Record* No. 807, 1981, pp 7-14, 9 Tab., 6 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

46 345943 EVALUATION OF TRAFFIC MANAGEMENT STRATEGIES IN CENTRAL BUSINESS DISTRICTS

A network traffic model, Micro-Assignment, has been refined and applied to the central business district (CBD) of San Jose, California. The model is capable of simulating the fine network details and the wide variety of intersection control that normally exist in downtown areas and can be used for assessing the impacts of control plans both on the local network and on the surrounding highway facilities. Model refinements included a procedure for estimation of fuel consumption that is compatible with the characteristics of such dense networks and additional input and output capabilities. The model was calibrated to the conditions of the summer of 1979 by using measured traffic volumes and travel times and was used for evaluating the impacts of selected control plans. Network data and origin-destination (O-D) demand data were established for the 1-h afternoon peak period. A set of O-D demand data that was available for an earlier year was updated for the 1979 conditions, taking into account the various changes in land use activities and natural growth in the CBD area. Three improvement plans proposed by the city were evaluated and included a new highway facility that bypasses the CBD, a transit mall, and a new office-garage building. The impacts of these plans on both the CBD and the surrounding highways were analyzed and evaluated. This application was considered successful because the model was shown to be capable of simulating actual traffic operations effectively and of predicting the impacts of a wide variety of control plans. Furthermore, this application may be viewed as an analytic framework that illustrates in a step-by-step fashion the procedure of data collection, model calibration, and evaluation of control strategies in CBDs. It also points out several common problems that may be encountered in the application of such operational models and suggests possible ways of resolving them. (Author)

This paper appeared in *Transportation Research Record* No. 816, Transportation System Management--Parking, Enforcement, and Other Issues.

Easa, SM May, AD (California University, Berkeley) *Transportation Research Record* No. 816, 1981, pp 1-10, 7 Fig., 3 Tab., 16 Ref.

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DOTL JC

46 345954 TRANSIT LANE ENFORCEMENT IN THE CENTRAL CITY

Transit lanes in crowded urban core streets are potentially effective for improving transit operations when they are available to transit vehicles. Concurrentflow transit lanes are susceptible to violation by motorists. Police enforcement is often costly and inconsistent. A 2-year demonstration grant, from the Urban Mass Transportation Administration to San Francisco, tested the concept of self-enforcing lanes by using improved lane markings to heighten motorist's awareness and, hence, voluntary compliance. A separate study of nontraditional enforcement techniques was included within the grant funding. The results of the test showed negligible change in motorist's behavior, but the research uncovered valuable information about more significant contributors to transit delay, namely, double-parked vehicles and a spotty parking enforcement program. Subsequent implementation of new transit lanes on a downtown San Francisco street reflected the lessons learned on design techniques and enforcement priorities. (Author)

This paper appeared in *Transportation Research Record* No. 816, Transportation System Management--Parking, Enforcement, and Other Issues.

Erikson, G (Department of City Planning, San Francisco); Hurrell, WE (Smith (Wilbur) and Associates); Nelson, BW (Bay Area Transportation Corporation) *Transportation Research Record* No. 816, 1981, pp 75-82, 1 Fig., 4 Tab., 5 Ref.

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46 346028

**ENFORCEMENT OF TRANSPORTATION SYSTEMS
MANAGEMENT STRATEGIES: FOUR CASE STUDIES**

The report examines the role of enforcement agencies in the Transportation System Management planning process. Four transportation projects in Boston--a preferential lane on an expressway; a center city auto restricted zone; residential parking permit programs; and towing/booting enforcement, were used to illustrate the importance of enforcement in successful project implementation. It is recommended that local transportation agencies provide opportunities for police participation in project planning.

See also PB81-130791.

Meyer, MD Sheldon-Dean, J
Massachusetts Institute of Technology, Urban Mass Transportation
Administration, (UMTA-MA-11-0034) Final Rpt. UMTA-MA-
11-0034-81-1, Sept. 1980, 52p

ACKNOWLEDGMENT: NTIS

ORDER FROM: NTIS

PB82-103698

46 348396

PLANNING FOR BUSES IN GREATER LONDON

This report is about requirements for buses in the urban infrastructure. It is intended for people planning new developments, highway improvements and traffic and environmental management schemes. It consists of three papers concerning respectively town centres, highway schemes and residen-

tial areas. It has been written specifically about Greater London, but much of the contents are applicable to other urban or suburban areas. The first paper, "Buses in Town Centres", gives guidelines for buses and discusses access and walking distances, stops and passenger comprehension, passenger waiting environment, interchange, bus routing, car parks and buses, and bus terminals. Different approaches which both retain and exclude buses from shopping streets are examined in relation to environmental improvement. The main factors to be considered in evaluating individual town centre schemes from the point of view of their effects on bus passengers and bus operations are listed. Mention is made of problems specific to coaches and of superstore developments outside town centres. "Buses in Highway Schemes" examines routing and terminals, location, siting and access to bus stops and bays, the passenger environment, and arrangements during construction periods. The third paper: "Buses in Residential Areas" gives guidelines for bus access in the sort of residential area development which is to be found in the London area. It points out the requirements for bus services and comments on how housing, carriageway and pedestrian way layouts need to be planned and designed to enable buses to serve the areas effectively. (TRRL)

Bradburn, PD Hurdle, DI
Greater London Council Monograph Aug. 1981, 118p, Figs., Tabs.,
Photos., 52 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 258845)

ORDER FROM: Greater London Council Library, County Hall, London SE1
7PB, England

47 320327

MOBILITY OF PEOPLE AND GOODS IN THE URBAN ENVIRONMENT: FACILITATION OF URBAN GOODS MOVEMENT, 1975

Report analyzing patterns and efficiency of truck pickup and delivery operations in downtown Brooklyn, N.Y., chosen for study as a representative central business district. Prepared by K.W. Crowley et al., Polytechnic Institute of New York. Presents data collected over the course of a year from on-site observations at areas primarily used for office buildings, apartment buildings, restaurants, grocery stores, department stores, and other retail stores; and from interviews with shippers, receivers, and carriers on goods movement problems and their causes. Contents: a) Narrative analysis with 37 tables and 11 charts on type and weight of vehicles; daily, weekly, and monthly trip distribution; parking patterns; commodities carried and size of shipments; and duration of stops, including time spent loading and unloading trucks and inside buildings; generally for 6 types of area, and b) Appendices, including facsimile site observation and interview forms. (TSC)

Paper copy, Microfilm.

Office of the Secretary of Transportation One-Time No Date, n.p.

ACKNOWLEDGMENT: Transportation Statistical Reference File, TSC (327)
ORDER FROM: OST, NTIS

PB-259533

47 335091

TSM: WHAT TO DO ABOUT URBAN GOODS MOVEMENT?

Although a significant body of information regarding urban goods movements has evolved over the past ten years, there is still much to be accomplished if the announced intention of the Secretary of Transportation--that all regional transportation planning must address urban goods movements--is to be realized. Research in the early 1970s outlined problems and potential solutions which have been substantially verified in more recent studies, but still no systematic planning approach exists. Transportation systems management (TSM) has been promoted since 1975 and has become a component of the urban transportation planning (UTP) process. However, urban goods movement, as a part of local TSM actions, has only received limited consideration and study. After a review of these developments, the issue of integrating urban goods movement into TSM planning of activities is addressed, and certain probable developments of the 1980s, which will further enhance the importance of urban goods movement, are examined.

Diewald, WJ (Lea (ND) and Associates, Incorporated) *ASCE Journal of Transportation Engineering* Vol. 107 No. 3, May 1981, pp 287-299, 15 Ref.

ACKNOWLEDGMENT: EI
ORDER FROM: ESL

DOTL JC

47 343152

THE SCOPE FOR CONSOLIDATION AND OTHER STRATEGIES IN THE RETAIL DISTRIBUTION OF THREE SPECIFIC COMMODITIES

Consolidation of goods distribution can reduce total vehicle mileages and number of deliveries by increasing average drop volumes. Incompatibility of goods with each other when being transported is a major limiting factor in goods consolidation. This study, by adopting a commodity approach, has attempted to evaluate the scope for increased consolidation and alternative distribution strategies for three specific retail commodities: furniture, confectionery and footwear.

Also pub. as ISSN-0306-3402.

Wilson, PRS
Newcastle upon Tyne University, England Tech. Rpt. RR-30, Nov. 1979, 34p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-202335

47 343586

FREIGHT TERMINALS OPERATING ENVIRONMENT

The research analysis has been directed toward (1) developing a realistic, quantitative description of the structure of the economic zones that are centered upon medium-size urban areas, (2) determining the nature of traffic in manufactured goods which are most susceptible to intermodal transportation, and (3) identifying trends in the surface freight transportation environment to 1990 and beyond. The range and dispersion of the statistical

data which describe each of the 13 urban areas that have been examined (three are adjacent city-pairs with a coalesced economic vitality) disclose the lack of a pattern of surface freight transportation services among medium-size communities. All of the traffic in fabricated commodities can be efficiently moved in intermodal service. Both the motor carriers and the railroads evidence either an open mind or a firm commitment to mutually beneficial intermodal ventures. Intermodal freight service will become the shippers' preferred option when (1) intermodal trains are given precedence and scheduled service becomes dependable, (2) rail and motor carriers establish transregional intermodal corridors as cooperative mutually profitable ventures, (3) organized labor evaluates the potential benefits of intermodal operations to its members, and (4) the hub concept of strategically located profitable intermodal facilities has been implemented throughout the rail industry.

Morris, RE Merrill, KS
Decision Group, Incorporated, Transportation Systems Center Final Rpt.
DOT-TSC-RSPA-81-1, June 1981, 154p

Contract DTRS-57-80-C-0031

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-223794

47 343608

URBAN GOODS MOVEMENT: AN OVERVIEW AND BIBLIOGRAPHY. FINAL REPORT

This report presents the results of a detailed review of the literature on urban goods movement (UGM) published in North America between 1970 and 1980. The overview includes an examination of the scope of the UGM problem, data collection, planning methodologies, government policies, regulations, proposed solutions, and areas for further research. The proposed solutions discussed in detail are transportation system management strategies, freight consolidation, and off-hours delivery. The literature search was conducted using manual and computer-based techniques. The Appendices include a list of North American publications not reviewed in the project and a list of non-North American publications.

See also PB81-210460.

Crowley, KW Sweeney, DG Ricondo, R Brugnoli, JP Helmsworth, MC
Pennsylvania Transportation Institute, Urban Mass Transportation Administration, (UMTA-PA-11-0020) PTI-8016-F, UMTA-PA-11-0020-81-2, Dec. 1980, 115p

ACKNOWLEDGMENT: NTIS
ORDER FROM: NTIS

PB81-210478

47 345402

FREIGHT FACILITIES FOR CENTRAL BUSINESS DISTRICT OFFICE BUILDINGS

Inadequate end-point facilities in office buildings for shipping and receiving freight are partly due to a lack of understanding of the urban goods movement problem by architects and engineers and partly due to inadequate municipal freight facility by-laws. Because of the wide range of environmental, social and economic impacts imposed on an urban area by inadequate freight facilities, engineers involved with the planning, design and approval of office buildings must take a comprehensive view of the factors that should be considered in the design and operation of office building freight facilities. This paper is based on a study conducted by the Department of Civil Engineering of the University of Calgary for the City of Calgary Transportation Department. The study, which included measurement of arrival rates and service times of delivery trucks, couriers and service vehicles at office buildings in Calgary, and a survey of existing freight facilities in central business district office buildings, formed the basis for the development of a proposal to revise existing zoning by-laws regarding freight facilities. The primary deficiency of these by-laws is that they overstate the need for delivery vehicle facilities larger office buildings and neglect the space requirements for couriers and service vehicles. The paper includes a comparison of freight facility by-laws for office buildings in a number of Canadian cities.

Proceedings of the Institute of Transportation Engineers Sixth Annual Meeting: Inter-City Transportation and the Urban Scene, held April 22-24, 1981 in Victoria, British Columbia.

Ho, HH (Barton-Aschman Canada Limited); Morrall, JF (Calgary University, Canada)
Institute of Transportation Engineers Conf Paper 1981, pp 282-308

ORDER FROM: ESL

47 348411

CARRIAGE OF GOODS IN URBAN CENTRES [LE TRANSPORT DE MARCHANDISES DANS LES CENTRES URBAINS]

The author begins by examining motorists' negative reaction to the presence of lorries in town centres, essential nonetheless if shops are to be supplied. Limitations on delivery and waiting times must not be excessive if important lorry and van services to the community are not to be unduly disrupted; improved town centre loading and unloading facilities for lorries and improved parking facilities for all vehicles are more positive elements in a solution to the problem. Pedestrian precincts and limited access streets may be helpful in certain cases. Transit traffic must in any case be separated from delivery traffic and guided away from urban centres by existing or specific infrastructures. Road stations with adequate parking and garage facilities for lorries and with warehouse installations should be conveniently sited outside town centres. A reduction in noise and pollution emitted by commercial vehicles has already been achieved by the manufacturers, who unceasingly continue their efforts in this field. Door-to-door deliveries are an essential service, and while they involve the presence of a lorry or van, they replace much more numerous journeys otherwise made by clients to collect goods. In this period of recession, greater efficiency and a reduction in transport costs must be sought, and this is only possible if there is full collaboration between the representatives of the private road transport sector and the authorities. (TRRL) [French]

Papers from the 9th IRF World Meeting, Roads Into the Future--Urban Transportation--TS6, held at Stockholm, June 1-5, 1981.

Ernst, J-M (Union Internationale Des Transports Routiers)
Svenska Vaegfoereningen 1981, pp 85-94

ACKNOWLEDGMENT: TRRL (IRRD 257869), National Swedish Road & Traffic Research Institute
ORDER FROM: Svenska Vaegfoereningens Foerlags AB, Box 27115, S-102 52 Stockholm, Sweden

47 348462

FREIGHT DISTRIBUTION AS A STARTING POINT FOR THE INTEGRATION OF ROAD GOODS TRAFFIC INTO INNER-CITY TRAFFIC [GUETERVERTEILUNG ALS ANSATZPUNKT ZUR INTEGRATION DES STRASSENGUETERVERKEHRS IN DEN INNERSTAEDTISCHEN VERKEHR]

In urban conurbations private and public transport are considerably hindered by goods traffic. But the freight business also considers the traffic conditions caused by lorries during goods delivery in towns and cities to be unsatisfactory. A possible solution for a trouble free integration of commercial traffic into the inner city traffic system is offered by the establishment of freight distribution centres. These offer links between different transport routes and transport means for a concentration area, the collection and distribution of freight, freight transfer, temporary storage and further services. In this way an improved usage of road space and transport capacity are guaranteed. Cost-benefit-analyses confirm the economic advantages of freight distribution centres. Further difficulties are brought about by the lack of readiness to co-operate shown by the goods transport contractors and the existing legal restrictions on co-operation. (TRRL) [German]

Herx, G (Institut fuer Verkehrswissens, Cologne, West Ger) *Zeitschrift fuer Verkehrswissenschaft* Vol. 51 No. 1, 1980, pp 38-54, 3 Tab., 24 Ref.

ACKNOWLEDGMENT: TRRL (8101BA082E), Federal Institute of Road Research, West Germany
ORDER FROM: Federal Institute of Road Research, West Germany, Bruhlerstrasse 1, Postfach 510530, D-5000 Cologne 51, West Germany

48 322097

COMMUNITY ASSESSMENT OF THE ENVIRONMENTAL IMPACTS OF A TRANSPORT SERVICE

The environmental impacts of road traffic are known, and the contribution of public service vehicles to these impacts can be estimated. It is proposed to determine how communities assess the environmental impacts imposed on them by both buses and bus stops or shelters when their streets of residence are included in a bus route. The main section of this study is a household survey in the form of a questionnaire carried out in two areas within greater Manchester, which have both different traffic flow patterns and different bus service frequencies. Prior to the description of the survey, the nature of the environmental impacts are detailed and the two survey areas described. The results of the questionnaire are displayed and analysed and conclusions are drawn from them. Finally, recommendations are made both about the planning of bus routes and about developing the environmental impact assessment methodology used in this study so that it may become more widely applicable for use by public transport companies. (Author/TRRL)

Walbank, MJ

Greater Manchester Passenger Transport Executive Monograph Oct. 1978, 135p, Figs., Tabs., Photos., 43 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 248123)

ORDER FROM: Greater Manchester Passenger Transport Executive, 2 Devonshire Street North, Ardwick, Manchester, Lancashire, England

48 322169

NOISE RESTRICTIONS FOR HEAVY VEHICLES. PROPOSALS FOR SPECIFICATIONS [Stoeyforskriftene for tunge kjoeretoey. Forslag til bestemmelser]

The report recommends noise measuring methods for testing a particular type of vehicle for approval and for general noise emission control of large vehicles. New emission criteria to take effect from 1980 are recommended, together with stricter criteria intended for around 1985. A survey of noise reducing measures and the consequences of these is given. Measurements on low noise buses and ordinary city buses show great differences in noise levels. (TRRL) [Norwegian]

Berge, T

Elektronikklaboratoriet Ved Nth (ELAB) Monograph ELAB STF44 A79058, Sept. 1979, 45p, 10 Fig., 2 Tab., 3 Phot., 29 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 247677), Norwegian State Highway Laboratory

ORDER FROM: Elektronikklaboratoriet Ved Nth (ELAB), O S Bragstads Plass 4, Trondheim-nth, Norway

48 322700

TRANSPORTATION AND ENERGY

This publication which focuses on federal energy programs and community energy initiatives, pays particular attention, in this issue, to the transportation aspects of energy consumption. The President's (Carter's) program for energy efficiency is presented and difficult choices concerning the future of the automobile are discussed. The DOT Secretary's (Goldschmidt) view of the challenges of the 1980's are presented, as well as articles on automobile fuel conservation, gasoline rationing, and electric vehicles. Public transit aspects are also discussed including trolley transport and ridesharing. Creative alternatives such as bicycles, the human motor and solar-powered vehicles are examined. Future fuels such as alcohols are also discussed.

Energy Consumer Sept. 1980, 47p

ORDER FROM: Department of Energy, Office of Consumer Affairs, 1000 Independence Avenue, SW, Washington, D.C., 20585

48 324580

3RD SYMPOSIUM ON BUS DEVELOPMENT [3. Symposium Kraftomnibus-Entwicklung]

The following subjects were dealt with at the symposium: experiences with buses used in urban transport from the viewpoint of the technician; the development and construction of the Icarus series for the future; the future Icarus series and technical problems related to its maintenance; assembly of three-point engine suspension with the tolerance method;-emission of pollutants from bus in urban traffic. (TRRL) [German]

Torges, G *Kraftfahrzeug Technik* Vol. 29 No. 6, June 1979, pp 191-192

ACKNOWLEDGMENT: TRRL (IRRD 311610), Federal Institute of Road Research, West Germany

ORDER FROM: VEB Verlag Technik, Oranienburgerstrasse 13-14, Postfach 293, 102 Berlin, East Germany

48 324615

DEVICE FOR REGULATING SPEED AND RECOVERING BRAKING KINETIC ENERGY [DISPOSITIVO REGULADOR DE VELOCIDAD Y RECUPERADOR DE ENERGIA CINETICA DE FRENADO]

Details are given of a device which not only regulates speed very simply but also enables part of the kinetic energy released by braking to be stored and reused later and considerably reduces the instant driving power required to restart the vehicle after braking. The system is particularly adaptable to urban transport vehicles, which have to start and brake frequently and the effective output of which would be greatly increased. (TRRL) [Spanish]

Serrano, J *Revista de Obras Publicas* Vol. 126 No. 3170, June 1979, pp 489-500, 3 Fig.

ACKNOWLEDGMENT: TRRL (IRRD 109387), Central Laboratory of Bridges & Highways, France, Ministry of Public Works, Spain

ORDER FROM: Escuela de Ingenieros de Caminos, Canales y Puertos, Ciudad Universitaria, Madrid 3, Spain

48 324869

COMPLYING WITH THE 1977 CLEAN AIR ACT IN BOSTON

This paper examines the evolutionary development of transportation control strategies, beginning with some very controversial early proposals and including current efforts designed to bring the region into full compliance with the 1977 Clean Air Act Amendments. The implementation of the Clean Air Act program is considered to be an integral part of that transportation planning and development process. It includes the promotion of carpools and vanpools, improved and expanded public transportation services, incentives for carpools and buses, traffic engineering improvements, bikeway planning and implementation, and a state land use policy that encourages the revitalization of urban centers. The paper describes the roles and responsibilities of the federal, state, regional, and local agencies that participated in the development of the Transportation Element of the Statewide Implementation Plan during 1978.

Humphrey, TF (Massachusetts Institute of Technology) *ASCE Journal of the Urban Plan and Develop Div* Vol. 106 No. 1, Nov. 1980, pp 1-10

ACKNOWLEDGMENT: EI

ORDER FROM: ESL

DOTL JC

48 329513

CITY OF EL PASO PUBLIC TRANSIT ADMINISTRATION ENERGY CONTINGENCY PLAN

The purpose of this plan is to outline the strategies that the Department of Public Transit Administration will deem necessary to implement in the event of petroleum shortages. It is primarily designed to maximize the transit system capacity and supplement with paratransit and ridesharing services. The strategies are discussed relative to the severity of the fuel shortage and point of implementation: establish energy contingency task force; improve efficiency of existing transit system; increase or establish thirty day diesel shortage; coordinate fuel allocation procedures; increase bus fleet size by rehabilitation of buses and purchase of new buses; expand marketing program through public information, multimodal telephone hotline, and integration of share-a-ride program; expand park and ride facilities with increased express routing and a transfer policy of express to local and visa versa; institute reverse commute patterns; institute corridor routing; expand carpooling/ridesharing; spread peak ridership with variable work hours and user fee in peak hours; coordination with other transportation providers, i.e., school districts, intercity carriers, paratransit, and private taxicab companies; decrease deadhead mileage by establishment of satellite terminals and bus parking agreements; explore potential of alternative fuels technology; reduce weekend service; reduce non-peak service; institute skip stops; and eliminate other services such as charter service, tripper service, and Saturday and Sunday service.

El Paso, City of Texas UMTA-TX-09-0120, Oct. 1980, v.p., Figs., Tabs., 7 App.

ORDER FROM: El Paso, City of, Texas, Public Transit Administration, El Paso, Texas

48 330090

ENERGY-TRANSPORTATION OVERVIEW

Following remarks on the current energy situation in the U.S., we are told that substantive changes in energy direction and use are required now. We are presented with the question "How do we take the energy we do have and develop a new petroleum-efficient transportation system?" The answer given is that we must pursue "a combination of public transit investments and urban redesign incentives to reduce petroleum consumption by channeling new residential and employment investment to urban areas already furnished with appropriate infrastructure" which "will require joint land use and transportation policies and an irrevocable commitment to public transit facilities." Other important elements in a transportation energy-management program are also pointed out, including traffic signal programs, park-and-ride, highway space allocation programs, and transit enhancement codes.

This paper appeared in Transportation Research Special Report 191, Considerations in Transportation Energy Contingency Planning. Proceedings of the National Energy Users' Conference

Gambaccini, LJ (New Jersey Department of Transportation) *Transportation Research Board Special Report* No. 191, 1980, pp 6-9

ORDER FROM: TRB Publications Off

48 330113

CONTINGENCY TRANSPORTATION PLANS FOR URBAN AREAS AND THEIR POTENTIAL IMPACTS

This paper provides a broad overview of the energy-conserving actions available in urban areas to meet future transportation energy shortages. Based on transportation energy contingency plans prepared in several states and regions, as well as related literature, an inventory of both complementary and competing conservation actions is provided. The need for effective packaging of sets of reinforcing conservation actions is stressed. Illustrative estimates of both individual and cumulative impacts in reducing transportation energy consumption are also given based on the examples reviewed and the literature. The development of alternative energy contingency plans, staged to match anticipated energy shortfalls, and several key implementation-related issues are discussed.

This paper appeared in Transportation Research Special Report No. 191, Considerations in Transportation Energy Contingency Planning. Proceedings of the National Energy Users' Conference.

Stuart, DG (Barton-Aschman Associates, Incorporated); Hocking, RJ *Transportation Research Board Special Report* No. 191, 1980, pp 145-157, 1 Fig., 12 Tab., 31 Ref.

ORDER FROM: TRB Publications Off

48 330124

DOT: URGING CONTINGENCY PLANS FOR TRANSPORTATION

This paper describes the efforts of DOT to prepare local areas for increased demands on their transportation systems that would result from future oil shortages. UMTA and FHWA have established a program of technical assistance for local transportation contingency planning. In 1979, they asked their regional offices to give high priority to contingency planning, began developing technical assistance materials, held workshops in five cities, and designed energy related planning as a high priority in allocating Section 8 Technical Studies and for use of FHWA planning funds. As a result, nearly every urbanized area, and all those over one million population, have initiated some level of contingency planning activity. Local areas which are further along are undertaking more detailed efforts: laying out specific bus routes and schedules, developing public information programs, and detailing bus and driver use. FHWA and UMTA are continuing to press for plans of sufficient detail and currency to be prepared for rapid implementation in an emergency.

Maring, G (Federal Highway Administration); Steinmann, R (Urban Mass Transportation Administration) *Energy Consumer* Jan. 1981, p 12

ORDER FROM: Department of Energy, Office of Consumer Affairs, 8G082, Washington, D.C., 20585

48 330201

RAILWAY NEEDS IN TERMS OF LAND AND COMPATIBILITY WITH THE ENVIRONMENT [Gelaendebedarf und Umweltvertraeglichkeit der Eisenbahn]

The article examines the needs of the railway in terms of land and compatibility with the environment compared with other modes of trans-

port. Specific examples are given with reference to new lines, suburban networks and marshalling yards on the German Federal Railway. [German]

Gruebmeier, J Werler, R *Eisenbahntechnische Rundschau* Vol. 29 No. 9, Sept. 1980, pp 601-609, 8 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD
ORDER FROM: Hestra-Verlag, Holzhofallee 33, Postfach 4244, 6100 Darmstadt 1, West Germany

DOTL JC

48 330303

PRESENT TECHNOLOGY AND DEVELOPMENT POSSIBILITIES FOR ELECTRIC VEHICLES. FINAL REPORT

[Aktuell teknik och utvecklingsmoeligheter foer elfordon. Slutrapport]
One of the main purposes of this study was to investigate whether electricity for road vehicle propulsion means rational energy use. The results presented in the report indicate that electric vehicles use energy twice as efficiently as combustion engine vehicles. Furthermore, replacing of petrol and diesel vehicles by electric vehicles means a reduced oil dependence and great environmental advantages. Therefore an introduction of electric vehicles would be beneficial from both economic and emergency points of view. However, cost prices would be higher for electric vehicles, while the fuel costs would be lower. It is not established which vehicle is the most advantageous with respect to lifetime costs. Around the world efforts are being made to develop electric vehicles. In Sweden very small efforts have been made by international standards. These are the areas where large amounts of development resources are needed: battery technology, vehicle technology and distribution system. With this as a background it is suggested that the national power administration should test 5 transport vehicles for use by different local administrations. Furthermore it is suggested that conditions be established for a trial with electric buses in city traffic. (TRRL) [Swedish]

Olsson, C Ristborg, H
Statens Vattenfallsverk Monograph Rapport NR1, Mar. 1980, 50p, 3 Fig., 1 Tab., 5 Phot.

ACKNOWLEDGMENT: TRRL (IRRD 251207), National Swedish Road & Traffic Research Institute

ORDER FROM: Statens Vattenfallsverk, Vaellingby, Sweden

48 330721

ENERGY IMPACTS OF URBAN TRANSPORTATION IMPROVEMENTS

This report addresses the vital role urban transportation engineers can and must play in achieving more efficient and wiser energy use. The key word is efficiency as conservation must be equated with the efficient use of energy, not sacrifice, if conservation efforts are to be successful. The report first reviews the nature of the energy problem to describe its present and growing seriousness. A major aspect highlighted in this regard is the large share that energy for transportation purposes contributes to the total energy problem and its solution. Next, this monograph stresses the importance of a dual approach to urban transportation energy efficiency. Equal emphasis is given to the mutually reinforcing strategies of (1) increasing the use of more energy efficient travel modes and travel habits, and (2) increasing the energy efficiency of traffic flow. While the first element reduces the total quantity of vehicular travel, the second improves traffic flow travel, the second improves traffic flow quality which reduces the energy consumed for each vehicle mile traveled. Finally, this report estimates the energy savings potential of various urban transportation improvements. Specifically, the energy conservation impacts of eight urban transportation programs are analyzed individually and also their combined potential is estimated. While the scope of this report is limited to urban transportation, the need for improved energy efficiency is equally as vital for the rural highway system as well as for all other transportation forms. For energy efficiency actions to be meaningful, they must be applied vigorously across all energy use sectors. (Author)

Wagner, FA
Wagner-McGee Associates, Incorporated Aug. 1980, 59p, Figs., Tabs.

ORDER FROM: Institute of Transportation Engineers, 525 School Street, SW, Suite 410, Washington, D.C., 20024

48 330866

CONSERVATION OF ENERGY IN THE URBAN PASSENGER SECTOR: A GENERAL PRINCIPLE AND SOME PROPOSALS

A large number of competing proposals have been made for energy conservation, and this paper proposes a straightforward principle for choosing among them: "the law of large proportions". The law is a simple one—the biggest components matter most—but it has been largely ignored by much of the government-formulated energy policy so far. The paper applies the law to the urban transportation sector, and concludes that the major hope for conserving transportation energy is to drop our preoccupation with public transit and, instead, to concentrate on the goal of "civilizing" the automobile. The paper, then, proposes three ideas that might accomplish this: two different ways of promoting the sale of fuel-efficient vehicles, and one way of improving the efficiency of the existing vehicle fleet. (TRRL)

Lave, CA *Transportation Research. Part A: General* Vol. 14A No. 5/6, Oct. 1980, pp 321-326, 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252222)

ORDER FROM: ESL

DOTL JC

48 331022

ASSESSMENT OF ENERGY AND PETROLEUM CONSUMPTION OF DIFFERENT TRANSPORTATION MODES IN THE BUFFALO AREA

This analysis evaluates the results of a local rail vehicle performance model. Line-haul travel calculations, operating energy consumption, and total energy consumption, especially of petroleum energy, are calculated for an example situation in Buffalo, New York. The energy impacts that result from the implementation of a carpool and express bus system are also included. The comparison of these results with energy estimates by using average values indicates that the variance in urban rail system performance is too large for generalizations at the national level. A second reason for the promotion of local energy studies is the need to develop criteria to calculate the petroleum consumption of modes that do not burn petroleum products directly. The results of this study demonstrate that a light rail system in the example city will save energy; however due to the relatively small demand, the net energy and petroleum savings are rather small. Recent trends toward the purchase of foreign-manufactured light rail vehicles have a negative impact on energy savings. (Authors)

This paper appeared in Transportation Research Board Record No. 764, Transportation Energy: Data, Forecasting, Policy, and Models.

Morris, M (North Central Texas Council of Governments); Talvitie, A (State University of New York, Buffalo) *Transportation Research Record* No. 764, 1980, pp 1-6, 1 Fig., 5 Tab., 22 Ref.

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48 331023

LONG-RANGE FORECASTS OF TRANSPORTATION ENERGY CONSUMPTION IN NEW YORK STATE

This paper summarizes the methods used by the New York State Department of Transportation to prepare long-range baseline forecasts of energy use in each of the subsectors of the transportation sector in New York. By use of a variety of techniques that relate energy to the economy, fuel price and supply, and vehicle efficiency, five-year forecasts to 1995 are prepared for trucks, passenger cars, aviation, rail, vessel, and transit modes. Within each group, separate forecasts are made for relevant segments (e.g., passenger rail). Results show that in 1995 total transportation energy in New York will expand by 13 percent from its 1976 level. Growth in air passengers of 108 percent, intercity rail of 10 percent, transit of 9 percent, and light truck of 59 percent will be offset by declines in passenger car fuel use of 24 percent. The latter are caused primarily by increasing vehicle efficiency. Gasoline use is projected to fall by 8 percent over the period; use of most other products will increase. The report concludes that growth will be moderate, generally even, tied to the New York economy, and highly dependent on increases in the efficiency of personal cars. (Authors)

This paper appeared in Transportation Research Board Record No. 764, Transportation Energy: Data, Forecasting, Policy, and Models.

Hartgen, DT Erlbaum, NS (New York State Department of Transportation) *Transportation Research Record* No. 764, 1980, pp 7-16, 2 Fig., 11 Tab., 30 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

48 331025

HOW MUCH FUEL DOES VANPOOLING REALLY SAVE? (ABRIDGMENT)

Opinions vary as to how much fuel is actually saved by vanpools. Estimates range from an optimistic 49,210 L/year (13,000 gal) to a conservative estimate of 5700 L/year (1500 gal). A reliable estimate is required by policy planners so that preferential treatment for vanpools with regard to fuel allocation can be justified. During the fall of 1978, drivers of 211 vans provided the information necessary to compute values for average trip length by van and automobile and vehicle occupancy rates for the van and automobile. Late in the following spring, 211 van passengers responded to a questionnaire designed to obtain estimates for van and automobile fuel-efficiency rates and the use of vehicles formerly used for commuting. Fuel savings were determined by substituting the values into a modified version of a model developed for the U.S. Department of Energy. The results indicate that the most probable saving per van in 17,400 L/year (4600 gal). This is based on 11.2 occupants/van, a previous vehicle occupancy of 1.47, an 86.6-km (53.8-mile) commute distance, vehicles left at home being driven 9.8 km/day (6.1 miles/day), 4.25 km/L (10 Miles/gal) for the van, and 6.8 km/L (15.9 miles/gal) for the previous vehicle. If the vanpoolers formerly drove by themselves in gas guzzlers that were disposed of immediately, the optimistic savings estimate is 30,280 L/year (8000 gal). If they drove the average fleet, carpooled some, and gave their previous cars to teenagers, a more pessimistic estimate of savings is 5700 L/year (1500 gal). (Authors)

This paper appeared in Transportation Research Board Record No. 764, Transportation Energy: Data, Forecasting, Policy, and Models.

