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Paratransit Services for the Transportation Handicapped

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On the cover, (left to right) Randy Isaacs, May Caldwell, and Jean Lyon of the Mid-Cumberland Human Resource Agency in Nashville, Tennessee demonstrate their new lift-equipped vehicle.

Paratransit Services for the Transportation Handicapped

A Report in the Series
Paratransit: Options for the Future

Final Report
April 1982

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NOTE: This report is one of a series commissioned to assess future options for the evolution of paratransit. Part of its content includes policy and other recommendations based upon this contractor's perception of the issues involved. Recognizing that there may be many alternative approaches to resolving transportation problems, these positions may not necessarily reflect those of the U. S. Government. As such, no endorsement of these recommendations is either expressed or implied by the U. S. Department of Transportation.

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Foreword

Paratransit - the "family" of transportation services between the private drive-alone auto and fixed route transit - is a concept which formally emerged in the early 1970's. Much has occurred since the seminal UMTA-sponsored Urban Institute study - Paratransit: Neglected Options for Urban Mobility (1) - popularized the term and the concept around 1975. However, despite the fact that paratransit is no longer a neglected option, there is still considerable controversy regarding what paratransit is and what it might accomplish. The attitudes towards paratransit are as diverse as the range of services which are included under the paratransit mantle.

Paratransit: Options for the Future is intended to unravel some of the controversy concerning paratransit. Specifically, the overall report is aimed at developing an understanding of the nature of the various paratransit concepts, the results and impacts they have had, and what roles they might play in the future.

The assessment of the experience of paratransit to-date is based on in-depth case studies of a number of services. These studies were designed to identify institutional, site-specific, and operational factors which have most directly influenced the impacts of various types of services. The effort has differed from other recent projects, in that no attempt has been made to develop a comprehensive list of paratransit systems. (Indeed, to provide a broader perspective, we have drawn upon the results of a number of previous studies, notably Barb and Cook (2), Multisystems (3), Systan (4), and Voorhees (5).) Instead, we have attempted to utilize a subset of experiences to provide a better understanding of what paratransit services can and cannot be expected to do. In adopting this approach, we are cognizant of the fact that, by focusing on specific cases, some of the important experiences of paratransit may be missed. However, it was felt that this approach would allow a more in-depth assessment of paratransit than would be possible if an attempt were made to review a greater number of services. The cases selected were intended to cover as wide a range of service permutations as possible. However, where appropriate, information on services not included as case studies has been incorporated as well.

The assessment of the "state-of-the-art" of paratransit traces the evolution of the concept for each market sector considered. Unlike the treatment of the individual paratransit experiences, this discussion is oriented towards an assessment of the forms to which paratransit has evolved, rather than a judgemental analysis of specific services.

Finally, the report addresses possible future directions for paratransit. The aim is to explore the potential future roles and forms of paratransit, partly to aid in guiding its future development in the most effective directions. An emphasis is placed on trying to explore how various future factors will influence paratransit, as well as the way paratransit itself may impact future trends.

The report itself is divided into stand-alone volumes addressing the specific market areas into which paratransit services generally fall: Paratransit for the Work Trip - Commuter Ridesharing; Paratransit for the Transportation Handicapped; General Community Paratransit (in Urban Areas); and Paratransit in Rural Areas. In addition, the report includes a volume on The European Paratransit Experience, covering the development of all types of paratransit in Europe. The Overview volume summarizes the characteristics of the individual types of service, and identifies issues and themes which are common to more than one specific market area. Finally, the Conclusions volume summarizes the findings of the overall study and presents recommendations concerning the future development of paratransit.

1 Introduction: Paratransit Services for the Transportation Handicapped

Background

One of the major market segments served by paratransit services is the group of elderly and handicapped (E&H) individuals who comprise the transportation handicapped (TH) - those persons whose physical (or mental) conditions make it difficult for them to use conventional transit. It has been estimated that over 13 million Americans experience "more than average difficulty" in using public transportation (6), due to inability to access and board a transit vehicle. While nearly a third of these people do drive cars, the remainder are in need of some form of specialized transportation to get around (7). In response to this need, a great many door-to-door transportation services have been introduced over the past several decades. Such paratransit services have clearly played an important role in improving the mobility of the TH.

Many TH paratransit services were originally initiated by social service agencies, which realized that transportation was a necessary auxiliary service if their clients were to benefit from their other programs. Such agencies also saw paratransit as a means of enabling their clients to attend to their own basic needs without having to depend on relatives and friends to chauffeur them.

These specialized services have been funded largely through a variety of government-aided programs, including those authorized by such legislation as the Older Americans Act of 1965, the Social Security Act of 1935, the Public Health Service Act of 1944, and the Community Services Act of 1974 (A complete list is included in Section 3. of this chapter). In all, there are over 100 different federal programs providing funds for TH services; as of early 1980, 65 of these were administered by the U.S. Department of Health and Human Services (HHS). Although an accurate count is nearly impossible to obtain, due to constant changes and the fact that many local programs are too small to receive any attention, it has been estimated that there are over 3000 such services in this country at present (8).

Although social service agency programs continue to dominate the field, regular transportation providers (i.e., transit operators) and other governmental agencies have become increasingly involved in the initiation of

specialized TH services. Transit's involvement in this area really began in 1970, when amendments to the Urban Mass Transportation Act of 1964 declared it to be: "national policy that the elderly and handicapped have the same right . . . to utilize mass transportation facilities and service"

" Along with reduced fare programs on fixed-route service, paratransit became a common response to the needs of the elderly and handicapped. Activities in this area intensified when the National Mass Transportation Assistance Act of 1974 (which created federal operating subsidies for the first time) required "special efforts" to be made to meet the needs of elderly and handicapped. In contrast to the HHS - funded programs, the UMTA initiatives were targeted at all individuals with transportation problems, rather than toward travel needs induced by social service agency programs. By the mid-1970's a number of transit agencies, including those in Portland (OR), Cleveland (OH), Denver (CO), and Minneapolis/St. Paul (MN) were leading the way in terms of introducing paratransit services for the TH. In addition to sponsoring transit agency services, the Urban Mass Transportation Administration (UMTA) has provided funds to purchase vehicles for private non-profit agencies through the 16(b)(2) program.

State and local governments have also entered the TH paratransit field. In some cases, states have provided specialized funding; for example, in Wisconsin, the Elderly and Handicapped Transportation Assistance Program was budgeted at nearly \$2.5 million for 1981. In other cases, state (and local) agencies have been responsible for coordinating social service programs and/or directly providing transportation service.

Finally, the issue of paratransit's role in insuring mobility for the TH has become well-publicized, in light of the controversy surrounding U.S.DOT's requirements that transit facilities be made accessible to the handicapped, so as to conform with Section 504 of the Rehabilitation Act of 1973. These requirements, which have been modified so as permit the implementation of paratransit service, may have a significant impact on the future status of TH paratransit services.

Overview

This volume examines the experiences of various types of TH paratransit services, discusses the state-of-the-art of organizational and service options and issues, and explores the nature of future directions in this area.

Much of the information in this volume is based on a series of case studies prepared in conjunction with the report. The cases selected for analysis represent a variety of institutional arrangements, ranging from social service agency-sponsored and operated to transit agency-operated and sponsored services, as well as a range of service delivery mechanisms. The characteristics of these services, including key cost and ridership information, are outlined in Tables 1, 2 and 3. An effort has been made to compile comparable statistics on each service; however, this has not always been possible. For purposes of comparison, an average of a number of systems nationwide (4) has been included in the table. The cases studied are summarized below:

- Spokane Area Special Transportation Agency (Spokane, WA) - The Spokane Area Special Transportation Agency (SASTA) is an independent agency which provides demand-responsive transportation service for the E&H. The service, formerly known as the Interagency Motor Pool, was originally operated by the Spokane YMCA. Contracting social service agencies make use of SASTA's vehicles, and, in turn, donate their own vehicles while not in use for their own program.
- Neighborhood Transportation Service (Chicago, IL) - The Council for Jewish Elderly in Evanston operates the Neighborhood Transportation Service - three autonomous, yet interrelated services - as part of a broad human service program (providing professional help, housing, leisure activities, and personal care). All of these services have been developed through a neighborhood-based planning process.
- OHDS Demonstrations (five locations) - The Office of Human Development Services (part of the then Department of Health, Education, and Welfare) sponsored five demonstrations of coordination of specialized transportation services during 1978-79. The projects, which demonstrated various types and aspects of coordination, took place in the following locations: Jacksonville (FL), Fayetteville (AR), Howard County (MD), Westchester County (NY), and Grand Rapids (MI).

TABLE 1

INSTITUTIONAL CHARACTERISTICS: TH SERVICES

System	Type of Service	Began	Lead Agency	Operator	Source of Funding	Nature of Coordination	Major Problems/Barriers
Spokane Area Special Transportation Agency	d-r	1976	Spokane YMCA	SASTA	Various federal, state, and local agencies	consolidation; use of pool by associated independent agency providers	-----
Chicago CJE/NTS	d-r (curb-to-curb; door-to-door; subscription)	1973	CJE	CJE	CJE	integrated into overall service delivery system (3 transport. options)	-----
OHDS Demos.:							
Jacksonville	d-r and fixed schedule	1978	GJEO, Inc.	RIDE	OHDS	consolidation	billing/accounting problems
Fayetteville	d-r and fixed schedule	1978	NAHSA, Inc.	NAHSA	OHDS	clearinghouse	-----
Grand Rapids	d-r and fixed schedule	1978	Grand Rapids Area Transit Authority	GRATA and non-profit agency	OHDS, UMTA, agencies	administrative coordination	-----
Howard Co.	d-r and fixed schedule	1978	Community Action Agency of Howard Co.	URTA	OHDS, participating agencies	consolidation	lack of good management
Westchester Co.	fixed schedule	1978	Westchester Co. DOT	WCSC	OHDS	consolidation	political opposition, high costs
Portland LIFT	d-r (curb-to-curb; door-to-door)	1976	Tri-Met (Tri-County Metro. Trans. District)	Tri-Met, taxi co.'s; non-profit providers	Fed. programs	contracts between Tri-Met, agencies, private providers	scheduling, reliability of service, high cost

TABLE 1
(continued)

INSTITUTIONAL CHARACTERISTICS: TH SERVICES

System	Type of Service	Began	Lead Agency	Operator	Source of Funding	Nature of Coordination	Major Problems/Barriers
Cleveland CRT	d-r (door-to-door)	1976	Greater Cleveland Regional Transit Authority (GCRTA)	GCRTA, taxi co.	UMTA County (sales tax)	zonal countywide system with public and private operator	pressure from taxi co.'s
Twin Cities: Metro Mobility	d-r (door-to-door)	1979	Minnesota DOT, Metro Transit Comm., Metro Council	Metro.Transit comm. 3 taxi cos., 2 non-profit providers	Minnesota DOT, UMTA	centralized scheduling and program management	high costs, poor attitude among staff
Pittsburgh ACCESS	d-r (door-to-door)	1979	Port Authority of Allegheny County (PAT)	taxi co.'s, non-profit organizations	UMTA, PAT	countywide brokerage (ACCESS transportation systems, Inc.)	labor, insurance agency cooperation, question of regulatory authority, capacity constraints
Delaware DAST	d-r	1974	Delaware Administration for Special Transportation	DAST, private provider	State of Delaware, agencies	statewide coordination	labor issues, federal funding
Mercer Co. (NJ) TRADE	f-r, subscription d-r (door-to-door)	1979	Mercer Co. Dept. of Human Services	TRADE	UMTA, Co., state agencies	consolidation	lack of agency interest, lack of political support, operational problems (vehicles and drivers)

Sources: project directors and evaluation reports.

TABLE 2

SERVICE CHARACTERISTICS: TH SERVICES

System	Location	Eligibility	Target Population	Service Area (sq. miles)	Density (target pop./sq. mile)	Average Daily Ridership	Trips/Day per 1000 eligible Residents	Registrants (%)	Trips/Day per 1000 Registrants
Spokane Area Special Transportation Agency	Spokane, WA	E/H	70,000	325	215	460	7	2000 (3%)	230
CJE/NTS	Northern Chicago, IL	Elderly	70,000	6	11,700	180	9	2000 (3%)	90
OHDS Demos.	Jacksonville FL	E/H	N/A	766	N/A	1450	N/A	N/A	N/A
	Fayetteville AR	E/H	N/A	3,267	N/A	70	N/A	N/A	N/A
	Grand Rapids MI	E/H	N/A	857	N/A	212	N/A	N/A	N/A
	Howard Co., MD	E/H and low income	N/A	200	N/A	160	N/A	N/A	N/A
	Westchester Co., NY	E/H	N/A	450	N/A	32	N/A	N/A	N/A
LIFT	Portland, OR	Cannot use regular transit	23,000	89	258	1000	23	4300 (19%)	233
CRT	Greater Cleveland, OH	E/H	160,000	456	351	1500	9	72,000 (45%) E/H I.D.	21
Metro Mobility	Minneapolis/St. Paul, MN	Certified transportation handicapped	70,000	100	700	1250	18	13,500 (19%)	93

TABLE 2
(continued)

SERVICE CHARACTERISTICS: TH SERVICES

System	Location	Eligibility	Target Population	Service Area (sq. miles)	Density (target pop./sq. mile)	Average Daily Ridership	Trips/Day per 1000 eligible Residents	Registrants (%)	Trips/Day per 1000 Registrants
ACCESS	Allegheny County, PA	Certified handicapped	260,000	734	354	520	2	N/A	N/A
DAST	Delaware (statewide)	Over 60; or cannot use transit	N/A	2057	N/A	800	N/A	N/A	N/A
TRADE	Mercer Co., NJ	Elderly, low income, un-employed	40,000 ⁺	226	177	470	12	N/A	N/A
System average of a number of systems:	N/A	N/A							
Mean			14,900	88.4	N/A	N/A	9.9	N/A	N/A
			75-	0.8-			0.9-		
Range			22,000	5,700			1467		

* travel within 24 sq. miles

Sources: project directors and evaluation reports.