Maxwell, DA Williamson, DV (Texas A&M University) *Transportation Research Record* No. 764, 1980, pp 23-26, 2 Tab., 5 Ref.

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DOTL JC

48 331031

DIRECT ENERGY ACCOUNTS FOR URBAN TRANSPORTATION PLANNING

Methods for computing accounts of direct energy consumption by urban person travel are described. These accounts are compiled by mode, trip purpose, time of day, and origin-destination pair and are designed to be compatible with the existing transportation planning software and data sets. For automobile trips, a program is used to trace equilibrium assignment paths and calculate zone-to-zone fuel consumption based on link speeds and distances. A similar program for public transit modes calculates zone-to-zone energy consumption based on modal vehicle kilometers per person trip along each minimum impedance path. The final accounts are separate matrices of zone-to-zone energy flows for both public and private modes that can be summarized in tables or displayed graphically. Results from a case study of the Chicago metropolitan area are briefly presented. (Authors)

This paper appeared in Transportation Research Board Record No. 764, Transportation Energy: Data, Forecasting, Policy, and Models.

Janson, BN Ferris, M (Illinois University, Urbana); Boyce, DE (Chicago Area Transportation Study); Eash, RW *Transportation Research Record* No. 764, 1980, pp 53-59, 7 Fig., 1 Tab., 15 Ref.

ORDER FROM: TRB Publications Off

DOTL JC

48 331034

TRAVEL DEMAND AND ESTIMATION OF ENERGY CONSUMPTION BY A CONSTRAINED MODEL

A new model based on a theory of consumer behavior has been developed to aid transportation policy analysis. The model assumes that travelers attempt to maximize their spatial and economic opportunities, represented by the total daily travel distance, subject to constraints of time and money. The constraints are not identical for all travelers but depend on such factors as socioeconomic characteristics and transportation system supply. In this basic optimization travelers choose the number of trips, trip distances, and car-ownership levels by trip purpose and mode shares. All of these choices are determined through a feedback solution mechanism. Both urban and interurban travel can be treated by the model, although investigation of the interurban model has just begun. The model is useful for the analysis of policies that affect all travel decisions, such as increases in energy prices. It can treat the trade-offs travelers will make among their various trips and their decision to own cars. A simple analysis of the effect of raising fuel prices

has shown that travelers will reduce their total amount of interurban travel and shift their mode shares. The energy savings from these responses appear to come mainly from the reduction in travel distance and only minimally from a switch to energy-efficient modes. (Authors)

This paper appeared in Transportation Research Board Record No. 764, Transportation Energy: Data, Forecasting, Policy, and Models.

Zahavi, Y Cheslow, MD (DHR, Incorporated) *Transportation Research Record* No. 764, 1980, pp 79-89, 11 Fig., 7 Tab., 15 Ref.

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48 331118

UNSTEADY AIRFLOWS IN RAPID TRANSIT SYSTEMS. PART 1: MEASUREMENTS ON THE LONDON TRANSPORT VICTORIA LINE. PART 2: THEORETICAL BACKGROUND AND DESIGN PARAMETERS

Part 1: the measurement of pressure fluctuations on the London Transport Victoria line is described and results are presented in sufficient detail for accurate comparisons to be made with theoretical models. Measurements were obtained during the night-time shut-down period, and so complicating effects due to other trains are absent. The results give a clear indication of the relative importance of several events such as entry to and exit from a station. The effectiveness of cross-passages for draught relief is clearly demonstrated. A computer program is used to simulate the airflows, and satisfactory correlation is obtained with the measured results at different train speeds. The program is used to predict system characteristics that were not measured during the tests. It is found that platform wind velocities and passenger pressure histories do not violate recommended acceptable limits even when the train passes through the station at 65 km/h without stopping. Part 2: the principal aerodynamic effects in a rapid transit system are predicted by use of a computer program. Account is taken of the influence of cross-passages, ventilation shafts, cross-overs and stations, etc., on the airflows generated by any number of trains travelling along any routes with any speed histories. Very few empirical coefficients are needed to obtain satisfactory correlations with experimental data. The program is used to investigate the relative influence of important system parameters, and skin friction is found to have a particularly strong effect. It is shown that the tunnel system can be considerably simplified in the numerical simulation without serious loss of accuracy, but that account must be taken of local cross-passages and ventilation shafts.(a)

Vardy, AE (Dundee University, Scotland) *Institution of Mechanical Engineers Proceedings* Vol. 194 Dec. 1980, pp 341-356

ACKNOWLEDGMENT: TRRL (IRRD 252433)

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DOTL JC

48 331187

URBAN TRAFFIC ENGINEERING AND ENERGY CONSERVATION [VERKEERSTECHNIEK IN STEDELIJKE GEBIEDEN EN ENERGIEBESPARING]

The author sums up various ways by which a traffic engineer may achieve a reduction in fuel consumption by urban motor car traffic. Although some measures offer favourable prospects as such, their overall effect is less than might be expected. The article gives a good indication of the relative impact of the measures and their feasibility.(a) (TRRL) [Dutch]

Prestwood-Smith, G (Greater London Council Library) *Verkeerskunde* Vol. 31 No. 11, Nov. 1980, pp 556-560, 6 Tab., 24 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252282), Institute for Road Safety Research

ORDER FROM: Dutch Touring Club ANWB, Wassenaarseweg 220, Box 2200, The Hague, Netherlands

48 331435

LAND USE PLANNING FOR TRANSPORT ENERGY CONSERVATION IN AUSTRALIAN CITIES

This paper was presented to Jubilee Anzaas Conference "Science for a Sustainable Society" Section 4: Architecture & Planning Section "Sustainable Urban Form." Adelaide, May 1980. The transport energy characteristics of Australian cities have been examined by obtaining detailed data on public and private transport. The results show: (1) the dominance of the private automobile and hence of gasoline as the primary transport fuel; (2) electric trains and trams are clearly the most efficient public transport mode

and where they form the backbone of a public transport service, the patronage and energy efficiency are superior to a more bus-orientated service; (3) Perth and Adelaide on a per capita basis use more cars and hence more energy than Melbourne and Brisbane with Sydney having some 20 per cent lower energy per capita. These transport patterns were then found to correlate significantly with certain land use parameters. All the cities except Brisbane have transport patterns related to the density and degree of centralisation in land use. Brisbane's lower car use as well as the other cities' patterns appear to be related to the level of traffic restraint measured in terms of per capita road availability, traffic congestion, and CBD parking availability. Energy conservation can be pursued through increasing density and centralisation as medium term aims with traffic restraint or planned congestion as an immediate policy to introduce along with an upgrading of public transport (A). (TRRL)

Newman, P Kenworthy, J
Murdoch University Monograph May 1980, 31p, Figs., Tabs., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 239974), Australian Road Research Board

ORDER FROM: Murdoch University, South Street, Murdoch, Western Australia, Australia

48 331531

TESTING NOISE-DAMPED WHEELS ON HAMBURGER HOCHBAHN

Discusses the theory behind the generation of noise by the screeching of wheels on tight curves, a method for its suppression and tests carried out on Hamburg's mass transit system.

Albert, H Raquet, E *Railway Engineer International* Vol. 5 No. 6, Nov. 1980, pp 51-53, 12 Fig.

ACKNOWLEDGMENT: International Union of Railways, BD

ORDER FROM: ESL

DOTL JC

48 334353

TRANSPORTATION ENERGY CONTINGENCY PLAN FOR THE KANSAS CITY METROPOLITAN REGION

The purpose of the Plan is to study and recommend strategies which provide persons residing in the KCMR with energy efficient alternatives for traveling to work during a transportation fuel crisis, and focuses on strategies which protect passenger transportation and the work trip and reduce the demand for transportation fuel. It does not address measures which would increase the fuel supply or gasoline allocation and rationing, which are the responsibilities of State and Federal governments. Over fifty transportation control measures were studied. Ten transportation control strategies were selected by the Plan based on their institutional transportation and environmental impacts. These strategies include: Park and Ride Improvements for Public Transit; Vanpooling for Major Employers; Promotion of a Four-Day Work Week Left Turn Removal at Appropriate Intersections; Switching Traffic Control Devices to Flashing Mode in off-Peak Periods; Transit Fleet Stockpiling; Regional Carpooling Programs; Peak Period Transit Improvements; Transit Feeder Service; and Variable Work Scheduling. Several of these strategies have already been carried out by MARC and other agencies in the region in response to the 1979 energy crisis. The implementation of this Transportation Energy Contingency Plan includes a monitoring system which is already being utilized to gauge supply and demand for gasoline in the region to better determine when the ten strategies should be used.

Mid-America Regional Council, Urban Mass Transportation Administration, (MO-09-7001) Final Rpt. UMTA-MO-09-7001-81-1, Feb. 1980, 92p

Contract MO-09-7001

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PB81-182420

48 334414

NOISE ABATEMENT FOR URBAN RAILWAY VEHICLES

Noise pollution has become a severe environmental problem. Although the equivalent noise levels of urban railway vehicles are lower than those of car traffic for the same transport capacity, further efforts are necessary for damping noise and vibrations. By means of systematic research and development work a reduction of noise generation from urban rail vehicles

can be achieved. Measurements of the interior and outside noise levels have been taken on 30 vehicles of 17 different types in W. Germany. The average noise levels of tramway and light rail vehicles are 78 dBA outside (7.5 m distance) and 72 dBA interior, 3 dB lower than 1970, when the last systematic measurements took place. Underground railway vehicles have an outside average value of 76 dBA, 1 dB higher than 1970, the interior level did not change (64 dBA). By comparing the noise levels with technical data on the vehicles and tracks, the factors influencing noise generation and propagation have been analysed and possibilities of noise abatement are shown. This covers wheels, bogies, drive, gears, the floor and walls of the cars, as well as different types of tracks. Based on these dependencies some recommendations for noise abatement are given.

World Conference on Transport Research. Transport Research for Social and Economic Progress, April 14-17, 1980, Imperial College, London, England.

Blennemann, F Gross, K (Studiengesellschaft f Unterirdische Verkehr EV)

Organization for Economic Cooperation and Devel, European Conference of Ministers of Transport Conf Paper Volume 4, 1980, pp 2644-56, 8 Fig.

ORDER FROM: Organization for Economic Cooperation and Devel, Suite 1207, 1750 Pennsylvania Avenue, NW, Washington, D.C., 20006

48 334442

METHOD FOR THE EXACT CALCULATION OF THE ENERGY LOSSES IN A DC TRACTION NETWORK [Verfahren zur Genauigen Berechnung der Energieverluste in einem Gleichstrom-Traktionsnetz]

In order to decide whether or not regenerative braking should be used for rapid transit lines it is necessary to know the overall energy losses of the traction system. The determination of the losses within fixed energy supply installations is considered. A method is presented for the computation of the current and voltage distribution within the electric network taking into account the circuitry, including the position of the feeding and separating points and the position of trains on the line. [German]

Heijst, TC van Hamels, D *Elektrische Bahnen* Vol. 78 No. 7, July 1980, pp 170-179, 9 Ref.

ACKNOWLEDGMENT: EI

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48 334713

LIGHT RAIL/RAPID TRANSIT: NEW APPROACHES FOR THE EVALUATION OF ENERGY SAVINGS--2. ON THE RECEPTIVITY OF A TRANSIT SYSTEM

New approaches are presented for the determination and evaluation of regeneration in large transit systems. A specific definition of the receptivity of transit systems to available regenerative braking energy is presented, and the analytical base for receptivity evaluations is developed. Also described is the construction of a transit system operational model. This operational model is the mechanism by which the values required for the receptivity analysis are generated.

Forsythe, JB (AiResearch Manufacturing Company) *IEEE Transactions on Industry Applications* Vol. IA-1 No. 5, Sept. 1980, pp 665-678, 21 Ref.

ACKNOWLEDGMENT: EI

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DOTL JC

48 334714

LIGHT RAIL/RAPID TRANSIT: NEW APPROACHES FOR THE EVALUATION OF ENERGY SAVINGS--1. LIFE-CYCLE COST FROM SYNTHETIC ROUTES/OPERATIONAL MODELS

The energy-saving benefits of new traction technologies for light rail/rapid transit systems must be evaluated on the basis of life-cycle cost, which includes both purchase cost and energy consumption. Overall, a systematic approach for comparing the energy consumption of different traction systems on the basis of equal work performed (operational model) is presented. The techniques described will allow a total cost figure based on purchase price plus energy consumption to be calculated for each type of transit car on a given property basis.

Forsythe, JB (AiResearch Manufacturing Company) *IEEE Transactions on Industry Applications* Vol. IA-1 No. 5, Sept. 1980, pp 655-665, 16 Ref.

168

ACKNOWLEDGMENT: EI

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48 334817

MEASURES FOR ENERGY SAVINGS IN THE TRANSPORT SECTOR

Japan today spends a little less than 20% of all its petroleum energy in the transportation sector, and the total amount of this consumption is increasing. It is essential for the society to put an end to this increase from the standpoint of the current world energy situation. This report lists several potential conservation policies in the field of transportation, and shows the expected effects and inadequacies of some of the more representative ones. Technical improvements, law enforcement, and financial controls, are amongst the policies discussed. This study showed that bus priority lanes were not as effective as expected as a fuel saving measure, and that wide-area signal control on a nationwide scale would be very effective. (TRRL)

Nakamura, H (Tokyo University, Japan) *IATSS Research* Vol. 4 1980, pp 42-50, 4 Fig., 2 Tab., 1 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 252570)

ORDER FROM: International Association of Traffic & Safety Sci, 6-20, 2-Chome, Yaesu, Chuo-ku, Tokyo 104, Japan

48 335205

TEST SIMULATIONS OF A SINGLE-TRACK SUBWAY ENVIRONMENT

The Subway Environment Simulation (SES) Computer Program was developed to analyze flows of air and heat in complex subway networks. As part of a recent effort to enhance its cost-effectiveness, the SES was reworked to operate on the central computer facility at the Transportation Systems Center in order to provide project administrators with real-time access capabilities. To demonstrate these capabilities, a series of test cases was devised that illustrated the transformation of data from input to output that would characterize more-detailed simulations. A single-track, two-step route was selected for a base that allowed for the introduction of variable scheduling, track alignment, speed restrictions, coasting, distributed heat sources, blockage ratios, head losses, station impedances, vent shafts, and fans. Data were derived from prior sample problems described in the Subway Environmental Design Handbook. The requirements for input verification and computational execution of each case are described. The program output details, at user-specified intervals, the train's position and speed, heat rejection, induced airflow, system air velocities, temperature, and humidity. Data are summarized and compared by using baseline time-location profiles. These results are contrasted with alternative methods for quantifying the subway environment, including a model of propulsive force estimated by linear regression of the manufacturer's data. Further analysis provides insight into the development of design strategies through basic simulation. In conjunction with piston action, the tunnel-vent configuration has a predictable effect on resulting patterns of airflow. Fundamental parametric relationships are evaluated, and implications for environmental control in stations are discussed. (Author)

This paper appeared in Transportation Research Record No. 785, Bridges, Culverts, and Tunnels.

Meltzer, N (Transportation Systems Center) *Transportation Research Record* No. 785, 1980, pp 40-45, 8 Fig., 3 Ref.

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48 335269

NUCLEATED URBAN GROWTH EFFECTS ON TRANSPORTATION ENERGY CONSUMPTION

An aggregate digital computer simulation model was used to test the urban passenger transportation energy consumption associated with different patterns of nuclear growth in a hypothetical city. The model simulated the effects of various central and noncentral locations for residential, employment, and retail growth clusters. Centralized urban growth is more efficient, in terms of transportation energy consumption, than noncentralized growth. Off-center manufacturing employment clusters are the least energy efficient of non-centralized cluster, and clusters at the edge of the established urban area are less attractive for all land use types. The implications for near term urban decision making are explored.

Schofer, JL (Northwestern University, Evanston); Weisel, W Peskin, RL *ASCE Journal of Transportation Engineering* Vol. 107 No. 3, May

1981, pp 331-344, 6 Ref.

ACKNOWLEDGMENT: EI

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48 335490

PERSONAL TRAVEL ENERGY CONSUMPTION: ACCOUNTING METHODS AND CASE STUDY FOR THE CHICAGO METROPOLITAN AREA

This study of urban personal travel in the Chicago area attempted to (a) establish an accounting framework that could keep track of energy consumption for urban passenger transportation, (b) develop tools for calculating energy consumption, and (c) run through prototype applications of the methodology developed in the project. This report documents the methodology and presents a case study of peak period person travel consumption. The methodology is a logical and marginal extension of the current state-of-the-art urban transportation models. The case study of peak period person travel in the Chicago metropolitan area provides data on energy usage and formats for displaying this data. Energy accounting procedures are reviewed and the advantages of energy origin-destination tables are discussed.

Chicago Area Transportation Study, Federal Highway Administration, Urban Mass Transportation Administration Jan. 1980, 81p, 16 Fig., 16 Tab., 1 Ref.

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48 335629

PUBLIC AND PRIVATE TRANSPORT IN AUSTRALIAN CITIES: I. AN ANALYSIS OF EXISTING PATTERNS AND THEIR ENERGY IMPLICATIONS

Data from a wide range of sources have been collated to examine past trends and existing patterns of public and private transport in Australia's five biggest cities. Energy consumption by type of fuel has been used to compare modal energy efficiencies and per capita transport energy consumption in each city. Significant differences were found between the five cities in the level of private travel, provision of public transport, public transport patronage and transport energy consumption per capita. Much of the variation appears to be associated with the use of electrified fixed rail systems. Electric trains and trams were shown to be the most energy-efficient form of public transport in Australian cities, to attract the highest patronage and to use an insignificant amount of total transport energy. By contrast, cities with public transport based mainly on buses and diesel trains have lower public transport utilisation, perform less energy-efficiently and have higher transport energy consumption per capita due to greater private car usage. It is concluded that encouraging a well-integrated public transport system with electric trains and trams as a backbone has the potential to save significant quantities of liquid fuel. (a) (TRRL)

Newman, P Kenworthy, J (Murdoch University, Australia) *Transport Policy and Decision Making* Vol. 1 No. 2-3, 1980, pp 133-149, 3 Fig., 8 Tab., 15 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253901), Institute for Road Safety Research

ORDER FROM: Martinus Nijhoff Publishers, P.O. Box 22, Dordrecht, Netherlands

48 335630

PUBLIC AND PRIVATE TRANSPORT IN AUSTRALIAN CITIES: II. THE POTENTIAL FOR ENERGY CONSERVATION THROUGH LAND USE CHANGE

An attempt has been made to explain observed difference in public and private transport and per capita energy consumption in five Australian cities by reference to a number of non-land use and land use variables. Non-land use variables were considered inadequate to explain the differences in transport and energy patterns. However, numerous significant correlations were found between the seven key transport parameters and various land use indicators representing density, centralisation and traffic restraint characteristics. The correlations suggest a key role for these three factors in giving a competitive edge to public transport and increasing the feasibility of cycling and walking. A policy combining densification, centralisation and traffic restraint measures is recommended as an effective way of promoting transport energy conservation in the short and long terms.(a) (TRRL)

Newman, P Kenworthy, J (Murdoch University, Australia) *Transport Policy and Decision Making* Vol. 1 No. 2-3, 1980, pp 149-167, 7 Tab., 57

Ref.

ACKNOWLEDGMENT: TRRL (IRRD 253902), Institute for Road Safety Research

ORDER FROM: Martinus Nijhoff Publishers, P.O. Box 22, Dordrecht, Netherlands

48 335634

ENERGY SAVINGS WITH MELBOURNE'S NEW ELECTRIC TRAMS

Although public transport vehicles consume only one-third to one-half the energy per person kilometre of that consumed by motorcars, this characteristic has become well known only since the "energy crisis" of 1973. When compared with motor travel, metropolitan public transport services have the additional energy saving potential of reducing the average length of person journeys through their significantly more economical use of land space, thus allowing higher gross densities of more productive land uses. Electric public transport vehicles are well suited to an energy saving role. Recent developments in their traction motor control circuits have made possible further energy savings. The use of a solid state control system ("chopper" control) for regulating motor current during acceleration has eliminated the power formerly lost in "starting" resistances; while regenerative braking, in which energy from braking returns power to the trolley wire, though its energy savings have long been recognized, has only recently become commercially feasible through extension of this solid state control system. Chopper control has the additional advantage of smooth acceleration and braking. Melbourne's newest trams are being equipped with chopper control and regenerative braking. Recent tests made with a prototype tram operated under simulated service conditions showed energy savings of nearly 40 percent, indicating the significant savings possible with this type of modern electric vehicle (A).

Petroleum, Policies and People. Australian Institute of Energy, 2nd National Conference, University of Melbourne.

Fouvy, CL (Melbourne And Metropolitan Tramways Board)

Australian Institute of Energy 1980, pp 137-148, 3 Fig., 1 Tab., 19 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250532), Australian Road Research Board

ORDER FROM: Australian Institute of Energy, P.O. Box 230, Wahroonga, New South Wales, Australia

48 335703

TRANSPORTATION ENERGY CONTINGENCY STRATEGIES: TRANSIT, PARATRANSIT, AND RIDESHARING. PART 3: THE CASE OF THE "YOURTOWN" URBANIZED AREA

This three-part report represents an effort by the U.S. Department of Transportation (DOT) to provide technical assistance to State and local governments in preparing energy contingency plans to respond to future energy shortages. These strategies are particularly focused on transit, paratransit, and ridesharing (TPR) services. The report provides guidance to those involved in the planning and implementation of TPR initiatives. This study also provides insight and recommendations on how to approach contingency planning. To be effective, it is essential that plans be especially tailored to the local institutional arrangements, abilities, TPR capabilities, and demographic characteristics. This report, Part 3, describes a model case study of the contingency planning process. The various institutional relationships, types of analysis performed, agreements reached, and other activities are presented in a manner which should be helpful to areas conducting actual contingency planning. (UMTA)

Salvucci, F Humphrey, TF Myer, M

Massachusetts Institute of Technology, Urban Mass Transportation Administration Final Rpt. UMTA-DC-06-0270-81-3, Aug. 1980, 7p

Contract DC-06-0270

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PB81-189680

48 335704

ALTERNATIVE ACTIONS FOR ACHIEVING ENERGY SAVINGS IN THE TRANSPORTATION SECTOR. SUMMARY

The specific objectives of this study were to: 1) identify alternative public policies, or actions, that can potentially reduce energy consumption attributable to transportation services within an urban area; 2) estimate and evaluate the performance characteristics of alternative strategies for achieving reductions in energy consumption and in maintaining personal mobility;

3) assess the practical feasibility of applying selected strategies after considering their likely social and economic effects, their probable environmental consequences, and their judicial and administrative requirements; and 4) attempt to identify appropriate mixes of strategies, if they are to be had, that achieve energy conservation while still preserving relatively high levels of personal mobility, environmental quality, and social equity. This study identified and analyzed actions and policy instruments aimed at reducing fuel consumption in the transportation sector. The study area for the investigation was Houston and Harris County, Texas, which is a low density metropolitan area exhibiting a high dependence on the use of private automobiles as a means of transportation. Actions examined included direct restrictions on fuel purchasing; transportation pricing strategies; efforts to encourage transit ridership, ridesharing, and paratransit alternatives; and improvement of vehicular operating efficiencies. Both short-term contingency plans and longer-term plans for conservation were considered, as well as the institutional framework within which such plans could be carried out. Generally, it was found that application of a strategy incorporating a number of actions influencing both supply and demand for transportation could result in future fuel consumption significantly below current levels. However, the effect of transit in reducing fuel consumption, except in the long-term, seems likely to be marginal. With proper planning, short-term reductions in available fuel supplies may also be accommodated. (UMTA)

Rowe, PG Glenn, CW
Rice Center, Urban Mass Transportation Administration Final Rpt.
UMTA-TX-11-0010-81-1, 78-47, Nov. 1980, 10p

Contract TX-11-0010

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PB81-193070

48 335705

ALTERNATIVE ACTIONS FOR ACHIEVING ENERGY SAVINGS IN THE TRANSPORTATION SECTOR

The specific objectives of this study were to: 1) identify alternative public policies, or actions, that can potentially reduce energy consumption attributable to transportation services within an urban area; 2) estimate and evaluate the performance characteristics of alternative strategies for achieving reductions in energy consumption and in maintaining personal mobility; 3) assess the practical feasibility of applying selected strategies after considering their likely social and economic effects, their probable environmental consequences, and their judicial and administrative requirements; and 4) attempt to identify appropriate mixes of strategies, if they are to be had, that achieve energy conservation while still preserving relatively high levels of personal mobility, environmental quality, and social equity. This study identified and analyzed actions and policy instruments aimed at reducing fuel consumption in the transportation sector. The study area for the investigation was Houston and Harris County, Texas, which is a low density metropolitan area exhibiting a high dependence on the use of private automobiles as a means of transportation. Actions examined included direct restrictions on fuel purchasing; transportation pricing strategies; efforts to encourage transit ridership, ridesharing, and paratransit alternatives; and improvement of vehicular operating efficiencies. Both short-term contingency plans and longer-term plans for conservation were considered, as well as the institutional framework within which such plans could be carried out. Generally, it was found that application of a strategy incorporating a number of actions influencing both supply and demand for transportation could result in future fuel consumption significantly below current levels. However, the effect of transit in reducing fuel consumption, except in the long-term, seems likely to be marginal. With proper planning, short-term reductions in available fuel supplies may also be accommodated. (Author)

Rowe, PG Glenn, CW
Rice Center, Urban Mass Transportation Administration Final Rpt.
UMTA-TX-11-0010-81-2, 78-47, Nov. 1980, 93p

Contract TX-11-0010

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PB81-193088

48 335717

FEDERAL, STATE AND LOCAL RESPONSES TO 1979 FUEL SHORTAGES

There are many lessons that can be learned from examining federal, state and local responses to the 1979 fuel shortages which can be applied to present and future energy contingency planning efforts to enhance their effective-

ness. As part of a study performed for the Office of the Secretary, U.S. Department of Transportation, case studies were made of emergency transportation energy conservation actions implemented, or attempted, in Los Angeles, Dallas-Fort Worth, Minneapolis-St. Paul, Seattle, Rhode Island, and New York State. Information on responses to the fuel shortages for each case study area was obtained through on-site meetings with representatives of organizations having a strong interest in emergency transportation actions such as transit operators, metropolitan planning organizations, service station dealers, state highway and energy departments, ridesharing agencies, and others. Types of emergency transportation actions most commonly implemented or attempted by the case study areas were (1) expanded public information and marketing distribution systems, (2) emergency expansion of ridesharing (carpool and vanpool services), (3) rehabilitation and placing in service of standby reserve or "mothball" fleet buses, (4) implementation of odd-even and/or minimum (maximum) fuel purchase restrictions and (5) monitoring of transit ridership and shifting buses to the most heavily used routes. This report summarizes, and partially assesses, the major transportation energy contingency actions implemented, key implementation problems encountered, and actions planned but not implemented. Preliminary conclusions, recommendations, and implications for developing future transportation energy contingency plans are also presented. More detailed information on the individual case studies may be found in a separate volume. (Author)

Schueftan, O Ellis, RH
Peat, Marwick, Mitchell and Company, Office of the Secretary of Transportation, (289-53265-30-40) Summ Rpt. DOT-P-30-81-05, HS-032 508, Feb. 1981, v.p.

Contract DOT-OST-78-017.9

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48 341281

TRANSPORTATION ENERGY CONSERVATION AND URBAN GROWTH

This paper investigates the role of transportation energy consumption constraints in the organization of an urban system, and the relative allocation of its land use activities, through the use of a combined land use transportation model based on a modification of topaz. In addition to the formulation of the mathematical structure of the model, the paper reports on the development of the solution algorithm, and some preliminary tests indicating rapid model convergence and minimal computational costs. These tests also reveal that transportation energy cost is an important variable in determining metropolitan structure and the location of urban activities. (Author/TRRL)

Romanos, MC (Illinois University, Chicago); Hatmaker, M (Arizona Department of Transportation); Prastacos, P (Illinois University, Chicago) *Transportation Research. Part A: General* Vol. 15A No. 3, May 1981, pp 215-222, 1 Fig., 34 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 254255)

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48 341561

PROPAGATION OF VIBRATIONS AND NOISE FROM NEW YORK SUBWAY TUNNELS INTO NEARBY BUILDINGS

Vibrations associated with subway train passages were measured simultaneously at several points in a two-level tunnel and on the floors and walls of rooms in a building over the tunnel. The corresponding sound in the rooms was also recorded. Results are presented that illustrate the observed invert vibration spectra, the vibration distributions in the tunnel, the dependence of the vibrations of the room surfaces on the tunnel vibrations, and the relation between sound in the rooms and the vibrations of their surfaces.

Proceedings of the International Conference on Noise Control Engineering, Inter-Noise 79, V2, Warsaw, Poland, September 11-13, 1979.

Ungar, EE (Bolt, Beranek and Newman, Incorporated); Wittig, LE Paolillo, AA
Polish Academy of Sciences Proceeding 1979, pp 919-922

ACKNOWLEDGMENT: EI

ORDER FROM: Polish Academy of Sciences, Institute of Fundamental Technical Research, Warsaw, Poland

48 341562

INFRASOUND OCCURRED TO CENTRIFUGAL FANS USED IN SUBWAY VENTILATING EQUIPMENT, AND INFRASOUND CONTROL

The operation of forced ventilating fans for subway tunnels resulted in infrasound pollution in a densely built-up area near the ventilating tower. To find the causes of the pollution, studies were made of the noise, as well as the turbulence and fluid flow inside the suction box of the fans. It was determined that the infrasounds were caused by the rotating stall of the fans due to drift in the suction box. Changes were made to the air flow in the suction box, and the infrasound pollution was successfully eliminated, with the band sound pressure level of the infrasounds (7 Hz) reduced by as much as 27 dB.

Proceedings of the International Conference on Noise Control Engineering, Inter-Noise 79, V2, Warsaw, Poland, September 11-13, 1979.

Ugai, Y Suzuki, S

Polish Academy of Sciences Proceeding 1979, pp 569-572

ACKNOWLEDGMENT: EI

ORDER FROM: Polish Academy of Sciences, Institute of Fundamental Technical Research, Warsaw, Poland

48 343669

AMTRAK FUEL CONSUMPTION STUDY

This report documents a study of fuel consumption on National Railroad Passenger Corporation (Amtrak) trains and is part of an effort to determine effective ways of conserving fuel on the Amtrak system. The study was performed by the Transportation Systems Center (TSC) under the sponsorship of the Federal Railroad Administration and in cooperation with Amtrak. A series of 26 test runs were conducted on Amtrak trains operating between Boston, Massachusetts, and New Haven, Connecticut, to measure fuel consumption, trip time and other fuel-use-related parameters. The test data were analyzed and compared with results of the TSC Train Performance Simulator replicating the same operations. Results of the tests showed that the average fuel consumption for the 157.7 mile trip was 368 gallons and that the average fuel use efficiency was 277 ton-miles per gallon. Fuel consumption and fuel use efficiency were found to increase consistently with increasing train tonnage. One locomotive was also found to consume about 12 percent more fuel than the other locomotive tested. The fuel consumption and trip time results for individual runs varied between 8.0 to-9.5 and 5.4 and -10.7 percent, respectively, of the Train Performance Simulator results. However, when averaged over the ten test runs analyzed, the fuel consumption and trip time results were within 1.04 and 0.03 percent, respectively, of the simulator. Throttle notch settings and train speed profiles also agreed well with simulated results.

Hitz, JS

Transportation Systems Center, Federal Railroad Administration Final Rpt. DOT-TSC-FRA-81-6, FRA/ORD-81/42, Feb. 1981, 77p

ACKNOWLEDGMENT: NTIS

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PB81-227332

48 343867

STUDY DESCRIPTION: AN ENVIRONMENTAL COMPARISON OF FUTURE URBAN-TRANSPORTATION ALTERNATIVES

The transportation sector directly consumes one quarter of the energy used in this country with auto passenger travel accounting for half of the transport sector's energy supply. Due to rapidly rising fuel prices and intermittent supply shortages, Federal, state, and local government have begun to introduce various strategies (combinations of policies and technologies) designed to conserve urban transportation energy while maintaining a productive economy. The environmental consequences of many of the conservation strategies have not been adequately assessed. As a result, a technology assessment project is underway. The project will concentrate on the effects of alternative conservation strategies for the efficient movement of people in urban areas. The goals of the project are to provide: a description of several alternative strategies promoting energy conservation in the urban passenger transportation sector; a better understanding of the environmental impacts of such strategies; and an identification of the constraints to the implementation of such strategies. After a brief discussion of conditions leading to the need for such a project, the process of defining and refining the study is presented. Objectives are then defined via examples followed by a presentation of the project structure and

methodology. A short concluding statement presents the status of the major study elements. (ERA citation 06:023752)

World Energy Engineering Congress, Atlanta, GA, 15 Oct. 1980. Microfiche only after original copies are exhausted.