TABLE 3

OPERATING CHARACTERISTICS: TH SERVICE

System	Passengers per Vehicle Hr.	Ave. Trip length (miles)	Fare	Advance Request	Operating Cost per Passenger	Cost per Veh. Hr.	Year of Data
Spokane Area Special Transportation Agency	N/A	3	0	48 hours.	\$3.64	N/A	1980
CJE/NTS	1.47 subscr. 2.7 other	N/A	0	---	\$2.53	N/A	1979
OHDS demos.:							
Jacksonville	9.1	N/A	N/A	fixed sched. and advance notice	\$0.96	\$8.70	1980
Fayetteville	3.9	N/A	N/A	fixed sched. and advance notice	\$2.91	N/A	1980
Grand Rapids	2.7	N/A	0/60¢	fixed sched. and advance notice	\$9.12	\$24.50	1980
Howard Co.	3.2	N/A	0	fixed sched. and advance notice	\$4.36	\$13.90	1980
Westchester Co.	2.6	N/A	N/A	fixed sched.	\$13.30	\$35.15	1980
LIFT	4.1	4-5	0 agency clients 50¢ indiv.	48 hrs.	\$10.50 (\$6.50 taxi)	\$29.30	1980

TABLE 3
(continued)

OPERATING CHARACTERISTICS: TH SERVICE

System	Passengers per Vehicle Hr.	Ave. Trip length (miles)	Fare	Advance Request	Operating Cost per Passenger	Cost per Veh. Hr.	Year of Data
CRT	3.3	N/A	0	24 hrs.	\$4.80 CRT	\$16.00 CRT (\$17 bus; \$15 taxi)	1980
Metro Mobility	N/A	N/A	35¢	2 hr.	8.75	N/A-taxis and non-profits; \$24.60-Project Mobility	1980
ACCESS	1.23*	5	\$2.00-\$18.00 without subsidy	day before	\$9.65	\$12.25*	1980
DAST	2.5	4	\$2.50 indiv., \$3.84 agencies	48 hrs.	\$4.05 (\$5.88 taxi)	\$14.50	1980
TRADE	5.9	N/A	0	fixed sched., and 24 hrs.	\$2.00	\$11.00	1980
System: average of a number of systems:							
Mean	3.0	4	25¢	N/A	\$3.89	\$13.23	1978
	1.0-	0.5-			.34¢-	\$6.96-	
Range	16.2	150	0-\$1	N/A	10.72	\$20.26	

* for dedicated vehicles only.

Sources: project directors and evaluation reports.

- The LIFT (Portland, OR) - The LIFT was a special program which provided curb-to-curb transportation services for the elderly and handicapped in Portland. Operated by Tri-Met (the public transit agency), the LIFT provided demand-responsive wheelchair-accessible service on 48-hours advance notice. Due to high operating costs, the LIFT service was discontinued in July 1980, and replaced by service contracted out to three non-profit providers and a taxi company.
- Community Responsive Transit (Cuyahoga County, OH) - Community Responsive Transit (CRT) is a county-wide, 24 hr. advance notice demand-responsive service for the elderly and handicapped. Two-thirds of the service is operated by the Greater Cleveland Regional Transit Authority (GCRTA) through a special labor classification, while one-third of the service is contracted to the Yellow Cab Company.
- Metro Mobility (Minneapolis/St. Paul, MN) - Metro Mobility (MM) is a coordinated system serving the TH of Minneapolis/St. Paul (and several surrounding suburbs). The system has three components: a transit agency-operated service for the wheelchair-bound, a shared-ride taxi service within Minneapolis, and service operated by two non-profit providers in the suburbs.
- ACCESS (Allegheny County, PA) - ACCESS is a door-to-door, advance reservation, shared-ride transportation service for the TH of Allegheny County,. Sponsored by the Port Authority of Allegheny County, ACCESS is a "brokerage" system; service is provided by eight different taxi companies and non-profit operators under contract to the broker.
- DAST (State of Delaware) - The Delaware Administration for Specialized Transportation (DAST) was created in 1974 with the objective of improving the mobility of the TH. DAST both provides transportation in its own vehicles and contracts with private carriers to provide services.
- TRADE (Mercer County, NJ) - Transportation Resources to Aid the Disadvantaged and Elderly (TRADE) is a consolidated county-wide system providing specialized service (predominantly fixed schedule subscription in nature) to clients of five participating agencies and programs. TRADE, a county agency, began its consolidated service in 1979.

These cases, supplemented with additional examples, serve as the basis for the following examination of TH programs. The remainder of this volume is divided into three chapters. Chapter 2 assesses the experiences of the case study services. Chapter 3 describes the state-of-the-art, in terms of key institutional and operational issues. Finally, Chapter 4 examines future directions for specialized services, in terms of key factors influencing the future and evolving service arrangements.

2 *Transportation Handicapped Paratransit Services: A Retrospective*

In this chapter, the experiences of the case study services are reviewed and key findings are presented. The operating and institutional characteristics of the cases are summarized in Tables 1,2, and 3.

Project Summaries and Results

Nonprofit Agency-Sponsored Services

The key actor in the provision of specialized transportation service for the TH has long been the (public and private) nonprofit social service agency. The number of individual agencies transporting their clients to and from activities is too great to permit any accurate count, but such services exist in virtually every locality in this country. Although most agencies continue to operate their own services, many have grouped together in some form of "coordination," primarily for reasons relating to increased efficiency and avoiding duplication of effort. Coordination has taken a wide variety of forms; these are discussed later in this section. In addition to coordination with other transportation providers, certain agencies provide service to clients of other agencies (i.e., those not providing service on their own) or non-affiliated individuals, as well as to their own clients. Our first two agency-sponsored case study services (SASTA and NTS) represent examples of this type of arrangement.

In Spokane, Washington, a non-profit agency - the Spokane Area Special Transportation Agency (SASTA) - operates a coordinated specialized demand-responsive service open to all TH residents of Spokane County. SASTA (known as the Interagency Motor Pool/Transportation Program until January 1981) was originally part of the Spokane YMCA. The Transportation Program was initiated in 1976, when the YMCA was granted a Certificate of Public Convenience and Necessity by the State, which provided authorization to operate a specialized transportation service. The YMCA obtained vehicles (primarily through UMTA's 16(b)(2) program) and contracted with various local agencies to transport their clients. As of the beginning of 1981, SASTA operated a fleet of 20 vehicles, all of which are wheelchair lift-equipped. In addition to these vehicles, all of which are owned by SASTA, various local

agencies donate use of their own vehicles while they are not in use; in return, these agencies are able to borrow SASTA vehicles for expanded services at other times.

SASTA provides service under contract to the City of Spokane. Service was initiated as a means of meeting UMTA's "special efforts" requirements, as well as to provide service to participating social service agencies; funding comes from a range of sources, including the Older Americans Act, CETA, UMTA (Sec. 5 and 16(b)(2)), and the State. In general, clients of different agencies are transported together on the same tours; when vehicles are not in use by SASTA they are available to any individual member agency. During 1980, the agency served approximately 9600 passenger trips per month, 1300 of which were by wheelchair users. The operating cost has been fairly low for a specialized TH service - \$3.64 per trip. All in all, SASTA represents a successful effort to coordinate specialized paratransit services into a unified system.

An example of a different type of agency-based service is the Neighborhood Transportation Service, operated by Chicago Council for Jewish Elderly (CJE). The CJE, a non-profit agency, has provided service to the elderly living within a high-density Chicago neighborhood (East Rogers Park) since 1973. The CJE's transportation program is designed to aid the elderly by providing just the level of service absolutely needed by each person; according to CJE, clients are transported to their destinations in the "most independent and dignified manner". Furthermore, the program aims to "integrate the client into his neighborhood, help him manage his environment, and develop relationships with his peers" (9).

The CJE provides three different types of service, and these are assigned based on the particular needs of the user: portal to portal - for persons in need of personal assistance; subscription - for regularly scheduled trips by those not needing personal assistance; and dial-a-ride - a door-to-door service for those more ambulatory users whose travel needs cannot be met through the subscription program. As of 1980, the Neighborhood Transportation Service was carrying nearly 1000 riders per month, at a per-trip operating cost of approximately \$2.50.

The CJE Transportation program is funded through several sources. Private donations through the Jewish Federation of Metropolitan Chicago provide funding for the Council as a whole; additional funds for transportation come

from the Title XX (of the Social Security Act) and 16(b)(2) programs. In addition, CJE clients are assessed a \$5 registration fee; the registration process enables the CJE to collect background information on users of the various services, and the fee removes the transportation service from a pure charity connotation (i.e., clients do not feel that they are receiving something for nothing).

The CJE has, apparently successfully, developed a set of transportation services which is flexible enough to meet different types of needs and which actively complements a wide range of human services. The CJE has demonstrated the viability of a neighborhood-based (and target market-based) service delivery system which recognizes and responds to gradations in the transportation requirements of the elderly.

The next TH case study is the set of five demonstrations sponsored by the DHEW's (now DHHS) Office of Human Development Services (OHDS). These are presented at this point in the discussion because three of the five were agency-sponsored (the other two were sponsored by a transit agency and a governmental body). The basic goal of this two-year program (1977-79) was to assess various approaches to coordination and consolidation* of specialized services. The specific objectives of the demonstrations were as follows (10):

- o to encourage human service programs offering transportation services to develop practical approaches to coordination/consolidation at the local level
- o to investigate and test alternative transportation service delivery systems and organizational approaches which could produce more cost-effective services
- o to develop and test methods for greater coordination among existing transportation providers (public and private) and human service agencies
- o to identify barriers (regulatory or administrative) to coordination and consolidation

In pursuit of these objectives, five projects were selected so as to offer a range of structures and degrees of coordination. Individually, the results (as compiled and analyzed by Ecosometrics, Inc.(11) varied significantly, as did the approaches to coordination. Three of the projects - Howard County

* The different levels and aspects of "coordination" are described in Chapter 3: STATE-OF-THE-ART.

(MD), Jacksonville (FL), and Westchester County (NY) - achieved consolidation. The central operating organizations were originally non-profit consortiums - in Howard Co. (URTA) and Jacksonville (RIDE)* - and a social service agency in Westchester Co. (WCSC). A fourth project - Grand Rapids (MI) - represents a second level of coordination: administrative coordination (including maintenance and dispatching) of vehicle operations. Finally, the fifth project - Fayetteville's (AR) Project Respond - represented the "lowest" level of coordination - a "clearinghouse" of voluntary agency cooperation. The participating agencies administered their own operations while the clearinghouse organization - Northwest Arkansas Human Service Agency, Inc. - arranged for the sharing of rides among clients of different agencies; the central organization was responsible for billing the proper agencies for the shared rides.

Each of the sites experienced its own set of problems and the degrees of "success" varied considerably. The Howard County project's major problem was management-related: the original project manager resigned soon after the project began, and the second manager lasted only 22 days. However, once the management issue was more settled (the third remained for the duration of the demonstration), the project began to show positive results. Efficiency was increased as service duplication was reduced and system productivity rose; vehicle idle time was substantially reduced.

In Jacksonville, RIDE was producing satisfactory results: productivity was quite high and improving and unit costs were acceptable. RIDE represented a consolidation of five agencies and had purchase of service agreements with nine others. However, RIDE's "success" was largely attributable to a fatal flaw in its billing procedure: participating agencies were being charged less than half the actual cost of providing service. This obviously resulted in severe cash flow problems and soon led to bankruptcy - RIDE ceased its operations in April 1979. Service was not totally discontinued, however, as the local Community Action Agency took over and provided service to three of the seven major participants. (This agency subsequently received an OHDS grant to continue the project after the two-year demonstration period).

* In Jacksonville, however, RIDE ceased operations in April 1979, and the project was taken over by a human service agency (NFCAA).

The Westchester County Coordinated Transportation Project was the last of the five projects to become operational. This was due to a number of start-up problems, including high insurance requirements, local regulatory difficulties, and a lack of available vehicles. The consolidated system (ultimately consisting of five agencies, with four more purchasing service) became increasingly efficient as the project progressed, but its levels of ridership and productivity were very low, and thus never justified the rather high administrative costs. Furthermore, the regulatory difficulties were never entirely resolved. As a result, the planned county-wide paratransit system (for individual elderly and handicapped persons) was never developed and the County did not even apply for third year funding. (The County is, however, exploring the development of a county-wide system independent of OHDS funding.)

The Grand Rapids project achieved the coordination of several administrative/operating functions of the local transit authority, the Community Action Council (CAC), and a rehabilitation center. The CAC withdrew early in the project, however, leaving only two participants. While the CAC was still involved, each agency maintained its own operation and continued to primarily serve its own client groups, but each provided trips for the others' clients as well. Overall, the coordination effort produced slight increases in unit costs; the project was not renewed after the two-year demonstration period.

The final project - Fayetteville's Project Respond - demonstrated the clearinghouse concept and promoted vehicle ride-sharing and time-sharing among the participating agencies. The clearinghouse operation did not prove to be especially cost-effective at first, but later produced significant improvements in productivity and efficiency. The clearinghouse framework eventually evolved into a consolidated system and the demonstration funding was renewed after the initial two years. (As of this writing, the consolidated system - called Ozark Transit - was still in operation.) (The overall results of the OHDS program were summarized later in this chapter under KEY FINDINGS.)

Transit Operator-Sponsored Services

Beginning in the early 1970's, transit agencies began to enter the specialized paratransit field through the provision of door-to-door services to supplement their fixed route operations. Such activities were expedited

through UMTA's 1974 E&H "special efforts" requirements. Four of our case study systems were initiated and/or are operated by transit agencies: Portland's LIFT, Cleveland's CRT, Twin Cities' Metro Mobility, and Pittsburgh's ACCESS; these are discussed below. In the first three, at least a portion of the service is (or was) operated directly by the transit agency; ACCESS was initiated by the local transit operator, but that operator was never involved in the actual provision of service.

The Tri-County Metropolitan Transportation District of Oregon (Tri-Met, in Portland) began operating the LIFT - demand-responsive service for the TH - in 1976, following receipt of a 3-year UMTA demonstration grant. The original intent of the project was to "demonstrate the viability of transit agency-operated, demand-responsive special transportation....combining the resources and transit expertise of Tri-Met with the resources and social service expertise of the Bureau of Human Resources..."

Tri-Met provided service to clients of contracting public and non-profit agencies, as well as to non-affiliated TH. In order to provide a role for private operators and to keep costs down, private taxi and chair-carrier companies were invited to bid on contracts to provide supplementary transportation for long distance low demand trips, which the bus system could not serve efficiently. Contracts were awarded to the City's two largest taxi companies* and to the lone chair carrier submitting a bid. Taxi trips subsequently amounted to 10-15% of the system's trips (12).

Twenty-seven percent of the 22,000 transportation handicapped persons (or forty-two percent of those without autos available) in Portland were registered for LIFT service. Of the 6,000 registered persons, 42% rode the LIFT. Approximately one quarter used the service in any given month; the majority of users rode infrequently. As of mid-1980, the total LIFT system was serving about 24,000 trips per month, 16% of which were by the wheelchair-confined; approximately 50% of users were clients of participating agencies, although most of these trips were made by clients of two agencies - the Area Agency on Aging and the Department of Public Welfare. Fifteen other agencies signed up for LIFT service for their clients, but did not use it on a regular basis. These agencies felt that the LIFT was not "reliable" enough

* These companies had submitted a joint bid.

and that using it required scheduling trips too far in advance to suit their purposes (12). Thus, a number of "participating" agencies continued to provide their own service for their clients, while occasionally making use of the LIFT.