Moses, DO LaBelle, SJ

Argonne National Laboratories, Department of Energy CONF-801076-5, 1980, 26p

Contract W-31-109-ENG-38

ACKNOWLEDGMENT: NTIS

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DE81023830

48 344337

NATIONAL SETTING FOR PRODUCTIVE CONSERVATION IN URBAN TRANSPORTATION

The need for productive conservation strategies in urban transportation is discussed. Key trends in urban transportation are discussed as a basis for identifying target areas for productive conservation strategies. The need for and expected impacts of such candidate strategies as improvements in conventional automobiles, increases in automobile load factors, changes in highway and transit system operation, price-driven reductions in travel, and shifts to more-efficient modes are briefly outlined. (ERA citation 06:020417)

Johnson, LR LaBelle, SJ

Argonne National Laboratories, Department of Energy Apr. 1981, 56p

Contract W-31-109-ENG-38

ACKNOWLEDGMENT: NTIS

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ANL/CNSV-20

48 344412

TRANSPORTATION SYSTEM MANAGEMENT, AIR QUALITY, AND ENERGY CONSERVATION

This is one of ten bulletins in the fourth series of Information Bulletins produced by the Transportation Task Force of the Urban Consortium for Technology Initiatives. Each bulletin in this series addresses a priority transportation need identified by member jurisdictions of the Urban Consortium. Nine newly identified transportation needs are covered in this fourth series of Information Bulletins. They are economic impacts of transportation restrictions, parking and traffic enforcement, pedestrian traffic safety, school bus use for non-school transportation, street management information systems, taxicabs as public transit, transportation construction management, transportation of hazardous materials, and transportation system management, air quality, and energy conservation.

Sponsored in part by Department of Transportation, Washington, DC.

Public Technology, Incorporated, Department of Transportation Sept. 1980, 85p

ACKNOWLEDGMENT: NTIS

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PB81-238628

48 345220

FUEL CONSERVATION AND MODAL SHIFT IN MELBOURNE'S PASSENGER TRANSPORT

This paper explores the potential fuel savings resulting from a shift of much of the existing car travel to a combination of non-motorised and fixed-rail transport. Using recent data the access of residences, workplaces and other traffic generators to Melbourne's fixed-rail network was calculated. These results were used to estimate the percentage of all trips that could be made by fixed-rail, as a function of access distance to fixed-rail network result, when combined with the distance distribution of car driver trips, enabled the calculation of the percentage of existing car vehicle-kilometres (and thus car fuel) that could be saved by increased non-motorised and fixed-rail transport, for various walking (or cycling) distances to fixed-rail stops. For maximum walking distances of 1 km, for example, about 30 per cent of existing car-fuel consumption could be potentially saved, with even greater savings possible for longer walking distances, or by using buses in outer areas. The substitution of short car trips by walking/cycling did not lead to major fuel savings; the key role of non-motorised transport in fuel conservation was in providing access to the fixed-rail system. (Author/TRRL)

Moriarty, P *Australian Road Research* Vol. 11 No. 1, Mar. 1981, pp 44-50, 3 Fig., 6 Tab., 16 Ref.

ACKNOWLEDGMENT: TRRL (IRRD 250803), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

48 345264

URBAN TRANSIT VS THE ENVIRONMENT [PROBLEM ODNOSA JAVNOGA GRADSKOG PROMETA I LJUDSKOG OKOLISA]

The historical development of cities and urban transport inevitably implies a conflict between mass transit and the urban environment, regardless of the steps taken to influence the ratio of mass transit to private transportation in cities and the degree of this influence. In fact, both are to be found among the most important factors reducing the standard of urban living in settlements and cities. The positive effect of transportation in terms of (its overcoming physical distances) is associated with quite a few negative impacts on man and the environment; within this scope the negative effects of passenger cars on the urban environment are higher than those of mass transit. A realistic approach to the urban transit-to-environment relation would involve the identification of its relative parameters, their objective quantification, and the selection of steps to reduce or prevent the occurrence of negative effects. The general transformation of the city-environment-transportation relation in Zagreb follows the same pattern. The assessment of the relation between mass transit in Zagreb and other elements of the urban environment is as negative as the relation of the former to the population (whether it involves pedestrians, transit users or passenger car drivers). The range of possible steps which could improve this state of affairs in Zagreb cover a span from secular to short-term measures. Unfortunately, the relation of transit as one of the elements of the urban environment to man does not seem to attract the interest of the main agents of the city's transportation policy makers. (TRRL) [Croatian]

Radacic, Z (Institut Prometnih Znanosti, Zagreb) *Suvremeni Promet* Vol. 2 No. 4, Sept. 1980, pp 649-653, 12 Refs.

ACKNOWLEDGMENT: TRRL (IRRD 253103)

ORDER FROM: Institut Prometnih Znanosti, Gruska 20, Zagreb, Croatia, Yugoslavia

48 345363

VANPOOL ENERGY EFFICIENCY: A REEVALUATION AND COMPARISON WITH A BROKERED-CARPPOOLING CONCEPT

Since the first employer-operated vanpools began operating in 1973, much has been made of the considerable energy savings possible through vanpooling and it has been generally accepted that vanpools are the most efficient commuter transportation mode available. The analyses that formed the bases for these conclusions have seldom involved more than simple comparisons of the linehaul energies of vanpools and average commuter automobiles; rarely, if ever, have vanpools been compared with other innovative and efficient commuting modes. Based on data available through a recent survey of vanpool riders in Chattanooga, Tennessee, a more detailed calculation of vanpool energy intensities is presented that incorporates the line-haul, access-egress, and indirect energy uses of vanpools as well as a calculation of the energy uses arising from the use of pool vehicles for private purposes. The resultant energy intensity of vanpools is calculated at 1508 kJ/passenger-km (2300 Btu/passenger mile), which represents an increase of more than 100 percent over the line-haul energy intensity. Concurrently with the calculation of the vanpool energy intensities, values are calculated for an alternative commuting mode essentially identical to vanpools with the exception that efficient subcompact and compact automobiles are used instead of vans. In the final analysis it is shown that efficient brokered carpools could save up to 60 percent of the energy used by vanpools and also offer significant advantages over vanpools in ease of implementation and possible penetration of the commuting market. (Author)

This paper appeared in Transportation Research Record No. 815, Improvements in Travel Monitoring and Data Aspects of the Energy Problem.

Rose, AB (Oak Ridge National Laboratory) *Transportation Research Record* No. 815, 1981, pp 41-47, 6 Fig., 3 Tab., 11 Ref.

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DOTL JC

48 345415

URBAN MASS TRANSIT USE DURING ENERGY SHORTAGES

The projected increase in the use of rail and bus systems in intercity transportation is discussed. Both transportation modes will be increased during petroleum-resource limited conditions and must therefore be resource-effective. Obstacles currently blocking the resource-effective use of rail and bus systems are identified. DOT and National Transportation Policy Commission studies on trends and choices for future intercity passenger transportation are reviewed.

Nupp, B (Department of Transportation) *Transportation Journal* Vol. 19 No. 4, 1980, pp 48-52, 9 Ref.

ORDER FROM: American Society of Traffic and Transportation, 547 West Jackson Boulevard, Chicago, Illinois, 60606

DOTL JC

48 345433

INTERCITY PASSENGER TRANSPORTATION--1. ENERGY CONSUMPTION CHARACTERISTICS

This paper reports energy consumption characteristics of Canadian intercity travel modes from a total energy viewpoint. For line haul as well as terminal access/egress operations, both the direct energy consumed for vehicle propulsion and the indirect energy required for the provision of intercity transportation services are investigated. Factors affecting modal energy consumption are identified and the energy efficiency impact of technical developments are assessed.

Khan, AM (Carleton University, Canada) *Transportation Planning and Technology* Vol. 6 No. 4, 1981, pp 249-262, 26 Ref.

ACKNOWLEDGMENT: EI

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DOTL JC

48 345441

ENERGY-ECONOMY STUDY METHODS AND TRANSIT CASES

The purpose of this report is to describe energy economy study methods that are now available for practical use. The report discusses methods of estimating energy demands in Chapter II. Three heavy rail transit systems and two bus systems (Chapters III to VII) are described in terms of their development history, physical characteristics, operations, service, and energy demands. Estimates are made for the direct and indirect energy demands for the systems and energy economy studies of hypothetical alternatives for operations, equipment, or facilities are presented for the following systems: PATH (Port Authority Trans-Hudson) rail system; BART (Bay Area Rapid Transit District) rail system; AC Transit (Alameda-Contra Costa Transit District) bus system; Washington Metropolitan Area Transit Authority (WMATA) Metrobus and Metrorail systems. Chapter VIII discusses a number of opportunities to conduct energy economy studies, and presents quantitative data for three comparisons of hypothetical alternatives. Some information from actual settings was used. (MCW)

Henderson, C Ellis, HT

SRI International Final Rpt. DOE/CS/50189-T1, July 1981, 89p

Contract AC03-80CS50189

ACKNOWLEDGMENT: Energy Research Abstracts

ORDER FROM: NTIS

DE81-027485

48 345468

ENERGY COSTS AND CITY STRUCTURE

Increasing energy costs will inevitably increase transport costs and so affect location decisions in urban areas. The result of a changed pattern in locational decision making will be a significant change in urban structure from the extensive development which has occurred during the last three decades of falling transport costs to a more intensive pattern. The changed pattern would be costly to the community as a whole and to many individuals. Some traffic measures accentuate the problem but others may be used to reduce it. These matters are discussed in terms of an accessibility-based model which relates transport to urban structure. This paper is no 80028. (Author/TRRL)

Two day seminar-Can Traffic Management Reduce Vehicle Fuel Consumption and Affect Vehicle Design Requirements.

Davidson, KB (Australia. Department Of The Capital Territory)

Society of Automotive Engineers (Australasia), Australian Road Research Board Conf Paper 80028, 1980, 8p, 1 Fig., 3 Refs.

ACKNOWLEDGMENT: TRRL (IRRD 254837), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

48 345469

TRAFFIC MANAGEMENT, PUBLIC BUS OPERATION AND POLLUTION

This paper examines the links between traffic management initiatives and effects on public bus services in respect of fuel usage, overall pollution control, and bus design and utilisation in both line haul and collector modes of operation. It is intended to be a general introduction to bus-related issues which should be considered in advocating the use of traffic management policies as means of controlling vehicle derived pollution (a). This paper is no 80024. (TRRL)

Two day seminar-Can Traffic Management Reduce Vehicle Fuel Consumption and Affect Vehicle Design-Requirements

Usher, JC (Invicta United Bus Services)

Society of Automotive Engineers (Australasia) Conf Paper 80024, 1980, 8p, 8 Refs.

ACKNOWLEDGMENT: TRRL (IRRD 254858), Australian Road Research Board

ORDER FROM: Australian Road Research Board, P.O. Box 156, Bag 4, Nunawading, Victoria 3131, Australia

48 345979

PROBLEMS OF NOISE AND VIBRATION DUE TO RAILWAY TRAFFIC IN THE URBAN ENVIRONMENT; SYSTEMS OF PROTECTION [PROBLEMES DU BRUIT ET VIBRATIONS DUS AUX TRANSPORTS FERROVIAIRES EN MILIEU URBAIN; DISPOSITIFS DE PROTECTION]

A description of techniques applied by the RATP (Paris Transport Authority) to reduce and virtually eliminate disturbance caused to people living in the vicinity through propagation of noise (reduction of noise at its source and prevention of its propagation by means of sound barriers) and through transmission of vibrations (reduction of vibration at the source and protection against its transmission between the underground structure and nearby buildings, and between the rail and the underground structure). [French]

Colnat, J *Travaux* No. 558, Sept. 1981, pp 49-60, 1 Tab., 39 Phot.

ACKNOWLEDGMENT: International Union of Railways, BD

ORDER FROM: ESL

48 345992

ON PREDICTION OF TRAIN-INDUCING GROUND VIBRATION BY A WEIGHT DROPPING TEST AND A MICROBUS RUNNING TEST

The prediction of train-inducing ground vibration is one of the most important themes in our problem of vibration nuisance. This paper deals with the most difficult case which demands prediction of waveforms in the planning stage of a railway route.

Yoshioka, O *Railway Technical Research Inst, Quarterly Reports* Vol. 22 No. 2, June 1981, pp 54-58

ACKNOWLEDGMENT: British Railways

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DOTL JC

48 345993

SLAB-TRACK CUSHIONS LRT'S

Describes the use of resilient slab-track at a bus-train interface in Calgary thereby reducing noise and vibration.

Railway Track and Structures Vol. 77 No. 9, Sept. 1981, pp 68-69

ACKNOWLEDGMENT: British Railways

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DOTL JC

48 346015

COST-EFFECTIVENESS MODEL DEVELOPMENT FOR ENERGY STORAGE DEVICES IN RAPID TRANSIT SYSTEMS

The purpose of this study was to develop a cost-effectiveness model which could assess the return on investment (ROI) obtained when energy storage devices or regenerative substations are applied to real transit properties with regenerating trains. The storage devices can either be flywheels or batteries and can be placed off-board or on-board. To complete development of this model, an analysis of the range of capital and operating costs for various energy storage systems was conducted. The model takes into account the initial cost of the system, savings per year, costs incurred, energy and inflation escalators, and the life of the asset. This report provides user and programmer instructions, including input data formats, program computation methods, program output descriptions and examples, and a description of the costs and methodology employed. The conclusions reached as a result of this study are that: (1) of the five energy storage systems studied, all are technologically feasible and the technology exists today to implement any of these systems immediately and (2) with advances in technology, new energy storage systems may be developed and they should be analyzed in the same manner as these systems were, including an ROI analysis using the computer model developed in this study.

Sunstein, DIL Uher, RA

Carnegie-Mellon University, Urban Mass Transportation Administration Final Rpt. CMURSC-001-80, UMTA-PA-06-0059-81-1, Sept. 1980, 99p

Contract DOT-OS-60129

ACKNOWLEDGMENT: NTIS

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PB82-101163

48 346321

FOREIGN NOISE RESEARCH IN SURFACE TRANSPORTATION, 1978-1981

Information on foreign research projects in surface transportation noise abatement was collected from both individuals and organizations. These contacts were queried on the research they either were conducting or funding and the names and addresses of other surface transportation noise researchers. In total, some 700 researchers were contacted. They were asked to respond with information about research projects that deal with: highway vehicle noise control (trucks, buses, cars, etc.); vehicle component noise control (engines, exhaust mufflers, cooling systems, power trains, tires, etc.); roadway surface materials, tire/road interaction; path control (barriers, insulation, highway planning and land management); highway noise analysis (prediction models, propagation theory, etc.); rail noise (guided mass transit, light rail, elevated structures, wheel/rail interaction); off road and recreational vehicle noise; measurement, monitoring and enforcement research. From these contacts, 294 surface transportation noise research projects were identified.

Barber, D Modig, C

Informatics, Incorporated, Environmental Protection Agency EPA-550/9-81-317, May 1981, 373p

ACKNOWLEDGMENT: NTIS

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PB82-100306

48 346338

POTENTIAL ENERGY SAVINGS IN THE LIGHT-VEHICLE, LONG-HAUL-TRUCK, AND BUS MARKET SECTORS

The potential oil and gas savings that could be realized in the transportation sector are calculated for the years 1980, 1985, and 2000. To date, two market sectors have been analyzed; light vehicles (automobiles, light trucks, and vans) and large vehicles (long haul trucks and buses). These analyses are described. Potential savings are identified at the physical system and operational option level and then aggregated by generic approach. The potential generic approach savings are further aggregated by market sectors. The physical systems and operational options investigated are shown in the transportation sector tree. (ERA citation 06:028896)

TRW Systems Group, Department of Energy Nov. 1977, 27p

Contract AC03-77CS40004

ACKNOWLEDGMENT: NTIS

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DOE/CS/40004-T5

48 346500

ENGINE HORSEPOWER MODELING FOR DIESEL ENGINES

The EPA is conducting a cycle development project for heavy duty engines. Ultimately the project will produce dynamometer cycles. The data being used in the cycle development data analyses are the data collected in the CAPE-21 survey. Forty-four trucks and three buses were surveyed in Los Angeles, and forty-four trucks and four buses were surveyed in New York City. For the trucks surveyed, speed (MPH), engine rpm, road and traffic descriptions, and an engine load parameter (rail pressure for Cummins diesel engines, rack position for Detroit Diesel Allison (DDA) diesel engines, throttle position for caterpillar diesel engines, and manifold vacuum for gasoline engines) were recorded at approximately one second intervals. For cycle development, it is desirable to have the load (power) parameter in terms of % engine HP. The purpose of this report is to summarize the analyses, subsequent results, and conclusions in developing a normalized horsepower model for diesel engines.

France, CJ

Environmental Protection Agency Tech Rpt. EAP-AA-HDV-76-03, Oct. 1976, 74p

ACKNOWLEDGMENT: NTIS

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PB81-243172

48 348408

URBAN TRANSPORTATION AND THE ENVIRONMENT

The paper identifies the scale of urban growth to the end of the century and the importance of the urban environment to mankind. Whilst the need to "clean up" and "quieten down" motor vehicles is accepted the paper concentrates on the measures open to the urban transport planner to control urban traffic and its effects on the environment. Four main approaches to controlling the use of vehicles in urban areas are discussed, with emphasis on pragmatic approaches. The first approach is that of changing travel schedules through peak spreading and peak separation. The second is extending the capacity of the urban transport infrastructure such as building new roads. The third is tactical traffic management such as clearways and vehicle priorities and the fourth is strategic traffic management such as parking controls and restrictions on moving vehicles. In each approach the measures available to the transport planner are outlined with the effects their introduction can have on the urban environment, their more general traffic effects and the problems and opportunities presented by their introduction. The paper concludes that well designed transport policies can help ameliorate the adverse effects of transport on the urban environment but these must be complemented by improvements in vehicle design and maintenance and careful designs and location of the transport infrastructure. (TRRL)

Papers from the 9th IRF World Meeting, Road Into the Future--Urban Transportation--TS6, held at Stockholm, June 1-5, 1981.

Bayliss, D (Greater London Council)

Svenska Vaegfoereningen 1981, pp 1-34, 5 Tab., Refs.

ACKNOWLEDGMENT: TRRL (IRRD 257864), National Swedish Road & Traffic Research Institute

ORDER FROM: Svenska Vaegfoereningens Foerlags AB, Box 27115, S-102 52 Stockholm, Sweden

48 348416

URBAN TRANSPORTATION AND THE ENVIRONMENT

The paper commences with a review of the various forms of mass transport making an assessment of their differing capacities. The effects of noise pollution on the environment is appraised. A discussion on the trends affecting mobility and accessibility is promulgated with examples of experimental schemes introduced. Leading on to an appraisal of the role of transportation and its tasks, the competing forms of transportation are discussed with a view of their relative effect on the urban scene. Factors affecting the choice of modes are listed and details of the relative degrees of energy consumption are examined. The effects of our increasing awareness of the results of the decision on the choice of modes and trends into the future are considered. (TRRL)

Papers from the 9th IRF World Meeting, Roads Into the Future--Urban Transportation--TS6, held at Stockholm, June 1-5, 1981.

Turnbull, J (Mott, Hay & Andersson International Ltd, England)

Svenska Vaegfoereningen 1981, pp 227-238

ACKNOWLEDGMENT: TRRL (IRRD 257881), National Swedish Road & Traffic Research Institute

ORDER FROM: Svenska Vaegfoereningens Foerlags AB, Box 27115, S-102 52 Stockholm, Sweden

48 348418

EXTENDED MODEL 77 FOR NOISE PROPAGATION STUDIES OF ROAD TRAFFIC, RAILWAY TRAFFIC, AND INDUSTRIAL NOISE

Many efforts at reducing noise pollution concern outdoor noise sources. As soon as either the topographic conditions, or the behavior of the noise sources is complicated, systematic evaluation procedures are required. Current computer programs can treat this type of problem, and are sufficiently adaptable to be useful also in simpler noise propagation studies. This paper discusses one such set of programs, MODEL 77, developed in Switzerland. With the MODEL 77 any noise source can be treated as an omnidirectional or a directional radiator. The source spectrum is defined in one-third-octave bands at a reference distance of 7.5m. The basic unit is a pair of two source types. For road traffic this could be automobiles and trucks. In a railway system, one source type is used for each wheel of a train, and the other for the noise radiated by the locomotive. Topographic descriptions, propagation and statistical calculations are described.

Proceedings of the International Conference of Noise Control Engineering, Noise Control for the 80's, Inter-Noise 80, held December 8-10, 1980 in Miami, Florida.

Rathe, EJ (Swiss Federal Institute of Technology)

Institute of Noise Control Engineering Conf Paper Vol. 1 1980, pp 531-534

ACKNOWLEDGMENT: EI

ORDER FROM: Institute of Noise Control Engineering, P.O. Box 3206, Arlington, Poughkeepsie, New York, 12603

48 348419

PREDICTING PUBLIC REACTION TO NOISE FROM MIXED HIGHWAY, LIGHT-RAIL-TRANSIT AND PARK-AND-RIDE FACILITY NOISE SOURCES FOR THE PROPOSED BANFIELD TRANSITWAY, PORTLAND, OREGON

The paper reports on studies undertaken to ascertain noise impacts of the proposed Banfield Freeway improvements, and the construction and operation of the proposed light-rail-transit (LRT) system. Of prime concern in the noise impact assessment was the identification of applicable noise impact criteria. Details of the study, study method, field measurements, analysis, noise predictions, and design criteria for the proposed transitway are discussed.

Proceedings of the International Conference of Noise Control Engineering, Noise Control for the 80's, Inter-Noise 80, held December 8-10, 1980 in Miami, Florida.

Cass, GR (Dames & Moore, San Francisco)

Institute of Noise Control Engineering Conf Paper Vol. 2 1980, pp 991-996

ACKNOWLEDGMENT: EI

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48 348420

NOISE PREDICTIVE AND ASSESSMENT METHODOLOGY FOR EVALUATING THE COMBINED IMPACT OF VARIOUS SURFACE TRANSPORTATION MODES

As long as the noise environment is dominated by only one type or mode of transportation, the noise assessment procedures are straightforward. However, difficulties arise in predicting overall noise levels and in evaluating the combined impact from several different modes of transportation. This paper presents a methodology for evaluating the combined noise impact from various surface transportation noise sources. The intent is to present a practical methodology that is compatible with established requirements and guidelines of regulatory agencies. Noise emissions data for various types of surface transportation vehicles are compiled for easy reference and comparison.

Proceedings of the International Conference of Noise Control Engineering, Noise Control for the 80's, Inter-Noise 80, held December 8-10, 1980, in Miami, Florida.

Eichelberger, EC, Jr (Gannett Fleming Corrdry & Carpenter Incorporated)
Institute of Noise Control Engineering Conf Paper Vol. 2 1980, pp 1133-6

ACKNOWLEDGMENT: EI

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48 348428

COMPARISON OF RAIL SUPPORT SYSTEMS IN UNDERGROUND RAILWAY LINES-REDUCTION OF STRUCTUREBORNE SOUND

In the Cologne U-Bahn system the concept of ballastless and sleeperless track has been employed for many years. The rails are in the main mounted on elastomeric point supports. This system of rail mounting has recently been improved. In order to clearly measure the vibration reduction provided by the new rail support, called the "Cologne Egg", different rail supports were mounted one after another for measurements on the same section of track. This provided the opportunity for measurements to be carried out where all other influences could be kept constant, e.g. tunnel construction, route selection, vehicle type, operating conditions, track conditions and measurement conditions. This paper discusses design of the elastomeric rail support systems, the measurement program and its results.

Proceedings of the International Conference of Noise Control Engineering, Noise Control for the 80's held December 8-10, 1980 in Miami, Florida.

Melke, J (Tech Ueberwachungs-Ver Reinland, West Germany) *Conf Noise Control Eng Noise Control for the 80's*, Vol. 2 1980, pp 709-714

ACKNOWLEDGMENT: EI

ORDER FROM: Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, New York, 12603

48 348429

SCALE MODEL OPTIMIZATION OF A RAILROAD PLATFORM CANOPY AS A COMMUNITY NOISE BARRIER

A proposal to improve and expand a major transportation corridor in Boston, Massachusetts, prompted investigations of potential noise impact. The Environmental Impact Statement (EIS) that was prepared for the improvement project identified a peak-hour noise level criterion of 67 dBA as the design goal for residential areas. The EIS also identified a predicted future peak-hour level of 80 dBA at the nearest residence. In the preliminary conceptual noise control design, noise barriers were to be attached to the canopies over the station platforms. These barriers would provide noise shielding for the community from many of the corridors' noise sources while allowing for ventilation of the diesel electric locomotives. The study discussed in this paper included the further investigation, optimization, and design of the noise barrier system on the station's platform canopies.

Proceedings of the International Conference of Noise Control Engineering, Noise Control for the 80's, held December 8-10, 1980 in Miami, Florida.

Menge, CW (Bolt, Beranek and Newman, Incorporated); Wittig, LE
Institute of Noise Control Engineering Vol. 2 1980, pp 607-610

ACKNOWLEDGMENT: EI

ORDER FROM: Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, New York, 12603

48 348431

REACTIONS TO RAILWAY NOISE IN GREAT BRITAIN: AN UPDATED REPORT

The Institute of Sound and Vibration Research has concluded a four year study of reactions to railway noise in residential areas. Residents' reactions and railway noise levels were measured in 403 neighbourhoods along 75 sections of railway routes in Great Britain. The reactions of 1,453 residents were obtained in forty-five minute interviews. Railway noise levels were derived from complex computer analyses of the tape recordings of over 1,700 pass-bys for the 403 measurement sites. This paper reviews the main study findings, but concentrates on the aspects of reactions to noise on electrified and diesel routes.

Proceedings of the International Conference of Noise Control Engineering, Noise Control for the 80's, held December 8-10, 1980 in Miami, Florida.

Fields, JM (Southampton University, England); Walker, JG
Institute of Noise Control Engineering Vol. 2 1980, pp 871-874

ACKNOWLEDGMENT: EI

ORDER FROM: Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, New York, 12603

48 348432

ESTIMATION AND CONTROL OF GROUND VIBRATIONS FROM TRAINS ON CONCRETE ELEVATED STRUCTURES

The proposed Metropolitan Dade County Rapid Transit System will include approximately 32 km (20 miles) of concrete elevated guideway, passing near potentially vibration sensitive areas such as residences, hospitals, and research buildings. A careful estimation of anticipated ground vibration levels near the elevated structure is important. This paper describes the vibration estimation procedure used for the proposed Dade County system and discusses some implications of the results in terms of vibration control for concrete elevated structures.

Proceedings of the International Conference of Noise Control Engineering, Noise Control for the 80's, Inter-Noise 80, held December 8-10, 1980 in Miami, Florida.

Towers, DA (Bolt, Beranek and Newman, Incorporated)
Institute of Noise Control Engineering Vol. 1 1980, pp 399-402

ACKNOWLEDGMENT: EI

ORDER FROM: Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, New York, 12603

48 348435

EVALUATION OF EXTERNAL NOISE LEVEL OF SUBWAY STATION

The paper presents a noise level forecast to predict train-generated noise level on the neighborhood of a partially underground Rio Subway Co. station, about to start operation. The station is ventilated by two sets of vents located at ground level, one of which is 4 meters from a block of buildings. In order to prepare the forecast, two field tests are made: the former to define sound attenuation from platform to ground level; the latter to record train noise at a similar station already in operation.

Parentes de Rezende Correa, F
Institute of Noise Control Engineering Vol. 1 1980, pp 391-394

ACKNOWLEDGMENT: EI

ORDER FROM: Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, New York, 12603

48 348436

NOISE CONTROL DESIGN FOR THE METROPOLITAN DADE COUNTY RAPID TRANSIT SYSTEM

Addressing community concerns about noise impact in the planning phases of the transit system, the County and the design engineers have developed an awareness of the importance of incorporating noise control, as an integral part of the engineering process. As a result, noise control features such as noise barriers have been integrated into the guideway structure requirements, resilient rail fasteners are part of the trackwork structure, and noise specifications are an important part of the vehicle specification. The approach for placement and design of the noise control treatments is based on a well-documented, logical development with foundations in community noise studies by the U. S. Environmental Protection Agency. This paper discusses the noise criteria for the transit system design and implementation of the noise control measures.

Proceedings of the International Conference of Noise Control Engineering, Noise Control for the 80's, Inter-Noise 80, held December 8-10, 1980 in Miami, Florida.

Hanson, CE (Bolt, Beranek and Newman, Incorporated); Ellis, JV
Institute of Noise Control Engineering Vol. 1 1980, pp 383-386

ACKNOWLEDGMENT: EI

ORDER FROM: Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, New York, 12603

48 348437

DIESEL-ELECTRIC LOCOMOTIVE NOISE CONTROL

The paper reports on the development of exhaust silencing hardware and a quieter radiator cooling fan that result in locomotive sound levels within the requirements of the Federal EPA noise regulations. Current development programs in progress include low backpressure silencers for both turbocharged and Roots blown engine locomotives for improved fuel economy and a compact exhaust silencer for turbocharged engine export locomotives having limited space available.

Proceedings of the International Conference of Noise Control Engineering,

ing, Noise Control for the 80's, Inter-Noise 80, held December 8-10, 1980 in Miami, Florida.

Goding, DJ (General Motors Corporation)
Institute of Noise Control Engineering Vol. 1 1980, pp 375-378

ACKNOWLEDGMENT: EI
ORDER FROM: Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, New York, 12603

48 348438

SOME RECENT PROGRESS IN THE CONTROL OF WHEEL/RAIL NOISE

Wheel/rail noise is generally divided into three categories: squeal, impact, and roar. Of the three, roar is the one category for which effective, system compatible noise control techniques for rapid transit systems have not been demonstrated. This paper reports on an on-going study that is focused on roar noise control through improved wheel designs and wheel/rail smoothing techniques. It discusses analysis and field measurements and noise control treatments, including a resiliently treated wheel.

Proceedings of the International Conference of Noise Control Engineering, Noise Control for the 80's, Inter-Noise 80, held December 8-10, 1980 in Miami, Florida.

Remington, P (Bolt, Beranek and Newman, Incorporated); Dixon, N Menge, CW Wittig, LE
Institute of Noise Control Engineering Vol. 1 1980, pp 283-296

ACKNOWLEDGMENT: EI
ORDER FROM: Institute of Noise Control Engineering, P.O. Box 3206, Arlington Branch, Poughkeepsie, New York, 12603

48 348470

ENERGY PROBLEM IN PUBLIC TRANSPORT BY BUS [LE PROBLEME DE L'ENERGIE DANS LES TRANSPORTS PUBLICS PAR AUTOBUS]

Savings can be made in fuel consumption by buses, especially urban buses. The study described deals with rolling stock, operation, personnel, environment and administrative authorities. (TRRL) [French/Eng/German]

Savary, Y (Paris Transport Authority, France) *UITP Revue* Vol. 28 No. 4, Oct. 1979, pp 247-264

ACKNOWLEDGMENT: TRRL (IRRD 112179)
ORDER FROM: International Union of Public Transport, Avenue de l'Uruguay 19, B-1050 Brussels, Belgium

DOTL JC

48 348511

PLANNING OF RESEARCH AND DEVELOPMENT OF ELECTRICAL TRACTION FOR RAILROADS IN THE LIGHT OF THE ENERGY SHORTAGE

An analysis of various factors suggests the adoption of a few ground rules and basic principles, to eliminate "blindalley" projects in electrical traction research and development (R&D). These ground rules and principles, when accepted, lead to basic premises for medium-and long-range R&D. Particularly, it is concluded that the three pillars for medium-and long-range hardware R&D are: ac traction, catenary/pantograph, and large-scale test facilities. An important conclusion is that, because of the expected coexistence of diesel-electric locomotives and all-electric locomotives on many railroads, commonality of major components is a must. Also, the operation of mixed consists of diesel-electric and all electric locomotives/-power cars is emerging as an attractive future option for those railroads that will be partially electrified.

Joint American Society of Mechanical Engineers, Institute of Electrical and Electronics Engineers, and Association of American Railroads Railroad Conference 1981. Atlanta, Georgia, April 28-30 1981.

Guarino, M (Department of Transportation)
Institute of Electrical and Electronics Engineers Conf Paper 81 CH 1667-5, 1981, pp 26-31

ACKNOWLEDGMENT: EI
ORDER FROM: IEEE

Ongoing Research Summaries

11 333308

APPLICATION ANALYSIS OF ENERGY STORAGE FOR TRANSPORTATION

This proposal is based upon the ongoing multi-DOE laboratory study of Energy Storage Systems for Automobile Propulsion which was completed in FY 1980. During FY 1981 and FY 1982 LLL proposes to provide continued applications analysis support to the Division of Energy Storage Systems through its Technical and Economic Analysis support to the Division of Energy Storage Systems through its Technical and Economic Analysis Subprogram. To accomplish this the following tasks are proposed to: (1) examine all other available studies which have considered energy storage systems for transportation and normalize their results in the light of the data and methodologies developed in the prior LLL study; (2) review the current and past projects involving energy storage for transportation; (3) monitor the ongoing projects involving energy storage for transportation; (4) monitor the state-of-the-art in energy storage device development for significant advances which might modify the prior LLL study conclusions; (5) continue the update and expansion of the National energy storage data base into TIS from the results of the FY 1980 LLL study; (6) provide technical and planning assistance; and (7) complete and publish the report of the FY 1980 study of energy storage for automotive propulsion.