The LIFT proved to be relatively expensive, with an overall average per trip cost of \$10.50 (in 1980). The taxi service used to supplement LIFT bus service proved less expensive, with average costs per trip of \$6.50. Controlling for different trip lengths and the percentage of wheelchair trips, evaluators have estimated that private transportation for all trips would have cost under \$7 per trip (12). Because of the high cost of the transit-operated service, the LIFT was discontinued in mid-1980; this service is now provided by three non-profit agencies and a taxi company, under contract to Tri-Met. The average cost per trip for the overall revised system was approximately \$6.50 (as of mid-1980).

Another transit agency - the Cleveland Regional Transit Authority (GCRTA) operates two separate demand-responsive services - one for the elderly and the more mobile handicapped and one for wheelchair users commuting to and from work - and contracts out a portion of the former service to a taxi operator. Unlike the Portland system, service is targeted solely at unaffiliated individuals, rather than agency clients and individuals. The Community Responsive Transit (CRT) and Extra-Lift (for commuting wheelchair users) programs have been in operation since 1976. CRT evolved from a smaller-scale service - the Neighborhood Elderly Transportation (NET) project - initiated by the City of Cleveland in 1975. When the GCRTA was formed in late 1975, the City and local elderly groups demanded that it provide demand-responsive service for the E&H in addition to conventional transit service. GCRTA thus introduced CRT and expanded service throughout the metropolitan area.

CRT provides 24-hour advanced notice demand-responsive service for elderly and handicapped individuals living in Cuyahoga County. Due to the size of the county (456 square miles), the total service area has been divided into 18 service zones whose boundaries approximate neighborhoods within the City of Cleveland and communities located in the surrounding area. Within each service zone, transportation is provided free of charge for any trip purpose, but at the present time no travel is offered between zones. Most of the trips

are many-to-many, although groups are also transported. GCRTA operates the service directly within the city and handles all dispatching, but contracts out service to a taxi company in the suburban areas.

CRT Service has been gradually expanded since its initiation in 3 service zones. During the first month of operation (July 1976), CRT provided 3770 passenger trips; by the following year monthly ridership had increased to over 17,000 and the number of zones had been expanded to 10. CRT is currently (1981) one of the most heavily utilized systems of its kind in the country, carrying roughly 32,000 passengers per month (Extra-Lift carries an additional 2300) with a fleet of more than 70 vehicles.

The CRT service is being provided at a cost of approximately \$4.80 per trip (as of mid-1980); the transit-operated element costs \$5.50 per trip, while the cost of the taxi element is approximately \$3.50 per trip. The comparatively-low operating cost of the transit-operated service is partially a result of an innovative labor agreement with the local chapter of the Amalgamated Transit Union (ATU). This agreement stipulated that a new classification would be created for CRT drivers, in which these drivers are paid at a lower rate than regular transit drivers.*

The third transit-operated case study system is Metro Mobility, a coordinated TH system in Minneapolis/St. Paul, Minnesota. Metro Mobility was developed and implemented (in 1979) through the joint efforts of the Metropolitan Transit Commission (MTC), the Minnesota Department of Transportation (MnDOT), and the Metropolitan Council. The service has been funded largely through the State Paratransit Demonstration Program. MTC had previously (from 1976) operated a wheelchair service - Project Mobility - in portions of Minneapolis. Metro Mobility expanded Project Mobility and supplemented this service with non-wheelchair services operated by three local taxi companies and two private non-profit organizations. All requests for service are received by the MTC-operated Metro Mobility Transportation Center, where they are assigned to the appropriate carrier: Project Mobility for Minneapolis and St. Paul residents (primarily those needing accessible

* This type of labor agreement was not replicated until 1980, when the Greater Bridgeport (CT) Transit District negotiated a lower wage rate for drivers in a paratransit system being operated in a suburb of Bridgeport.

vehicles); one of the taxi operators* for service within Minneapolis; or one of the non-profit providers for residents of designated suburban areas. Metro Mobility is fairly unique in that service need be requested only two hours in advance.

Metro Mobility's ridership (over 30,000 per month) is among the highest in the country for a specialized system. This is nearly as high as that of CRT, but, considering the relative ages of the two systems, Metro Mobility's growth has been impressive; ridership rose from 12,000 per month during the two months following the introduction of the taxi service (April 1979) to 30,000 one year later. Of course, it must be kept in mind that the service area was expanded during this time as well.

Metro Mobility's overall operating costs are relatively high, with a system average per trip cost of nearly \$9. The publicly-operated Project Mobility (PM) has an average cost of nearly \$12 per trip, but 46% of PM passengers are wheelchair-bound, and this type of service is necessarily more expensive than is service for the ambulatory. In contrast, Cleveland's Extra Lift has a cost per trip of \$17. The privately-operated Metro Mobility components have a cost per trip of nearly \$6, which is less than the cost of private operation in both Portland and Pittsburgh (ACCESS, discussed below). Metro Mobility is still relatively new, of course, and its comparative cost level may improve over time, as, for instance, scheduling efficiency is upgraded. Nonetheless, it has effectively demonstrated the feasibility of coordinating different types of services and providers within both the public and private (both non-profit and for-profit) sectors.

The final transit-sponsored TH case study system - ACCESS - represents a rather different approach to the development of specialized services. ACCESS, initiated by the Port Authority of Allegheny County (PAT) as an UMTA demonstration in 1978, is a TH "brokerage" system. The central broker, ACCESS Transportation Systems, Inc. (a private company) operates under contract to PAT, and subcontracts for service with a number of private providers. As of the beginning of 1981, there were eight for-profit (taxi) and non-profit providers under contract to ACCESS. ACCESS uses these carriers to provide service for social service agencies and for handicapped and elderly

* Trips are assigned to the taxi companies on a rotating proportional basis, according to the relative fleet sizes of the companies.

individuals. Trip requests are made either directly to the carrier or through the ACCESS office, depending upon the particular circumstances. Carriers submit records of all service provided to the broker, who then bills agencies (on a monthly basis). Individuals pay for service with scrip coupons which are purchased in advance from ACCESS. The average cost per trip (as of mid-1980) for the ACCESS system was \$9.95 (excluding administrative costs). Those users who meet PAT's eligibility requirements receive scrip at a discount (ACCESS later bills PAT for this amount); "non-eligible" TH may buy scrip at face value (fares are slightly lower than those of exclusive-ride taxis), although there are few such users. PAT also contributes a system subsidy to pay for administrative and related costs.

ACCESS has been fairly successful at improving the mobility of those unable to use public transit, although ridership by this group is only about 5000 per month. The eligible population is considerably smaller than that of the other case study systems due to tight eligibility criteria. Furthermore, the system is still fairly new; greater efficiencies may be obtainable as experience is gained with the brokerage arrangement.

Other Government Agency-Sponsored Services

Because of the strong involvement of public agencies in funding nonprofit social service agencies, some state and local governments began to establish specialized transportation operating/administrative agencies or departments in the mid-1970's. The purpose of such agencies has generally been to coordinate different social service programs; some directly operate specialized service, while others contract for service from nonprofit social service agencies or (less frequently) for-profit operators. Among the case study systems, DAST, TRADE, and one of the OHDS demonstrations (Westchester) can be classified as government agency-sponsored. The former two are discussed below.

The Delaware Authority for Specialized Transportation (DAST)* was created in 1974 by state enabling legislation, with the objective of improving the mobility of the transportation disadvantaged. Originally an independent authority, DAST is now a subsidiary corporation of the State, under the

* In 1979, the system's name was changed to the Delaware Administration for Specialized Transportation, as a result of the consolidation of all the State's independent authorities.

auspices of the Delaware Transportation Authority. DAST provides demand-responsive service to the TH (i.e., those over the age of 60 and/or unable to use transit or taxis) throughout the state.

DAST operates 50 vehicles, virtually all of which are wheelchair lift-equipped. The majority of service is provided by DAST's own vehicles, with the remainder provided through purchase of service agreements with two taxi operators in the City of Wilmington. DAST has made other attempts at contracting out service to private operators, but these have reportedly produced unreliable service and have generally been viewed as unsuccessful. The State is divided into 10 service zones, and fares are charged on a zonal basis. Trips are subsidized at different rates, depending on the affiliation of the user (i.e., whether or not a client of a contracting social service agency).

DAST has survived several serious institutional challenges over the past few years. The first of these was a 13(c) battle with the State's transit union: this led to the use of unionized drivers on DAST, a factor which, apparently, did not significantly escalate overall operating costs. This episode was followed by opposition from several taxi operators (and the drivers' union) on the grounds of unfair competition that threatened the drivers' jobs. This resulted in DAST contracting with a taxi company to provide some service. Finally, DAST has experienced certain problems from its own rather complex billing system. A new system, based on charging "full cost" for all trips, significantly increased the complexity of billing and also raised the agency cost for many trips due to added administrative time necessary to perform accounting functions.

Despite its problems, DAST has been successful at increasing its patronage and keeping operating costs fairly low. During 1980, ridership was roughly 20,000 per month, and the average per trip operating cost was \$4.50; the average trip length is slightly over 4 miles. Ridership has grown from 6500 per month during the first year, but the operating cost per passenger has risen relatively little over the past few years (during 1978, the unit cost was \$3.40). DAST is a rather unique system, in that it is statewide and has demonstrated the potential for providing reliable specialized service over a large service area (over 2000 square miles).

The final program studied is TRADE (Transportation Resources to Aid the Disadvantaged and Elderly), a division of the Mercer County (NJ) Department of Human Services. TRADE, which originated (in 1977) as an UMTA demonstration, is a consolidated system providing service to clients of five social service agencies and programs. Three different types of services are provided: fixed schedule/subscription, demand-responsive, and fixed route; unlike the other systems discussed here, demand-responsive service represents a relatively small proportion of the service offered. Furthermore, as of the beginning of 1981, virtually none of TRADE's clients were wheelchair-bound, although the agency had plans at that time for adding several wheelchair-lift vehicles to its fleet of 18 vehicles.

The Mercer County project, as originally conceived, called for the step-by-step coordination of the transportation operations of seven designated agencies (which had agreed to participate in the project, although no formal agreements had been made), with the eventual creation of a totally consolidated system. However, a variety of institutional and attitudinal barriers prevented the implementation of the original plan, and the emphasis shifted somewhat. The coordination phase was essentially bypassed, and TRADE went directly to consolidation, securing participation from a largely new group of agencies/programs; only two of the original "participants" actually became part of TRADE.



A TRADE van equipped with wheelchair ramp. (photo: D. Fleishman)

Despite a myriad of problems (both during implementation and in day-to-day operation), TRADE developed into a fairly efficient system. The average per trip operating cost (\$2.00) is very low for this type of system, although this is largely attributable to the fact that over 80% of all trips are subscription in nature, as opposed to the lower productivity demand-responsive services offered by most of the other case study operations. TRADE's average monthly ridership was approximately 11,900 during 1980; most of these riders previously used several of the services which combined to form TRADE. TRADE has increased its patronage gradually, but, as of the end of 1980, it was making a concerted effort to add additional agencies, which would expand patronage at a faster rate.

Key Findings

The major goal of establishing paratransit services for the transportation handicapped is generally to improve the availability and quality of service to this market. Another major concern, particularly with projects that involve some form of coordination, is to minimize cost. The case studies, results of other programs, and earlier research efforts have produced important lessons regarding the relative effectiveness of various design, organizational, and operational alternatives for structuring TH paratransit services in meeting these objectives. The major findings are discussed below.

Eligibility, Market Penetration, and Impacts on Mobility

Perhaps the most important result of any TH transportation service lies in improving the level of mobility of the target population. Depending on the nature of those eligible for service, improvements in mobility may apply to better accessibility to life-support services in general, or to social service agency programs in particular. The impact on mobility can be reflected, in part, in terms of market penetration and level of use of a particular service.

One characteristic of TH systems which impacts potential mobility improvements is eligibility requirements. These vary from system to system (see Table 2). In some systems, such as CRT and SASTA, all elderly and handicapped residents of the service area are eligible. The ACCESS Service in Pittsburgh is also available to all E&H, but only individuals certified as

unable to board a bus are eligible for a PAT subsidy (agency clients, of course, also receive subsidies). In other systems, such as TRADE, only clients of participating agencies can use the service. Finally, other systems require that all users be certified as being transportation handicapped, with the definition varying from one system to the next. Metro Mobility, for instance, is available only to "certified handicapped" individuals, with certification based on a handicap classification scheme involving 13 separate categories related to degree of handicap and travel assistance requirements. Restrictions on who is permitted to use a specialized service are generally stipulated by funding sources and/or the policies of the participating agencies. These restrictions affect the use of the service, and also impact the unit cost of service provision.

A key eligibility issue underlying service cost relates to the degree of handicap of the system users - e.g., are wheelchair-bound persons the dominant type of riders? This affects the ability to group rides, as well as the length of time required for loading/unloading passengers, and therefore affects the efficiency of operation. For instance, only 2% of CRT's riders are confined to wheelchairs,* and the average operating cost per passenger is approximately \$4.80. On the other hand, the unit operating costs for ACCESS and Metro Mobility, each of which carries 20-25% wheelchair passengers, are considerably higher (\$9.95 and \$8.75, respectively). Of course, other factors, including type of service, size of service area, nature of operator, and scheduling procedure, also impact costs; these are discussed in the next section.

An important measure of the effectiveness of marketing the TH service is market penetration, which refers to the percentage of eligible persons who actually register to use the service. (This applies only to those systems targeted at the general TH population; agency clients are essentially automatically "registered"). Table 4 shows the level of market penetration

* This is largely attributable to the fact that the service was originally targeted primarily to the elderly, and did not utilize a wheelchair lift-equipped fleet. Cleveland later implemented a separate wheelchair service - Extra Lift.

among several of the case study systems. The high registration figure for CRT reflects the fact that service is available to all elderly (as well as handicapped) and possession of existing E&H I.D. cards for the transit system is considered .CRT registration. The LIFT had more stringent eligibility criteria and required a special registration. Spokane's very low registration rate may reflect the fact that not all agencies are participating, and that the target market includes TH in outlying areas where the service is less readily available.

Per capita ridership levels (i.e., as percentages of eligible residents) provide a comparative measure of improved mobility among the TH. As shown in Table 4 however, these figures do not necessarily reflect the market penetration figures. Note, for instance, that the system with the highest market penetration - CRT - has one of the lowest per capita ridership levels, while the highest per capita ridership levels belong to systems having middle-range levels of market penetration: Metro Mobility and the LIFT. In part, this may be due to the registration process itself - CRT registration figures include all those who have registered for reduced bus fare eligibility. Thus many of those persons may not actually need to use CRT.

TABLE 4

MARKET PENETRATION

System	Target Population	Registrants	% Registered	Trips/day per 1000 eligible residents
CRT	160,000	72,000	45%	9
FARE/SHARE	18,600	5,000	27%	6
Metro Mobility	70,000	13,500	19%	19
The LIFT	23,000	4,300	19%	16
SASTA	70,000	2,000	3%	7
CJE	70,000	2,000	3%	9
Average*	15,000	N/A	N/A	10

* Source: (4)

Note: These figures are from 1979.

Overall, TH services have been moderately successful in attracting riders (see Table 2). There are variations among the cases studied due to a number of factors. In some cases, for instance, ridership levels are constrained by the amount of service provided. One may conclude, however, that demand does indicate that these services have improved the level of mobility of system users, and that greater outreach and marketing, as well as service improvements, could extend the benefits to a larger market.

The registration figures suggest that there is a significant potential demand (and need) for specialized services; however, they also indicate that the TH population is not without transportation alternatives. Obviously, many of those among the target population in each location who do not register for the specialized service have access to, and are able to use, some other means of travel (e.g., auto, transit, or agency-sponsored service). It is estimated, for instance, that one-third of all TH persons own and operate autos and that the handicapped make over 70% of their trips by auto (13). Furthermore, a percentage of those who are registered are also likely to have access to some alternative service; the alternative may be inferior to the service in question, or else the registrant may simply wish to expand his/her options. The level of registration (and of use) varies based on several factors, including eligibility requirements, convenience and level of service of the system, ease of registration, availability of alternatives, success of marketing/outreach, and existence of opportunities to work, shop, or relax (which generates demand for trips).

In measuring the impact of TH systems on mobility and the availability of alternatives, surveys which were taken of TRADE and LIFT users provide useful information. When asked what they would do if the service were not available, 84% of the TRADE respondents indicated that they would not have made the trip at all (14). Furthermore, 57% of the respondents reported never having access to an auto, and 64% indicated at least "some difficulty" using public transit. Thus, TRADE can be said to have significantly improved the mobility of the TH. As for the LIFT, 23-36% of respondents indicated that they would not have made the trip on which they were surveyed if the LIFT did not exist (12). This implies that the LIFT resulted in increased mobility for a substantial portion of the riders. However, it also reflects a major contrast

with TRADE: whereas most TRADE users have no alternative, many LIFT users had agency-provided services available in addition to the LIFT. LIFT responses varied considerably by trip purpose, with 66-75% of respondents indicating that they would continue to make personal business, medical/dental and work trips by other modes, while only 25-38% would continue to make shopping, social/recreational and other trips. The alternative modes which would be utilized also varied considerably by trip purpose.

Service Characteristics

The experience of the many TH services has demonstrated that the "TH" does not represent a homogeneous market and that its varied travel needs and patterns can be addressed through a variety of service types. Furthermore, a variety of service characteristics have been shown to have significant impacts on the quality and cost of service. These characteristics, discussed below, include service type, size and structure of service area, hours of service, scheduling procedures, and fare policy.

Transportation services for the TH have taken three basic forms: demand-responsive, fixed route, and fixed schedule/subscription. However, the vast majority of such systems involve door-to-door service of some type; most such service is demand-responsive, although some systems (e.g., TRADE) provide service which is predominantly fixed schedule/subscription.* Traditional fixed route service has been provided in some systems (e.g., TRADE and several of the OHDS systems), but is obviously usable only by the more ambulatory members of the TH community. For many of the TH, the access trip to and from a fixed route stop is as onerous as (in some cases, more than) boarding and alighting from the vehicle itself. For some segments of the TH market, following directions and locating the correct vehicle may be difficult as well.**

* Fixed schedule/subscription service differs from fixed route in that, in the former, all passengers are generally travelling to the same destination, and the passengers arrange to be picked up (usually at their door) on a regular basis.

** The recent controversy over U.S.DOT's requirements for transit accessibility (under Section 504 of the Rehabilitation Act of 1973) has brought the issue of fixed route accessibility to the forefront.

Subscription service, generally utilized by social service agencies for group trips to and from nutrition sites, senior citizen centers and shopping centers, enables high productivities and requires less in the way of a dispatcher's time than more demand-responsive services; these factors have generally resulted in significantly lower (per trip) operating costs than is possible with demand-responsive alternatives. In TRADE, for example, the fixed schedule trips to nutrition sites cost an average of \$1.34 per passenger, while the demand-responsive trips cost \$3.80 per passenger trip. In light of the types of travel needs generally encountered by the TH, however, subscription service is often infeasible, and, regardless of the cost differential, demand-responsive options are necessary.

Within the category of door-to-door service, there also exists a range of options, in terms of level of assistance provided. Chicago CJE, for instance, offers three different service variations entailing differing levels of assistance to the user: "portal-to-portal" service is employed for those persons requiring personal assistance at the home and/or destination end, while subscription and dial-a-ride options are used for patrons not in need of as much personal attention.

The productivities and costs of demand-responsive systems are affected by a number of other service characteristics as well. First of all, service may be either "areawide" or "zonal" in nature; in the latter, service is restricted to designated service zones, with transfers necessary for inter-zonal travel. Most of the case study systems offer areawide service. However, most ACCESS trips occur either within service provider areas or between these areas and downtown Pittsburgh. Portland's current service and Cleveland's CRT represent true zonal demand-responsive systems. Such systems are likely to produce higher productivities, and thus lower per-passenger operating costs (see Table 3). In general, the smaller the service area - or zone - the greater the productivity is likely to be; in smaller zones, the average trip lengths will tend to be lower and the demand densities will tend to be higher. However, zonal systems may also require that a system of transfers be arranged, in which vehicles meet at pre-arranged times on zone boundaries for those users wishing to go from one zone to another.

Other important service characteristics include service hours, amount of advance notice required, and fare policy. All three can influence the level of demand and the cost of operating the service. Obviously, the length of the service day is a key factor in determining the operating cost of the service. Restricting hours may be an easier way to minimize costs than, say, reducing the level of service. The most important consideration in setting service hours is ensuring that the key trip purposes (e.g., medical visits, scheduled group social activities) can be scheduled within the allotted service hours. It is often felt that the elderly, in particular, can plan their trips more easily around available transportation schedules. While this may be somewhat true, certain types of trips may not be flexible.

The amount of advance notice required for demand-responsive options may also influence the cost and efficiency of providing service. By requiring users to request service some specified period in advance of desired travel time, TH service providers may be able to group trips more efficiently and to offer more reliable service. Many systems (including most of the case studies) require users to book trips 24-48 hours in advance; this can be useful in increasing productivity, particularly if passengers can be called back and asked to shift their travel time for scheduling efficiency purposes. In this way, it is hoped that the most efficient vehicle tours can be developed. One notable exception to this requirement is Metro Mobility, which requires only 2 hours advance reservation time. This policy has both reduced "no-shows" and increased discretionary trip making; furthermore, the productivity of this system is no lower than that of similar systems with 24-hour advance notice. Thus, there are certain advantages to setting short advance request times, and it may not be necessary to have clients reserve trips a day (or more) in advance. In fact, long advance request times may deter riders. In Portland, where the advanced notice requirement was 48 hours, 32-52% of survey respondents said they would ride more if request times were shorter.

The final service characteristic of concern here is the fare policy* associated with the system. Different systems have adopted widely divergent

* Fare policy is defined here to refer to the portion of the system cost paid by the rider.

fare structures (See Table 3): many charge no fare; MM charges 35¢ . the ACCESS fare is free to agency clients and variable for other riders, depending on travel distance (the average user fare is \$1.41 per trip). The level of the fare will obviously impact the net operating cost of the system, and will also influence the level of demand for the service. The fare policy is thus tied into the broad issue of the extent to which such services can - and should - be subsidized (i.e., by the public). Traditionally, it has been felt that such services are necessary to ensure the mobility of persons without other options, and that the users should be charged only a nominal (if any) fare. However, the economic realities of escalating costs and limited public funds are forcing many providers to reevaluate their fare policies so as to pass on a greater portion of the operating expense to the user. The hope in these cases is that, although higher fares will discourage some trips, these will be predominantly discretionary in nature and the absolutely necessary trips (i.e., medical) will continue to be affordable. The overall impact of such a policy on the well-being of the TH remains to be seen, as severe funding cuts affecting TH services have yet to be made (see Chapter 4 of this report).

Organizational Options: Impact on Costs

The services examined in this report illustrate the variety of arrangements through which TH services have been initiated, managed, and operated. While one type of arrangement may not be optimal for all circumstances, the range of experiences to date sheds some light on the advantages and disadvantages of different frameworks.

The organizational/management responsibilities associated with delivery of TH service can be divided into three separate activities: service initiation, management, and provision. The identities of the actor(s) responsible for each of these depends on the source of funds, the nature of the target population (i.e., agency clients, unaffiliated individuals, or both), the nature of coordination (if any) involved, and the institutional/regulatory setting. In some instances, the initiating body or agency will also serve one or both of the management/provider functions, while in others three different bodies are involved. The initiators for our case study systems represent a

wide range of actors, and in several cases more than one was involved. The major options for organizing and/or managing TH services have been the following:

- private non-profit agency
- governmental agency
- transit agency
- for-profit company

Experience has shown that the former two management frameworks can generally provide service at considerably lower operating costs than can the transit agency. Among the case study systems, TRADE (county) and CJE (non-profit) have the lowest per trip operating costs (\$2.00 and \$2.53, respectively). The transit agency-managed services, on the other hand, have been considerably more expensive to operate; this is primarily due to high costs associated with the transit operations (see Table 3). The administrative cost (i.e., the control cost, marketing, and overhead) alone of Metro Mobility works out to \$2.10 per passenger (during 1980), or 24% of the total operating cost. For CRT, the administrative cost was approximately \$1.30, or 28% of the total operating cost. The ACCESS administrative cost per passenger during the same period was \$1.60 (representing 16% of the total).

Just as the identity of the management organization has affected administrative costs, the nature of the actual service operator has influenced the operating cost. The basic service provision alternatives have been direct operation by the managing organization, operation through purchase of service from outside providers, resource-sharing among participating "agencies," or a combination of these.

In general, the non-profit and government systems studied here involve direct provision of service and or resource-sharing. For instance, TRADE and SASTA provide service for clients of participating agencies and CJE provides service for its own clients, as well as unaffiliated individuals. DAST operates its own service, but this is supplemented with contract (taxi) service in one section of the state.

The transit agency services are operated through combinations of direct provision and purchase of service from private operators. In general, the

latter has proven considerably less costly than the former, due primarily to lower wage rates among the private operators. In Metro Mobility, for instance, the number of riders carried by the public and private operators is roughly equal, but the per trip operating cost of the public component (\$12) is more than twice that of the private component (\$6). (It must be kept in mind, however, that nearly half of Project Mobility's riders are wheelchair-bound, a factor which can add substantially to the operating cost, as suggested earlier.)

In CRT, the cost of the publicly-operated service (\$6.00/passenger) is also nearly twice the cost (\$3.50) of the privately provided service. In this system, however, even the public cost is quite low. The low costs of CRT are partially attributable to the zonal system and the resulting high productivity. However, more importantly, the low public component cost is due to the separate job classification for CRT drivers which includes lower wages than for the regular transit drivers.

The LIFT experience also bears out the public-private differential. The per trip operating cost of the transit-operated service at the time it was terminated was \$10.50, while the contracted service was running at \$6.50 per trip. This discrepancy led Tri-Met to phase out the LIFT in favor of service completely contracted to private operators.

It should follow from the Metro Mobility and CRT cases that ACCESS would have the lowest operating cost of the three transit authority-initiated projects, since it is managed and operated completely within the private sector. The data support this from the perspective of operating cost per vehicle hour. In 1980, Project Mobility was costing \$24.60 per hour, CRT was costing \$16.00 per hour (including the cheaper taxi service), and ACCESS was costing roughly \$14.50 per hour (including administrative costs). However, the ACCESS per passenger operating cost is relatively high at \$9.85; this cost is attributable to the large service area, the high percentage of wheelchair users, the relatively low (compared to MM and CRT) ridership levels - which limits trip sharing - and the fact that ACCESS carried certain demonstration-related expenses not borne by the others.

As shown in these examples, private providers (both for-profit and non-profit) can be cost-effective operators of specialized service. However,

in the case of contract services the nature of the contractual arrangement can influence the level of cost-effectiveness. For instance, a contract which ties payment to trips served rather than to vehicle-hours of service provided will best promote efficiency. On the other hand, it is difficult to establish a fair cost per trip without prior knowledge of the demand and level of service. In Long Beach (CA) a vehicle-hour subsidy which varies based on the number of vehicles used was established so that operators were encouraged to provide service using the fewest vehicles possible (15).

Thus, the choice of service provider and management structure have proven to be important issues in designing a specialized transportation system; they can significantly affect the cost and nature of service provided. It would seem, based on the case studies, that the transit agency is not the most cost-effective setting for the provision of such services. Rather, private operators - taxi companies and non-profit providers* - generally offer much less expensive service. (It should also be noted that privately-operated service has been found, in studies of these systems, to be quite acceptable to the riders.)

Impacts of Coordination

A significant result of the proliferation of TH services during the past decade has been the growing awareness that some duplication of service often occurs. Whether it is simply a duplication of administrative support or a situation in which vehicles from different services travel over the same "routes" and thus are inefficiently scheduled, there is certainly the potential for major inefficiencies in the TH service delivery system. Under increasing budgetary constraints, service sponsors and providers have sought to improve efficiency while maintaining program effectiveness. The most commonly attempted solution to this problem has been some form of "coordination."

* The low costs reported by non-profit providers are sometimes attributable to the lack of true cost accounting; however, the major reason lies in the use of inexpensive labor, including the widespread use of volunteers.

Coordination has been (and continues to be) a significant challenge, and perhaps the most important current TH paratransit design problem. Options which have been classified as "coordination" range from simple "cooperation" to full "consolidation" (the different levels of coordination are discussed further in Chapter 3). The particular approach followed in each case has generally reflected the nature of the services provided, the target market served, and the sources of funds for the existing providers. Some efforts have involved coordination of different providers, while others have involved the coordination of the transportation programs of social service agencies; a few have done both.

The case study systems have involved the full range of coordination efforts (see Table 1) - from Fayetteville's Project Respond, which exhibited cooperation among a group of agencies, to the consolidated arrangements of TRADE, SASTA, and three of the other OHDS projects (Westchester County, Howard County, and Jacksonville). In between these levels are coordination of various aspects of system administration and service delivery. The Grand Rapid project achieved coordination of certain functions including maintenance and dispatching. Metro Mobility has coordinated several service providers (one through direct provision, five through a contracted basis) through centralized scheduling. ACCESS has coordinated a number of providers (on a contractual basis), as well as several agencies desiring service for their clients. Like ACCESS, DAST and the LIFT each coordinate(d) the demand side, through contracts with social service agencies; in addition, these two contract(ed) with private operators to furnish "supplementary" service.*

Determining the impacts/results of any type of coordination effort is often a difficult (if not impossible) task. "Before" and "after" costs can be measured, to a certain extent, in controlled, carefully monitored situations. However, it is often difficult to fully assess the changes in costs or the improvements in mobility resulting from coordination, because of either changes in supply of service or simply because of insufficient data.