PERFORMING AGENCY: Lawrence Livermore National Laboratory
INVESTIGATOR: Forsberg, HC
SPONSORING AGENCY: Department of Energy, Office of Conservation and Solar Energy, 6020 W-7405-ENG-48

Contract

STATUS: Active NOTICE DATE: Dec. 1981 START DATE: Oct. 1980 COMPLETION DATE: Sept. 1982 TOTAL FUNDS: \$700,000

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (FQ 1170)

11 333893

FLYWHEEL ENERGY MANAGEMENT PROPULSION TO REDUCE FUEL CONSUMPTION IN MOTOR VEHICLES

Design of vehicle systems to greatly reduce fuel consumption will be investigated by computer simulation. The simulations will design systems for driveability as well as fuel economy. From the computer simulations will be developed a set of specifications from which industry can construct components to achieve the performance and fuel economy goals.

REFERENCES:

Design Considerations for Flywheel Transmission Automobiles Frank, AA; Beachly, NH, SAE 800886, Aug. 1980
Principles and Definitions for Continuously Variable Transmissions with Emphasis on Automobile Applications, Beachly, AH; Frank, AA, ASME 80-C2/DET-95

PERFORMING AGENCY: Wisconsin University, Madison
INVESTIGATOR: Frank, AA Beachly, NH
SPONSORING AGENCY: Department of Energy

Contract 4492309

STATUS: Active NOTICE DATE: Jan. 1981 START DATE: Jan. 1978 COMPLETION DATE: 1983 TOTAL FUNDS: \$100,000

ACKNOWLEDGMENT: Wisconsin University, Madison

Bus & Paratransit Operations Technology

12 333710

**ELECTRONIC SYSTEM FOR IMPROVING BUS OPERATIONS
STUDY**

Evaluate the technological developments for improving bus operations and develop a master plan for the application of an electronics system to improve bus operations in terminals.

PERFORMING AGENCY: Port Authority of New York and New Jersey,
TS-A-761

INVESTIGATOR: Foote, RS Tel (212) 466-7406 Ashe, JM

SPONSORING AGENCY: Urban Mass Transportation Administration;
Tri-State Regional Planning Commission

RESPONSIBLE INDIVIDUAL: Pavlovich, JS Tel (212) 938-3329

Contract DOT-NY-09-0054

STATUS: Active NOTICE DATE: Dec. 1981 START DATE: Apr.
1980 COMPLETION DATE: Jan. 1982 TOTAL FUNDS: \$130,000

ACKNOWLEDGMENT: Port Authority of New York and New Jersey

13 025403

URBAN RAPID RAIL VEHICLE SYSTEMS PROGRAM

To enhance the attractiveness of rapid rail transportation to the urban traveler by providing existing and proposed transit systems with service that is comfortable, reliable, safe, and as economical as possible. Short range goals: Demonstration of the state-of-the-art in rapid rail vehicular technology. The Advanced Concept Train (ACT-1) phase calls for delivery of two next generation rail transit vehicles by August 1977 and Advanced Subsystems Development Program (ASDP) calls for component development for near-term industry application.

Subcontractors for the project are St. Louis Car Company, AiResearch Manufacturing Company, Delco Electronics, Westinghouse Air Brake and the Budd Company.

PERFORMING AGENCY: Boeing Vertol Company
 INVESTIGATOR: O'Brien, T Tel (215) 522-3200
 SPONSORING AGENCY: Urban Mass Transportation Administration
 RESPONSIBLE INDIVIDUAL: Teel, S Tel (202) 426-0090

STATUS: Completed NOTICE DATE: Aug. 1981 START DATE: 1971
 COMPLETION DATE: July 1981

ACKNOWLEDGMENT: UMTA (IT-06-0026)

13 128051

RAIL VEHICLE POWER AND ENERGY CONSUMPTION STUDY

The purpose of this study, which is part of the general Energy Management Program, is to determine the power requirements and energy consumptions of transit vehicles operating in free air and in tunnels under various conditions as specified by operational parameters such as acceleration, maximum speed, station spacing etc. The study first establishes the mechanical limits of power requirements, energy consumption, regeneration and energy storage in terms of the operational conditions and free air and in tunnels. The calculations within this part of the study will use the results of the aerodynamic drag study (project #3605) and operational criteria established in other studies. The study then incorporates the performance characteristics of various propulsion systems-DC series, shunt or separately excited motors, as well as AC motors-with and without energy saving devices such as choppers and flywheels. The study relies here on input from investigations carried out by the Electrical Group. The resulting calculations will produce actual power and energy consumption profiles of the different propulsion systems under the various operational conditions considered. The energies associated with drags, momentum change, regeneration and equipment losses will be identified. The results will be used in the Economic Evaluation Program to determine the viabilities of the various propulsion options. The viable alternatives will then be investigated further with refined performance data and extended operational ranges in order to provide basic data for preliminary conceptual design of the total energy system. /RTAC/

A report is currently being drafted.

PERFORMING AGENCY: Ontario Ministry of Transportation & Communic, Can, 3607
 INVESTIGATOR: Soots, V
 SPONSORING AGENCY: Ontario Ministry of Transportation & Communic, Can

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: 1975

ACKNOWLEDGMENT: Roads and Transportation Association of Canada

13 138537

GAS TURBINE-ELECTRIC (GT-E) COMMUTER CARS

The objective is to develop advanced dual powered commuter cars capable of gas turbine or electric propulsion which is equivalent to all-electric car performance, and can provide a no-change ride to suburbs beyond electrified territory. Four GT/E cars were built by General Electric and four by Garrett AiResearch. Two Garrett cars were tested briefly at the DOT Transportation Test Center, Pueblo, Colo. All eight cars were tested in non-revenue service beginning in 1975 on the Long Island Rail Road, and entered revenue service in 1976 for a 12 month evaluation period.

Final report is being prepared.

REFERENCES:

Dual-Powered Gas Turbine/Electric Commuter Rail Cars: Test, Evaluation and Economics, UMTA-NY-06-0005 Final Rpt., Sept. 1980, PB81-211757

PERFORMING AGENCY: Metropolitan Transportation Authority (New York), NY-06-0005

SPONSORING AGENCY: Urban Mass Transportation Administration; Metropolitan Transportation Authority (New York)

RESPONSIBLE INDIVIDUAL: Mora, J Tel (202) 426-0090

Contract DOT-UT-613

STATUS: Completed NOTICE DATE: Aug. 1981 START DATE: July 1971
 COMPLETION DATE: Mar. 1981 TOTAL FUNDS: \$14,800,000

ACKNOWLEDGMENT: UMTA

13 138539

ADVANCED SUBSYSTEMS DEVELOPMENT PROGRAM (ASDP)

The objective of this investigation, a part of the Urban Rapid Rail Vehicle Systems Program, is to achieve transit vehicles that are as reliable, safe and economical as possible, choosing subsystems which reduce the cost of operation and maintenance, reduce energy requirements and/or improve safety, comfort and performance. The components chosen for detailed development are the self-synchronous a-c traction motor, the monomotor truck with active suspension and the synchronous spin-slide control braking system with improved emergency stopping capability.

Subcontractors are Delco Electronics, Budd Company and Westinghouse Air Brake Division.

PERFORMING AGENCY: Boeing Vertol Company

INVESTIGATOR: O'Brien, T

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Teel, S Tel (202) 426-0090

Contract DOT-UT-10007

STATUS: Completed NOTICE DATE: Aug. 1981 START DATE: Dec. 1976
 COMPLETION DATE: July 1981 TOTAL FUNDS: \$8,650,000

ACKNOWLEDGMENT: UMTA

13 165811

RAILCAR STANDARDIZATION--PHASE II

The broad objectives of UMTA's Railcar Standardization program are to reduce or stabilize railcar initial and life cycle costs, reduce maintenance costs, increase fleet availability and permit evolutionary technology improvements. Contractors will perform a series of tasks including one requiring the development of a minimum number of car performance and dimensional specifications which collectively describe future transit industry requirements.

REFERENCES:

Determination of The Optimal Approach to Rail Rapid Transit Car Standardization, Morris, R, Available at NTIS, UMTA-IT-06-0131-76-1 131 pp, 1976, PB-259-363

An Investigation of Rail Rapid Transit Carbody Materials Morris, R et al, Available at NTIS, UMTA-IT-06-0175-80-1 140 p., PB80-170970

Proposed Analysis Methodology for Rail Car Propulsion System Selection, Bamberg, W; Eldredge, D, Available at NTIS, UMTA-IT-06-0229-80-1 50p, 1980, PB80-201460

Roster of North American Rapid Transit Cars 1945-1980 American Public Transit Association, Available at NTIS, UMTA-DC-06-0121-80-1 299p, 1980, PB80-213564

PERFORMING AGENCY: Decision Group, Incorporated, IT-06-0175; Lea (ND) and Associates, Incorporated, IT-06-0229; American Public Transit Association, DC-06-0121

INVESTIGATOR: Morris, RE Tel (703) 827-0227 Elms, CD Tel (703) 471-4007 Cihak, FJ Tel (202) 828-2888

SPONSORING AGENCY: Urban Mass Transportation Administration, Office of Technology Development and Deployment

RESPONSIBLE INDIVIDUAL: Mora, J Tel (202) 426-0090

Contract DOT-UT-70043

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: May 1976
 COMPLETION DATE: Dec. 1981 TOTAL FUNDS: \$1,600,000

ACKNOWLEDGMENT: UMTA

13 185231

DEVELOP A DETAIL OUTLINE, FORMAT AND SCOPE OF A NATIONAL DESIGN PRACTICES MANUAL, PHASE I

The objective of the National Design Practices Manual Project is to establish minimum criteria for design and safety of Urban Rail Transit Systems. This will allow evaluation of grant (capital funding) requests and development of

cost effective design standards. Phase I consists of establishment of a detailed outline of subjects. Phase II consists of supporting a contractor who will develop and utilize source documents identified in Phase I to fill out the outline.

PERFORMING AGENCY: American Public Transit Association, 7216
INVESTIGATOR: Cihak, FJ Tel (202) 331-1100
SPONSORING AGENCY: Urban Mass Transportation Administration

Contract DOT-UT-80034

STATUS: Active NOTICE DATE: Aug. 1980 START DATE: Aug. 1978
COMPLETION DATE: Sept. 1981 TOTAL FUNDS: \$298,613

ACKNOWLEDGMENT: American Public Transit Association

13 193777

SUBSYSTEM TECHNOLOGY APPLICATIONS TO RAIL SYSTEMS (STARS)

The objectives of the STARS Program are to apply existing technology to the solution of rail transit operators' pressing technical and operational problems and deploy these solutions in the near term. Furthermore, the subsystem technology applications are to be self-paying such that the development and deployment costs are offset by the benefits to the properties in terms of performance reliability, safety, and service. STARS is a "quick response" program which emphasizes technology which are compatible with existing rail systems, such that deployment can be commenced within the next 5 years in order to improve transit and reduce costs. The projects selected: Car equipment, including technology application investigation; controls/communications/power, including technology application investigations; and maintenance technology application investigations. Three car equipment development programs have been defined: Alternating-current induction motor propulsion system; static-inverter auxiliary power supply; and improved air comfort system. In controls/power, electrical power distribution modeling and validation for rail transit systems has been initiated. Electromagnetic interference of chopper controlled propulsion systems with the existing train control track signaling systems is being investigated. A technology investigation has been partially completed for Fare Collection systems. An investigation and assessment of the use and maintenance of escalators has been completed, with a report in preparation. In response to the recent severe winters in the Northeast with consequential disruption of rail transit service, an assessment is currently underway appraising the available technologies for combating winter weather.

Contract to a performing agency not yet awarded.

SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Oren, R Tel (202) 426-0090

STATUS: Programmed NOTICE DATE: Aug. 1980 START DATE: Sept. 1979
COMPLETION DATE: Sept. 1984 TOTAL FUNDS: \$19,375,000

ACKNOWLEDGMENT: UMTA

13 193778

INSTALLATION AND TESTING OF THE TRACK GEOMETRY MEASUREMENT SYSTEM

To install rail geometry sensing, recording and analysis package furnished by TSC on a standard car belonging to the NYCTA. Test operation and reliability of the equipment over a two year period by systemwide use.

PERFORMING AGENCY: New York City Transit Authority
INVESTIGATOR: Gamache, LW Tel (212) 330-3757 Lapinski, R
SPONSORING AGENCY: Transportation Systems Center
RESPONSIBLE INDIVIDUAL: Nickles, JE Tel (617) 494-2204

Contract DOT-TSC-1635

STATUS: Active NOTICE DATE: Aug. 1980 START DATE: Dec. 1978
TOTAL FUNDS: \$45,000

ACKNOWLEDGMENT: New York City Transit Authority

13 308324

RING DAMPED RAILWAY WHEELS

The first phase of this project will determine the efficacy of using damping rings on subway wheels in an attempt to control squeal noise. The lab tests done to date have determined the natural frequencies and some of the mode shapes of the wheel. The damping ratios with and without various rings under varying conditions have been obtained. Phase 2 involved field testing of the damping rings on a Toronto Transit Commission subway vehicle. These tests were performed in January 1981 and evaluation of the results obtained is currently in progress.

REFERENCES:

Vibration Properties of Two Ring Damped TTC Railway Wheels
Strasberg, L; Tiessinga, J, Ontario Ministry of Transportation and Communications, Oct. 1978

Point Impedances of Railway Wheels Strasberg, L; Tiessinga, J, NOI-SEXPO 80 Paper, Apr. 1980

The Effects of Varying Ring Parameters on the Modal Damping Ratios of Ring Damped Railway Wheels, Strasberg, L; Tiessinga, J, INTERNOISE 80, Dec. 1980

PERFORMING AGENCY: Ontario Ministry of Transportation & Communic, Can, 31129

INVESTIGATOR: Strasberg, L Tel (416) 248-3771

SPONSORING AGENCY: Ontario Ministry of Transportation & Communic, Can

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: Aug. 1978
TOTAL FUNDS: \$75,000

ACKNOWLEDGMENT: Ontario Ministry of Transportation & Communic, Can

13 308639

DEVELOPMENT OF GUIDELINES FOR THE USE, DESIGN AND INSTALLATION OF RESTRAINING RAIL ON TRANSIT TRACK

This research effort identified and evaluated all of the significant factors relating to the use of restraining rails in rapid transit tracks (heavy rail systems) in the U.S. It included operational, economic, and environmental considerations as well as dynamic forces and structural factors. The end product of the study was guidelines intended to optimize design and installation of restraining rail.

PERFORMING AGENCY: ENSCO, Incorporated

INVESTIGATOR: Cunney, EG Tel (703) 321-9000

SPONSORING AGENCY: Transportation Systems Center

RESPONSIBLE INDIVIDUAL: Saulnier, G Tel (617) 494-2006

Contract DOT-TSC-1771

STATUS: Completed NOTICE DATE: Aug. 1981 START DATE: Aug. 1979
COMPLETION DATE: Jan. 1981 TOTAL FUNDS: \$141,700

ACKNOWLEDGMENT: TSC

13 335897

PCB SUBSTITUTES

The objective of this contract is to identify a suitable substitute for railroad transformer coolants containing PCB. During FY80, the contractor installed instrumentation on and monitored the performance of transformers containing Iralac and RTEmp in service on SEPTA lines. Transformers are presently being prepared for in-service tests of Midel and RTEmp II.

PERFORMING AGENCY: ENSCO, Incorporated

INVESTIGATOR: Marine, R

SPONSORING AGENCY: Federal Railroad Administration

RESPONSIBLE INDIVIDUAL: Gannett, MC Tel (202) 426-9665

Contract DT-FR 53-80-C00002

STATUS: Active NOTICE DATE: July 1981 START DATE: Oct. 1979
COMPLETION DATE: Mar. 1982 TOTAL FUNDS: \$41,000

ACKNOWLEDGMENT: FRA

14 136338

COMPUTER APPLICATIONS IN CONTROL OF RAILWAY SYSTEMS

DESCRIPTION: This project encompasses development activity in the application of computers to the control of main line rail traffic, rail classification yards and high density rail and rapid transit interlockings. The general goals of these efforts are improvement of resource utilization, minimization of delays, and greater rail system throughput. Benefits are reduction in energy consumption and increased attractiveness of rail transport as an alternative to more energy intensive forms of transportation. Classification yard control includes automatic computer control of retarder for precise coupling speeds and the switching network for accurate car routing. Computer based management information systems operate in conjunction with the above for maintenance of rolling stock inventory. Development efforts are aimed at improving yard throughput while maintaining or improving coupling speed accuracy. Main line control projects currently underway emphasize centralization and simplification of

dispatching and routing functions. Systems deployed to date utilize computer-aided control with the basic decision processes being performed by operating personnel. Development efforts are directed toward higher levels of automatic control encompassing larger areas of controlled territory to yield increased operating efficiency. High-density rail and rapid transit interlockings are ideal candidates for computer control because of their complexity and frequency of traffic. Computerized route finding is currently used in GRS systems, and systems in development will automatically perform many more of the necessary control functions allowing higher traffic densities to be accommodated.

PERFORMING AGENCY: General Railway Signal Company

INVESTIGATOR: Conover, HH

SPONSORING AGENCY: General Railway Signal Company

STATUS: Active **NOTICE DATE:** Aug. 1979 **START DATE:** July 1975

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (AX 615 1)

15 138532

CONSTRUCTION TECHNOLOGY

The results of the Urban Rail Construction Technology program will assist policy makers and the transit industry in evaluating construction alternatives which show areas of cost savings, safety enhancement and increased performance and reliability. The primary goal of the program is to bring about significant reduction in construction cost of urban rail transit system facilities by implementing new technologies and by improving design, construction and contracting practices in the urban rail transit construction industry. The four major thrusts of the program are underground, at-grade track and wayside, elevated structures and contracting and management.

PERFORMING AGENCY: Urban Mass Transportation Administration; Transportation Systems Center
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Butler, GL

STATUS: Active NOTICE DATE: Aug. 1980 START DATE: 1973 COMPLETION DATE: 1985 TOTAL FUNDS: \$30,000,000

ACKNOWLEDGMENT: UMTA

15 179326

DEVELOPMENT OF DESIGN RECOMMENDATIONS FOR CONCRETE TUNNEL LINERS

The objective of this procurement is to develop guidelines and recommendations for structural design of concrete linings of underground structures based upon ultimate strength concepts of concrete behaviour. This concrete may be in the form of either precast segments, cast-in-place, or shotcrete; and may be either reinforced or unreinforced.

PERFORMING AGENCY: Illinois University, Urbana, Department of Civil Engineering
INVESTIGATOR: Paul, SL
SPONSORING AGENCY: Transportation Systems Center
RESPONSIBLE INDIVIDUAL: Saulnier, G Tel (617) 494-2006

Contract DOT-TSC-1504

STATUS: Active NOTICE DATE: Aug. 1981 START DATE: Apr. 1978 COMPLETION DATE: Aug. 1981 TOTAL FUNDS: \$349,000

ACKNOWLEDGMENT: TSC

15 179329

DEVELOPMENT OF AN EXTRUDED TUNNEL LINING SYSTEM

The objective of this R&D Program is to design, develop, fabricate, test and demonstrate an extruded liner tunneling system. Such a system would shorten the time requirement to excavate and line a tunnel section and eliminate the need for primary support. The three phases of the 44 month program are: I. Laboratory Research and Development; II. System Engineering Design; III. System Development and Demonstration.

PERFORMING AGENCY: Foster-Miller Associates, Incorporated
INVESTIGATOR: Maser, KR Tel (617) 890-3200
SPONSORING AGENCY: Transportation Systems Center
RESPONSIBLE INDIVIDUAL: Saulnier, G Tel (617) 494-2006

Contract DOT-TSC-1516

STATUS: Active NOTICE DATE: Aug. 1981 START DATE: Dec. 1977 COMPLETION DATE: May 1982 TOTAL FUNDS: \$2,287,101

ACKNOWLEDGMENT: TSC

15 179344

IMPROVED DESIGN PROCEDURES FOR UNDERGROUND STRUCTURAL SUPPORT SYSTEMS IN ROCK

The research objective is to obtain improved analysis and design procedures for structural support systems of underground openings in rock. Present design procedures are based on assumed loads and do not adequately consider the influence of the construction procedure and rock-support interaction. Support systems for large vaults (such as used for underground powerhouses and subway stations) and for intersections of vaults and tunnels have been identified as areas where significant economies in construction can be realized with improved analysis and design procedures. The initial effort includes a review of analysis and design procedures used for selected projects, e.g., the Washington Metro subway system. Measured rock deformations and support strains at sections of the selected projects will also be reviewed. The observed behavior of the rock and support systems of representative underground vault or major tunnel during construction will be correlated with the response of a three-dimensional nonlinear finite

element model of this installation during the same simulated sequences of construction. A second analytical study will consider a typical intersection of two underground vaults or major tunnels. After verification of the analysis procedure, the analysis of the intersection will be repeated using a more economical support arrangement than conventionally provided. Cases then will be analyzed to provide sets of parametric curves that can be used for preliminary design of selected support systems.

PERFORMING AGENCY: Agbabian Associates

INVESTIGATOR: Balachandra, MB

SPONSORING AGENCY: National Science Foundation, Division of Applied Research, DAR 76-80044

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: Oct. 1977 COMPLETION DATE: Mar. 1981 TOTAL FUNDS: \$498,600

ACKNOWLEDGMENT: Agbabian Associates

15 185230

SUBSURFACE EXPLORATION FOR TRANSIT TUNNELING

Employ selected innovative geotechnical and geophysical exploration and instrumentation techniques on an ongoing transit tunnel project: Evaluate the feasibility, applicability, reliability and cost effectiveness of the selected techniques; use the selected techniques to define the real and relevant geotechnical unknowns in test sections; evaluate the accuracy of the geotechnical predictions with appropriate field instrumentations, monitoring and mapping during construction; to demonstrate the effectiveness of instrumentation and monitoring during construction in documenting the effects of tunneling on adjacent structures; to provide data during construction for use by designers and contractors which can be employed to evaluate tunneling procedures and their effects on ground deformations so that modifications might be employed in critical areas and to evaluate need for protecting structures.

REFERENCES:

Field Evaluation of Advanced Methods of Subsurface Exploration for Transit Tunneling, Thompson, D; Humphrey, J; Young, L; Wall, C, June 1980

PERFORMING AGENCY: Bechtel Corporation

INVESTIGATOR: Sutcliffe, H Tel (617) 628-9600

SPONSORING AGENCY: Transportation Systems Center; Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Mattson, P Tel (617) 494-2431

Contract DOT-TSC-1570

STATUS: Active NOTICE DATE: Aug. 1981 START DATE: Sept. 1978 COMPLETION DATE: July 1981 TOTAL FUNDS: \$411,000

ACKNOWLEDGMENT: Bechtel Corporation

15 196750

NATM ALTERNATIVE DESIGN FOR CONSTRUCTION OF MT. LEBANON TRANSIT TUNNEL

This project will provide an alternative design for the construction of Mt. Lebanon Transit Tunnel in Pittsburgh using the New Austrian Tunneling method (NATM) technology. Phase I includes detailed planning and pre-design investigations involving review of geotechnical details and finite element analysis of selected tunnel sections as an initial check of external loading and geologic conditions.

PERFORMING AGENCY: Port Authority of Allegheny County, PA-06-0052

INVESTIGATOR: Mundo, J Tel (412) 237-7377

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Butler, GL Tel (202) 426-0090

Contract PA-06-0052

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: July 1980 COMPLETION DATE: Dec. 1981 TOTAL FUNDS: \$460,000

ACKNOWLEDGMENT: UMTA

15 196751

NON-DESTRUCTIVE TESTING FOR TUNNEL STRUCTURES

To develop an effective non-destructive method for testing the structural integrity of tunnels. The project consists of three phases: 1) current NDT technology will be researched with the data compiled and evaluated, 2) laboratory tests to research methods and modifying or developing necessary instrumentation to successfully test brick, homogeneous concrete, reinforced concrete, concrete encased steel, concrete lined tunnel sections, and for defining voids behind these structures; 3) field instrumentation to carry out various test procedures established in Phase II.

PERFORMING AGENCY: Port Authority Trans-Hudson Corporation, NY-06-0078; New York City Transit Authority
INVESTIGATOR: Theofilos, LG Tel (201) 963-2701
SPONSORING AGENCY: Urban Mass Transportation Administration
RESPONSIBLE INDIVIDUAL: Butler, GL Tel (202) 426-0090

CONTRACT NY-06-0078

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: Sept. 1979 COMPLETION DATE: Apr. 1983 TOTAL FUNDS: \$800,000

ACKNOWLEDGMENT: UMTA

15 308321

DESIGN RECOMMENDATIONS FOR TRANSIT GUIDEWAYS

Prepare recommendations for design of elevated Transit Guideways; Scope: 1. Definition of Design Philosophy and limit State Concept; 2. Derivation of load and performance factors by a calibration process using probabilistic techniques similar to those used for the Ontario Bridge Code; 3. Integration of special structures, such as stations, switches, etc.; 4. Reference will be made to the OHBD Code in elements common to both bridges and guideways. The study will culminate in a set of design recommendations. Pertinent information will be supplied to American Concrete Institute Committees 358 (Concrete Guideways) and 443 (Concrete Bridge Design). Likewise, MTC will receive from them data for calibration purposes.

REFERENCES:

Review of Guideway Design Criteria in Existing Transit Dorton, RA; Grouni, HN, ACI Journal, Apr. 1978

PERFORMING AGENCY: Ontario Ministry of Transportation & Communic, Can, Transit Systems Research and Development Office, 31217

INVESTIGATOR: Grouni, H Billing, JR

SPONSORING AGENCY: Ontario Ministry of Transportation & Communic, Can, Transit Systems Research and Development

STATUS: Programmed NOTICE DATE: Feb. 1981 TOTAL FUNDS: \$56,000

ACKNOWLEDGMENT: Ontario Ministry of Transportation & Communic, Can

15 309948

EVALUATION OF SITE EXPLORATION PREDICTIONS AND THE INSTRUMENTATION AND MONITORING OF SOFT GROUND TUNNELING

Design experiments and instrumentation plans, laboratory and field tests, and analyze information developed at the Mt. Baker Ridge tunnel site to evaluate methods for site exploration to determine if newly developed methods are superior to conventional ways of predicting soil-tunnel interaction.

PERFORMING AGENCY: Shannon and Wilson, Incorporated

INVESTIGATOR: Douglass

SPONSORING AGENCY: Federal Highway Administration, Structures and Applied Mechanics Division

RESPONSIBLE INDIVIDUAL: Sallberg, JR

Contract DOT-FH-11-9665

STATUS: Active NOTICE DATE: Mar. 1980 START DATE: Oct. 1979 COMPLETION DATE: Jan. 1984 TOTAL FUNDS: \$648,000

ACKNOWLEDGMENT: Federal Highway Administration (277039353)

15 329565

DESIGN AND SPECIFICATION MANUAL FOR STEEL BOX GIRDER TRANSIT STRUCTURES

This project is to establish the Institute for Physical Science and Technology at the University of Maryland as a research center for elevated structure design. The project will develop an engineering design specification or standard for steel aerial structures, and to develop a design oriented computer program for use in the analysis of such structures.

PERFORMING AGENCY: Maryland University, College Park, MD-06-0076

INVESTIGATOR: Heins, C Tel (301) 454-3104

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Spencer, PR Tel (202) 426-0090

Contract UMTA-MD-06-0076

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: May 1980 COMPLETION DATE: May 1982 TOTAL FUNDS: \$89,000

ACKNOWLEDGMENT: Maryland University, College Park

15 329566

INVESTIGATION OF WASHINGTON METRO UNDERGROUND ENVIRONMENT

This project consists of studies which will investigate and provide solutions to a number of structural problems within Washington Metrorail tunnels. Studies which are to be undertaken in this project include calcification analysis, hydrostatic pressure relief, acid water analysis, and water leakage and waterproofing. The project will develop answers to problems which may also prove useful for other transit authorities that have similar construction characteristics.

PERFORMING AGENCY: Washington Metropolitan Area Transit Authority, DC-06-0347

INVESTIGATOR: Garrett, V Tel (202) 637-1158

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Butler, G Tel (202) 426-0090

Contract UMTA-DC-06-0347

STATUS: Proposed NOTICE DATE: Feb. 1981 START DATE: Feb. 1981 COMPLETION DATE: Feb. 1982 TOTAL FUNDS: \$205,000

ACKNOWLEDGMENT: Washington Metropolitan Area Transit Authority

15 329567

EVALUATION OF ROCK CHAMBER LINING PERFORMANCE--PORTER SQUARE STATION, MBTA

To observe and evaluate the performance of the innovative thin lining support system used in the construction of the Porter Square Station. The project will be conducted using data collected from construction control instrumentation supplemented by observations and convergence measurements made during construction. Through this project the validity of the design approach can be assessed and compared for future chamber design and construction.

PERFORMING AGENCY: Massachusetts Bay Transportation Authority, MA-06-0127

INVESTIGATOR: Wey, G Tel (617) 722-5914

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Butler, GL Tel (202) 426-0090

Contract UMTA-MA-06-0127

STATUS: Proposed NOTICE DATE: Feb. 1981 START DATE: Feb. 1981 COMPLETION DATE: Feb. 1983 TOTAL FUNDS: \$215,000

ACKNOWLEDGMENT: Massachusetts Bay Transportation Authority

15 329568

RESEARCH MAPPING DURING EXCAVATION OF WASHINGTON METRORAIL SECTION B-9

To provide an in-depth description of the characteristics of the geological material encountered during excavation including stand-up time, effect of water, and effect of excavation procedures during the excavation of Section B-9 of the Washington Metrorail system. The data developed during the study will be compared with similar materials encountered in other excavation projects with the final report containing a discussion on how weathering materials from regional metamorphic rocks can be described in terms of engineering behavior and excavated.

PERFORMING AGENCY: Washington Metropolitan Area Transit Authority, DC-06-0343

INVESTIGATOR: Garrett, V Tel (202) 637-1158

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Butler, GL Tel (202) 426-0090

Contract UMTA-DC-06-0343

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: Jan. 1981 COMPLETION DATE: Jan. 1983 TOTAL FUNDS: \$55,000

ACKNOWLEDGMENT: Washington Metropolitan Area Transit Authority

15 333282

FIELD EVALUATION OF ADVANCED METHODS OF SUBSURFACE EXPLORATION AND INSTRUMENTATION AND MONITORING FOR TRANSIT TUNNELING

The objective of this study is to evaluate through the use of field a demonstration project, the feasibility, applicability, reliability and cost effectiveness of selected advanced methods of subsurface exploration and instrumentation to produce data usable for rapid transit tunnel design and construction. Selected techniques are used to define real and relevant geotechnical conditions in a test section of a transit tunnel. The results are evaluated by monitoring conditions during construction.

REFERENCES:

Field Evaluation of Advanced Methods of Subsurface Exploration for Transit Tunnelling, Thompson, DT; Humphrey, JT; Young, LW; Wall, CF, National Technical Information Service, Va. 22161, UMTA-MA-06-0100-80-1, June 1980, PB80-200496

PERFORMING AGENCY: Bechtel Corporation, 12363
 INVESTIGATOR: Thompson, D Haley and Aldrich, Incorporated Tel (617) 492-6460 Young, L, Jr Tel (301) 258-3128
 SPONSORING AGENCY: Transportation Systems Center
 RESPONSIBLE INDIVIDUAL: Mattson, P Tel (617) 494-2431

Contract DOT-TSC-1570
 STATUS: Active NOTICE DATE: Dec. 1980 START DATE: Sept. 1978 COMPLETION DATE: Aug. 1981 TOTAL FUNDS: \$456,757

ACKNOWLEDGMENT: Bechtel Corporation

15 333296
A STUDY OF THE BEHAVIOR OF THE BART TUNNELS THROUGH THE HAYWARD FAULT ZONE

The Hayward Fault exhibits a right-lateral slippage (or "creep") of 4-5 mm per year. The objective of the research is to study how this movement has affected the tunnel linings, and to recommend a monitoring program.

PERFORMING AGENCY: California University, Berkeley, Department of Civil Engineering, N-20951
 INVESTIGATOR: Brekke, TL Tel (916) 642-5525 Taylor, R Mitchell, JK
 SPONSORING AGENCY: Bay Area Rapid Transit District
 RESPONSIBLE INDIVIDUAL: McCutchen, WR Tel (415) 465-4100 X 414

Contract BART 03FC-RM-410
 STATUS: Active START DATE: July 1979 COMPLETION DATE: June 1981 TOTAL FUNDS: \$45,000

ACKNOWLEDGMENT: California University, Berkeley

15 333401
CONCRETE SLAB TRACK STUDY

To evaluate the technical and economic feasibility of using concrete slab systems for at-grade rapid transit track. State-of-the Art technology associated with slab track systems will be reviewed, existing slab track installations evaluated, and economic and life-cycle cost studies performed.