* CRT also contracts out supplementary service, but is not really a "coordinated" system as we have presented the concepts here. The CJE service is also not a coordinated system.

Whereas a major goal of most coordination projects is to reduce duplication and improve the efficiency of service delivery, some efforts result in the creation of new service operating in addition to the existing services. In Portland, for example, certain participating agencies continued to provide service with their own vehicles in addition to using the LIFT service to meet some of their transportation needs. Although the costs to agencies were reduced due to Tri-Met subsidies, the LIFT introduced new costs. Thus, whether the overall efficiency of TH service provision was improved by the LIFT is unclear. Equally unclear is whether Tri-Met's per-passenger costs would have been higher without the incorporation of the agency service into the system.

In systems (such as SASTA and DAST), which do not involve expansion of service to unaffiliated individuals, measurement of changes in costs may be more meaningful, and could conceivably be carried out. However, available data are simply insufficient in both cases to undertake such an assessment. In TRADE, several of the participating agencies/programs did not provide transportation service prior to joining TRADE; no pre-coordination data were available for the other participants. Finally, ACCESS may eventually reveal changes in costs and benefits, but its operation has not yet produced conclusive data concerning the results of coordination.

The OHDS demonstrations were controlled so as to be able to measure the impacts of various types of coordination. Overall, the program failed to clearly demonstrate the presumed benefits of coordination. All of the projects experienced some improvements in overall service provided, but these improvements were generally not as great as had been anticipated. In most cases, total ridership increased, but unit costs generally increased as well. Most of the agencies participating in coordination efforts experienced increased costs, and, in general, the quality of service provided did not improve. Service quality actually deteriorated in some of the projects. All in all, the evaluators concluded that "... for the most part, the coordination of transportation efforts were no more or less efficient or effective than uncoordinated transportation operations" (11). They state, further, that "in general, few of the objectives of the program were met, although substantial progress has been made in understanding the barriers to coordination."

The project results and problems led the evaluators to conclude that "the benefits of coordinating transportation operations are not as universally applicable or as easily obtainable as had been anticipated. Coordination is worth the effort in some circumstances and under certain conditions - but not others. In particular, coordination does not necessarily lead to more efficient or effective transportation operations and it does require a substantially greater investment of time and effort than heretofore imagined." (11).

On the other hand, although the coordination of actual service delivery functions has seldom produced significant cost savings, coordination of certain "auxiliary" functions (e.g., purchasing of insurance or parts, preventive maintenance, or driver training) has paid off in some instances.* Furthermore, coordination has produced benefits which cannot be measured in terms of dollar savings. These may include: 1) releasing certain agencies from the responsibility of directly providing transportation services, allowing them to contract for service instead; 2) upgrading the quality of the service provided; and 3) promoting the coordination of non-transportation services provided by the agencies. These benefits may significantly offset the associated costs in some cases.

Thus, it has been shown that coordination can produce rather mixed results. Several efforts to date (i.e., OHDS demonstrations) have indicated that the administrative/operating costs may actually increase from coordination. Due to the nature of many social service agency transportation operations, anticipated cost savings may not be realized through a coordinated system, in which all costs must be explicitly accounted for. Many agencies keep their costs relatively low by using volunteer drivers and staff and donated vehicles and office space. These costs may increase in a coordinated system, with, for example, a formal purchasing structure. Finally, and perhaps most significantly, any coordination effort involves considerable front-end costs (e.g., planning and administration), which may never be offset by slightly greater efficiency in actual operations.

* One of the best examples of such coordination is the Oregon Special Services Association (OSSA), a statewide consortium of agencies which provide specialized transportation. The agencies obtain insurance jointly, and participate in OSSA driver training, vehicle inspection, and preventive maintenance. The result has been significantly lower insurance premiums, better insurance coverage, and improved service.

Barriers to Implementation and Coordination of TH Services

Efforts to coordinate existing services, as well as to implement new services, have had to overcome various barriers - in both implementation and operational phases. The nature of the obstacles encountered by the case study and other systems are discussed below.

The major barriers have fallen into two basic categories: statutory/legal and administrative/institutional. These barriers include the following (14,15,16):

Statutory and Legal Barriers

- user or eligibility restrictions (if agencies try to combine programs) - Even when no statutory prohibitions exist, the categorical nature of funding programs inhibits coordination.
- private enterprise rights (if transportation projects are run by public transit companies) - New TH services using public transit operators may require ironing out conflicts with existing taxi operators. These conflicts may stem from franchise rights or from private enterprise participation clauses.
- labor issues - Similarly, if public transit operators are used, costly new union agreements may be required.
- funding regulations - Sometimes government grant restrictions and regulations and the varied interpretations of these inhibit coordination.

Administrative, Institutional and Perceptual Barriers

- accountability - Utilizing funds from different sources in a single consolidated system can present a formidable accounting problem to agencies.
- lack of knowledge of transportation costs - It is hard to convince agencies of the benefits of coordination when they are not fully aware of the true present cost of service.
- turf protection - Agency providers may be reluctant to give up control of vehicles and the identify of the agency transportation service.
- preferential treatment to clients - Agencies are often concerned about a lack of partiality toward their clients on the part of a lead agency in a consolidated system.
- public transit orientation/limitations - Agencies view public transit agencies as limited in service potential, due to geographic and regulatory constraints, as well as their non-social service orientation.

- mixing clients - Some agencies believe that mixing different types of clients is not advisable.
- discontinuity of funding - Agencies fear that funding cutbacks to other agencies will negatively impact the service they receive from consolidated system.
- unavailability of funds - Some agencies simply lack funds to purchase transportation service (i.e., in a consolidated system).
- disagreements over lead role - Key parties may disagree over nature of coordination, director, etc.

Some of these barriers are perceived (on the part of the prospective participants), rather than real. In particular, statutory constraints on user restrictions have generally been modified so as to allow program resources (e.g., vehicles) to be used for serving persons not directly funded under that particular program. Nevertheless, recipients of these resources have often resisted coordination out of fear of violating rules and thereby losing their funds. Thus, it is important to realize that the perception of a problem can be as serious an obstacle as an actual regulatory problem.

One of the most significant barriers has been the labor issues related to Sec. 13(c). DAST and ACCESS have been among the systems that have faced this issue. When the transit drivers' union protested against DAST, the Secretary of Labor ruled in favor of DAST. Nevertheless, the outcome of the conflict has been the use of unionized drivers. Taxi drivers protested against ACCESS in Pittsburgh. The ACCESS case led to a precedent-setting court decision; it extended coverage of the 13(c) agreement with the transit union to certain taxi drivers whose primary work previously involved shared-ride service to the TH. No new collective bargaining was required, however. In Cleveland, on the other hand, GCRTA was able to negotiate agreements which created a special classification and lower wage rate for CRT drivers. This agreement made provisions for CRT drivers to be phased into the transit driver classification after a specified period. This may have been partly due to the simultaneous pressure from private sector operators.

Private bus, chair carrier, and taxi operators have also affected services, utilizing both Section 3(e) of the UMT Act and local statutes in an effort to block implementation. The result of such a protest against DAST was the use of private contracts to provide some portion of DAST services.

The case study systems also experienced a number of administrative/institutional barriers. Several of these have resulted in agency reluctance to participate in coordinated systems. Agencies operating transportation programs or having transportation budgets have generally take part only if they are convinced that coordination/ consolidation will provide specific benefits (e.g., reduction in costs, improvements in service, or elimination of the responsibility for operating service). It is unrealistic to expect that all agencies in an area will realize actual benefits. For instance, an agency operating one or two vehicles may experience greater operating costs by having to absorb a portion of the administrative costs of a larger system, and further may have to give up control of its vehicle(s) (e.g., have it stationed at a central location, away from the agency). If such an agency is already able to efficiently transport its clients, it may not realize any appreciable benefits from coordination. However, there are many agencies in most locations which will stand to benefit from entering into a coordinated system, but which may have serious reservations about doing so. Overcoming these concerns represents a major challenge to the coordination initiator.

Spokane utilized a carrot-and-stick approach in developing its consolidated system: the YMCA obtained a Certificate of Public Convenience and Necessity, which made YMCA approval a requirement for any 16(b)2 grant application in the county. Grants are not approved if it is believed that the applicant can participate in the consolidated system. Thus, any agency which desires 16(b)2 vehicles (either for a new service or for replacing old vehicles) must participate in SASTA. SASTA also encourages participation by offering agencies exclusive use of vehicles where needs make this imperative, and by offering the benefits of the motor pool to agencies which provide their privately-owned vehicles to the pool during periods when they are not utilized.

Other consolidated systems also offer some flexibility to agencies. DAST will "rent out" vehicles to agencies for exclusive use. The assurance that agencies can have exclusive use of vehicles for special program needs is an aspect of a flexible consolidated service which can be instrumental in inducing agencies to participate. Program flexibility is a key issue to most agencies.

In Pittsburgh, the difficulty of getting agencies to commit themselves to participate was addressed by obtaining "letters of understanding" early in the ACCESS project. Thus, some level of commitment was obtained before a great deal of resource expenditure for the project took place. However, expanding agency participation required considerable "hand-holding" on the part of ACCESS staff, as well as demonstration that the project would both work and be permanent. ACCESS' experience has generally been that many barriers are more perceived than real and can be tackled successfully.

TRADE also obtained advance "commitments" from agencies willing to take part in a coordination effort; seven agencies originally agreed to participate. However, of this group, only two agencies actually joined the project. The reasons for not participating varied considerably: heads of several of the agencies had reservations over the project's chances for success, while others were laboring under significant misconceptions concerning the potential benefits; specific concerns included loss of control and visibility, possible increased costs, and accelerated vehicle depreciation. Of the five eventual members of the consolidated system, only one had been operating its own transportation program; the other were either new programs or had previously purchased service from other providers. Thus, TRADE was basically unsuccessful at persuading provider agencies to give up their vehicles to the consolidated operation.

In examining coordinated systems, it has been found that encouraging participation in the planning and design process by citizens, agencies, private operators and other interest groups can reduce the barriers to implementation and lead to a more successful project. In many projects, one or more of these critical interest groups was inadequately included in the planning process; the inevitable result was some type of confrontation. Protests from private providers in Cleveland and Delaware point to the necessity of their involvement early in the process. In Portland, a citizen advisory committee played an important role in the LIFT project; the specialized nature of service for the TH suggests a greater need for advisory groups made up of potential special needs users. The evaluation of the LIFT project (7) indicated that an earlier role for the advisory committee would have been desirable.

Summary

Although specialized services for the transportation handicapped have been relatively expensive to operate (i.e., as compared to service for the general public), they have proven to be the most cost-effective way to improve the mobility of those persons not having other transportation options. As a result of the investigation of such services, a number of inferences and conclusions can be made regarding their accomplishments and the factors influencing their success or failure.

First of all, specialized services for the TH have developed a modest sized market. A typical system may serve approximately .01 trips per day per elderly and handicapped person in the area. In many cases, demand is constrained by the available supply of transportation; however, not all handicapped persons avail themselves of such services. Registration for service has varied considerably from area to area, depending on a variety of factors, including the ease of registration itself. Approximately 10 to 25% of the total market is registered in most systems. Higher percentage registration in some systems suggests that there is still room for greater market penetration in others; however, many elderly and handicapped persons have other alternatives, and cannot be expected to register. A large percentage of users of specialized services typically do not have alternatives, attesting to the impact of such services on the mobility of this market.

Providing specialized service has often proven quite costly; however, the following factors have been shown to help keep costs at a minimum:

- restricting trip length through a zone system
- offering different levels of service/assistance according to minimum needs
- use of private operators, particularly in low density areas with dispersed trip origins and destinations
- inclusion of productivity incentives in private operator contracts
- setting advance request times which permit efficient scheduling, but which are short enough to minimize the likelihood of no-shows and cancellations
- promoting higher productivity subscription (and other fixed schedule) service

The use of private operators has been shown to have a significant impact on cost levels, particularly when compared with transit agency operations. Given the specialized nature of the market and limited ridership levels, transit agency operation becomes extremely expensive.

Coordination efforts to date have produced mixed results. In some cases, such efforts have resulted in certain benefits, including upgrading the quality of service provided, increasing productivity, and releasing agencies from the responsibilities of directly providing transportation services. However, coordination efforts have generally not demonstrated operating/administrative cost savings. Due to the nature of many specialized operations, which benefit from volunteer labor and donated office space and vehicles, formal coordination may prove more costly by eliminating these benefits. In many coordinated systems, costs and benefits are difficult, if not impossible, to measure.

Finally, coordination efforts have been impeded by a variety of institutional, operational, and attitudinal barriers related to regulatory restrictions, opposition from other transportation providers, and reluctance of agencies to give up control over their clients' transportation, among others. However, although they often prove quite troublesome, such barriers have not proven insurmountable in most coordination efforts.

3 Paratransit for the Transportation Handicapped: State-of-the-Art

Introduction

As described earlier, the development and provision of specialized services for the TH has changed substantially over the past decade. Beginning with individual social service agencies transporting their clients to and from agency-run activities, TH services have evolved into metropolitan or county areawide (or even statewide) coordinated systems. Whereas each agency originally operated its own vehicles, some systems now provide service through multi-operator arrangements.

"Special efforts" requirements stipulated by UMTA spurred a major change in the nature of service development and provision, bringing the transit industry onto the scene. This produced a number of new services, essentially overlaid on the existing system of social service agency programs. Meanwhile, the push for coordination, both within the special efforts context and because of increasing budgetary constraints, brought other public agencies into the act. Over the second half of the 1970's, coordination was perhaps the single key issue in TH service considerations. Earlier coordination efforts involved just social service agencies or just the transit agency and contract providers, and were thus targeted either solely at agency clients or solely at non-affiliated individuals; a number of more recent systems have bridged this gap and are serving both groups. Systems such as that in Pittsburgh have integrated the participation of social service agencies and the transit agency, along with private for-profit providers.

As the emphasis placed on coordination over the past five years continues, it remains a key issue in TH transportation system design. As described in the previous section, the benefits of coordination have not been dramatic and no single approach has been found to be "best." Thus, many agencies, communities, transit operators, and states around the country are still striving for ways to provide effective transportation for the TH, as well as to make best use of the multitude of funding programs and services that currently exist. Improving cost-effectiveness now takes on even greater importance, given increasing budgetary constraints and cutbacks being experienced by social service programs and transit systems in the early 1980's.

One of the major issues currently affecting the nature of coordination and TH transportation in general is U.S. DOT's response to "Section 504" of the

Rehabilitation Act of 1973. As they now stand (early 1982), the U.S. DOT's 504 rules permit "local option" in making transit accessible to the handicapped; transit agencies have the option of either equipping 50% of their buses with wheelchair lifts or providing separate demand-responsive services. The nature of transit agencies' choices will have a significant impact on the development of paratransit over the coming years.

This chapter reviews the current "state-of-the-art" of TH paratransit in terms of the key issues associated with service delivery and coordination, the funding of specialized services, and the nature of the Section 504 controversy. This discussion sets the stage for an assessment of the potential future direction of paratransit for the TH.

Service Delivery and Coordination

As suggested above, the most recent developments in the field of TH paratransit have come from a number of sources: social service agencies attempting to meet the needs of their clients and, at times, to relieve themselves of an administrative burden or to reduce costs through coordination; government bodies, interested in making more efficient use of funds and, perhaps, in increasing the amount on quality of service through coordination; and transit agencies, typically responding to government regulation and/or local political pressure to expand service opportunities for the TH. In some cases, the interests of these groups have merged; in others, they remain quite separate.

Coordination Approaches

As discussed in the previous chapter, attempts at coordination have taken on many different forms. Perhaps some of the differences between anticipated and actual results of coordination efforts stem from confusion over exactly what coordination is; this can often lead to unrealized expectations. For example, the term "coordination" is applied to projects ranging from simple cooperation to full scale consolidation of services. One should not expect significant monetary savings from projects with limited amounts of coordination; at the same time, one should recognize that the creation of what is effectively a new system, even through consolidation, will generate some new administrative costs. Where expectations are realistic, the experience with coordination efforts to-date can be categorized as satisfactory.

Some of the confusion as to what constitutes coordination results from the range of very different concepts characterized as such. For example, the Metro Mobility project is an example of coordination in the sense that service is provided by more than one operator and is "coordinated" through centralized dispatching. However, this system does not represent coordination of existing social service agency providers (although, there are such providers in the network), but rather, the creation of an entirely new service delivery network targeted to "unaffiliated" users. Thus, it is important to recognize that this concept differs significantly from the concept of coordination as it is widely used in connection with social service agency transportation.

Coordination may or may not involve the direct delivery of transportation service. Auxiliary functions can also be coordinated. For example, one of the most successful examples of coordination is the Oregon Special Services Association (OSSA), mentioned in the previous section. OSSA member agencies have obtained reduced insurance premiums through lower group rates, a wider "actuarial" history base for rate setting purposes and improved loss control procedures. This concept, aimed specifically at reducing costs, is beginning to spread to other states. The OSSA program has in no way changed service delivery; each agency continues to offer its own service.



Metro mobility "dispatcher" transmits trip requests to contract service providers (taxi companies). (photo: H.R. Menhard)

In terms of coordinating service delivery functions, approaches range from the simple interagency cooperation represented by Fayetteville's original Project Respond to consolidation, as represented by TRADE and SASTA. In the former arrangement, each participating agency retains control over its own transportation functions, but shares its resources with the others where feasible. Typically, this entails procedures such as ride-sharing, in which unused space on one agency's vehicles is made available to clients of other agencies, so as to expand the overall service delivery capacity and improve the efficiency of the participating agencies.

In consolidation, on the other hand, participating agencies/providers relinquish direct control over their own transportation operations and essentially merge to form a single system. This arrangement removes the burden of directly operating service from the individual agencies. The availability of a larger diversified fleet may improve reliability for some agencies, and some economies of scale may be realized for support functions such as maintenance and insurance. The transportation of a number of agencies' clients on the same set of vehicles can produce economies of scale and, effectively, increased overall capacity. The aim is thus basically the same as in cooperation, but the means of achieving that aim differ considerably - at least from an administrative viewpoint. In fact, consolidation has often proven difficult to achieve, because of agencies' unwillingness to give up control of their own operations.

Brokerage

Thus far, the coordination concepts discussed here represent either an attempt to reduce the cost of serving agency clients (as in OSSA, Project Respond, and TRADE), or to serve other (i.e., unaffiliated) TH persons (as in Metro Mobility). More recently, however, there have been attempts to both coordinate social service agency programs and expand service to unaffiliated users. Perhaps the best known example of this approach is the ACCESS system in Pittsburgh. ACCESS achieves this coordination through "brokerage" activities which coordinate both the supply and the demand for TH transportation service. The transportation brokerage concept* involves a

* Brokerage relates to all aspects of paratransit, not just the TH, and is discussed separately in the volumes on COMMUTER RIDESHARING and GENERAL COMMUNITY PARATRANSIT. The concept in its broadest sense is discussed at some length in the OVERVIEW volume.

range of activities related to the "matching" of demand with supply, be it existing services or service created to meet the demand. Many TH paratransit systems utilize certain elements of the brokerage approach; ACCESS incorporates a number of these elements, and is therefore generally referred to as a brokerage system.

Supply side coordination in Pittsburgh involves the establishment of contracts with a set of carriers who provide the service. Demand side coordination is achieved through the active solicitation of agency participation and the establishment of arrangements with these agencies to serve their clients. The intention is to offer agencies service at lower costs than they would be able to achieve in their own, primarily through interagency ride-sharing. All fares are set so as to cover the full costs of operation. Unaffiliated individuals can use the service as well; in such cases, riders receive a "user-side" subsidy from the transit authority (the user-side subsidy concept is discussed further below).

The brokerage system displays certain of the same basic characteristics as a consolidated system in that agencies essentially turn their operations over to a different provider. (Indeed, service to both affiliated and unaffiliated users can be offered through a consolidated system, if the system is able to generate excess capacity through ride- and time-sharing.) Brokerage offers an advantage through its multiple operator framework, which allows greater leverage over providers, leading (potentially) to improved service levels. In addition, the lack of affiliation of the brokerage "agent" with any single operator enables it to better serve as an "ombudsman" for the user market, and to avoid potential conflict of interest situations.

Systems such as Metro Mobility also display certain brokerage features, since the demands of individuals are "matched" with supply through the central dispatcher.* However, Metro Mobility makes no active attempt to relieve agencies of the need to provide service. Agencies can elect to use the centrally provided services for their clients (and indeed do, since the transit authority typically picks up a substantial portion of costs), but in

* In the case of Metro Mobility, the dispatch center is affiliated with a particular supplier, and is thus not an example of true broker.

most cases, they do not do so extensively. Thus, this type of system does not really attempt to make more efficient use of existing resources and reduce costs - instead, it is aimed primarily at expanding service availability.

User-side Subsidy

Metro Mobility and similar projects represent attempts to expand service opportunities for the TH through the creation and subsidy of a new paratransit service. An alternative approach is based on the premise that at least a segment of the population can utilize existing transportation providers such as bus and taxi operators, and that the problem is one of cost rather than lack of supply. The proposed solution is a user-side (rather than the traditional supply-side) subsidy.

In a user-side subsidy program, eligible riders are provided with a certain subsidy which enables them to utilize existing transportation services at reduced costs. For example, in an UMTA-sponsored Service and Methods Demonstration project in Montgomery, Alabama, elderly and handicapped persons were able to utilize taxi service for half the normal fare; the remainder of the fare was paid by the City - up to a limit of \$15 per person per month, exclusive of medical and work trips. Other user-side subsidy programs have been introduced in Danville (IL), Kinston (NC), Lawrence (MA), Milton (IL), Kansas City (MO), Milwaukee, San Francisco and Los Angeles, and a statewide program exists in West Virginia (Transportation Remuneration and Incentives Program - TRIP).

Proponents of the user-side subsidy approach point out that it can be used to facilitate differential subsidies for persons with different needs. In addition, this approach minimizes the amount of administrative overhead created in implementing an actual service. Evaluations of UMTA SMD user-side subsidy demonstrations produced the following general conclusions (17):

- The user-side subsidy is a viable, easily-administered method of furnishing transportation service for specific markets, involving both public and private operators. A key advantage is that it does not require the purchase and operation of vehicles.
- Project registrants comprise between 26 and 45% of the eligible market; registrants generally have lower incomes and auto availability levels than the target population as a whole.

- User-side subsidies for taxi use appear to be a cost-effective alternative to publicly-provided demand-responsive service. In the UMTA demonstration sites, the average total cost per subsidized trip ranged from \$1.20 to \$3.05; the average per trip subsidies ranged from \$0.76 to \$1.45. These costs are considerably lower than those experienced in most publicly-provided demand-responsive services.
- Actual subsidy costs can be controlled through special containment mechanisms such as per-trip subsidy payment limits, eligibility restrictions, and total subsidized travel limits.
- Private operators are generally willing to participate in user-side subsidy programs and, because of the expectation of increased business, are generally willing to absorb small administrative costs.

There are, however, certain drawbacks to the user-side subsidy approach. For example, there are always a significant number of more severely handicapped individuals who cannot utilize any existing carriers, except, perhaps, chair carriers or ambulettes, and these are often prohibitively expensive. In addition, the lack of controls over carriers may tend to reduce the level of service to handicapped individuals whom many carriers would prefer not to serve.

It should be noted that the ACCESS system, which employs a user-side subsidy for a subset of the user market (unaffiliated persons unable to use fixed route transit), attempts to solve some of these problems by effectively creating a new group of wheelchair-accessible shared-ride services and retaining some degree of control over these services. However, this is achieved at the expense of a significant increase in administrative overhead, thus negating one of the primary advantages of a user-side subsidy.

In summary, the methods of improving the effectiveness of transportation services for the TH continue to evolve, even if the nature of the service itself (i.e., predominantly advance request door-to-door) does not change all that much. Because of the differing perspectives of the actors involved in initiating TH paratransit services, the range (and lack of coordination) of funding sources, and the pressures of federal regulations, different areas continue to implement varying approaches for providing transportation service for the TH. This is not inappropriate, of course, given differing local characteristics, user needs, and funding sources/requirements. (Issues associated with the latter are addressed in the next section.)

Funding Issues

As noted earlier, a large number of funding programs have been utilized to support transportation services for the TH. While the existence of a plethora of programs provides certain opportunities for TH service, it also creates some problems; in particular, multiple funding sources can work counter to coordination, as is discussed below. It can also create problems relating to which program should support particular projects.

HHS and State Funding

The vast bulk of TH transportation funding is provided through a range of categorical grants administered by the U.S. Department of Health and Human Services (HHS) (see Table 5). Some of these programs channel funds directly to social service agencies; other funding flows through the states. For the majority of the HHS programs, transportation is but one of a number of eligible expenditures. Since funding is generally not transportation-specific, it is difficult to ascertain exactly how much is spent annually on TH transportation; however, estimates range upwards of \$1 billion per year.

Differences in eligibility criteria, reporting requirements, and eligible expenses under different HHS funding sources have often been cited as a major barrier to coordination of social service agency transportation programs. Recent research (14,15,16) however, suggests that such barriers are more perceived than real. Federal funding-related regulations may create more difficult reporting requirements in a coordinated system but, in general, those regulations do not prohibit - or even discourage - coordination efforts. Nevertheless, despite the evidence offered by successful coordination efforts some agencies still cite these regulations/requirements as a reason for not participating in coordination projects.*

* The current Administration has proposed eliminating categorical social service grants, in favor of a new set of block grants. This could impact the nature of coordination, as is discussed in Chapter 4 of this chapter.

Table 5

Federal Funding Sources for Specialized Transportation

DEPARTMENT STATUTE TITLE & SECTION (OMB CATALOG NO.)	DESCRIPTION	PROVIDES TRANSPORTATION FOR	USER ELIGIBILITY RESTRICTIONS			GRANT TYPE & MATCHING REQUIREMENTS	AREA COVERAGE	FUNDING LEVELS	REGULATIONS/ RESTRICTIONS	APPLICATION DEADLINES	CAPITAL SPENDING AUTHORIZED	OPERATION SPENDING AUTHORIZED	ADDITIONAL INFORMATION
			AGE	INCOME/ WORK STATUS	HEALTH/ EDUCATION/ OTHER								
A. ACTION													
1 DOMESTIC VOLUNTEER SERVICES ACT OF 1973	Part time Employment for Low-income Elderly	Low-income Elderly & Children with Special Problems	Set by Director	Not to be Able to Help & Supervise Children	None	Project Grants Matching Requirements, Normally Federal 90% 10%	Community	FY 77 \$4.5 million FY 78 \$3.5 million	Used for Staff Travel, Fringe Compensation, Transp., Etc.	None	Possible sub Prior Approval	YES	Possible 100% Federal funding
2 The Foster Grandchild Program (17 001)	Volunteer Service	Elderly	None/Retired	None	None	Project Grants Matching Requirements, Normally Federal 90% 10%	Community	FY 77 \$1.5 million	To be Established Community Service Organizations	None	Possible sub Prior Approval	YES	80%-100% Federal funding at end of 3rd year
3 The Senior Companion Program (17 001)	Part time Employment for Low-income Elderly	General Population (incl. Children)	Set by Director	Not to be Able to Help People, Community, or Property	None	Project Grants Matching Requirements, Normally Federal 90% 10%	Community	FY 77 \$1.5 million	Used for Staff Travel, Fringe Compensation, Transp., Etc.	None	Possible sub Prior Approval	YES	Possible 100% Federal funding
4 The Youth Challenge Program (17 001)	Community Service	Low-income, Developmentally Disabled, Etc.	Low-income	None	None	Project Grants Matching First Year 90%-50%, Second Year Federal Max 30% max 50%	Community	FY 77 \$4.5 million	Used for Staff Travel, Fringe Compensation, Transp., Etc.	To be Announced	Possible sub Prior Approval	YES	Federal participation not to exceed \$1,000 or 50% of total cost, whichever is smaller; high schools, community or junior colleges, or other public or private non-profit agencies can apply for priority related projects.
B. COMMUNITY SERVICES ADMINISTRATION (CDA)													
1 COMMUNITY SERVICES ACT OF 1970 AS AMENDED	Transportation Necessary for Blind Social Services	Low-income families & individuals	OSD Priority Guidelines	None	None	Project Grants Matching	Urban or Rural	Est. \$200 million	None	Not Applicable	Possible	YES	Funds may be used for locally developed programs which lighten the objectives of community action.
2 Community Action (18 007)	Transportation Necessary for Blind Social Services	Low-income	None	None	None	Project Grants No Match	Urban or Rural	FY 77 \$4.5 million	Funds for Fringe	As Forwarded	Possible	Possible	
3 Community Food & Nutrition (18 005)	Transportation Necessary for Blind Social Services	Elderly	OSD Priority Guidelines - Feasible	None	None	Project Grants No Match	Urban or Rural	Est. \$10 million	None	None	Possible	Possible	
C. VETERANS' ADMINISTRATION													
1 VETERANS' DOMICILIARY CARE (16 001)	Hospitalization, Medical and Rehabilitation for Veterans	Service Related Disabilities or a Veteran Under a Priority Support Costs	None	Not to be Disabled	None	Provisions of Specialized Services	Individual	\$5.5 million	Provides Provisions of Specialized Assistance	None			
2 VETERANS' HOSPITALIZATION (16 001)	Hospitalization, Medical and Rehabilitation for Veterans	Service Related Disabilities or a Veteran Under a Priority Support Costs	None	Not to be Disabled	None	Provisions of Specialized Services	Individual	\$2.7 million	Hospital Care	None			
3 VETERANS' OUTPATIENT CARE (16 011)	Hospitalization, Medical and Rehabilitation for Veterans	Service Related Disabilities or a Veteran Under a Priority Support Costs	None	Not to be Disabled	None	Provisions of Specialized Services	Individual	\$79.9 million	Not to be Property Authorized	None			

Source: (6)

Table 5 (cont.)