PERFORMING AGENCY: Portland Cement Association, Construction Technology Laboratories, CR-4511
 INVESTIGATOR: Hanna, AN Tel (312) 966-6200
 SPONSORING AGENCY: Transportation Systems Center, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Witkiewicz, P

Contract DOT-TSC-1765
 STATUS: Active NOTICE DATE: Jan. 1981 START DATE: Oct. 1979 COMPLETION DATE: Mar. 1981

ACKNOWLEDGMENT: Portland Cement Association

15 333955

FEASIBILITY OF USING ACOUSTIC EMISSION TECHNIQUES TO PREDICT GROUND STABILITY DURING AND AFTER UNDERGROUND EXCAVATIONS

The objective of this contract is to assess the current state of knowledge in the acoustic emission (also called microseismic) area as pertains to underground excavations, primarily tunnels. An evaluation of available equipment will then be made, with eventual purchases of a system or system components for subsequent assembling suitable for stability for stability monitoring in both soft ground and rock situations. Utilization of the equipment via laboratory and field testing will be undertaken with the ultimate goal of developing step-by-step procedures for using the acoustic emission system to evaluate stability of underground excavations.

REFERENCES:

U.S. DOT Conference on R&D in Underground Tunnelling and Construction, Reston, Virginia, May 21-23, 1980

PERFORMING AGENCY: Drexel University, Philadelphia, Department of civil Engineering
 INVESTIGATOR: Koerner, RM Tel (215) 895-2343 Lord, AE, Jr
 SPONSORING AGENCY: Federal Highway Administration, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Sallberg, JR Tel (703) 285-2072

Contract DOT-FH-11-9672
 STATUS: Active NOTICE DATE: Apr. 1981 START DATE: Oct. 1979 COMPLETION DATE: Oct. 1981 TOTAL FUNDS: \$138,000

ACKNOWLEDGMENT: Drexel University, Philadelphia

15 335363

IMPROVED TUNNEL AND ROCK CAVITY SUPPORT SYSTEMS

The objective of this work unit is to (a) provide the designer and field engineer with the appropriate tools to analyze and predict rock behavior around supported openings under operating conditions, (b) to provide practical information concerning the support offered to jointed rock by shotcrete, rock bolts, wire mesh, special grouts and other means, and (c) to optimize route selection and support requirements. Work being addressed includes (a) studies of tunnel case histories to evaluate computer programs developed for predicting tunnel costs, (b) continued development of the interactive computer graphics program, and (c) development of a computer data storage and retrieval system.

PERFORMING AGENCY: Waterways Experiment Station
 INVESTIGATOR: Bennett, RD
 SPONSORING AGENCY: Waterways Experiment Station, DA0Z8183

STATUS: Active NOTICE DATE: June 1981 START DATE: Oct. 1976 COMPLETION DATE: Sept. 1981

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (ZQA268183 4)

16 333681

DIESEL BUS INSPECTION/MAINTENANCE STUDY

A Federal Court-mandated study on the compliance of emissions from diesel buses is being conducted by the DEP Mobil Systems laboratory in cooperation with the NYC Transit Authority. The goal of this study is to determine the necessity and feasibility of setting up an inspection program to enforce compliance. In addition it is hoped that guidelines can be developed for TA shops to enable them to identify vehicles that produce objectionable amounts of exhaust smoke so that these conditions can be corrected as part of the regularly scheduled service orders. Smoke is being

emphasized in the study, but HC,CO and NO sub x emissions levels are also being recorded and reviewed.

PERFORMING AGENCY: New York City Dept of Environmental Protection
INVESTIGATOR: Pinto, J Tel (212) 388-4994 Goldbeger, L Aronowitz, L
SPONSORING AGENCY: New York City Dept of Environmental Protection;
New York City Transit Authority

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: May 1980
COMPLETION DATE: Nov. 1982

ACKNOWLEDGMENT: New York City Dept of Environmental Protection

17 170605

AGTT/AGRT SUPPORT AND CONSENSUS

APTA will provide UMTA's AGRT and AGTT programs with transit industry input, advice, and consensus on automated guideway transit technology and advanced group rapid transit in such areas as classification, basic requirements, service and operational requirements, passenger accommodations, system and subsystem design requirements, and system verification, certification, and acceptance.

PERFORMING AGENCY: American Public Transit Association

SPONSORING AGENCY: Urban Mass Transportation Administration

Contract DOT-UT-70058

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: Feb. 1977 COMPLETION DATE: June 1981 TOTAL FUNDS: \$166,000

ACKNOWLEDGMENT: American Public Transit Association

17 195742

ACCELERATING WALKWAY SYSTEM DEMONSTRATION PROGRAM

The Accelerating Walkway System Demonstration Program consists of five Project Phases leading to the public use demonstration and product improvement of the technology. Phase I, Preliminary Feasibility Studies is completed, and Phase II, Design Development is underway. Phase III will involve hardware validation and testing of up to two Accelerating Walkway Systems, and Phase IV the Public Use Demonstration of one of these. Phase V will involve product improvements as indicated from the demonstration.

Reports issued: UMTA-06-0126-78-1 "Accelerating Walkway Systems-Executive Summary" (Fruin, et al) 11/78; UMTA-06-1026-78-22 "AWSs Technology Assessment (Fruin, et al) 3/78; UMTA-06-0126-78-3 "AWSs Safety and Human Factors" (Fruin, et al) 3/78; UMTA-06-0126-78-4 "AWSs Market, Attributes, Applications and Benefits (Fruin, et al) 3/78; UMTA-06-0126-78/7 "AWSs Safety Seminar Proceedings (edit. Fruin)

PERFORMING AGENCY: Port Authority of New York and New Jersey, TS-R-812

INVESTIGATOR: Fruin, JJ Tel (201) 963-7205

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation; Tri-State Regional Planning Commission; New Jersey Department of Transportation

RESPONSIBLE INDIVIDUAL: Pavlovich, JS Tel (212) 938-3329

Contract DOT-UMTA-IT-06-0126

STATUS: Active NOTICE DATE: Aug. 1980 START DATE: Aug. 1977 COMPLETION DATE: Dec. 1983 TOTAL FUNDS: \$6,000,000

ACKNOWLEDGMENT: Port Authority of New York and New Jersey

17 329558

MAGNETIC SUSPENSIONS FOR URBAN AND INTER-CITY TRANSPORTATION

Tractive electromagnets with automatic control as a means of levitating and controlling ground transportation vehicles in both low-speed (urban) and high-speed (intercity) applications are studied. Particular emphasis is placed on the effects of lateral and heave motion, as well as forward speed, lift, draft, and controllability.

PERFORMING AGENCY: Massachusetts Institute of Technology

INVESTIGATOR: Wormley, DN Tel (617) 253-2246 Richardson, HH

SPONSORING AGENCY: Department of Transportation

STATUS: Active NOTICE DATE: Aug. 1981

ACKNOWLEDGMENT: Massachusetts Institute of Technology

17 330671

COLD WEATHER TRANSIT TECHNOLOGY PROGRAM

A research and development program for applications of advanced technologies to active and passive countermeasures for ice control and snow removal on automated guideway transit systems.

PERFORMING AGENCY: Notre Dame University, 26030

INVESTIGATOR: Berry, WB Tel (219) 283-4241

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Morgan, PH Tel (202) 426-2896

Contract IN-06-0009

STATUS: Active NOTICE DATE: Jan. 1982 START DATE: Jan. 1981 COMPLETION DATE: Sept. 1981 TOTAL FUNDS: \$20,000,000

ACKNOWLEDGMENT: Notre Dame University

17 330673

TESTING OF AN AGT VEHICLE TO CONTROL CENTER COMMUNICATION SYSTEM

The purpose of this research is to fully test and demonstrate a modified communication system for the Morgantown People Mover Transit System. The modified system has the capability of automatically identifying any calling vehicle by displaying its ID number anytime the vehicle radio is activated. Another feature to be tested is the vehicle audio monitoring capability. That capability allows the operator to monitor the vehicle for any indication of a passenger related emergency condition. Such capabilities are considered critical on driverless vehicles.

PERFORMING AGENCY: West Virginia University

INVESTIGATOR: Elias, SEG Tel (304) 293-4550 Mitry, S

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Mitry, S Tel (304) 293-6371

Contract WV-06-0014

STATUS: Active NOTICE DATE: Jan. 1982 START DATE: Mar. 1980 COMPLETION DATE: June 1981 TOTAL FUNDS: \$21,872

ACKNOWLEDGMENT: West Virginia University

17 330675

ELECTRIC POWER, ENERGY REQUIREMENT AND REAL TIME POWER MEASUREMENTS FOR AGT SYSTEMS

The objective of this study is to measure the instantaneous power and energy demands of AGT vehicles and systems. This information is necessary in order to assist and design fund innovations, and evaluate various aspects of energy requirements of AGT's. The research will develop a data logging device which will measure the real time power consumption and record this information for later retrieval and analysis. In addition a model of a single AGT vehicle including on or off board rectification and regenerative braking and developing a statistical model for the simulation of a total AGT system.

PERFORMING AGENCY: West Virginia University

INVESTIGATOR: McConnell, RL Tel (304) 293-6371

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: McConnell, RL Tel (304) 293-6371

Contract WV 11-0003

STATUS: Active NOTICE DATE: Apr. 1981 START DATE: July 1981 TOTAL FUNDS: \$49,910

ACKNOWLEDGMENT: West Virginia University

17 330676

INTEGRATION OF AGT SYSTEMS WITH OTHER TRANSPORTATION MODES

This research studies the integration of the "Morgantown Downtown People Mover (M-DPM)" system in a comprehensive transit system that includes all the existing transportation modes. It studies the effect of parameters such as bus routes, stops, schedules, number of cars and buses, and all other pertinent parameters on the comprehensive system. A simulation model is developed to simulate the existing traffic conditions and to evaluate both the existing transportation modes and the proposed integrated system.

PERFORMING AGENCY: West Virginia University, Stagers (Harley O) National Transportation Center, WV-11-0003

INVESTIGATOR: Iskander, WH Tel (304) 598-0038

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Iskander, WH Tel (304) 598-0038

Contract WV-11-0003

STATUS: Active NOTICE DATE: Apr. 1981 COMPLETION DATE: Aug. 1981 TOTAL FUNDS: \$35,417

ACKNOWLEDGMENT: West Virginia University

17 330677

VISUAL AESTHETIC IMPACTS OF AGT GUIDEWAYS

Principles of urban design are applied to AGT guideways and aesthetic impact issues are examined. A series of impact matrices are developed which relate design objectives to design elements of guideways and key aesthetic issues. The matrices are used to identify impact areas and trade offs, and involve citizen and specialist input. Preference structures are measured for different interest groups and design guidelines are presented.

PERFORMING AGENCY: West Virginia University, WV-11-0003

New Systems & Automation Technology

17A

INVESTIGATOR: Neumann, ES Tel (304) 293-5580 Trent, RW
Kvashny, A

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Asatoorian, S Tel (202) 426-2898

Contract WV-11-0003

STATUS: Active NOTICE DATE: Apr. 1981 START DATE: July
1980 COMPLETION DATE: July 1982 TOTAL FUNDS: \$110,000

ACKNOWLEDGMENT: West Virginia University

21 156630

EVALUATION OF CONTROL STRATEGIES AND DEMONSTRATION OF BUS PREEMPTION OF TRAFFIC SIGNALS IN NEW JERSEY

The goal is to provide a bus preemption system at signalized intersections which minimizes total passenger hours of delay. Five separate bus preemption strategies are being incorporated into the UTCS-1 Simulation Model. Once the strategies are incorporated and validated the UTCS-1 model will be used to determine the passenger delay caused by each strategy at the proposed demonstration site. Passenger delay will be one of several criteria used for selection of the strategy to be installed. Before and after bus travel time, as well as estimated before and after person delay, will be used as measures of effectiveness.

PERFORMING AGENCY: New Jersey Department of Transportation
 INVESTIGATOR: Dommasch, I
 SPONSORING AGENCY: New Jersey Department of Transportation; Federal Highway Administration, Traffic Systems Division
 RESPONSIBLE INDIVIDUAL: Rosen

HP&R 7717

STATUS: Active NOTICE DATE: Dec. 1978 START DATE: July 1976 COMPLETION DATE: July 1981 TOTAL FUNDS: \$112,000

ACKNOWLEDGMENT: Federal Highway Administration (155016354)

21 177695

ROUTE EVALUATION PROCEDURES FOR REGIONAL TRANSIT SYSTEMS

The objective is to develop and apply an evaluation technique for existing and proposed routes using cost-ridership-level of service parametric relationships. The demand estimation tasks involve establishing and refining inexpensive and usable demand relationships for bus routes and developing a process for a regional planning agency to update these relationships. The cost modelling task involves relating costs to service elements such as hours, miles and vehicles in service. Such standardized costs will also be used in a purchase of service concept for contract negotiations. The demand and cost models are integrated into a cost-benefit-evaluation process for changes in routes and schedules. The project includes analysis of issues, development of procedures, and implementation on a case study basis.

PERFORMING AGENCY: Commonwealth of Massachusetts, Executive Office of Transportation and Construction, MA-09-8003
 INVESTIGATOR: Kiley, ML Tel (617) 727-8954 Morris, H
 SPONSORING AGENCY: Urban Mass Transportation Administration, TSC Technology Building
 RESPONSIBLE INDIVIDUAL: Bell, D

Contract MA-09-8003

STATUS: Active NOTICE DATE: Nov. 1981 START DATE: Nov. 1977 TOTAL FUNDS: \$70,000

ACKNOWLEDGMENT: Commonwealth of Massachusetts

21 192937

STAGGERED WORK HOURS AND ALTERNATIVE WORK SCHEDULES

This is a continuing study to determine feasible work schedules of staggered work hours and 4-day work weeks, and investigate their impacts on the operational efficiency of a highway network serving a high-density employment area in a medium size city. A random sample of 140 employees from the main office of NYS DOT in Albany, NY, was surveyed in September 1976. Using the stratification tool Automotive Interaction Detection (AID) and a method of attitude scaling known as Trade-Off Analysis, a sample of 110 usable responses was analyzed to determine the most important variables shaping attitudes toward flexible work hours and 4-day work-weeks, and the schedules supported by the majority of employees. Traffic simulation techniques were then used to estimate changes in the operational efficiency of the transportation network and travel costs based on present and future traffic conditions. The estimated systemwide transportation economic benefits are over 3 million (1976\$) per year, occurring to commuters during the peak hour, especially those who participate in flexible or 4-day work programs. A follow-up, "after" survey is being planned to determine the actual impact of the change on employee work habits and attitudes as well as impact on travel habits, carpooling, and employee productivity.

REFERENCES:

Who Favors Work Schedule Changes, and Why? Tannir, AA; Hartgen, DT, Transportation Research Board, Research Record 677, 1978

Impacts of Work Schedule Changes on Traffic Congestion in Medium-Sized Urban Area, Tannir, AA; Hartgen, DT, Transportation Research Board, Research Record 677, 1978

The Impacts of Feasible Staggered Work Hours and Compressed Workweek Policies on Highway Networks..., Tannir, AA, New York State Department of Transportation, Prelim Research Rpt 129, Aug. 1977

PERFORMING AGENCY: New York State Department of Transportation, P008088826C

INVESTIGATOR: Tannir, AA Tel (518) 457-6920 Hartgen, DT

SPONSORING AGENCY: New York State Department of Transportation; Federal Highway Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Hartgen, DT

HP&R

STATUS: Active NOTICE DATE: June 1980 START DATE: Jan. 1976 COMPLETION DATE: Jan. 1980 TOTAL FUNDS: \$25,000

ACKNOWLEDGMENT: New York State Department of Transportation

21 315714

MODE SHIFT MODEL FOR PRIORITY TECHNIQUES

The objective of this study is to develop and test a modal split model which can predict shifts in ridership that may be expected from implementing priority treatments for high occupancy vehicles (HOVs). The model(s) is to apply to both freeway and arterial priority treatments for HOVs. Freeway treatments consist of 1) separate carpool-bus roadways; 2) restricted carpool-bus lanes with flow and contraflow; and 3) carpool-bus ramp meter bypasses. An additional treatment for arterial highways will consist of reversible carpool-bus lanes. The model to be developed should, ideally, be simple enough to be applied with a hand-held calculator.

PERFORMING AGENCY: Charles River Associates, Incorporated, 511

INVESTIGATOR: Parody, TE Tel (617) 266-0500

SPONSORING AGENCY: Federal Highway Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Bissell, H Tel (703) 557-5231

0Contract DOT-FH-61-80-C-00018

STATUS: Active NOTICE DATE: Feb. 1980 START DATE: Jan. 1980 COMPLETION DATE: Mar. 1981 TOTAL FUNDS: \$100,000

ACKNOWLEDGMENT: Charles River Associates, Incorporated

21 316103

DYNAMIC ROUTING OF FLOWS IN CONGESTED TRANSPORTATION SYSTEMS

This research is concerned with the problem of finding a real-time feedback algorithm which can be utilized to remove congestion from transportation systems at the end of rush hours. A solution is sought which consists of local optimum feedback controls to manage the flows at the nodes of a large traffic network interrelated via an information exchange about conditions at neighboring nodes. The result is a real-time decentralized feedback control strategy. Optimum node level feedback algorithms have been developed for two cases. First for a single destination network when the nodes have any number of exit links and second for network with any number of destinations but the nodes have only 2 exit links. A decentralization algorithm has also been developed which is proven to give loop free flows in single destination networks when used with the optimum node level feedback controls. Work is in progress to find the optimum node level feedback control for M destination networks when nodes have L exit links. Also the problem of guaranteeing non-looping flows when using the real-time decentralized strategy is being investigated.

PERFORMING AGENCY: Polytechnic Institute of New York, Graduate School

INVESTIGATOR: Sarachik, PE

SPONSORING AGENCY: National Science Foundation, Directorate for Engineering and Applied Science, ENG77-14898

STATUS: Completed NOTICE DATE: June 1981 START DATE: Feb. 1978

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (GSE 6781 2)

21 333511

TRANSPORTATION SYSTEM MANAGEMENT (TSM) HANDBOOK

The purpose of this study is to develop an information handbook briefly describing over 50 transportation system management (TSM) strategies. The handbook will contain a brief description of each strategy, identify current

examples, and discuss potential impacts, costs, and implementation considerations.

REFERENCES:

Draft Report: Transportation System Management-Handbook of Techniques and Impacts, Charles River Associates, Incorporated, Oct. 1980

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.10

INVESTIGATOR: Ziering, E Tel (617) 266-0500

SPONSORING AGENCY: Transportation Systems Center, Department of Transportation

RESPONSIBLE INDIVIDUAL: Spear, B Tel (617) 494-2276

Contract DOT-TSC-1757

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: June 1980 COMPLETION DATE: Jan. 1981 TOTAL FUNDS: \$41,000

ACKNOWLEDGMENT: Charles River Associates, Incorporated

21 333597

A METHODOLOGY FOR LOCATING AND SIZING TRANSIT FIXED FACILITIES AND THE DETROIT CASE STUDY

To develop a procedure for optimally locating layover sites within a transit network. The study procedure will apply various optimizing techniques with the objective of minimization of the total system cost with respects to facility location and size. A number of candidate algorithms will be selected, and the procedure will be used on an actual experimental site, a Detroit case study. Each algorithm identified is to be tested and evaluated using the Detroit transit network. The transferability of the approach of other urban regions, simplicity of the method, data requirements and the ability of the method to consider the interaction between critical variables will be the prime factors used in selecting the final methodology. The output of this research project will be a methodology that will quickly and accurately assess the total system cost of locating and sizing fixed facilities.

PERFORMING AGENCY: Wayne State University, Department of Civil Engineering

INVESTIGATOR: Khasnabis, S Tel (313) 577-3789 Maze, TH

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Fisher, RT Tel (202) 426-9271

Contract MI-11-0004

STATUS: Active NOTICE DATE: Mar. 1981 START DATE: June 1980 COMPLETION DATE: May 1981 TOTAL FUNDS: \$69,963

ACKNOWLEDGMENT: Wayne State University

21 333669

SHORT-RANGE OPERATIONS PLANNING MODELS FOR TRANSIT SYSTEMS

The objective of the proposed research is to develop simple and usable analytic tools to guide management in the search for and evaluation of operating strategies which meet local transit-service objectives. This objective will be achieved by the integration of models of demand and supply in a decision-making framework. The decision framework will be designed to

aid the management or analyst to identify and evaluate promising operations alternatives. The system will also incorporate capabilities for sensitivity analysis to clarify tradeoffs between multiple service characteristics, ridership and net operating costs.

PERFORMING AGENCY: Cornell University, School of Civil and Environmental Engineering

INVESTIGATOR: Turnquist, MA Tel (607) 256-4796 Meyburg, AH

SPONSORING AGENCY: Department of Transportation

RESPONSIBLE INDIVIDUAL: Couture, MR Tel (617) 494-2512

Contract DTRS5680-C-00012

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: Sept. 1980 COMPLETION DATE: Dec. 1981 TOTAL FUNDS: \$74,778

ACKNOWLEDGMENT: Cornell University

21 333702

AN EXAMINATION OF THE ORGANIZATION OF THE METROPOLITAN TRANSPORTATION AUTHORITY

A study to determine whether the current organizational structure of the Metropolitan Transportation Authority in the New York City area is responsible for planning and operational problems involving the Authority's facilities. Currently, the Authority's Board of Directors serves as the ex officio Board of Directors for each of the Authority's operating subsidiary public authorities.

PERFORMING AGENCY: New York Senate Committee on Transportation; New York State Comm on Critical Transportation

INVESTIGATOR: Zimmerman, JF Tel (518) 455-3341 Derrick, P

SPONSORING AGENCY: New York, State of

RESPONSIBLE INDIVIDUAL: Zimmerman, JF Tel (518) 455-3341

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: Sept. 1980 COMPLETION DATE: Sept. 1981

ACKNOWLEDGMENT: New York Senate Committee on Transportation

21 333715

TRANSPORTATION SYSTEMS MANAGEMENT (TSM) IMPLEMENTATION AND IMPACT STUDY

To evaluate and analyze a group of local TSM projects in order to gain insight as to what combination of factors facilitated or hindered project implementation. To analyze the impacts of a sample of TSM projects which have been implemented in order to make decisions based upon better information regarding various TSM strategies and their expected impacts.

PERFORMING AGENCY: Urbitran Associates, Incorporated, 8010

INVESTIGATOR: Lee, RB Tel (212) 267-6310 Falcocchio, JC

SPONSORING AGENCY: Urban Mass Transportation Administration, Office of Transportation Planning Assistance

RESPONSIBLE INDIVIDUAL: Steinmann, R Tel (202) 472-5104

Contract DTUM-60-80-C-72035

STATUS: Active NOTICE DATE: Dec. 1980 START DATE: Aug. 1980 COMPLETION DATE: Oct. 1981 TOTAL FUNDS: \$199,500

ACKNOWLEDGMENT: Urbitran Associates, Incorporated

22 315721

**SURVEY OF REGIONAL TRANSIT AUTHORITY'S
ADMINISTRATION, MANAGEMENT AND MAINTENANCE
PROCEDURES**

To conduct an overview survey of the structure and characteristics of the administration, management, and personnel of the Regional Transit Authority (RTAs), study the level and types of transit services in each RTA, survey maintenance practices and procedures, the planning and marketing procedures, the financial policies and practices and provide a final report describing the results of the analysis of the material and information collected, including a plan for continual updating of the report.

REFERENCES:

Regional Transit Authorities--A Survey Prepared for the Executive Office of Transportation and Construction, Kelly/Lodge Associates

PERFORMING AGENCY: Massachusetts Exec Office of Transp & Constr, Office of the Secretary

INVESTIGATOR: Kiley, ML Tel (617) 727-8954

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation; Transportation Systems Center, Department of Transportation

Contract DOT-MA-09-8004

STATUS: Completed NOTICE DATE: June 1981 START DATE: Dec. 1979 TOTAL FUNDS: \$18,800

ACKNOWLEDGMENT: Massachusetts Exec Off of Transport & Construct

22 315938

**SITE EVALUATION AND PRELIMINARY DESIGNS FOR NEW
TRANSIT MAINTENANCE AND ADMINISTRATION FACILITY**

The objective is to evaluate 15 proposed sites for new maintenance & administrative facilities and prepare preliminary architectural plans for

layout structures and estimated costs for construction.

PERFORMING AGENCY: Parsons, Brinckerhoff, Quade and Douglas, Inc; Total Design Four

INVESTIGATOR: Kohn, M Tel (512) 884-8811 Howald, J

SPONSORING AGENCY: Urban Mass Transportation Administration, Region VI; Corpus Christi, City of, Texas

RESPONSIBLE INDIVIDUAL: Wieschuegel, J Tel (512) 884-3011

STATUS: Completed NOTICE DATE: Nov. 1981 START DATE: Nov. 1979 TOTAL FUNDS: \$20,000

ACKNOWLEDGMENT: Corpus Christi, City of, Texas

22 341063

**INDUSTRIAL ENGINEERING SUPPORT FOR TRANSIT TRACK
MAINTENANCE**

This project involves the development and deployment of a track maintenance management information system (TMMIS), a track maintenance training program, and an evaluation of the project's effectiveness in improving track maintenance and maintenance work productivity. The final task also includes the preparation of an integrated package of industrial engineering support for transit track maintenance for use by other transit properties, with appropriate modifications to suit local conditions.

PERFORMING AGENCY: Washington Metropolitan Area Transit Authority

INVESTIGATOR: O'Donnell, TJ Tel (202) 635-4379

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Fateh, MA Tel (202) 426-0090

Contract DC-06-0333

STATUS: Active NOTICE DATE: Aug. 1981 START DATE: June 1981 COMPLETION DATE: Sept. 1983 TOTAL FUNDS: \$1,200,000

23 193262

UNION-MANAGEMENT PROGRAMS IN URBAN TRANSIT

To provide a forum for union and management representatives in the municipal transit industry, to identify those labor relations problems on which union and management are willing to work co-operatively, and to develop options for UMTA which will help labor and management resolve these problems.

REFERENCES:

Labor-Management Conference on Issues in Urban Transit Summary Report, Aug. 1978

PERFORMING AGENCY: Wisconsin University, Madison

INVESTIGATOR: Stern, JL Tel (608) 262-8789

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Erickson, R Tel (608) 262-3822

Contract DOT-WI-11-0006

STATUS: Active **NOTICE DATE:** May 1981 **START DATE:** June 1978 **TOTAL FUNDS:** \$78,525

ACKNOWLEDGMENT: Wisconsin University, Madison

23 333709

WOMEN IN SCIENCE PROGRAM IN TRANSPORTATION PLANNING AND ENGINEERING

This program aims at retraining of college educated women who wish to improve their employment status or re-enter the job market after an absence in the technical field of transportation planning and engineering. The program provides for remedial math training and technical orientation programs plus 15 units of regular graduate work.

PERFORMING AGENCY: Polytechnic Institute of New York, Transportation Training and Research Center

INVESTIGATOR: Roess, RP Tel (212) 643-5526 Pignataro, L Kramer

SPONSORING AGENCY: National Science Foundation, Division of Engineering

STATUS: Active **NOTICE DATE:** Mar. 1982 **START DATE:** Sept. 1980 **TOTAL FUNDS:** \$100,000

ACKNOWLEDGMENT: Polytechnic Institute of New York

23 333857

DEVELOP KNOWLEDGE AND PERFORMANCE TEST FOR HEAVY VEHICLE OPERATORS

The objective of this project is to develop knowledge and performance tests to be used by State licensing authorities in the testing of applicants for a heavy vehicle operator's license. The general types of heavy vehicles to be addressed in this test development effort include large articulated and straight trucks and commercially operated buses. A number of studies will be conducted to identify those behaviors most critical to the operation of heavy vehicles which can be measured in a licensing setting and the most appropriate method for measuring these behaviors. Particular attention will be paid to the identification and measurement of those more basic and safe operating practices which are unique to the operation of heavy vehicles. Products to be developed in this research effort include: candidate

knowledge tests, guidelines for establishing on-road performance test routes, scoring criteria, scoring methods, and appropriate manuals for applicants. A field test of this heavy vehicle operator licensing system will be conducted in California under the sponsorship of the California Department of Motor Vehicle.

PERFORMING AGENCY: National Public Services Research Institute

INVESTIGATOR: Edwards, ML Tel (703) 548-3444

SPONSORING AGENCY: National Highway Traffic Safety Administration
RESPONSIBLE INDIVIDUAL: Versace, S

STATUS: Active **NOTICE DATE:** Jan. 1982 **START DATE:** Aug. 1980 **COMPLETION DATE:** Aug. 1983

ACKNOWLEDGMENT: National Public Services Research Institute

23 333916

TRAINING AND EVALUATION PROGRAM IN THE UTILIZATION OF ACCESSIBLE BUSES

OBJECTIVES: The ultimate goal of this project is the maximum utilization of lift-equipped kneeling buses in the Washington Metropolitan Area. Specific project objectives are as follows: 1. Develop, package and conduct a sensitivity program for WMATA trainers. 2. Develop a model training program for rehabilitation professionals to utilize with handicapped persons on the use of public transit facilities and services, including lift-equipped kneeling buses. 3. From the consumer's perspective, evaluate the new lift-equipped and kneeling buses for accessibility and safety. 4. Develop a comprehensive evaluation component which will assess the impact on the handicapped of the newly accessible transportation system in the Washington Metropolitan Area. 5. Disseminate nationally the findings of the newly accessible transportation system project. **METHODOLOGY:** It was decided to approach the training component of this project by a "Train the Trainer" approach. A three-day comprehensive training program on disability awareness was developed for 18 WMATA bus operator instructors who in turn would train WMATA's 2800 bus operators. The program was designed to allow instructors to examine their own attitudes as they relate to the disabled and elderly, communicate with consumers who have transportation handicaps, experience the feeling of a transportation-handicapped individual through simulation, obtain information regarding disabilities and to learn how to properly assist disabled and elderly passengers. The second phase of this training program was to evaluate the three-day activity and condense the information into a three-hour comprehensive program for the 2800 bus operators, and to co-lead with each of the 18 instructors, their first three-hour disability awareness seminar.

PERFORMING AGENCY: Georgetown University, Medical Rehabilitation Research and Training Center

INVESTIGATOR: Tamagna, IG Dew, DW

SPONSORING AGENCY: Department of Health and Human Services, Office of Human Development Services

STATUS: Active **NOTICE DATE:** Jan. 1982 **START DATE:** Nov. 1978 **COMPLETION DATE:** Nov. 1980 **TOTAL FUNDS:** \$221,040

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (GWB 2106)

24 185234

TRANSIT RELIABILITY INFORMATION PROGRAM (TRIP)

The Scope in Phase I is to operate an experimental data bank with rapid rail vehicle and bus data from a few selected operating properties. The Phase II effort is to monitor all rapid rail vehicles 10 years old or younger in the U. S. plus about 5000 buses. The Phase III scope is to expand TRIP to become a National Transit Reliability Data Bank.

PERFORMING AGENCY: Transportation Systems Center, PPA/UM029

INVESTIGATOR: Robichaud, RH Tel (617) 494-2302 Watson, L

SPONSORING AGENCY: Urban Mass Transportation Administration

RESPONSIBLE INDIVIDUAL: Limpert, SB Tel (617) 658-6100

Contract DOT-TSC-1559

STATUS: Active NOTICE DATE: Aug. 1981 START DATE: Sept. 1978 COMPLETION DATE: Apr. 1981 TOTAL FUNDS: \$562,080

ACKNOWLEDGMENT: Dynamics Research Corporation

24 315681

EFFECTIVENESS OF TRANSPORTATION SERVICES

The purpose of this study is to develop and implement measures for use in monitoring the effectiveness of transportation services. Results from the compilation of measures of effectiveness will fill a void of previously unavailable quantitative data relating to transportation services. From several data sources, including a citizen survey, a variety of transportation services ranging from maintenance activities to public transit usage will be monitored and evaluated. Annual reports will provide administrators with sufficient documentation to determine whether programs intended to provide services to the public are meeting their objectives. Findings may result in additional funding for some programs or services and reductions in others. A survey was conducted of licensed drivers and bus riders in Kentucky. This survey provided extensive information on the effectiveness of present transportation services in Kentucky.

PERFORMING AGENCY: Kentucky Transportation Research Program, KYP-79-89

INVESTIGATOR: Pigman, JG Tel (606) 254-4475 Agent, KR Crabtree, JD

SPONSORING AGENCY: Kentucky Department of Transportation, Bureau of Highways, Division of Research

RESPONSIBLE INDIVIDUAL: Havens, JH Tel (606) 254-4475

STATUS: Active NOTICE DATE: Mar. 1981 START DATE: Jan. 1979 COMPLETION DATE: July 1981 TOTAL FUNDS: \$63,000

ACKNOWLEDGMENT: Kentucky Transportation Research Program

24 330674

TRAIN CREW REDUCTIONS FOR INCREASED PRODUCTIVITY OF RAIL TRANSIT

Train crews on most rail transit systems (regional rail and rapid transit) in U.S. cities tend to be larger than they might be if modern technologies and operating practices were fully utilized. Study will analyze potential crew reductions on different groups of systems. All duties which train crews presently perform will be defined. Possible alternatives for performing each duty will be explored, based on experiences from cities in the U.S. and abroad which operate with smaller crews. Finally, the obstacles to crew reductions, such as obsolete labor practices and lack of managerial initiative, will be analyzed and possible solutions proposed.

PERFORMING AGENCY: Pennsylvania University, Philadelphia

INVESTIGATOR: Vuchic, VR

SPONSORING AGENCY: Urban Mass Transportation Administration

Grant

STATUS: Active NOTICE DATE: Apr. 1981 TOTAL FUNDS: \$69,985

ACKNOWLEDGMENT: Pennsylvania University, Philadelphia

24 333297

ASSESSING THE MARKET PERFORMANCE AND ECONOMIC EFFICIENCY OF URBAN BUS TRANSPORTATION

This project attempts to examine the role of an efficient bus system in urban transportation. A peak load pricing model is modified and applied to urban

bus transportation. The model generates a set of optimal operating characteristics (including bus size, bus size, bus frequency, and a pricing scheme) corresponding to an assumed demand configuration. The welfare costs of inefficient operations, pricing distortion and misdirected public policy are also estimated and analysed by means of an economic framework. Useful policy are also estimated and analysed by means of an economic framework. Useful policy implications can be derived with respect to issues of transit subsidies and suburban transit operations.

PERFORMING AGENCY: California University, Berkeley, Institute of Transportation Studies

INVESTIGATOR: Keeler, TE Tel (415) 525-2847 Wong, DP

SPONSORING AGENCY: Center for Transportation Policy

RESPONSIBLE INDIVIDUAL: Harris, RG Tel (414) 642-3585

Contract 54400

STATUS: Active NOTICE DATE: Dec. 1980 START DATE: July 1980 COMPLETION DATE: June 1982

ACKNOWLEDGMENT: California University, Berkeley

24 333306

COMPARATIVE ANALYSIS OF TRANSIT PERFORMANCE

Examined data from the Urban Mass Transportation Administration's Section 15(a) Uniform System of Accounts and Records (1978-1979) to: (1) assess reliability of the data; (2) develop a small set of performance indicators, and (3) produce a classification of bus systems based on inherent operating, environmental and organizational characteristics. To assess the reliability of the Section 15 data, econometric models based on previous data sets were replicated. Development of performance indicators was accomplished using factor analysis. Sixty performance measures were grouped into nine performance dimensions. Two sets of nine performance indicators were described. A standardized value on each performance indicator was calculated for each transit property. Transit properties were ranked by their sum on each of the nine performance indicators. Classification was based on summed performance scores, as well as upon a cluster analysis based upon four performance measures.

REFERENCES:

Comparative Analysis of Transit Performance Anderson, SC; Fielding, GJ, California University, Final Report, 108p, Jan. 1982, UMTA-CA-11-0020-1

PERFORMING AGENCY: California University, Irvine, Institute of Transportation Studies, UMTA-CA-11-0020

INVESTIGATOR: Fielding, GJ Tel (714) 833-5448

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Fielding, GJ Tel (714) 833-5448

Contract UMTA-CA-11-0020

STATUS: Completed NOTICE DATE: Dec. 1981 START DATE: July 1980 TOTAL FUNDS: \$69,177

ACKNOWLEDGMENT: California University, Irvine

24 333880

IMPROVING THE PRODUCTIVITY OF BUS TRANSIT SYSTEMS IN SMALL AND MEDIUM SIZE COMMUNITIES

The objective is to increase the productivity of bus transit systems in small communities, especially under reduced funding from federal government.

PERFORMING AGENCY: Virginia Polytechnic Institute & State University, Department of Civil Engineering

INVESTIGATOR: Hobeika, AG Tel (703) 961-7407

SPONSORING AGENCY: Virginia Polytechnic Institute & State University, Productivity Center

RESPONSIBLE INDIVIDUAL: Glare, P Tel (703) 961-5554

STATUS: Active NOTICE DATE: Jan. 1982 START DATE: Jan. 1981 COMPLETION DATE: Sept. 1981

ACKNOWLEDGMENT: Virginia Polytechnic Institute & State University

25 315710

CHICAGO FARE INTEGRATION DEMONSTRATION EVALUATION

Objective: To evaluate the effect of the implementation of a regionwide monthly pass program as a fare integration mechanism on transit patronage, resource utilization, and net cost of providing transit service. The pass will be an intermodal, intercarrier pass available for three different service configurations. The evaluation will be executed using diary reporting methods for the collection of travel data.

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.01
 INVESTIGATOR: Brand, D Tel (617) 266-0500 Ziering, E
 SPONSORING AGENCY: Transportation Systems Center, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Doxsey, L Tel (617) 494-2616

Contract DOT-TSC-1757-01

STATUS: Active NOTICE DATE: Jan. 1980 START DATE: Nov. 1979
 COMPLETION DATE: Dec. 1981 TOTAL FUNDS: \$100,000

ACKNOWLEDGMENT: Charles River Associates, Incorporated

25 315715

PEAK-PERIOD PRICING DEMONSTRATION IN MADISON, WISCONSIN

This is a highly "innovative" project in that a \$1.20 parking surcharge will be assessed to all vehicles that enter any one of five major parking facilities in the Madison CBD during the morning peak hours (6:30-9:30 a.m.). The principal objective of the demonstration is to improve the utilization of parking spaces in the downtown area by discouraging single occupant, auto commuter trips to the CBD, thereby increasing the availability of parking spaces for midday shopping trips. Three of four parking lots near the fringe of the central area will be available for auto commuters to park (free) and take a shuttle bus (25¢) to the CBD, thus avoiding the downtown parking surcharge. In designing this demonstration, Madison was faced with the following problem. Auto commuters to the CBD filled up nearly all the available parking spaces to the detriment of individuals who drove to the downtown to shop during the middle of the day, but could not find a place to park. Consequently, many of these shoppers would drive to outlying retail districts.

REFERENCES:

Evaluation Plan: Madison Parking Pricing Demonstration Project, Parody, T, Charles River Associates, June 1979

PERFORMING AGENCY: Charles River Associates, Incorporated, 388.20
 INVESTIGATOR: Parody, T Tel (617) 266-0500
 SPONSORING AGENCY: Transportation Systems Center, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Ott, M Tel (617) 494-2458

Contract DOT-TSC-1406-20

STATUS: Active NOTICE DATE: Feb. 1980 START DATE: Dec. 1978
 COMPLETION DATE: Mar. 1981 TOTAL FUNDS: \$100,000

ACKNOWLEDGMENT: Charles River Associates, Incorporated

25 333503

ATLANTA TRANSIT PRICING STUDY

The Atlanta Transit Pricing Study is a case study of alternatives for moderating the impact of fare increases on low income groups. Task I of the study is the development of an inventory of fare policies designed to aid low income riders. Task II is an assessment of the alternatives compiled during Task I. These tasks investigate six pricing alternatives in the light of specific evaluation criteria. The alternatives considered are direct user subsidies, quality-based fares, reduced fares on designated routes, peak/off-peak fare differentials, distance-based fares and weekly passes. The report contains a systematic application of welfare criteria to transit pricing policy.

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.12
 INVESTIGATOR: Lovely, ME Tel (617) 266-0500 Brand, D Parody, TE
 SPONSORING AGENCY: Transportation Systems Center, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Doxsey, L Tel (617) 494-2616

Contract 1757-12

STATUS: Active NOTICE DATE: Dec. 1980 START DATE: Sept. 1980
 COMPLETION DATE: Dec. 1980 TOTAL FUNDS: \$30,000

ACKNOWLEDGMENT: Charles River Associates, Incorporated

25 333507

DULUTH VARIABLE WORK HOURS/PORT PASS DEMONSTRATION EVALUATION

The Duluth demonstration is intended to relieve peak congestion on the bus routes of the Duluth Transit Authority. The program includes marketing of flexible and staggered work hours to Duluth CBD employers, and the introduction of a discounted monthly pass valid for travel outside the morning half hour peak. The demonstration evaluation will utilize a variety of surveys, including self-completion on-board, employee, and pass purchaser surveys and an employee travel diary, to identify the travel and related impacts of the various demonstration elements.

REFERENCES:

Draft Evaluation Plan for the Duluth Variable Work Hours/Port Pass Demonstration, Charles River Associates, Incorporated, Nov. 1980

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.04
 INVESTIGATOR: Ziering, E Tel (617) 266-0500
 SPONSORING AGENCY: Transportation Systems Center, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Doxsey, L Tel (617) 494-2616

Contract DOT-TSC-1757

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: Jan. 1980
 COMPLETION DATE: Dec. 1982 TOTAL FUNDS: \$85,000

ACKNOWLEDGMENT: Charles River Associates, Incorporated

25 333856

DEMONSTRATION OF TECHNIQUES FOR IMPLEMENTING FLEXIBLE FARE STRUCTURES

The objectives of the program are to determine the feasibility of using self-service and automatic billing fare systems under revenue operations; to demonstrate the value of such systems for implementing flexible fare structures; to establish the improved operating efficiency resulting from the implementation of these systems, and to ascertain the public response to each of the systems. Self-service is the method of fare collection currently in use throughout Europe in which fare payment is neither monitored nor controlled by drivers, station attendants, or special equipment. Fare payment is enforced by special personnel who randomly check compliance. Automated billing systems are those in which the passenger is allowed to use either a credit or debit card for paying the transit fare and would include the purchase of passes from vending machines and the use of special cards to pay fares through payroll deduction.

REFERENCES:

Self-Service Fare Collection: Review and Summary Deibel, LE, NTIS, PB80-132251, Aug. 1979

Self-Service Fare Collection: Hardware Considerations Deibel, LE, NTIS, PB80-132277, Sept. 1979

Self-Service Fare Collection: Legal and Labor Issues Eiseman, G, NTIS, PB80-132285, Aug. 1979

Postpayment Alternatives in Transit Fare Collection Sulek, J, UMTA, UMTA-VA-06-0049-80-2, June 1980

PERFORMING AGENCY: Mitre Corporation, Metrek Division
 INVESTIGATOR: Deibel, LE Tel (703) 827-6910
 SPONSORING AGENCY: Urban Mass Transportation Administration, Office of Service and Methods Demonstration
 RESPONSIBLE INDIVIDUAL: Arrillaga, B Tel (202) 426-4984

Contract DOT-UT-80047

STATUS: Active NOTICE DATE: Jan. 1982 START DATE: Oct. 1978
 COMPLETION DATE: Oct. 1982 TOTAL FUNDS: \$819,000

ACKNOWLEDGMENT: Mitre Corporation

25 341060

FARE COLLECTION PROJECT

This project, part of the UMTA Subsystem Technology Applications to Rail Systems (STARS) Program, is to improve the cost effectiveness of fare collection systems by examining reliability and maintainability of existing equipment; developing uniform methods for such assessment; developing reliable collection systems for local needs; and producing specifications and standards for such systems. CTA will develop a reliable pass reader which may be added to existing turnstiles, PATCO will develop a high-reliability ticket vendor.

Fares & Pricing

PERFORMING AGENCY: Port Authority Transit Corporation; Chicago
Transit Authority
SPONSORING AGENCY: Urban Mass Transportation Administration

STATUS: Active NOTICE DATE: Aug. 1981 START DATE: 1981 COM-
PLETION DATE: 1982

26 170780

SAFETY AND SYSTEM ASSURANCE

Continue development of safety plans for rail transit, and initiate safety plans for light rail and bus transit systems. Assist UMTA in safety training courses at the Transportation Safety Institute, and reviews of safety programs at pre-operational and operational transit systems.

PERFORMING AGENCY: American Public Transit Association
 SPONSORING AGENCY: Urban Mass Transportation Administration

Contract DOT-UT-60061
 STATUS: Active NOTICE DATE: Feb. 1981 START DATE: Dec. 1976 COMPLETION DATE: Mar. 1981 TOTAL FUNDS: \$531,613

ACKNOWLEDGMENT: American Public Transit Association

26 315622

ACRS/SCHOOL BUS/SPECIAL INTEREST ACCIDENT INVESTIGATION

Vehicular collision events involving Air Cushion Restraint System equipped automobiles, school bus accidents involving serious injury or fatal injury to one or more bus occupants and other special interest accident events are investigated relative to accident causes and injury production factors in a seven state regional area defined by N.U.T.S.A.

PERFORMING AGENCY: Miami University, Coral Gables, School of Engineering & Architecture
 INVESTIGATOR: Fogarty, WJ Tel (305) 284-3391 Metka, JA
 SPONSORING AGENCY: National Highway Traffic Safety Administration

STATUS: Active NOTICE DATE: May 1980

ACKNOWLEDGMENT: Miami University, Coral Gables

26 315994

THE DEVELOPMENT OF A UNIFORM MASS TRANSIT SAFETY RECORDS SYSTEM

The purpose of this study is to develop a comprehensive transit accident reporting system for the State of Virginia. The research will focus particular attention on the safety characteristics of public bus transportation. Current transit safety data collection procedures in Virginia will be examined to help formulate criteria for the development of a transit accident reporting

procedure. An accident report form will subsequently be developed and guidelines for its use suggested.

PERFORMING AGENCY: Virginia Highway & Transportation Research Council
 INVESTIGATOR: Hajec, PJ Tel (804) 977-0290
 SPONSORING AGENCY: Virginia Department of Transportation Safety
 RESPONSIBLE INDIVIDUAL: Hanna, JT Tel (804) 276-9600

STATUS: Active NOTICE DATE: Jan. 1980 START DATE: Feb. 1979 COMPLETION DATE: July 1980 TOTAL FUNDS: \$30,000

ACKNOWLEDGMENT: Virginia Highway & Transportation Research Council

26 341051

FIRE-FLAMMABILITY OF MATERIALS USED IN RAIL PASSENGER CARS

Despite the enviable safety record possessed by intercity rail passenger travel the occurrence of an onboard fire within the rail vehicle interior presents the potential threat of injury or death to passengers. DOT is considering the development of fire safety standards for materials used within the interior of the vehicles. Information describing rail interior fires will be collected as well as pertinent Federal, state, and local fire prevention regulations and codes. Existing flammability test methods will be reviewed to select methods which are applicable to vehicle interior materials. Flammability of current interior materials in various categories of use will be measured using suitable fire testing methods. A full-scale test of a typical rail passenger vehicle interior will be conducted. This test will allow the evaluation of the complete interaction between burning materials within the entire vehicle. The output of the research effort will be used in developing fire performance requirements for materials used within rail passenger vehicle interiors.

PERFORMING AGENCY: Ballistic Research Laboratory
 SPONSORING AGENCY: Federal Railroad Administration
 RESPONSIBLE INDIVIDUAL: Levine, D Tel (202) 426-1227

Contract DOT-AR-8179
 STATUS: Active NOTICE DATE: Aug. 1981 START DATE: Aug. 1978 COMPLETION DATE: Aug. 1982 TOTAL FUNDS: \$675,000

ACKNOWLEDGMENT: FRA

28 315862**IMPROVED TRANSPORTATION CONNECTIONS BETWEEN MIDTOWN TRANSPORTATION NODES**

This study is designed to determine the existing and potential market and develop based thereon recommendations for innovative transit and/or paratransit services and marketing systems designed to improve the transportation for distribution from and for the interconnecting of the five major midtown transportation hubs in Pennsylvania Station, Grand Central Terminal, Port Authority Bus Terminal, East Side Airlines Terminal and PATH 33rd St.

PERFORMING AGENCY: Port Authority of New York and New Jersey, IT-09-0069 TSA-651

INVESTIGATOR: Quimby, WS Tel (212) 466-8396

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

STATUS: Active NOTICE DATE: May 1981 START DATE: Dec. 1978 COMPLETION DATE: June 1981 TOTAL FUNDS: \$50,000

ACKNOWLEDGMENT: Port Authority of New York and New Jersey

28 316045**TRANSIT EDUCATION PROGRAM PHASE I**

This effort will consist of the initiation of a multi-faceted educational program designed to educate school age children on the nature of mass transit and how they can use it. The program will consist of a formatted curriculum with support materials. These materials will be designed to be used within the established curriculum of the metropolitan school districts. To be included will be appropriate lesson plans, student literature and audio-visual aids.

PERFORMING AGENCY: Washington Metropolitan Area Transit Authority, DC09-0005-86

INVESTIGATOR: Frisbee, R Tel (202) 637-1325 Bickert, L

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation; Council of Governments

Contract DC09-0005-86

STATUS: Programmed NOTICE DATE: Jan. 1980 START DATE: Feb. 1980

ACKNOWLEDGMENT: Washington Metropolitan Area Transit Authority

29 193158

STUDY THE INTEGRATION OF AUTOMATED TRANSIT INFORMATION SYSTEM WITH RELATED TRANSIT SYSTEMS

The objectives of this project are (1) to develop a report on state-of-the-art of integrated transit information systems for scheduling, routing, monitoring vehicle movement, providing customer information, and other operational activities and (2) to conduct analyses and a workshop in designing and evaluating integrated systems.

REFERENCES:

ERICA-Easy Rider Information Computerized Assistance Wood, P, Mitre Corporation, Dec. 1978

PERFORMING AGENCY: Mitre Corporation

INVESTIGATOR: O'Sullivan, DF Tel (703) 827-6862 Wood, P .

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation, UAD-71

RESPONSIBLE INDIVIDUAL: Durham, J Tel (202) 426-4022

Contract DOT-UT-90009

STATUS: Active **NOTICE DATE:** Mar. 1979 **START DATE:** Dec. 1978 **COMPLETION DATE:** Dec. 1980 **TOTAL FUNDS:** \$97,750

ACKNOWLEDGMENT: Mitre Corporation

29 333633

TELEPHONE TRANSIT INFORMATION SYSTEM STUDY

This project is a consultant study of the need, feasibility, design, and implementation for a partly or fully integrated Telephone Transit Information System for the New York-New Jersey Metropolitan Area.

PERFORMING AGENCY: Port Authority of New York and New Jersey

INVESTIGATOR: Foote, RS Tel (212) 466-7406

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

Contract NY-06-0077

STATUS: Active **NOTICE DATE:** Jan. 1981 **START DATE:** Oct. 1980 **COMPLETION DATE:** June 1981 **TOTAL FUNDS:** \$185,000

ACKNOWLEDGMENT: Port Authority of New York and New Jersey

31 192909

GEORGE WASHINGTON BRIDGE BUS STATION ACCESS AND SURVEY STUDY

The objectives of the study are to study and develop recommendations that would improve the GWB Bus Station's attractiveness to users and its service to the community. The study is examining access, patron services, communications and traffic operations, among other areas, in order to determine whether existing patrons can be better served and new ones attracted. The work program will include attitude surveys to help identify problem areas, and will evaluate several alternatives.

PERFORMING AGENCY: Port Authority of New York and New Jersey

INVESTIGATOR: Mayer, L Tel (212) 466-8671

SPONSORING AGENCY: Tri-State Regional Planning Commission

Contract TS A-611

STATUS: Active NOTICE DATE: May 1981 START DATE: Feb. 1978 TOTAL FUNDS: \$60,000

ACKNOWLEDGMENT: Port Authority of New York and New Jersey

31 193109

PRIORITY USE OF TRANSPORTATION FACILITIES

To prepare for and to assist the Texas Department of Highways and Public Transportation in the implementation of priority treatment projects on transportation facilities which includes both restricted travel lanes and park and ride techniques.

PERFORMING AGENCY: Texas Transportation Institute, Texas A&M University

INVESTIGATOR: Christiansen, DL

SPONSORING AGENCY: Texas State Department of Highways & Public Transp; Federal Highway Administration, Traffic Systems Division

RESPONSIBLE INDIVIDUAL: Bissell

HP&R 2-10-74-205

STATUS: Active NOTICE DATE: May 1981 START DATE: Sept. 1977 COMPLETION DATE: Aug. 1981 TOTAL FUNDS: \$487,000

ACKNOWLEDGMENT: Federal Highway Administration (263057354)

31 333517

BOSTON HARBOR MANAGEMENT PROJECT

In the past year, the Boston Harbor Management Project has investigated the status and operation of the Port of Boston; its competitiveness with other ports and MASSPORT's role in the management of the port. Additional research will focus on the commuter transportation problem: Why it has been ineffective and what we might learn from other cities.

PERFORMING AGENCY: Massachusetts Institute of Technology, Department of Ocean Engineering

INVESTIGATOR: Kildow, J Tel (617) 253-5310 de Neufville, R

SPONSORING AGENCY: Massachusetts Institute of Technology, Sea Grants Program; New England River Basins Commission

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: July 1979 COMPLETION DATE: June 1981

ACKNOWLEDGMENT: Massachusetts Institute of Technology

31 333704

DEVELOPMENT OF A MANUAL OF GUIDELINES FOR PLANNING OF URBAN WATERBORNE PASSENGER TRANSPORTATION

The study, in three successive years, investigates three primary aspects of urban ferry services: functional design, demand prediction and planning, and operations. The objective is to produce a set of procedures allowing planners to seriously consider the waterborne alternative in their urban transport systems.

REFERENCES:

Functional Design of Ferry Systems Habib, P; Bloch, A; Roess, RP, June 1980

Some Critical Aspects of Ferry Planning Roess, R; Grealy, P; Berkowitz, C, Nov. 1981

PERFORMING AGENCY: Polytechnic Institute of New York, Transportation Training and Research Center

INVESTIGATOR: Roess, RP Tel (212) 643-5526 Grealy, P Habib, P

SPONSORING AGENCY: Maritime Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Seibold, F

STATUS: Completed NOTICE DATE: Nov. 1981 START DATE: Sept. 1979 COMPLETION DATE: June 1982

ACKNOWLEDGMENT: Polytechnic Institute of New York

31 333876

BUS PREEMPTION SYSTEM JUSTIFICATION AT URBAN INTERSECTIONS

The objective is to develop justifications for bus preemption at urban intersections under different levels of bus demand based on cost-benefit analysis. Since economic analyses involve uncertainty in assigning dollar value to certain operational variables, tradeoff analyses are needed to support the benefit-cost methodology.

REFERENCES:

Bus Preemption System Justification at Urban Intersections, Interim Report, Benevelli, DA; Radwan, AE, NSF, July 1980

PERFORMING AGENCY: Virginia Polytechnic Institute & State University

INVESTIGATOR: Radwan, AE Tel (703) 961-7408

SPONSORING AGENCY: National Science Foundation, Division of Engineering

Contract ENG-7908105

STATUS: Active NOTICE DATE: Jan. 1982 START DATE: Apr. 1979 COMPLETION DATE: Apr. 1981 TOTAL FUNDS: \$30,755

ACKNOWLEDGMENT: Virginia Polytechnic Institute & State University

32 177535

EMPLOYMENT CENTER SUBSCRIPTION SERVICE (ECSS)

The principle objectives of the Demonstration Project are to field test and demonstrate the feasibility of a Multi-trip Subscription Service within a major employment center; to develop and exercise techniques for the structuring and restructuring of multi-trip routes and schedules on a demand/response basis; to encourage the use of public transit within an auto-oriented industrial complex; to generate patronage through reduced fares and to increase the productivity and cost-effectiveness of commuter transit service beyond that now attainable under conventional service procedures. The project will contribute to the local and national goals of greater energy conservation, improvement in air quality and reduction in peak hour congestion, through the increased use of public transportation and a reduction in the number of low occupancy vehicle trips. In addition, ECSS methodology will be tested and upgraded by planning an additional ECSS service for another employment center, and developing means to achieve increased employer willingness and cooperation in modifying employment hours and providing incentives to their employees to use ECSS. Among the goals of this project will be the development of a service that will produce passenger revenue equal to or nearly equal to the cost of operation.

REFERENCES:

Feasibility Study of the Employment Center Bus Service Concept, Schmitt, A; Bush, LR, Aug. 1976

PERFORMING AGENCY: Southern California Rapid Transit District
INVESTIGATOR: Brewer, M Tel (415) 972-6465
SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation
RESPONSIBLE INDIVIDUAL: Fish, P Tel (202) 246-4984

Contract DOT-UMTA-CA-06-0109

STATUS: Active **NOTICE DATE:** Nov. 1981 **START DATE:** Aug. 1977 **TOTAL FUNDS:** \$773,100

ACKNOWLEDGMENT: Southern California Rapid Transit District

32 177647

CARPools POTENTIAL IN IOWA--AMES/DES MOINES: A CASE STUDY

To evaluate the potential for carpooling promotions in Iowa. The DOT is both working through primary employers and utilizing a community wide call-in-service. Inter-firm pooling is being utilized. A procedural manual was prepared in June 1979. This instructional manual, among other things, also described tips for carpoolers. This project has now been assigned to the Public Transit Division of the Iowa DOT.

PERFORMING AGENCY: Iowa Department of Transportation, 12-177647
INVESTIGATOR: Cain, PR Tel (515) 296-1682
SPONSORING AGENCY: Iowa Department of Transportation; Iowa Energy Policy Council
RESPONSIBLE INDIVIDUAL: Cain, PR Tel (515) 281-4420

STATUS: Active **NOTICE DATE:** Aug. 1980 **START DATE:** Feb. 1977 **COMPLETION DATE:** Feb. 1980 **TOTAL FUNDS:** \$133,000

ACKNOWLEDGMENT: Iowa Department of Transportation

32 192603

PARATRANSIT

The purpose of this study is to provide technical assistance to the Urban Mass Transportation Administration in the establishment of paratransit demonstration projects. Various aspects of paratransit service have been explored, such as the use of user-side subsidies and the coordination of social service transportation. In addition, we have monitored a taxifeeder demonstration which we helped to establish, and are preparing a paratransit planning guidelines report.

REFERENCES:

Supporting Mass Transportation in Small Urban Areas Through User-Side Subsidies: A Demonstration in Danville, Illinois, Kirby, RF; Tolson, FL, The Urban Institute, Dec. 1978

Taxicab Feeder Service to Bus Transit Miller, GK, Transportation Research Record, Number 650; pp 1-14, 1978

PERFORMING AGENCY: Urban Institute
INVESTIGATOR: Kirby, RF Tel (202) 223-1950 Miller, G Tolson, FL
SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

Contract DOT-DC-06-0195

STATUS: Active **NOTICE DATE:** Jan. 1981 **START DATE:** June 1977 **COMPLETION DATE:** Jan. 1982

ACKNOWLEDGMENT: Urban Institute

32 192911

RIDESHARING FEASIBILITY STUDY FOR PORT AUTHORITY VEHICULAR FACILITIES BETWEEN NEW YORK AND NEW JERSEY

The objective of this study is to determine the feasibility of developing an extensive ridesharing program to encourage additional carpooling and vanpooling among motorists using the six Port Authority tunnels and bridges. Study will include behavioral research to determine what programs of incentives/disincentives might be needed to induce motorists into ridesharing. The study will also determine the divertibility of present public transportation users to ridesharing modes.

PERFORMING AGENCY: Port Authority of New York and New Jersey
INVESTIGATOR: Mayer, L Tel (212) 466-8671
SPONSORING AGENCY: New Jersey Department of Transportation

STATUS: Active **NOTICE DATE:** May 1981 **START DATE:** Jan. 1979 **COMPLETION DATE:** 1981 **TOTAL FUNDS:** \$50,000

ACKNOWLEDGMENT: Port Authority of New York and New Jersey

32 306146

DEMAND RESPONSIVE BUS OPERATION (DIAL A BUS)**[Anropsstyrd busstrafik]**

The scope of the study is to work out guide lines for Swedish municipalities considering the introduction of a demand responsive system, with respect to (1) market (population distribution, demography), (2) physical conditions (street and road lay-out), (3) technical conditions (vehicle specifications, radio communication), (4) operational conditions (vehicle monitoring, training requirements), (5) economical conditions (comparison to regular bus operation), and (6) legal conditions (legal requirements for dial a bus operation). The project is divided into four parts: (1) problem inventory and selection of study site; 1979-11--1980-03, (3) dial a bus operation; 1980-04--1981-06, and (4) evaluation; 1981-07-n 1981-12. The area selected is the urban area of Nynäshamn, 75 km southeast of Stockholm, and the surrounding rural areas. The service area for the dial a bus experiment has a population of around 12000, and it is today served by four bus routes.

REFERENCES:

Projekt Astra (Project Astra) Elmberg, CM, Svensk Lokaltrafik, Sweden, No 1, pp 22-23

PERFORMING AGENCY: Greater Stockholm Transport Company, DNR 215-67
INVESTIGATOR: Elmberg, CM Greater Stockholm Transport Company, Sweden Svantesson, C Greater Stockholm Transport Company, Sweden
SPONSORING AGENCY: Swedish Transport Research Delegation, DNR 72/78-42; Greater Stockholm Transport Company

STATUS: Active **NOTICE DATE:** Jan. 1980 **START DATE:** Sept. 1978 **COMPLETION DATE:** Jan. 1982 **TOTAL FUNDS:** \$2,200,000

ACKNOWLEDGMENT: International Road Research Documentation, OECD (IRRD 606204), International Road Federation (IRF 22(4))

32 315724

PARATRANSIT ASSESSMENT AND DIRECTIONS FOR THE FUTURE

Comprehensive assessment of the field of paratransit. Evaluation of the state of the art, determination of desired future role and potential of paratransit, recommendation of policies, program, and actions that will encourage the expansion and proper implementation of paratransit services. Extensive data collection, research & operational experiences review, comprehensive analysis of institutional organizational environments/constraints all included.

REFERENCES:

Paratransit Assessment and Directions for the Future Multisystems, Incorporated, Vols I-VII, 8002

PERFORMING AGENCY: Multisystems, Incorporated, DOT-UT-90008
INVESTIGATOR: Flusberg, M Tel (617) 864-5810 Fleishman, D
SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation
RESPONSIBLE INDIVIDUAL: Mara, TW Tel (202) 755-4980

Contract DOT-UT-90008

STATUS: Active NOTICE DATE: Mar. 1980 START DATE: Dec. 1978 COMPLETION DATE: Mar. 1980 TOTAL FUNDS: \$170,954

ACKNOWLEDGMENT: Multisystems, Incorporated

32 333502

ATLANTA RIDESHARING EVALUATION

Evaluate the Georgia DOT approach to ridesharing, as part of a National Ridesharing Demonstration Program. Utilize travel surveys collected by Georgia DOT after program implementation to measure the effectiveness of the Georgia DOT ridesharing approach. The data will also be used to compare Atlanta's employer-based program with those of other cities participating in the demonstration.

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.00
 INVESTIGATOR: O'Neil, K Tel (617) 266-0500
 SPONSORING AGENCY: Transportation Systems Center; Federal Highway Administration, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Doxsey, L Tel (617) 494-2616

Contract DOT-TSC-1757-6

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: May 1980 COMPLETION DATE: Dec. 1981 TOTAL FUNDS: \$40,000

ACKNOWLEDGMENT: Charles River Associates, Incorporated

32 333504

BOSTON RIDESHARING DEMONSTRATION EVALUATION

The purpose of this research is to evaluate the Boston Ridesharing Demonstration Project. The project involves development of community, corridor, and multi-employer based car and vanpool programs, test marketing of innovative vanpool incentives, and establishment of flexible work hours to facilitate ridesharing. The evaluation of each of nine program elements will be based on short self-completion surveys distributed to employees and commuters at participating sites.

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.02
 INVESTIGATOR: Ziering, E Tel (617) 266-0500
 SPONSORING AGENCY: Transportation Systems Center, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Heaton, C Tel (617) 494-2303

Contract DOT-TSC-1757

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: Feb. 1980 COMPLETION DATE: Dec. 1982 TOTAL FUNDS: \$35,000

ACKNOWLEDGMENT: Charles River Associates, Incorporated

32 333506

DADE COUNTY (FLORIDA) TAXICAB AND PARATRANSIT INNOVATIONS

The purpose of this project is to evaluate the effects of the Service and Methods Demonstration Project in Dade County, Florida. This demonstration will encompass at least three distinct elements: taxicab regulatory reform-including removal of restrictions on ridesharing, rate-setting and geographical service area, and consolidation of regulatory responsibilities to produce more efficient and responsive taxi service; paratransit service-involving one or more operating configurations that increase the spatial and temporal coverage of transit service; and, social service agency transportation improvement-including procedural changes designed to improve efficiency and effectiveness. This first demonstration element, taxicab regulatory reform, was initially scheduled to be implemented on October 1, 1980. However, implementation has been delayed by a court ruling that the County lacked the authority to develop the regulatory reforms under preexisting state statutes. An evaluation strategy has been designed for this element of the demonstration that relies on surveys of taxi passengers and cabstand activity, as well as interviews and tabulations of existing records (e.g., driver logs, dispatcher logs), supplemented as needed to ensure comprehensiveness. These data collection activities will be carried out in January 1981, immediately prior to the revised expected implementation date for the regulatory reforms.

REFERENCES

Taxi Regulatory Revisions in Dade County, Florida: Data Collection Plan, Charles River Associates, Incorporated, Dec. 1980

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.07
 INVESTIGATOR: Nelson, M Tel (617) 266-0500 Spano, M
 SPONSORING AGENCY: Transportation Systems Center, Department of Transportation; Urban Mass Transportation Administration, Service and Methods Demonstration Program

RESPONSIBLE INDIVIDUAL: Freilich, J Tel (617) 494-2552
 Contract DOT-TSC-1757-7

STATUS: Active NOTICE DATE: Dec. 1980 START DATE: June 1980 COMPLETION DATE: June 1982 TOTAL FUNDS: \$80,000

ACKNOWLEDGMENT: Charles River Associates, Incorporated

32 333682

EVALUATION OF DIESEL POWERED VEHICLES FOR USE AS TAXI CABS IN THE NEW YORK CITY

To determine the Environmental Effects of introducing Diesel Powered Taxi Cabs in New York City's Business District, with emphasis on increase of suspended particulates. Scope: Collection of particulate samples from diesel and gasoline powered vehicles. Statistical evaluation. Use of Mathematical Model. Method: Vehicles are run on dynamometer through a pre-selected driving cycle. Particulate samples collected by the use of dilution tunnel on flouropore filters. Particulate quantity determined by weighing.