DEPARTMENT STATUTE TITLE & SECTION (OMB CATALOG NO.)	DESCRIPTION	PROVIDES TRANSPORTATION FOR	USER ELIGIBILITY RESTRICTIONS			GRANT TYPE & MATCHING REQUIREMENTS	AREA COVERAGE	FUNDING LEVELS	REGULATORY/ RESTRICTIONS	APPLICATION DEADLINES	CAPITAL SPENDING AUTHORIZED	OPERATION SPENDING AUTHORIZED	ADDITIONAL INFORMATION	
			AGE	INCOME/ WORK STATUS	HEALTH/ CONVICTION/ OTHER									
D. DEPARTMENT OF HEALTH, EDUCATION & WELFARE	1. OMB BUREAU OF HEALTH SERVICES PROGRAMS ON AGING	Senior Services	None	Priority DOC		Family, Federal/State Matching Grant	Priority Senior Services	100% Federal for Priority Senior Services	Family Program Eligibility for Priority Senior Services	Priority	Discouraged	Class & Staff Reimbursement Also Purchase of Services Allowed	DOC - Department of Commerce Programs based on Census Bureau Statistics Area Agency on Aging requests support for projects when funds are available May be administered by community. Requests for projects with "large number" of elderly. Apply to Administration on Aging only. At least 50% of projects must be in state predominantly rural. AUA priority is to encourage capital purchase for demonstration; through DOT participation Post special of age apply to the Governor's office Priority given to OMB priority funding needs	
			None	None		Family, Federal/State Matching Grant	Priority Senior Services	None Funded for This Fiscal Year	Family Program Eligibility for Priority Senior Services	None	Prohibited	YES		
			None	None		Family, Federal/State Matching Grant	Priority Senior Services	None	None	Family Program Eligibility for Priority Senior Services	Ongoing	Prohibited		YES
			60+	DOC		Family, Federal/State Matching Grant	Priority Senior Services	None	None	Family Program Eligibility for Priority Senior Services	Based on Fiscal Year	Prohibited		YES
			55+	OMB/Unemployed		Family, Federal/State Matching Grant	Priority Senior Services	Community	100% Federal for Priority Senior Services	Family Program Eligibility for Priority Senior Services	None	Prohibited		YES
2. PUBLIC HEALTH SERVICE ACT OF 1944 AS AMENDED	Comprehensive Public Health Services Community Health Centers Emergency Medical Services	Senior Health Services	None	None		Family, Federal/State Matching Grant	Community	50% Federal for Priority Senior Services	Priority Senior Services, 15% for the State Health Service Agency	May 1	Allowable with Approval of State	31600 money is allocated to states on a formula basis	Since these projects originated in the Office of Economic Opportunity with no federal money involved in getting it, such as housing, federal grant, 50-50 matching for services and administration Section 1202 no matching requirement, Section 1201 & 1201-501 for 100% 25% second year, exceptional need 75% & 50%	
			None	None		Family, Federal/State Matching Grant	Community	50% Federal for Priority Senior Services	Priority Senior Services, 15% for the State Health Service Agency	None	Allowable with Approval of State			
			None	None	Contract Combination	Family, Federal/State Matching Grant	Community	50% Federal for Priority Senior Services	Priority Senior Services, 15% for the State Health Service Agency	Established by the Regional Office	None	Allowable with Approval of State		
			None	None		Family, Federal/State Matching Grant	Community	50% Federal for Priority Senior Services	Priority Senior Services, 15% for the State Health Service Agency	None	None	Prohibited		
3. SOCIAL SECURITY ACT OF 1935 AS AMENDED	Human Development Assistance Programs MDC	Developmental Services	16+	MDC Recipient		Family, Federal/State Matching Grant	State	50% Federal for Priority Senior Services	None	Not applicable	Prohibited	YES - Purchase of Transportation for Priority Senior Services	Transportation services may be purchased, staff & direct care by reimbursement for transportation costs incurred in getting to, from or within, federal grant, 50-50 matching for services and administration Priority Senior Services in set up special needs areas in their assistance standards which may include transportation under circumstances specified in the State's plan. State services may and transportation is optional. Combined with the Department of Labor Title Program includes personal and services of State option and basic housing & or supplemental payments. After personal requests, are eligible for up to 60% of state. Capital of equity, no support limit when deducting actual actual requests (monthly, ready)	
			None	MDC Recipient		Family, Federal/State Matching Grant	State	50% Federal for Priority Senior Services	Priority Senior Services, 15% for the State Health Service Agency	None	None	Prohibited		
			None	MDC Recipient		Family, Federal/State Matching Grant	State	50% Federal for Priority Senior Services	Priority Senior Services, 15% for the State Health Service Agency	None	None	Prohibited		
4. FEDERAL BUREAU OF INVESTIGATION COMMUNITY HEALTH AND WELFARE CONSTRUCTION ACT OF 1961 AS AMENDED Title 42, 11271	Services to Individuals & Families	Priority Senior Services	None	MDC Recipient		Family, Federal/State Matching Grant	State	50% Federal for Priority Senior Services	None	None	Prohibited		Other public or private non-profit entities may participate	
			None	MDC Recipient		Family, Federal/State Matching Grant	State	50% Federal for Priority Senior Services	Priority Senior Services, 15% for the State Health Service Agency	None	None	Prohibited		

**State Administrator - Community Development Dept.
***State Administrator - Dept. of Social P. Affairs

****State Administrator - Dept. of Health

Table 5 (cont.)

DEPARTMENT STATUTE TITLE & SECTION (OMB CATALOG NO.)	DESCRIPTION	PROVIDES TRANSPORTATION FOR	USER ELIGIBILITY RESTRICTIONS			GRANT TYPE & MATCHING REQUIREMENTS	AREA COVERAGE	FUNDING LEVELS	REGULATIONS/ RESTRICTIONS	APPLICATION DEADLINES	CAPITAL SPENDING AUTHORIZED	OPERATION SPENDING AUTHORIZED	ADDITIONAL INFORMATION
			AGE	INCOME/ WORK STATUS	HEALTH/ EDUCATION/ OTHER								
5. EMERGENCY MEDICAL SERVICES SYSTEMS ACT OF 1973 (13.284)	Comprehensive Regional Emergency Medical Services Systems	Citizens Served by Regional Emergency Medical Services Systems	None	None	Critical Condition	Project Grants or Contracts Section 1202 - No Matching Requirements Section 1203 & Section 1204- 50% First Year, 25% Second Year. In Case of Exceptional Need Can Be 75 & 50%.	Established Service Area	Est. \$25.1 Million FY 77 Proposed Major	To be Used for Feasibility Studies, Planning, Est. & Initial Operations, Expansion & Improvement	Established in Regional Office	Possible With Approval	Possible	An applicant must be a local, regional or state governmental unit, or any other public entity, and any private non-profit entity.
6. FAMILY PLANNING PROJECTS (13.217)	Comprehensive Medical & Social Services	Mothers, Babies, Young Children	None	Priority to Low- income Persons	None	Project Grants Matching; Federal Support May Not Equal 100%.	Community	Est. \$95 Million FY 77		None	Prohibited	YES	Any private non-profit or public entity can apply.
7. COMMUNITY HEALTH CENTERS P.L. 94-63, Title V (13.224)	Health Centers	General Population				Project Grants Matching; Federal Support May Not Equal 100%.	Community	Est. \$196 Million FY 77	Services Must Be Provided in Accordance With the Plans of the State Comprehensive Health Agency	None	YES	YES	The grant policy statement is very flexible.
8. TITLE IV MIGRANT HEALTH P.L. 94-63, (13.246)	Itinerant Farm Families Health Program	Clients & Employees	None	None	None	Project Grant Applicant Must Assume Part of Project Costs	Generally Rural	Est. \$19.2 Million FY 77	Establish & Operate Family Health Service Clinics	None	YES	YES	Any public or private non-profit agency may apply.
9. DEVELOPMENTAL DISABILITIES SERVICES & FACILITIES CONSTRUCTION ACT OF 1970 Developmental Disabilities Programs (13.630)	Services for the Developmentally Disabled	General Population	None	None	Developmentally Disabled	Formula Grant (basic support) 80-90% in Poverty Areas 70-75% in Other Areas	Community	Est. \$33.1 Million FY 77		Established By State	Possible	YES	Grants may be used to assist states & local groups in developing & implementing a comprehensive plan for meeting the needs of the developmentally disabled.
10. REHABILITATION ACT OF 1973 AS AMENDED Rehabilitation Services Program (13.624)	Rehabilitation Services	Handicapped	None	None	Handicapped	Formula Grant 80-70% for Approved State Plans Project Grants - 90-10% Matching Rate	State	Est. \$720 Million FY 77		None	Possible	YES	Used to cover the costs of providing rehabilitation services which include diagnosis, comprehensive evaluation, counseling, training, reader services for the blind, interpreter services for the deaf, and employment placement.
11. COMMUNITY SERVICES ACT OF 1971 P.L. 92-644 (JAN. 4, 1975) CFR 45, CH. 13, PT. 1304 Head Start (13.600)	Child Development	Young Children & Their Parents	None	None	None	Project Grants (direct funding) - 20% Matching Requirements	Community	Est. \$434.3 Million FY 77	90% of Expenses Must Come From Families Whose Income is Below Poverty Guidelines	Submit 6 Months Before Anticipated Approval Date of the Grant	YES	YES	Any public or private non-profit organization may apply.
E. HOUSING & URBAN DEVELOPMENT 1. HOUSING & COMMUNITY DEVELOPMENT ACT OF 1974 Title I (14.218)	A Community Development Program Providing for a Range of Social Services	General Population				Grants & Contracts No Local Contribution Requirements	Any City of 50,000+ or Any County	Est. \$3.2 Billion FY 77	Comprehendes Seven Govt. Programs	July 1st Deadline for Local Agencies. Applications Must be in to Local Agencies by April 1st.	Possible if No Other Federal Funds Available	Possible	There is nothing specific on transportation services in the legislation. However transportation must be an integral part of, and relate to, the overall community development program.

* (State Adminstr - Dept. of Health)

** (State Adminstr - Dept. of Education)

Table 5 (cont.)

DEPARTMENT STATUTE TITLE & SECTION (OMB CATALOG NO.)	DESCRIPTION	PROVIDES TRANSPORTATION FOR	USER ELIGIBILITY RESTRICTIONS			GRANT TYPE & MATCHING REQUIREMENTS	AREA COVERAGE	FUNDING LEVELS	REGULATIONS/ RESTRICTIONS	APPLICATION DEADLINES	CAPITAL SPENDING AUTHORIZED	OPERATION SPENDING AUTHORIZED	ADDITIONAL INFORMATION
			AGE	INCOME/ WORK STATUS	HEALTH/ EDUCATION/ OTHER								
F. DEPARTMENT OF LABOR													
1. COMPREHENSIVE EMPLOYMENT & TRAINING ACT OF 1973													
a. Title II Public Employment Programs (17.232)	Work Duties	General	None		Grant - No Matching Requirements		\$70 Million in 1973		Date Set By Director	Possible	YES	Contracts cannot be entered into with private-for-profit organizations for the employment of participants.	
b. Title III Summer Program for Economically Disadvantaged Youth (17.237, 17.232)	Work Duties	Youth			Grant - No Matching Requirements							Designed to provide manpower services which are needed to obtain or retain employment or to participate in other manpower program activities.	
c. Title VI Emergency Job Programs (17.232)	Work Duties	General			Grant - No Matching Requirements				Date Set By Director	NO	YES	Contracts cannot be entered into with private-for-profit organizations for the employment of participants.	
G. DEPARTMENT OF TRANSPORTATION													
1. URBAN MASS TRANSPORTATION ACT OF 1964 AS AMENDED													
a. Section 3 (20.500)	Capital Grants	General Population			Capital Grant - 80-20% Matching	Urban	\$7.875 Billion for Fiscal Yrs. 1975-80. < \$1.0 Billion Left		Ongoing	Allowable	NO	Subject to availability of funds.	
b. Section 5 (20.502)	Capital & Operating Assistance Grants	General Population			Formula Grants	Urban and Areas	Est. \$650 Million FY 77	Special Off-peak Hour Rates Must Be Given to E/W	Must First be Part of Regional T.I.P.	Allowable	Allowable	Apply to UMTA. (Through the State if urban area < 200,000).	
c. Section 6 (20.504)	Research & Demos	General Population			Project Grants, Research Contracts	Urban	N.A.		Ongoing	Allowable		Apply to UMTA. Project must assist in reduction of urban transportation needs, improvement of service, or meeting total transit needs at minimum cost.	
d. Section 9 (20.505)	Technical Studies	General Population			Project Grants	Urban	N.A.	No Restrictions Specified	Must be included in R.T.P. Overall Work Program	Allowable		Apply to Regional Planning Agency to be included in their overall work program.	
e. Section 16(a)	Grants to Public Agencies, Public Bodies or States	Elderly & Handicapped		For Those Who Are Unable to Use Regular Public Transp.	Project Grants - Matching Requirements 80-20%	Urban	No Set Amount - Section 3 Funds Are Source	Service Primarily for E/W	Ongoing	Allowable		Service provided by existing operators must be unavailable or insufficient, & existing operators must have had opportunity to provide service.	
f. Section 16(b)	Grants to Private Non- profit bodies	Elderly & Handicapped			Project Grants - Matching Requirements 80-20%	Urban	Up to 2% of Total UMTA Federal Funding	Service Primarily for E/W	Early 1977	Allowable		Service provided by existing operators must be unavailable or insufficient, & existing operators must have had opportunity to provide service.	
2. FEDERAL-AID HIGHWAY ACT OF 1973													
a. Section 147	Rural Highway Demos	General			Demo Project - Up to 100% Grants	Rural			No New Applications Can Be Filed	Allowable Except Rail	Allowable		
b. Federal Aid Urban	Transit Capital	General			California - about 85-15%	Urban		Only Public Agencies Can Apply	Ongoing	Allowable	NO		

As stated above, certain HHS funds (e.g., Title XX) are distributed by the states; however, in addition to serving as conduits for federal funds, some state governments have established their own specialized TH transportation funding programs. For instance, Pennsylvania has a program - using state lottery funds - which has reimbursed transit authorities so that elderly individuals can ride for free. Recently, because of a surplus of funds, the program has been expanded to include paratransit services, effectively creating a broader user-side subsidy program. A local match of 25% will be required for receipt of these funds. As noted earlier, Wisconsin has a program offering aid to counties for TH transportation. Funding has been used for such diverse activities as county-wide service coordination and the introduction of a user-side subsidy program. Other states, including Florida, Minnesota, Missouri, and Delaware (DAST) have various types of programs targeted at the TH, while many states provide funds for the TH within more general public transportation programs.