PERFORMING AGENCY: New York City Dept of Environmental Protection
 INVESTIGATOR: Goldbeger, L Tel (212) 388-4994 Pinto, J
 SPONSORING AGENCY: New York City Dept of Environmental Protection; State Department of Environmental Conservation; Research Cab Corporation

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: Sept. 1980 COMPLETION DATE: Sept. 1982

ACKNOWLEDGMENT: New York City Dept of Environmental Protection

32 333693

NEIGHBORHOOD RIDESHARING DEMONSTRATION STUDY

This study will demonstrate the use of a Ridesharing Coordinator residing in each of four neighborhood implementation sites a method of increasing the incidence of ridesharing. Several promotion strategies will be tested. Comparisons will be made between: neighborhood coordinators vs. employer based coordinators, urban vs. suburban sites, town hall offices vs. residential offices, differing uses of volunteers. Evaluation will involve random sample telephone observations as well as detailed coordinators records.

REFERENCES:

Research Design for the Neighborhood Coordinator Demonstration Study, Brunso, JM; Ugolik, WK; Hartgen, DT, Preliminary Res Rpt. 189, Oct. 1980

PERFORMING AGENCY: New York State Department of Transportation
 INVESTIGATOR: Brunso, JM Tel (518) 457-6920 Ugolik, WR Hartgen, DT
 SPONSORING AGENCY: Federal Highway Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Hartgen, DT Tel (518) 457-6920

Contract DOT-FH-11-9675

STATUS: Active NOTICE DATE: Dec. 1980 START DATE: May 1980 COMPLETION DATE: Dec. 1981 TOTAL FUNDS: \$95,000

ACKNOWLEDGMENT: New York State Department of Transportation

32 333724

SMALL CITY TAXICABS TECHNICAL ASSISTANCE

The objective is to provide technical assistance for small city taxi operators in North Carolina who wish to be involved in public sector transportation programs.

PERFORMING AGENCY: North Carolina University, Department of City and Regional Planning
 INVESTIGATOR: Gilbert, G Tel 933-5204
 SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Birnie, D Tel 426-4060

STATUS: Active NOTICE DATE: Apr. 1981 START DATE: Oct. 1980 COMPLETION DATE: Oct. 1981

ACKNOWLEDGMENT: North Carolina University

32 333726

TAXICAB OPERATING STATISTICS

The objective is to assist I.T.A. with national survey of taxicab firms to establish data base on operating and financial characteristics.

PERFORMING AGENCY: North Carolina University, Department of City and Regional Planning
INVESTIGATOR: Gilbert, G Tel 933-5204
SPONSORING AGENCY: International Taxicab Association
STATUS: Active NOTICE DATE: Apr. 1981 START DATE: Jan. 1981 COMPLETION DATE: Dec. 1981 TOTAL FUNDS: \$50,000
ACKNOWLEDGMENT: North Carolina University

**32 335601
NEIGHBORHOOD RIDERSHARING DEMONSTRATION
PROJECT**

The objective of the Neighborhood Ridesharing Demonstration Project is to increase the incidence of Ridesharing to work and non-work activity among residents of 4 communities within the Capital District through the use of personalized matching by Ridesharing Coordinators located within the communities. The coordinators will promote ridesharing within the

community, manually match applicants, provide personal introductions and resolve ridesharing conflicts. The Employee Based Coordinator Program at three NYS Agencies and will be compared with the Neighborhood Program.
REFERENCES:

Research Design for the Neighborhood Ridesharing Demonstration, Brunso, JM; Ugolik, WR; Harrgen, DT, PRR 189, Aug. 1980

PERFORMING AGENCY: New York State Department of Transportation
INVESTIGATOR: Brunso, JM Tel (518) 457-2967 Hartgen, DT
SPONSORING AGENCY: Federal Highway Administration, Department of Transportation
RESPONSIBLE INDIVIDUAL: Shea, C Tel (202) 426-0182

Contract DOT-FH-11-9675

STATUS: Active NOTICE DATE: June 1981 START DATE: May 1980 COMPLETION DATE: Dec. 1981 TOTAL FUNDS: \$95,000

ACKNOWLEDGMENT: New York State Department of Transportation

33 335324

RURAL PUBLIC TRANSPORTATION DEMONSTRATION PROJECT, NORTHWEST PENNSYLVANIA REGIONAL PLANNING AND DEVELOPMENT COMMISSION

The State of Pennsylvania has requested a grant to assist the Northwest Pennsylvania Regional Planning and Development Commission in its continuing development of rural public transportation systems in each of four counties in its Region--Clarion, Forest, Venango and Warren. During the past year, the Northwest Pennsylvania Regional Planning and Development commission provided technical assistance to the county programs on such diverse areas as vehicle procurement and maintenance, administrative organization, rural public transit funding strategies, personnel procedures, and guidance in bidding and placing insurance. In addition, the Northwest Pennsylvania Regional Planning and Development Commission conducted two workshops for recently hired transportation coordinators. In each county a Central Transportation Organization (CTO) has been designated, and a RPT coordinator hired. In each instance, the CTO is providing some form of coordinated social-service agency transportation service. The results of this effort will be to provide a low-cost transportation mode for the consumer, an increase in mobility for the social-service agency client, a net reduction in energy consumption, and relief to the isolation of the rural poor. These objectives will be achieved through the provision of either demand responsive, fixed route, or fixed route deviation type service. The Clarion County system proposes to add two new agencies to their list of clients served, modify their service to allow public access, and provide some 330,000 vehicle miles and 10,000 vehicle hours of service. Forest County will also initiate public service while providing some 80,000 vehicle miles and 4,800 vehicle hours of operation. One additional agency will be included in the Venango County CTO service which will provide an overall service level of 360,000 vehicle miles and 12,000 vehicle hours. Warren County service will be coordinated with existing fixed route service in the Borough of Warren. Approximately 100,000 vehicle miles and 6.266 vehicle hours of service are expected to be delivered.

PERFORMING AGENCY: Pennsylvania State Government
SPONSORING AGENCY: Appalachian Regional Commission, PA-6824-80-C1-200C-0

STATUS: Active NOTICE DATE: June 1981 START DATE: Sept. 1980 COMPLETION DATE: Aug. 1981 TOTAL FUNDS: \$248,984

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (FK 829)

33 335326

PROPOSED RURAL TRANSPORTATION DEMONSTRATION PROJECT, BOROUGH OF LEWISTON, PENNSYLVANIA

The State of Pennsylvania has submitted a request for a grant to assist the Borough of Lewiston, Mifflin county, Pennsylvania in the development of a rural public transportation system. The ARC will contract directly with the Borough, who will in turn contract with a private provider for the service. To the extent possible existing social service agency transportation will be integrated into the proposed public service. This project is the culmination of a planning effort for the reinstatement of public bus service in the Lewiston area which was terminated by a private bus company in 1969. In March 1979 a "Short Range Transit Study for Mifflin County" was completed under the auspices of an UMTA/PennDOT planning grant. This study identified Lewiston as a borough with a larger than average number of elderly, handicapped and others that are transportation disadvantaged. The loss of public service has also forced many social service agencies to provide transportation for their clients. The purpose of the proposed program is to implement a fixed route, fixed schedule mini-bus service to provide low-cost transportation to the general public as well as the transportation disadvantaged. In addition the system will free the social service agencies of a large part of their need to provide client transportation and reduce the cost of the service actually provided. The system is designed to take advantage of both state and Federal programs designed to assist small urban and rural systems.

PERFORMING AGENCY: Pennsylvania State Government
SPONSORING AGENCY: Appalachian Regional Commission, PA-7718-80-I-302-070

STATUS: Active NOTICE DATE: June 1981 START DATE: 1980 TOTAL FUNDS: \$50,000

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (FI 515)

33 335341

PROPOSED RURAL TRANSPORTATION PROJECT, HORNELL AREA TRANSIT SYSTEM (HARTS)

The State of New York has requested a grant to assist the city of Hornell in the establishment of a rural public transportation system in and about the city and the towns of Alfred, Almond, Canisteo, and Hornellsville. The Commission would contract directly with the City of Hornell who would either provide the service directly or contract certain parts to private providers. Service will be provided for work trips as well as for social service agency clients. Two other existing systems will be consolidated into this operation. ARC funds would be used to purchase three mini-buses or vans and to provide operating monies. Hornell has identified that it has a significantly larger group of "transit-dependent" people than most communities. Currently service to these people is provided by one taxi company and the Elderberry Express. It is estimated that only 1 percent of the total demand is being met by these services. In addition there is substantial student traffic between Hornell and the universities in Alfred. Based on a year long study the sponsor proposes to purchase three vans equipped with lifts to form a core of service vehicles. Service will be provided each week day in both a fixed route and point deviation configuration, for 12 hours per day. Initial service will link central Hornell to North Hornell, Arkport, Alfred via Almond and Canisteo via South Hornell. Buses will operate on approximately two-hour headways and provide loop service within each of the communities connected. Point deviation service will be offered within the environs of Hornell. Since a number of "start-up" activities are needed, actual operations are not slated to begin until July 1981. These activities include the formation of a Transit Commission, the advertising for bids and contract awards for equipment and maintenance services, the training of personnel, and the finalization of marketing strategies.

PERFORMING AGENCY: New York State Government
SPONSORING AGENCY: Appalachian Regional Commission, NY-7613-80-I-302-061

STATUS: Active NOTICE DATE: June 1981 START DATE: 1981 TOTAL FUNDS: \$175,000

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (FK 825)

33 335582

FEASIBILITY OF VARIOUS MODES OF PASSENGER TRANSPORTATION IN RURAL AREAS

Develop a conceptual and operational framework to analyze alternative passenger transportation systems in rural areas. Transportation systems in respect to mode and operating procedures. Include bus, van pooling, taxi, jitney, private automobiles operated by volunteers or part-time drivers. Operating procedures include, private vendors, public transportation authorities and cash payments to persons who cannot afford to purchase transportation systems which allow the local decisionmakers or private businesses to determine the economic feasibility of alternative passenger transportation systems in their communities. Determine the demand for and costs of providing passenger service within and among rural communities. Develop budgets which include: Procedures to estimate the costs of various modes of passenger service such as capital expenditures, labor, insurance, other business services; procedures to estimate the demand for various modes of passenger transportation within and among rural communities. Design budgeting manuals which can be used by local businesses and decisionmakers to evaluate the feasibility of providing alternative passenger transportation systems in their communities. The main product of this research is development of a guide for local decision makers on the costs and income from various modes of car, van, or bus community transportation systems in rural areas.

PERFORMING AGENCY: Oklahoma State University
INVESTIGATOR: Doeksen, G
SPONSORING AGENCY: Oklahoma State University

STATUS: Active NOTICE DATE: June 1981 START DATE: Oct. 1978 COMPLETION DATE: Sept. 1980

ACKNOWLEDGMENT: Oklahoma State University (CRIS 0045026)

34 059864

EVALUATION OF SAFETY OF LOADING AND SECUREMENT HARDWARE FOR TRANSPORTING WHEELCHAIR PASSENGERS ON TRANSIT VEHICLES

The objectives include: (1) developing safety guidelines for wheelchair loading equipment, (2) determining the crashworthiness of standard wheelchairs secured by selected, representative securement systems, (3) comparison of parameters other than safety of systems being tested (i.e., ease of use, acceptability to user, costs), (4) recommendation of design modifications if they are found to be needed, (5) establishment of the cost effectiveness of the securement systems, and (6) development of educational materials for users and operators of wheelchair loading and securement facilities.

PERFORMING AGENCY: California Department of Transportation
 INVESTIGATOR: Rae, JW
 SPONSORING AGENCY: Urban Mass Transportation Administration, CA-06-0098-00-1

Contract CA-06-0098-00-01 (FFP)
 STATUS: Completed NOTICE DATE: Aug. 1981 START DATE: Jan. 1977 COMPLETION DATE: Mar. 1981 TOTAL FUNDS: \$195,000

ACKNOWLEDGMENT: TRAIS (CA-06-0098-00-01)

34 192809

EVALUATION OF COORDINATED TRANSPORTATION SERVICES FOR THE ELDERLY AND HANDICAPPED IN ALLEGHENY COUNTY, PENNSYLVANIA

Objective of this study is to evaluate the agent/broker concept for coordinating elderly and handicapped services on a countywide basis under complex regulatory conditions. Method to be used involves analysis of driver manifests, user surveys and agency interviews conducted before and after project initiation.

PERFORMING AGENCY: Charles River Associates, Incorporated, 388.07
 INVESTIGATOR: Greene, S Tel (617) 266-0500
 SPONSORING AGENCY: Transportation Systems Center, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Page, E Tel (617) 494-2510

Contract DOT-TSC-1406-7
 STATUS: Active NOTICE DATE: Feb. 1980 START DATE: Sept. 1978 COMPLETION DATE: Sept. 1980

ACKNOWLEDGMENT: Charles River Associates, Incorporated

34 315855

THE IMPACT OF FULLY ACCESSIBLE VEHICLES ON THE DEMAND FOR AND COST OF BUS TRANSIT SERVICES IN WESTCHESTER COUNTY, NEW YORK

(1) Investigation of reliability of GMC wheelchair lifts; (2) Estimation of cost impacts of fully accessible buses to the bus operators; and (3) Measurement of demand for wheelchair lifts and analysis of factors contributing to the use and non-use of the lift by the elderly/handicapped.

REFERENCES:

An Assessment of Wheelchair Lift Buses in Westchester County, New York, Falcochio, J, Oct. 1980

PERFORMING AGENCY: Polytechnic Institute of New York, Transportation Training and Research Center
 INVESTIGATOR: Falcochio, JC Tel (212) 643-5272
 SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Bautz, J

STATUS: Active NOTICE DATE: Mar. 1982 START DATE: Sept. 1979 TOTAL FUNDS: \$65,000

ACKNOWLEDGMENT: Polytechnic Institute of New York

34 315932

COORDINATION OF SPECIAL TRANSPORTATION SERVICES FOR THE ELDERLY, HANDICAPPED AND TRANSPORTATION DISADVANTAGED PERSONS IN DALLAS COUNTY

The objective is to develop a transition plan that would bring the city of Dallas into compliance with Section 504 Regulations. A parallel effort is underway to coordinate the specialized transportation service provided by human service agencies.

PERFORMING AGENCY: Dallas, City of, Texas
 INVESTIGATOR: Kelly, RW Tel (214) 670-4032 Kanoff, SH
 SPONSORING AGENCY: North Central Texas Council of Governments; Dallas Transit System
 RESPONSIBLE INDIVIDUAL: Kanoff, SH Tel (214) 670-4032

STATUS: Programmed NOTICE DATE: Dec. 1979 START DATE: Jan. 1980 COMPLETION DATE: July 1980 TOTAL FUNDS: \$12,500

ACKNOWLEDGMENT: Dallas, City of, Texas

34 333307

TAXI BASED SPECIAL TRANSIT SERVICES

This study will analyze the viability of taxi-based transit services for the elderly and handicapped. Data will be collected from 50 taxi systems in California which provide this type of service. The study has five major goals; (1) to conduct a comprehensive analysis of the issues involved in taxi based E&H transit; (2) to provide data on the expected performance of these systems; (3) to identify institutional constraints to increased use of taxi firms for special transit services; (4) to determine the impacts of public subsidies on taxi firms; and (5) to compare taxi involvement in special transit services with involvement in general-public service.

PERFORMING AGENCY: California University, Irvine, Institute of Transportation Studies

INVESTIGATOR: Teal, RF Tel (714) 833-6663
 SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Teal, RF Tel (714) 833-6663

STATUS: Active NOTICE DATE: Dec. 1981 START DATE: Sept. 1980 COMPLETION DATE: Jan. 1982 TOTAL FUNDS: \$58,562

ACKNOWLEDGMENT: California University, Irvine

34 335475

HIGH LEVEL PLATFORM-RAIL VEHICLE THRESHOLD GAP STUDY AND TESTS

PURPOSE: The purpose of this investigation is to gather data in four areas for use by DOT in its initiatives aimed at making transit systems accessible to persons in wheelchairs: a. The acceptable range of maximum gaps (various horizontal and vertical spacings in combination) which can be safely crossed by individuals in manually propelled or powered wheelchairs. b. Suitable techniques for safely and independently crossing such gaps in a wheelchair. c. The abilities of persons in wheelchairs with different disabilities safely and independently to cross the gaps. d. The effects crossing these gaps repeatedly may have on the structural integrity (durability and life expectancy) of wheelchairs. PLAN: A portable gap-simulator apparatus at the Veterans Administration Prosthetics Center (VAPC), New York will be used to gather the data mentioned above. METHOD: Persons using their own or Government-owned manual or powered wheelchairs cooperating in the study will be asked to proceed from starting reference lines and independently to cross a series of gaps of increasing difficulty. Their achievements using different wheelchair strategies and techniques will be recorded. A separate specially designed testing machine will be used in the durability tests.

PERFORMING AGENCY: Veterans Administration, Medical Center, Test and Development Laboratory

INVESTIGATOR: Reichenberger, AJ
 SPONSORING AGENCY: Veterans Administration, Department of Medicine and Surgery, 129-26-6369 790-001-1

STATUS: Active NOTICE DATE: July 1981 START DATE: June 1980

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (ZO 45969)

34 342515

DISABILITY AND BUILDING CODES: A QUANTITATIVE STUDY

This project is using human-subject testing to achieve categorization of handicapped populations (including percentage breakdowns) by functional abilities or disabilities. It includes analysis of barriers and countermeasures. It will provide comment on preferences of the handicapped concerning railings, clearances, floor surfaces, stair nosings, switch height and style, and styles of door knobs and control mechanisms. It will document abilities of the handicapped with respect to slope ascent and descent, clearances, thresholds, switch and control manipulation, push/pull forces, fire-alarm

response and door hardware. Devising its own test equipment and test protocol, the study team has tested arthritic subjects initially, and plans to continue testing with subjects exhibiting other conditions and handicaps. Findings will be compared with building-code specifications for accessibility, as well as with national standards.

PERFORMING AGENCY: Arizona University, Medical Sciences Center

INVESTIGATOR: Woods, WL

SPONSORING AGENCY: National Institutes of Health, Department of Health, Education and Welfare

ant 3P60-AM20597-0251
STATUS: Active NOTICE DATE: 1980

41 179331

MARTA IMPACT STUDY

This study is designed to provide a continuing assessment of the impacts of the new rail rapid transit system in Atlanta. Work prior to the opening in 1979 concentrated on obtaining "before" and base-case data on the impacts of construction. Operational impact measurement began in 1979.

PERFORMING AGENCY: Atlanta Regional Commission
 INVESTIGATOR: Stone, J Tel (404) 656-7700
 SPONSORING AGENCY: Urban Mass Transportation Administration, Office of Planning Assistance, UPM-13
 RESPONSIBLE INDIVIDUAL: Steinmann, R Tel (202) 472-5140

Contract GA-09-7002
 STATUS: Active NOTICE DATE: Aug. 1980 START DATE: Mar. 1976 COMPLETION DATE: Dec. 1983

ACKNOWLEDGMENT: UMTA

41 188644

SOCIOECONOMIC IMPACTS RELATED TO THE PLANNING, CONSTRUCTION AND OPERATION OF URBAN TRANSPORTATION TUNNEL PROJECTS

The objective of the study is to investigate the social and economic impacts arising from the planning, construction and operation of transportation tunnels. These tunnels can be either highway tunnels or mass transportation (subway) tunnels. Only tunnels in urban areas are being studied. The work consists of three phases. Phase I identified and listed impacts, using as source materials 100 recent EISs, as well as other relevant literature, particularly that concerning citizen involvement. Phase II will begin with the measurement of the identified impacts. Existing measurement methods will be utilized where possible, new measurement devices will be suggested where needed and feasible, and impacts that are not capable of being quantified will be so identified. An impact prediction model will then be constructed. In

Phase III, the impact prediction model will be tested as to both applicability and reliability. Impacts will be predicted in a real-life situation in order to determine whether the model can actually be used by planners.

PERFORMING AGENCY: ABT Associates, Incorporated
 INVESTIGATOR: Wolff, PC
 SPONSORING AGENCY: Federal Highway Administration

STATUS: Active NOTICE DATE: Feb. 1979 START DATE: Sept. 1977 COMPLETION DATE: May 1981

41 333768

USER RESPONSE TO TIME OF DAY VARIATIONS IN TRANSIT SERVICE LEVEL AND RELIABILITY

The purpose of the proposed research is to analyze the factors affecting time of departure and mode choice decisions for trips made during the peak period. Expected results include: (1) measurement of time variations in service level and reliability; (2) analysis of the effects of service level, reliability, and schedule delay on time of departure and mode choice decisions; (3) development and validation of models that can be directly applied by practicing transportation planners, and (4) case studies estimating user responses to a variety of TSM policies which may affect peaking patterns.

PERFORMING AGENCY: Carnegie-Mellon University
 INVESTIGATOR: Hendrickson, CT Tel (412) 578-2948 Nagin, D
 SPONSORING AGENCY: Urban Mass Transportation Administration, University Research and Training Program
 RESPONSIBLE INDIVIDUAL: Hendrickson, CT Tel (412) 578-2948

Contract PA110024
 STATUS: Active NOTICE DATE: Apr. 1981 START DATE: July 1980 COMPLETION DATE: Dec. 1981

ACKNOWLEDGMENT: Carnegie-Mellon University

42 082420

SUPPORT OF UMTA TECHNICAL STUDIES

Tri-State acts as the coordinator/contractor for the Urban Mass Transportation Administration in working with the counties, regional planning agencies, cities and towns, and special purpose agencies in carrying out the Urban Mass Transit Technical Studies by providing coordinated support for all projects in the region. These projects include local bus service feasibility studies, the evaluation of the impact of large scale development on existing transportation systems, a study of the feasibility of computer simulation of train operations and schedules, and several other research oriented projects.

PERFORMING AGENCY: Tri-State Regional Planning Commission, 7109; Port Authority of New York and New Jersey; New York City Transit Authority

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

STATUS: Active NOTICE DATE: May 1981

ACKNOWLEDGMENT: Tri-State Regional Planning Commission

42 129701

METRO IMPACT STUDY

As part of its ongoing programs, the Metropolitan Washington Area Council of Governments is conducting for UMTA an assessment of impacts of the METRO rail system in the Washington area. The program is somewhat narrower in scope than the BART Impact Work, concentrating on traveler impacts.

PERFORMING AGENCY: Metropolitan Washington Council of Governments, 1875 Eye Street, NW, Suite 200

INVESTIGATOR: Dunphy, R Tel (202) 223-6800

SPONSORING AGENCY: Urban Mass Transportation Administration, Office of Planning Assistance, UPM-13

RESPONSIBLE INDIVIDUAL: Steinmann, R Tel (202) 472-5140

Contract DC-09-7001

STATUS: Active NOTICE DATE: Aug. 1980 START DATE: Mar. 1976 COMPLETION DATE: Dec. 1983 TOTAL FUNDS: \$1,500,000

ACKNOWLEDGMENT: UMTA

42 185121

STUDY OF THE IMPACT OF CHANGES TO PUBLIC TRANSPORT IN THE METROPOLITAN COUNTY OF TYNE AND WEAR

The aims of the study are: to identify the effects of a large change in public transport (Between 1979 and 1981 considerable changes will be made in the supply of public transport in Tyne and Wear. These will include the opening of the Tyneside metro, extensive consequential changes to bus routes and the introduction of through ticketing and gradual implementation of a bus control system.) on travel behaviour, activities and land use; to examine how effective are different kinds of investment in improving travel and influencing residential and employment locations; to provide information to assist in day-to-day operations of public transport in Tyne and Wear. The study team is at present designing the overall study, but it is likely to consist of a number of interlocking surveys of household public transport users and users of selected activity centres, plus the collection of operational data on public transport use. /IRRD/IRF/

PERFORMING AGENCY: Transport and Road Research Laboratory, Department of the Environment; Tyne and Wear County Council; Tyne and Wear Passenger Transport Executive

INVESTIGATOR: Mitchell, CGB Langdon, MG Ramsay, B Pouw, I - Walmsley, DA

SPONSORING AGENCY: Department of the Environment, England; Department of Transport, England

STATUS: Active NOTICE DATE: Jan. 1978 START DATE: Jan. 1978 COMPLETION DATE: Dec. 1982

ACKNOWLEDGMENT: International Road Research Documentation, OECD (IRRD-605063), International Road Federation (IRF 1A(620))

42 192604

METHODS FOR THE ESTIMATION OF TRANSPORTATION SYSTEMS COST

This study is part of an effort to develop an effective evaluation Framework for the Alternatives Analysis process. The project involves the development of improved methods for estimating costs of major urban transportation alternatives, as well as the formulation of a cost-effectiveness analysis

framework.

REFERENCES:

Costs and Productivities of Innovative Urban Transportation Services, Bhatt, KU, Transportation Research Board Special Report, No. 184, 1979

Guidelines for the Estimation of Transit Costs Bhatt, KU, The Urban Institute, Final Report 1266-100, Nov. 1980

PERFORMING AGENCY: Urban Institute

INVESTIGATOR: Bhatt, KU Tel (202) 223-1950 Cheslow, M

SPONSORING AGENCY: Transportation Systems Center

Contract DOT-TSC-1566

STATUS: Active NOTICE DATE: Jan. 1981 START DATE: Nov. 1980 COMPLETION DATE: 1981 TOTAL FUNDS: \$146,542

ACKNOWLEDGMENT: Urban Institute

42 193070

AN ASSESSMENT OF THE TRANSPORTATION NEEDS OF SELECTED RURAL TEXAS COUNTIES

Identify the disadvantaged target population of the four county area, determine the transportation needs of the identified disadvantaged population, determine the current transportation policy of the four county areas, measure the adequacy of existing transportation systems used by the disadvantaged population, determine the total expenditure by social service agencies for transportation for its clients, determine the extent of the use of cars, vans, and buses for transporting the disadvantage. Determine the extent that the transportation resources of the community and of the social service agencies can be drawn together in a consolidated system, identify available funding sources for current and future development of a rural transportation system.

PERFORMING AGENCY: Prairie View A&M College, TEXX-PR-0003

INVESTIGATOR: Bell, RJ

SPONSORING AGENCY: Department of Agriculture

Contract 616-15-117

STATUS: Active NOTICE DATE: Aug. 1980 START DATE: May 1987 COMPLETION DATE: May 1981

ACKNOWLEDGMENT: Current Research Information Service (0071065)

42 315678

A PUBLIC TRANSPORTATION NEEDS STUDY FOR THE LOW DENSITY AREAS IN A FIVE-STATE REGION IN THE MID-WEST

The project entails derivation of a methodology for the estimation of public transportation needs and travel patterns in small towns and rural communities of a region comprised of a five-state area: Iowa, Kansas, Missouri, Nebraska, and Oklahoma. Methods for evaluating alternative transportation systems as to their cost effectiveness in satisfying the public transportation needs will also be established. Input for the study will be augmented by a two-phase seminar series to be held at the University campus. Those attending the seminars will be local, national officials, transit experts, and transit operators.

PERFORMING AGENCY: Kansas University, KS 11-0001

INVESTIGATOR: Lee, J Tel (913) 864-5658

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Jasper, N Tel (202) 426-0080

Contract KS-11-0001

STATUS: Active NOTICE DATE: Jan. 1980 START DATE: Oct. 1979 COMPLETION DATE: Sept. 1980 TOTAL FUNDS: \$64,680

ACKNOWLEDGMENT: Kansas University

42 315726

PROJECT EVALUATION AND TECHNICAL STUDIES UNDER THE UMTA SERVICE AND METHODS DEMONSTRATION

Responsible for the evaluation of projects, as well as development and assessment of evaluation methodologies, planning and implementation assistance and analytical studies in support of program activities. Evaluation efforts occurred in Knoxville, TN; Palm Beach County, FL; Washington, D.C.; New Jersey; Boston, MA; New York City; Roanoke, VA; Minneapolis, MN.

REFERENCES:

Evaluation Plan for the Palm Beach County Fully Accessible Bus Fleet Demonstration Project, Multisystems, Incorporated, Sept. 1978

The Knoxville, Transportation Brokerage Demonstration Project: An

Evaluation, Multisystems, Incorporated, Dec. 1978

Evaluation Plan for the Washington, D.C. Accessible Bus Project, Multisystems, Incorporated, Apr. 1979

Knoxville Transportation Brokerage Demonstration Project: An Evaluation, Multisystems, Incorporated, Oct. 1979

PERFORMING AGENCY: Multisystems, Incorporated, DOT-TSC-1412
 INVESTIGATOR: Juster, RD Tel (617) 864-5810 Englisher, L
 SPONSORING AGENCY: Transportation Systems Center, Department of Transportation
 RESPONSIBLE INDIVIDUAL: Kelleher, DJ Tel (617) 494-2000

Contract DOT-TSC-1412

STATUS: Active NOTICE DATE: Mar. 1980 COMPLETION DATE: Sept. 1981 TOTAL FUNDS: \$1,016,000

ACKNOWLEDGMENT: Multisystems, Incorporated

42 315861

IMPROVED PUBLIC TRANSPORTATION SERVICES TO AIRPORTS

Improved utilization of public transportation systems in the region is of continuing urgency because of the congested vehicular systems, concern for air quality, and high energy consumption resulting from extensive use of private autos. This Project will develop, examine and evaluate several alternate airport access improvements to determine their feasibility and to determine the extent to which they can reduce the airport user's reliance on the auto. Existing public transportation services linking Kennedy, LaGuardia, and Newark Airports with the Manhattan Central Business District (CBD) as well as rail and subway hubs in outlying areas will be examined.

PERFORMING AGENCY: Port Authority of New York and New Jersey, TSA-661

INVESTIGATOR: Schefer, L Gonseth, A Chudd, R

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation; Federal Highway Administration, Department of Transportation

Contract IT-09-0089/PL

STATUS: Active NOTICE DATE: May 1981 TOTAL FUNDS: \$200,000

ACKNOWLEDGMENT: Port Authority of New York and New Jersey

42 315863

PUBLIC TRANSPORTATION ACCESS TO FOUR PROPOSED INDUSTRIAL PARKS IN NEW YORK AND NEW JERSEY

The Port Authority has selected tracts of undeveloped land as possible sites for major innercity industrial parks in the New York-New Jersey Metropolitan Area. A successful park needs to attract lesser skilled workers which requires convenient and reasonable public transportation serving the worksite. None of the sites is now readily accessible from established public transportation systems. This study will develop the potential for various alternate means to connect four of the sites with public transportation or to develop recommendations for other possible services.

PERFORMING AGENCY: Port Authority of New York and New Jersey, A-720

INVESTIGATOR: Quimby, WS Tel (212) 466-8396

STATUS: Terminated NOTICE DATE: May 1981 START DATE: Oct. 1979

ACKNOWLEDGMENT: Port Authority of New York and New Jersey

42 315933

NORTH CENTRAL SUBAREA TRANSPORTATION STUDY--PHASE II ALTERNATIVES ANALYSIS

The objective is to conduct a Phase II Alternatives Analysis and file an Environmental Impact Statement in order to secure Federal capital funds for major transportation improvements.

PERFORMING AGENCY: Dallas, City of, Texas

INVESTIGATOR: Kelly, RW Tel (214) 670-4032 Kanoff, SH

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation; North Central Texas Council of Governments
 RESPONSIBLE INDIVIDUAL: Kanoff, SH Tel (214) 670-4032

Contract TX-09-0096

STATUS: Active NOTICE DATE: Dec. 1979 START DATE: Dec. 1979 COMPLETION DATE: June 1981 TOTAL FUNDS: \$280,000

ACKNOWLEDGMENT: Dallas, City of, Texas

42 316129

DERIVING ORIGIN-DESTINATION INFORMATION FROM ROUTINELY COLLECTED TRAFFIC COUNTS

The purposes of the research are to develop a practical methodology for deriving origin-destination (O-D) information from traffic counts in congested networks and to determine the relative accuracy of O-D synthesizing procedures. A benefit/cost approach is being used to examine several methods of trip table synthesis for single path networks (e.g., freeways, arterials, rail transit systems) in order to determine the most cost effective trip distribution method for different transportation planning situations. The state of the art in O-D synthesis has been reviewed and two very different approaches to the problem have been examined to determine their possible applicability to congested networks. Testing will be performed on both hypothetical networks and actual networks for which the link counts and true O-D pattern are known. Comparison of the results will be used to determine the most effective procedure for solving the congested network problem. congested network problem.

REFERENCES:

Deriving Origin-Destination Info from Routinely Collected Traffic Counts, Phase I: Rev of Current Res and Applications, Chan, VK; Dowling, RG; Willis, AE, California University, ITS, UCB-ITS-WP-80-1

Deriving Origin-Destination Info from Routinely Collected Traffic Counts, Phase III ..., Willis, AE; Chan, VK, California University, ITS, UCB-ITS-WP-80-10

PERFORMING AGENCY: California University, Berkeley, W20771

INVESTIGATOR: May, AD Tel (514) 642-3585

SPONSORING AGENCY: California Department of Transportation

Contract DOT-13445-A74104

STATUS: Active NOTICE DATE: May 1981 START DATE: July 1979 COMPLETION DATE: Aug. 1981 TOTAL FUNDS: \$80,646

ACKNOWLEDGMENT: California University, Berkeley

42 333303

TRANSPORTATION TOMORROW

Synthesis and analysis of investment, productivity, energy, roles of government and the private sector in transportation. Ten policy oriented management rules are under development.

PERFORMING AGENCY: California University, Berkeley

INVESTIGATOR: Garrison, WL Tel (415) 642-3585 Roberts, PO

Jones, DW Harris, RG Keeler, TE Deakin, EA

SPONSORING AGENCY: National Chamber Foundation

RESPONSIBLE INDIVIDUAL: Marshall, JA Tel (202) 659-6198

STATUS: Terminated NOTICE DATE: Dec. 1981 START DATE: July 1980

ACKNOWLEDGMENT: National Science Foundation

42 333311

COASTAL TRANSIT SERVICE OPTIONS AND POLICY

The overall project objectives are 1) to develop a set of guidelines for identifying situations in which transit services would be a feasible means of providing access to coastal recreation sites and 2) to test the applicability of these guidelines through trial design and evaluation of transit services in a series of case studies. Objectives for the first year are to develop guidelines for the feasibility of coastal recreation area transit service through a literature search and a survey of existing services. Objectives for the second year are to complete the case studies and reevaluate the applicability and generality of the guidelines in light of the case studies. Anticipated benefits are: 1) Public use--Public access to many coastal recreation areas is either restricted to these with access to an automobile or is made difficult due to traffic congestion and inadequate parking. The proposed project will identify conditions in which transit services can alleviate these barriers to public access. 2) Resource management agencies managing coastal resources in California have a legislative mandate to consider public transit as a means of providing access to coastal development. The proposed project will facilitate the planning and implementation of coastal transit services by pointing out conditions necessary for their feasibility. 3) Manpower development very few transportation professionals are trained in the planning, design, or operation of transit services especially suited to coastal recreation sites.

PERFORMING AGENCY: San Diego State University, School of Engineering, Department of Civil Engineering

INVESTIGATOR: Banks, JH Stutz, FP

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: Mar. 1980 COMPLETION DATE: 1982 TOTAL FUNDS: \$31,059

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (GBP 4559)

42 333373

ENERGY CONSERVATION CONSUMER TRAVEL QUESTIONNAIRE: TO DEVELOP A VALID AND REASONABLE QUESTIONNAIRE AND A COMPREHENSIVE HANDBOOK DETAILING ITS USE

A universal questionnaire and research methodology is needed by the state and local planning agencies and the local transit systems that can predict travel behavior with a higher degree of reliability and validity than is currently available. Transportation forecasts are unreliable because only vital statistics and generalized trip information is obtained by state and local planning agencies without input of consumer psychological behavior and marketing strategies.

PERFORMING AGENCY: Florida Department of Transportation, Department of Psychology, Star 80-073

INVESTIGATOR: Severy, LJ Tel (904) 392-6634

SPONSORING AGENCY: State University System of Florida

RESPONSIBLE INDIVIDUAL: Weber, DF Tel (904) 488-2600

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: July 1980 COMPLETION DATE: Sept. 1981 TOTAL FUNDS: \$26,000

ACKNOWLEDGMENT: Florida Department of Transportation

42 333445

INTERCITY BUS ROUTE EVALUATION FOR STATEWIDE PLANNING

Operating cost and revenue data from intercity bus operators serving Iowa are examined to develop cost estimates for the carriers and demand model on regular routes. Total operating cost estimates are based on operating cost components which can be tied to the Consumer Price Index. The passenger demand model incorporates service frequency and population factors. The route specific data are from 11 routes of five carriers. Additional community welfare and social factors are considered to assess the potential need for service in communities. The research results may be used to evaluate new services or service changes for intercity carriers.

PERFORMING AGENCY: Engineering Research Institute, Iowa State University, ERI 1456

INVESTIGATOR: Kannel, EJ Tel (515) 294-6777 Brewer, KA Carstems, R Tel (515) 294-6777

SPONSORING AGENCY: Iowa Department of Transportation, Planning and Research Division

RESPONSIBLE INDIVIDUAL: Peterson, S Tel (515) 296-1221

Contract IA-09-8008

STATUS: Active NOTICE DATE: Jan. 1980 START DATE: Mar. 1980 COMPLETION DATE: Feb. 1981 TOTAL FUNDS: \$45,000

ACKNOWLEDGMENT: Engineering Research Institute, Iowa State Univ

42 333515

ANALYSIS OF TRANSPORTATION/RETAILING INTERACTIONS

Project will continue the development of econometric models of retail activity in urban areas with special emphasis on the effect of transportation policies on the location and scale of retail activity.

PERFORMING AGENCY: Massachusetts Institute of Technology, Department of Civil Engineering

INVESTIGATOR: Lerman, S Tel (617) 253-7110

SPONSORING AGENCY: Department of Transportation, Office of University Research

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: June 1979 COMPLETION DATE: Sept. 1981

ACKNOWLEDGMENT: Massachusetts Institute of Technology

42 333523

DYNAMIC MODELS OF TRANSPORTATION SYSTEMS

The objective is to develop behavioral dynamic models of urban systems to evaluate alternative transportation, energy and urban policies. This project extends previous research on non-linear dynamical systems and it incorpo-

rates modern developments in individual choice and continuous time models.

PERFORMING AGENCY: Massachusetts Institute of Technology, Center for Transportation Studies

INVESTIGATOR: Ben-Akiva, M Tel (617) 253-5324

SPONSORING AGENCY: Massachusetts Institute of Technology

STATUS: Active NOTICE DATE: Nov. 1980

ACKNOWLEDGMENT: Massachusetts Institute of Technology

42 333530

IMPROVED METHODS FOR SHORT-RANGE TRANSIT PLANNING AND MANAGEMENT

Transit operators currently face a set of pressures which have been developing over the past five years, including: increased emphasis on short-range transit improvement strategies as reflected in the Transportation Systems Management requirement; increased fiscal conservatism resulting in the need to demonstrate cost-effectiveness of individual transit services; increased expectations for transit's role in accomodating future energy shortages.

PERFORMING AGENCY: Massachusetts Institute of Technology, Center for Transportation Studies

INVESTIGATOR: Wilson, N Tel (617) 253-5046

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: Sept. 1980 COMPLETION DATE: Aug. 1983

ACKNOWLEDGMENT: Massachusetts Institute of Technology

42 333532

MIT/GEIPOT MULTIMODAL TRANSPORTATION EDUCATIONAL AND RESEARCH PROGRAM

This project involves training and technical education by MIT of GEIPOT Personnel, as well as cooperative research projects undertaken jointly by MIT and GEIPOT personnel. Initial cooperative research will develop models and application procedures for a range of urban transportation planning contexts and an analysis of the consequences of transportation policy measures designed to reduce consumption of gasoline and diesel fuels. The project involves case studies in three Brazilian urbanized areas. Sao Paulo, Porte Alegre and Maceio. The focus of the project during the first year is on the investigation and modeling of urban travel behavior.

PERFORMING AGENCY: Massachusetts Institute of Technology, Center for Transportation Studies

INVESTIGATOR: Roos, D Tel (617) 253-5321 Gakenheimer, R Ben-Akiva, M

SPONSORING AGENCY: Ministry of Transportation, Brazil, GEIPOT, Planning and Research Agency

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: June 1980 COMPLETION DATE: Dec. 1982

ACKNOWLEDGMENT: Massachusetts Institute of Technology

42 333543

RESPONSIVE METHODOLOGIES FOR TRANSPORTATION SYSTEMS MANAGEMENT AND PLANNING USING CALCULATORS AND MICROCOMPUTERS

The objective is development of analysis methods which are policy-relevant, valid and responsive for use in short-range urban transportation planning and decision-making. Particular emphasis is on (1) simplified models of travel behavior in a region, (2) theories and models of transportation systems performance (including maintenance) and (3) integrated equilibrium models of travel demand and system performance based on a mix of continuous and discrete representation of the transportation networks and the urbanized area. Methods are being designed for use with limited data, using programmable desk and pocket calculators, and "personal" microcomputes. Teaching or workshops for mid-career professionals are being developed as well as case studies in cooperation with transportation agencies.

PERFORMING AGENCY: Massachusetts Institute of Technology, Center for Transportation Studies

INVESTIGATOR: Manheim, M Tel (617) 253-1627 Ben-Akiva, M

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

STATUS: Active NOTICE DATE: Nov. 1980 START DATE: Aug. 1979 COMPLETION DATE: June 1981

ACKNOWLEDGMENT: Massachusetts Institute of Technology

42 333549

ANALYSIS OF RURAL TRAVEL BEHAVIOR: THE DEVELOPMENT AND TESTING OF MODELS TO FORECAST DEMAND FOR RURAL PUBLIC TRANSPORTATION

The objective of this research is to develop and test quantitative models (aggregate and disaggregate) to describe the interrelationships between the socioeconomic and trip characteristics of rural residents and transportation system attributes. The models will serve several purposes: (1) improve the current understanding of rural travel behavior, (2) provide analytical tools to forecast demand on various demand-response systems alternatives and (3) assist transportation professionals in rural areas in the selection of the size and number of buses required for each alternative. Cross classification and multiple regression analysis will be employed to develop the models.

PERFORMING AGENCY: Massachusetts University, Amherst, Department of Civil Engineering

INVESTIGATOR: Collura, J Tel (413) 545-0635

SPONSORING AGENCY: National Science Foundation

Grant ENG 7805538

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: Apr. 1978 COMPLETION DATE: Mar. 1981 TOTAL FUNDS: \$24,600

ACKNOWLEDGMENT: Massachusetts Institute of Technology

42 333814

EVALUATION OF SELECTED HUMAN SERVICES TRANSPORTATION PROVIDERS IN TEXAS

The objective of the study is the development of a more cost-effective and efficient system for providing human services transportation in Texas. The study will collect cost and service data to be used in the development of an evaluation and monitoring system for use by human services transportation providers.

REFERENCES:

Evaluation of Selected Human Services Transportation Providers in Texas, Bullard, DL; Urbanik, T, Aug. 1980

PERFORMING AGENCY: Texas Transportation Institute, 2065

INVESTIGATOR: Urbanik, T Tel (713) 845-1535 Bullard, D

SPONSORING AGENCY: Texas State Department of Highways & Public Transp; Urban Mass Transportation Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Dial, D Tel (512) 475-7466

STATUS: Active NOTICE DATE: Dec. 1980 START DATE: Sept. 1979 COMPLETION DATE: Aug. 1981

ACKNOWLEDGMENT: Texas Transportation Institute

42 333817

IMPROVED TECHNIQUES FOR IMPACT ANALYSIS OF TRANSIT ALTERNATIVES

To develop a generalized approach to impact evaluation of alternative short range transit system plans.

REFERENCES:

Background Data Required for Developing a Generalized Approach to Eval Impacts of Short Range Transit Alternatives, Chui, MK; Buffington, JL, Nov. 1980

PERFORMING AGENCY: Texas Transportation Institute, 2-10-80-1066

INVESTIGATOR: Buffington, JL Tel (713) 845-5815

SPONSORING AGENCY: Texas State Department of Highways & Public Transp; Urban Mass Transportation Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Chapman, DT Tel (512) 475-7466

STATUS: Active NOTICE DATE: Dec. 1980 START DATE: Sept. 1979 COMPLETION DATE: Aug. 1981

ACKNOWLEDGMENT: Texas Transportation Institute

42 333819

PARK-AND-RIDE DEMAND ANALYSIS

No acceptable procedures are currently available that can be used to analyze the types of travel data available in Texas to reliably estimate park-and-ride

demands. This study will develop demand estimation models using data collected at Texas park-and-ride facilities.

PERFORMING AGENCY: Texas Transportation Institute, 2-10-81-1064

INVESTIGATOR: Christiansen, DL Tel (713) 845-1535

SPONSORING AGENCY: Texas State Department of Highways & Public Transp; Urban Mass Transportation Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Nixon, J Tel (512) 475-7403

STATUS: Active NOTICE DATE: Dec. 1980 START DATE: Sept. 1980 COMPLETION DATE: Aug. 1981

ACKNOWLEDGMENT: Texas Transportation Institute

42 333820

LEVEL OF SERVICE CONCEPT APPLIED TO PUBLIC TRANSPORTATION

The proposed work program of this research project is composed of a series of individual work tasks which detail the specific efforts designed to accomplish the following basic objectives: identify and define individual level-of-service indicators which shall be included in the development of level-of-service concept; assign quantitative values to each level-of-service indicator; develop a weighting technique to determine the relative importance of each indicator; and based on the concept of individual indicators, develop a level-of-service concept which can lead to an overall service rating that can be applied to any type of transit operation in Texas.

PERFORMING AGENCY: Texas Transportation Institute, 2-10-81-1067

INVESTIGATOR: Bullard, D Tel (713) 845-5817 Christiansen, DL

SPONSORING AGENCY: Texas State Department of Highways & Public Transp; Federal Highway Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Nixon, J Tel (512) 475-7403

Contract 2-10-81-1067

STATUS: Active START DATE: Sept. 1980 COMPLETION DATE: Sept. 1981 TOTAL FUNDS: \$30,000

ACKNOWLEDGMENT: Texas Transportation Institute

42 333933

INTERCITY BUS TRANSPORTATION PLANNING

The objective of this research is to investigate intercity travel requirements, including those of small urban and rural areas, and to evaluate the role and potential of intercity bus services in meeting those requirements. Procedures will be developed to determine appropriate level-of-service requirements for intercity bus services. The procedures will be designed for use by state and local transportation planners as a means of identifying the relative needs of communities or sets of communities for intercity bus transportation, and as a tool for prioritizing the potential recipients of public assistance for the provision of such services. Geographic, economic, demographic, and other characteristics of communities will be considered.

PERFORMING AGENCY: Peat, Marwick, Mitchell and Company

INVESTIGATOR: DiRenzo, JF Tel (202) 223-9525

SPONSORING AGENCY: American Assn of State Hwy and Transp Officials; Federal Highway Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Spicher, RE National Cooperative Highway Research Program Tel (202) 389-6741

NCHRP 8-25

STATUS: Active NOTICE DATE: Apr. 1981 START DATE: Apr. 1980 COMPLETION DATE: Sept. 1981 TOTAL FUNDS: \$200,000

ACKNOWLEDGMENT: National Cooperative Highway Research Program

42 333942

FORECASTING THE BASIC INPUTS TO TRANSPORTATION PLANNING

The general objective of this research is to summarize and evaluate techniques of using previously forecasted, independent, socioeconomic variables at appropriate levels of geography necessary for urban, rural, and statewide transportation planning. To accomplish this objective, the following tasks are considered essential but not limiting: Task 1. Examine the sensitivity of transportation forecasting and simulation procedures, including the FHWA/UMTA traffic simulation process, to variations in independent variables. The sensitivity analysis should take into account the size, growth trends, economic functions, density, and other significant characteristics of differing geographic areas. Task 2. Review techniques for using available sources of forecasted independent variables in the light of (a)

the foregoing sensitivity analysis, (b) current and anticipated planning functions, and (c) other factors, such as resource constraints. At least the following variables should be considered: (a) population and population characteristics, (b) housing unit and household characteristics, (c) income, (d) employment by major sector, and (e) vehicle availability. Limitations and biases of each technique for particular applications (such as growing vs. declining areas, urban vs. rural, both large and small) should be discussed, as should also the appropriateness of each technique and the availability of base data for small analysis areas such as traffic zones. Task 3. If satisfactory techniques for the modification and application of available forecasts are not found, propose new techniques. Task 4. Prepare a final report to include: (a) Documentation of available techniques and their attributes for utilizing socioeconomic variables. (b) Research findings, specifically addressing items under Task 2. (c) Applications of techniques to geographic areas with the

following characteristics: (1) growing versus declining; (2) urban versus rural; (3) large versus small.

PERFORMING AGENCY: Hamburg (John) and Associates

INVESTIGATOR: Lathrop, GT Tel (919) 942-8729

SPONSORING AGENCY: American Assn of State Hwy and Transp Officials; Federal Highway Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Kingham, RI National Cooperative Highway Research Program Tel (202) 389-6741

NCHRP 8-24

STATUS: Completed NOTICE DATE: Apr. 1981 START DATE: Jan. 1980 COMPLETION DATE: Apr. 1981 TOTAL FUNDS: \$75,000

ACKNOWLEDGMENT: National Cooperative Highway Research Program

43 195935

RELATIONSHIP OF LOCAL PUBLIC FINANCING TO NEEDED PUBLIC SERVICES

Develop for taxing purposes a theoretical model for rural land appraisal. Establish measures of productivity for the model. Relate local public services needs to the tax potential. Analyze relationship of functional socio-economic areas to legal-economic limitations on the tax base. The theoretical model will be based primarily upon the residual return to the natural resource land. Gross productivity will be based upon detailed soil surveys by the Soil Conservation Service which can be used to determine normal land use patterns, cultural practices and yields. Physical and economic data will be used to determine costs of inputs, returns and net rents. The initial standard for the need for public services will be current expenditures. Secondary data will be used where possible to determine level of expenditure and quality of services. Costs of model public services can be related arbitrary to certain proportions of the net rent of tax areas that are determined legally. One phase of the work has been to determine the impact of past price increases as well as hypothesized higher price levels for gasoline on the commuting habits of workers which could signal the need for examining the feasibility of public transportation as an alternative to private transportation. Workers who commute into larger towns to work in the factories were asked how they thought they might react to higher gasoline prices. The survey conducted in the Fall of 1976, included 1,329 industrial employees in Fort Smith Ark., who commute to their job from outside the city limits. Six alternative courses to action to respond to higher gasoline prices were suggested to the respondents. These were: (1) join a carpool, (2) buy a smaller car, (3) move closer to your job, (4) quit your job, (5) adjust by cutting other costs, and (6) do nothing. There was adjustment by the sampled employees to the gasoline price increases that occurred between 1973 and 1974. If prices were to go higher, there would be additional adjustment by these employees. The most drastic alternative is probably quitting the job; as the price goes from 75 cents per gallon to \$1.50 to 2.25 per gallon, the percentage of employees stating they would rise at each higher price.

REFERENCES:

How Factory Workers Stated They Would Adjust to Higher Gasoline Prices, Woods, MD; Redfern, JM, Arkansas Agri Expt Station, Arkansas Farm Research, 16(5):13, 1977

PERFORMING AGENCY: Arkansas University, Fayetteville, Agricultural Economics and Rural Sociology

INVESTIGATOR: Redfern, JM

SPONSORING AGENCY: Department of Agriculture

STATUS: Active NOTICE DATE: Nov. 1981 START DATE: Feb. 1971

ACKNOWLEDGMENT: Current Research Information Service (CRIS 0059255)

43 333510

MILWAUKEE USER-SIDE SUBSIDY CASE STUDY

The project is a case study of the Milwaukee User-Side Subsidy program. The study will investigate the program's performance in light of its two distinctive features--it receives no federal assistance and it serves handicapped persons only. The case study will provide a description of site characteristics and program history as well as an assessment of administrative cost and efficiency, provider response, user response and benefits and overall concept feasibility.

REFERENCES:

Milwaukee User-Side Subsidy Case Study Design Charles River Associates, Incorporated, Oct. 1980

PERFORMING AGENCY: Charles River Associates, Incorporated, 495.14

INVESTIGATOR: Lovely, ME Tel (617) 266-0500

SPONSORING AGENCY: Transportation Systems Center, Department of Transportation

RESPONSIBLE INDIVIDUAL: Spear, B Tel (617) 494-2276

Contract 1757-14

STATUS: Active NOTICE DATE: Dec. 1980 START DATE: Nov. 1980 COMPLETION DATE: Jan. 1981 TOTAL FUNDS: \$15,000

ACKNOWLEDGMENT: Charles River Associates, Incorporated

43 333551

ASSESSING LOCAL DEFICIT AND SOCIAL SERVICE AGENCY USER CHARGES FOR RURAL PUBLIC TRANSPORTATION

The objectives of the project are to develop, test, and evaluate alternative procedures to: (1) apportion the local share of deficits among towns receiving

service as part of a region-wide public transportation program; and (2) determine user charges to be paid by social service agencies for transportation services made available to them.

PERFORMING AGENCY: Massachusetts University, Amherst, DOT RC 82028

INVESTIGATOR: Collura, J Tel (413) 545-0635

SPONSORING AGENCY: Department of Transportation, Office of University Research

RESPONSIBLE INDIVIDUAL: McKelvey, D Tel (202) 426-0158

Contract DOT RC 82028

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: Sept. 1979 COMPLETION DATE: June 1981 TOTAL FUNDS: \$151,000

ACKNOWLEDGMENT: Massachusetts University, Amherst

43 334885

RESOURCE ALLOCATION TO TRANSPORTATION PROGRAMS IN TRI-CITIES AREA

Evaluate the allocation of transportation resources in the Tri-Cities area to determine the efficiency and effectiveness of the allocations in terms of energy utilization and regional socioeconomic development. Use the findings to develop transportation strategies and to encourage intercommunication for growth plans. Monitor the application of the findings.

PERFORMING AGENCY: Washington State Department of Transportation, HR 587

INVESTIGATOR: Shea, DJ Tel (206) 753-5784

SPONSORING AGENCY: Washington State Department of Transportation; Federal Highway Administration, Department of Transportation

HP&R

STATUS: Active NOTICE DATE: Nov. 1981 START DATE: July 1980 COMPLETION DATE: Dec. 1981 TOTAL FUNDS: \$43,580

ACKNOWLEDGMENT: Washington State Department of Transportation

43 335312

MODELLING THE GEOGRAPHIC COMPONENT OF MASS TRANSIT SUBSIDIES

A model is proposed for evaluating mass transit operating and net subsidies. The model, which differs significantly from previous efforts through its explicit consideration of the spatial interdependencies of the transit system, will provide new knowledge about the nature of subsidies in mass transit systems and knowledge at a much smaller geographic scale than ever before possible. The model may be oriented to determine subsidies for individual network segments or reoriented to determine subsidies for selected social groups and for geographic subareas or jurisdictions. The key element of the model is the apportioning of fares over the entire trip path of the transit user. Total fares generated for each network segment are determined by summing the partial fares contributed by all users of that segment. The operating subsidy for the use is calculated by reaggregating the per person subsidy over the user's trip path. These results may in turn be aggregated by the social class of the use and by his/her origin or destination to provide a data base suitable for evaluating distributional equity. Finally, the distribution of net subsidies is determined by adding non fare-box revenues to operating subsidies.

PERFORMING AGENCY: Washington University, Seattle, School of Arts and Sciences

INVESTIGATOR: Hodge, DC

SPONSORING AGENCY: National Science Foundation, Directorate for Biological, Behavioral & Social Sciences Div, SES80-16416

STATUS: Active NOTICE DATE: June 1981 START DATE: Sept. 1980 COMPLETION DATE: Feb. 1982 TOTAL FUNDS: \$38,500

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (FB 506)

45 334963

ANALYSIS OF LOCAL LAND USE REGULATIONS AND THEIR IMPACTS ON TRANSPORTATION FACILITY NEEDS AND HIGHWAY DEVELOPMENT COSTS

Assess land use changes around major access points to I-5 and I-405 and the impacts of these developments on facility needs and development costs. The role and importance of state and local land use regulations in determining the type and extent of development will be examined, and the costs of any state transportation facility changes required as a result of land use changes will be determined. A major objective will be to identify the indirect beneficiaries of freeway development and to assess their benefits in relationship to subsequent public costs, and/or to increased transportation facility needs.

PERFORMING AGENCY: Washington State Department of Transportation
 INVESTIGATOR: Jacobson, R Tel (206) 753-4617
 SPONSORING AGENCY: Washington State Department of Transportation;
 Federal Highway Administration, Department of Transportation

HP&R

STATUS: Active NOTICE DATE: Nov. 1981 START DATE: June 1981
 COMPLETION DATE: June 1982 TOTAL FUNDS: \$40,000

ACKNOWLEDGMENT: Washington State Department of Transportation

45 335325

EMPIRICAL TESTING OF A DYNAMIC THEORETICAL MODEL OF URBAN LAND USE

A dynamic model of urban land use will be developed by combining three major theoretical approaches within the context of the general theory of stochastic processes applied to land price determination, land price changes and land development. The static theory of urban land use, capital asset pricing theory and portfolio choice theory. The model will explicitly take into consideration externalities associated with the uncertainty and expectations of property owners and developers. The model will be used to empirically evaluate the long-run efficiency of urban land use development and the urban renewal process in the Tokyo metropolitan area for which data required for the model are available. The housing development and filtering process, the effects of uncertainty on the geographic pattern of urban land prices, and the effects of population growth, transportation network development and changes in agglomeration economies on the geographic configuration of land use will also be examined. A monograph will be produced as an outcome of the research.

PERFORMING AGENCY: Pennsylvania University, Philadelphia, School of Arts and Sciences
 INVESTIGATOR: Fujita, M

SPONSORING AGENCY: National Science Foundation, Directorate for Biological, Behavioral & Social Sciences Div, SES80-14257

STATUS: Active NOTICE DATE: June 1981 START DATE: Aug. 1980
 COMPLETION DATE: Jan. 1982 TOTAL FUNDS: \$29,500

ACKNOWLEDGMENT: Smithsonian Science Information Exchange (FB 499)

48 193782

EMERGENCY CONSERVATION PLANS TO REDUCE DEMAND FOR FUEL

This is a follow-on project to develop Standby Federal Conservation Plans for Transportation in the event of a severe energy supply interruption. Guidelines are also being developed to assist states in the development of local and statewide transportation contingency strategies. This effort is part of the response by the Department of Energy to the Emergency Energy Conservation Act of 1979. The MIT effort does not include the development of a rationing program, which is also mandated by the 1979 legislation. The MIT effort involves the generation and evaluation of alternative contingency measures.

PERFORMING AGENCY: Massachusetts Institute of Technology

INVESTIGATOR: Humphrey, TF

SPONSORING AGENCY: Department of Energy

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: Oct. 1980 COMPLETION DATE: Dec. 1981

ACKNOWLEDGMENT: Massachusetts Institute of Technology

48 315857

PROCEDURE FOR COST-EFFECTIVE TRANSIT

Because of the many treatments which can be applied to transit properties (in various combinations) for noise abatement and because of the complexity of the multiple noise sources, a systematic, orderly procedure for cost-effective determinations is needed. Such a computer-based procedure is being developed. It will allow users to find the best treatments to reach a desired level, or the effect and cost of specific treatment programs they specify.

PERFORMING AGENCY: Polytechnic Institute of New York, Transportation Training and Research Center

INVESTIGATOR: McShane, WR Tel (212) 643-5525 Slutsky, S Ulerio, JM

SPONSORING AGENCY: Transportation Systems Center, Department of Transportation

RESPONSIBLE INDIVIDUAL: Hinckley, R Tel (617) 494-2119

Contract DOT-TSC-1747

STATUS: Active NOTICE DATE: Mar. 1982 START DATE: Aug. 1979 TOTAL FUNDS: \$93,570

ACKNOWLEDGMENT: Polytechnic Institute of New York

48 333705

ECONOMIC AND FINANCIAL IMPACTS OF TRANSPORTATION STRATEGIES TO IMPROVE AIR QUALITY

The basic goal of the project is to develop a set of economic impact methodologies that local transportation officials can use in analyzing alternative transportation programs or policies. While the policies in question are those applied to reduce vehicular emissions, these procedures are equally applicable to any transportation action CTSM, new transit service, etc. where local economic and financial impacts are important. Methodologies range from computer-based approaches to simple, first-cut procedures.

REFERENCES:

Economic and Financial Impacts of Strategies to Improve Air Quality, Crowell, W; Bladikas, A; Bloch, A, Tri-State Regional Planning Commission, Final Report, Nov. 1981

PERFORMING AGENCY: Polytechnic Institute of New York

INVESTIGATOR: Crowell, W Tel (212) 643-4846 Bloch, A Tel (212) 643-4846 Bladikas, A

SPONSORING AGENCY: Tri-State Transportation Commission, Tri-State Regional Planning Commission

RESPONSIBLE INDIVIDUAL: Jordan, D Tel (212) 938-3343

Contract P-120

STATUS: Completed NOTICE DATE: Feb. 1982 START DATE: July 1980 TOTAL FUNDS: \$105,000

ACKNOWLEDGMENT: Polytechnic Institute of New York

48 333864

ENERGY SENSITIVITY OF TRANSPORTATION PLANNING TECHNIQUES

The single guiding objective of this study is to find an approach for long range transportation planning that is sensitive to the availability and price of energy. The scope of the study includes: (1) summarize short term changes in travel behavior that result from changes in cost and supply of energy; (2) hypothesize long term changes in life style; (3) external changes in life style to alterations in the patterns of land use and land development and (4) evaluate the ability of the UTP procedure to deal with this scenario.

PERFORMING AGENCY: Virginia Highway & Transportation Research Council

INVESTIGATOR: Demetsky, MJ Tel (804) 977-0290 Grist, DA

SPONSORING AGENCY: Virginia Department of Highways and Transportation; Federal Highway Administration, Department of Transportation

HP&R 1692

STATUS: Active NOTICE DATE: Feb. 1981 START DATE: Feb. 1980 COMPLETION DATE: June 1981 TOTAL FUNDS: \$29,875

ACKNOWLEDGMENT: Virginia Highway & Transportation Research Council

48 335599

IMPACTS OF TRANSIT SERVICES IN ENERGY EMERGENCIES

The study investigates the effect of the 1979 energy crisis on transit ridership for a nationwide sample of 66 urbanized areas. A second focus of the study is the impact of transit in terms of alleviating the energy shortfall. A formula converting ridership increases into gasoline savings is developed. Cross-elasticities of transit ridership with respect to gasoline supply are calculated (measured by arc elasticity) for various categories of transit systems broken down by region and system size. Ridership increases and savings due to transit are estimated for a variety of energy futures, and the overall role of transit in an energy crisis is assessed. Factors are developed which can be applied to ridership forecasts to adjust for the effects of future gasoline shortfalls.

REFERENCES:

Transit Use and Gasoline Shortages Boyle, DK, Apr. 1981

Transit Use and Energy Crises: Experience and Possibilities Boyle, DK, June 1981

PERFORMING AGENCY: New York State Department of Transportation

INVESTIGATOR: Boyle, DK Tel (518) 457-2967

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Steinman, R Tel (202) 472-5140

Contract NY-09-8006

STATUS: Completed NOTICE DATE: June 1981 START DATE: Feb. 1981 COMPLETION DATE: May 1981 TOTAL FUNDS: \$10,000

ACKNOWLEDGMENT: New York State Department of Transportation

46 315712

EVALUATION OF PROVIDENCE AUTO RESTRICTED ZONE SERVICE AND METHODS DEMONSTRATION PROGRAM

This project will evaluate the impacts of auto restrictions, transit route interlocking, downtown free fare service, and transfer point consolidation on changes in transportation supply and level of service, travel behavior, pedestrian and purchasing behavior and business establishment activity using before and after data. This project also includes extensive documentation of the urban revitalization process in downtown Providence.

REFERENCES:

Final Evaluation Framework for the Providence Auto Restricted Zone Demonstration, Greene, S; Winston, B, Charles River Associates, Aug. 1979

Draft Data Collection Plan for the Providence Auto Restricted Zone Demonstration, Greene, S, Charles River Associates, Nov. 1979

PERFORMING AGENCY: Charles River Associates, Incorporated, 388.19

INVESTIGATOR: Greene, S Tel (617) 266-0500

SPONSORING AGENCY: Transportation Systems Center, Department of Transportation

RESPONSIBLE INDIVIDUAL: Jacobson, J Tel (617) 266-0500

Contract DOT-TSC-1406-19

STATUS: Active NOTICE DATE: Feb. 1980 START DATE: May 1979 COMPLETION DATE: Dec. 1984 TOTAL FUNDS: \$120,000

ACKNOWLEDGMENT: Charles River Associates, Incorporated

46 333902

STUDY OF THE IMPACTS OF REDUCTIONS IN FEDERAL EMPLOYEE PARKING SUBSIDIES

The objective of the study is to establish what effects the parking price change has had on commuting patterns of employees of federal executive agencies. For the study, a "before-and-after with control group" survey has been carried out by the Metro Washington COG. The before-and-after survey data will be analyzed to identify any significant modal shifts as well as to investigate the relationship between mode choice and the parking price. Here other factors such as trip length, size of employment, transit access and parking supply will also be considered. A comparison of the before-and-after

results of the control groups is included.

REFERENCES:

Impact of Increasing Federal Parking Prices: Interim Report Commuting Patterns Before the Price Increase, Olsson, ML; Miller, GK, Aug. 1980

PERFORMING AGENCY: Urban Institute, 1429

INVESTIGATOR: Miller, GK Tel (202) 223-1950 Everett, CT Olson, ML

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

RESPONSIBLE INDIVIDUAL: Milione, V Tel (202) 426-4984

Contract DTUM-60-80-C-71001

STATUS: Active NOTICE DATE: Jan. 1981 START DATE: Mar. 1980 COMPLETION DATE: Mar. 1981 TOTAL FUNDS: \$73,811

ACKNOWLEDGMENT: Urban Institute

46 333924

AUTOMOBILE PRICING DISINCENTIVES

This project is concerned with development and implementation of demonstrations of automobile disincentive techniques. Particular projects include various disincentives for parking in downtown and/or residential areas to discourage excessive automobile parking. Disincentives are packaged with incentives for high occupancy vehicles.

REFERENCES:

The Impact on Commuters of a Residential Parking Permit Program: A Case Study, Miller, GK; Olsson, ML, Dec. 1979

PERFORMING AGENCY: Urban Institute, 1376, 1458

INVESTIGATOR: Bhatt, KU Tel (202) 223-1950 Higgins, T Miller, GK

SPONSORING AGENCY: Urban Mass Transportation Administration, Department of Transportation

Contract DTUM60-80-C-71001

STATUS: Active NOTICE DATE: Jan. 1981 START DATE: Jan. 1980 COMPLETION DATE: Jan. 1983

ACKNOWLEDGMENT: Urban Institute

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