UMTA Funding

Considerable funding for TH transportation is also provided by the Urban Mass Transportation Administration (UMTA), through several different programs. Section 16(b)(2) is perhaps the best known source of UMTA TH funds. This program was created to provide capital funding to private non-profit agencies.* Since 1975, approximately \$130 million has been expended on this program, at a rate of approximately \$22 million per year. Some of the implications of this funding are discussed below.

Additional UMTA funds are provided under Section 6, through the SMD Program. SMD grants have covered both operating and capital costs; the LIFT, CRT, ACCESS and TRADE systems were/are all SMD demonstrations. Finally, UMTA Section 5 operating assistance is also used to fund TH transportation. The 1975 "special efforts" regulations required that 5% of local Section 5 funding be used to fund services for the elderly and handicapped (current regulations, related to Section 504 of the Rehabilitation Act of 1973, are discussed in the next section).

* A 16(b)(1) program was created at the same time to provide vehicles for public agencies; however, funding was never authorized for this program.

Unfortunately, the introduction of UMTA funding, while creating additional opportunities, has also created some problems. For example, the 16(b)(2) capital grant program has prompted many agencies to seek a "capital-intensive" solution, rather than alternatives (e.g., subsidizing use of taxis) which might prove more cost-effective. Some agencies which have acquired vehicles have found it very difficult to operate them extensively, due to limited funding awarded to cover operating expenses. This has led, in some cases, to an inefficient use of capital resources. Furthermore, while UMTA has been clearly supportive of coordination, 16(b)(2) has had the opposite effect of creating further fragmentation of the service delivery network. While some state governments and Metropolitan Planning Organization (MPO's) responsible for disbursing 16(b)(2) funding have attempted to minimize these problems by either ensuring that there is no service duplication or by requiring that grant recipients agree to participate in (present or future) coordination efforts (e.g., the SASTA case described earlier), the overall impact of 16(b)(2) has clearly been to intensify the need for increased coordination.

The existence of both HHS and UMTA funding can create another problem: the replacement of one funding stream with another (rather than the more useful aggregation of funding). For example, consider the Metro Mobility system. As noted earlier, some social service agencies essentially "substitute" Metro Mobility service for their own service for some of their clients, without in any way supporting or reimbursing Metro Mobility. This raises the question of the appropriateness of UMTA in effect subsidizing social service agency transportation efforts. The Portland LIFT case is even more graphic with regard to this question; in that case, the transit authority actively sought to attract agency users by offering contract rates to agencies at costs considerably below agency costs. Perhaps such cross-subsidization would be appropriate - if U.S.DOT were the sole source of transportation funds. However, in an era of limited DOT funding resources, there is a clear question as to whether UMTA funding should be used to replace HHS funding (even where that HHS funding would be used for other important social services).

The ACCESS system has tried to avoid this question by attempting to establish breakeven contract rates for agencies, and by requiring all but the most severely handicapped individuals to pay relatively steep fares (so that

agencies would most likely continue to subsidize their own clients). Even in this case, however, UMTA is providing a subsidy, since the contract rates and individual fares have, as yet, fallen short of break-even levels.

One approach to the cross-subsidization/replacement of funding stream problem has been to establish "maintenance of effort" requirements that stipulate that agencies receiving new funding must continue to budget transportation funds from other sources at previous levels. The State of Pennsylvania has adopted this approach for its new paratransit/user-side subsidy program. Of course, such a requirement is sound in theory, but it tends to lose its potential impact in an era of sharply rising costs and declining budgets.

Thus, the availability of multiple funding sources has raised a number of fundamental issues related to supporting TH transportation, and has resulted in some inefficient uses of resources. Given the proposed funding cuts for both HHS and DOT in the 1980's, it is important that a greater effort be made to better coordinate the funding programs sponsored by the two Departments.

The Section 504 Controversy

The single recent development which can potentially have the most significant impact on TH transportation services is the set of U.S. DOT regulations intended to implement Section 504 of the Rehabilitation Act of 1973. The U.S. DOT's regulations for ensuring "accessibility to transit" for the handicapped (as mandated by Section 504) have been the subject of considerable controversy over the past several years, with proponents of full transit accessibility lined up against proponents of separate paratransit services. In the wake of these disagreements (manifested in lawsuits), the original transit rules, which mandated that all mass transit fleets be made accessible to the handicapped, have been modified to allow "local option."* Under this requirement, each locality would essentially have a choice between equipping 50% of its buses with wheelchair lifts or providing specialized paratransit service. The nature of transit agencies' responses to this choice will exert a significant influence on the nature and development of

* As of this writing, the 504 rules had not been finalized, but local option was expected to be officially adopted.

paratransit services. Because of its potentially great impact on paratransit, we have included in this report a background discussion of the issues surrounding the 504 controversy.

The Original Accessibility Requirements

Section 504 states that

No otherwise qualified handicapped individual in the United States shall, solely for reason of his handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.

The guidelines issued by DHEW in January 1978 interpreted this clause to mean that any federally-funded program or activity, when viewed in its entirety, must be readily accessible to, and usable by, handicapped persons.

The implications for public transit were made known on May 31, 1979, when the U.S. DOT issued its then final rules pertaining to Section 504. The rules outlined changes to be achieved and a time-table for compliance; in general, accessible public transit was mandated as the legally required long-term solution to urban public transportation for handicapped individuals. In particular, DOT's rules required the following for any federally-funded bus system (there were also specific requirements for rail systems):

- All public transit buses purchased after July 2, 1979 must be accessible to handicapped persons, including wheelchair users.
- Fixed route bus systems should achieve program accessibility as soon as practical, but no later than three years from the date of the regulation. Half of the peak hour bus fleet must be accessible within ten years. Accessible vehicles must be used before those which are non-accessible in off-peak hours.
- Accessible connector service must be provided between accessible and non-accessible rapid rail stations.
- Where service cannot be made accessible within three years, some form of interim accessible service (such as retrofitting lifts to old buses, or supplying some form of temporary taxi service) must be offered. The interim service must be comparable to the fixed route services to the extent feasible in such characteristics as wait and travel time, area served, fare, trip restrictions, etc. At least 2% of Section 5 funds must be expended on interim service.

The regulations also permitted operators of existing rapid rail systems to provide handicapped persons with some form of bus or taxi service instead of

adapting the rail system, if local handicapped persons and DOT agreed to the alternative plan. It was stipulated that at least 5% of Section 5 funds must be used for such alternative service.

The Cost and Mobility Implications

The original DOT rules for implementing Section 504 guaranteed handicapped persons their civil rights with respect to the use of public transit systems, but due to the barriers which still remain in the community, improvement in mobility was widely questioned. Many argued that accessible transit would be a less effective alternative for improving the mobility of handicapped individuals than solutions involving combinations of paratransit and conventional transit. The high cost of implementing the changes mandated by DOT's 504 rules, coupled with predictions that these changes would remove barriers for relatively few users, thus created considerable controversy.*

Various studies have pointed out the cost and mobility implications of full accessibility. For example, a study by the National Research Council (18) identified 13 alternatives and assessed how well each alternative would meet the needs of different types of handicapped persons. The study also evaluated the cost of various components of the options using a 5-level qualitative scale. The following general conclusions were reached (p. 66).

The options involving design changes in conventional transit fleets have high costs and low effectiveness in meeting the needs of the handicapped. Options involving a number of different providers working together to provide variants of door-to-door service have high continuing costs but appear to offer services to far more handicapped travelers. The unrestricted options of specially equipped personal, licensed vehicles and user-side subsidies might be very expensive both initially and over time, but it is possible that these options, coupled with the training programs, would meet the needs of the largest percentage of the transportation handicapped.

Estimates of the federal portion of the cost of achieving full accessibility varied between \$5-\$8 billion (to be spent over a 30 year period). However, no new federal funds were authorized to cover either the

* The controversy has extended to members of the handicapped community as well as transportation professionals. Some handicapped persons - the exact number is undetermined - argue very strongly for mainstreaming via accessible fixed route service, rejecting the notion of "separate but equal." Other handicapped persons argue just as vehemently that mobility must come before direct equality.

capital costs or the additional operating expenses which would be incurred. A Congressional Budget Office (CBO) report (13) urged Congress to address the budgetary implications of the DOT regulations and to decide "whether to fund these changes through reductions in other transit programs or through new appropriations -- or whether to enact new legislation requiring DOT or HEW to modify their rules."

The CBO report (prepared at the request of the Senate Budget Committee and the Transportation Subcommittee of the House Public Works and Transportation Committee), explored the costs and the number of people who would be expected to benefit from three basic alternatives for serving the transportation needs of handicapped persons: 1) the Transit Plan - the outcome of the rules issued by DOT on July 2, 1979; 2) the Taxi Plan - limited modifications to public transit combined with door-to-door service for the severely disabled; and 3) the Auto Plan - limited modifications to public transit, financial aid to severely disabled persons for the purchase of specially adapted automobiles, and door-to-door public transportation for those unable to drive cars.

The study estimated that \$6.8 billion would be required over a 30 year period to implement the DOT rules then in effect (the Transit Plan). Furthermore, according to the CBO, this approach to providing transportation for the handicapped would serve less than 7 percent of all severely disabled persons, at a cost of approximately \$38 per trip. In contrast, the Taxi Plan would serve 26% of all severely disabled persons and would cost substantially less -- \$4.4 billion. The cost per trip was estimated to be about \$7.62. The Auto Plan was estimated to serve 30% of all severely disabled persons, but at a cost nearly as high as the Transit Plan, \$6.3 billion. The cost per trip was calculated to be \$7.33.

The ranking of the CBO's three major alternatives in terms of costs and benefits corresponded to the general results of the National Research Council study, even though the options considered were not identical. Both studies concluded that modifying existing transit systems to make them accessible would cost the most and benefit the fewest people. Offering handicapped individuals financial assistance to purchase specially-equipped autos or offering them direct user-side subsidies that they may use to "buy" any type of transportation service would probably meet the needs of the greatest number of people, but would also be very expensive. In both studies, specially

tailored door-to-door paratransit services were found to serve 3-4 times the number of handicapped people that would be served by converting conventional transit and would cost substantially less.

The analyses in the above studies were based, in part, on the experience to date in cities which had implemented accessible bus service. This experience supported the predicted limited ridership by severely handicapped persons. The first accessible bus service (5 buses) in the U.S. was initiated in San Diego in February 1977 (19). The San Diego Transit Corporation reported 496 bus trips taken by wheelchair passengers in 1978, or roughly 41 trips per month. Four people in wheelchairs were identified as regular riders and presumably accounted for a high percentage of the total wheelchair trips.

Accessible bus service was started in St. Louis in August 1977, with 60 buses. (This number grew to 157 by November 1977.) Between November 1977 and August 1978, Bi-State Development Agency, which operates the system, scheduled 126 of its 157 accessible buses in daily service. The ridership, which had averaged about 175 trips per month with 60 buses, did not substantially increase when additional buses were added. In addition, some extreme maintenance problems were experienced with the lifts. As a result, Bi-State reduced the number of scheduled buses to 40. Ridership during the second year of operation declined. In all, 40 wheelchair users were identified, but two of these persons accounted for about 41% of all reported trips. Only 13 wheelchair users made over ten one-way trips on the accessible buses during the two-year evaluation period. Their travel accounted for 82% of all reported wheelchair trips (19).

Ridership by wheelchair users in other cities which have purchased and scheduled accessible buses has been similar low. In Washington, D.C., for example, lift usage has been on the order of 160-170 passenger boardings per month; furthermore, it has been estimated that, during much of each year, fewer than 10 individuals have been making use of the lift service (20). In Palm Beach, Florida, usage has been similar: an average of 150 boardings per month (21). Whereas poor reliability of the lifts themselves has doubtless contributed to the low usage levels in all of these systems, evaluations of several of the aforementioned services suggest that service reliability is a much less important factor in discouraging use than is the inconvenience posed by having to get to and from the bus stops.

Reactions to the 504 Rules

In light of the above findings, there was considerable opposition to the 504 requirements. The 504 controversy came to a head in early 1980 when the DOT's rules were upheld as legal by a Federal District Court; in February 1980, Judge Louis Oberdorfer ruled against a suit filed by the American Public Transit Association (APTA) that sought to prevent DOT from enforcing the 504 requirements.

The attitude towards 504 at that time varied from property to property. Some transit agencies felt that their responsibility ends with putting (fixed-route) buses on the street, and were quite willing to purchase lift-equipped vehicles. In particular, many smaller properties, for whom the cost of 504 compliance was relatively low (particularly in light of the 80% UMTA match for capital costs), proceeded to implement full accessibility before the 1982 deadline.

On the other hand, many transit agencies opposed full accessibility, and remained hopeful that the 504 regulations would be modified so as to afford increased flexibility to localities in meeting accessibility guidelines. Indeed, a number of transit agencies, including the New York Metropolitan



Handi-LIFT is a privately-operated service for the handicapped sponsored by San Antonio's public transit system. (source of photo: U.S. DOT)

Transit Authority and the Rochester(N.Y.)-Genesee Regional Transportation Authority, announced their intention not to make their fleets fully accessible. On the other hand, properties such as the Southern California Rapid Transit District (Los Angeles) and the Seattle METRO announced plans to make their fleets fully accessible long before the 504 regulations were finalized. Finally, some properties sought waivers of various aspects of the requirements.*

In light of the strong arguments against mandating full accesibility (especially the enormous costs involved), Congressional support for modifying DOT's rules became quite strong during 1980-81. Separate versions of an amendment to the 1980 Surface Transportation Act that would have allowed local option were passed by the House and the Senate, but the 1980 legislative session ended before the legislation could be enacted. The rules were finally changed (at least on an interim basis - as of this writing, the new rules had not been finalized) in 1981 by authority of the new DOT, in keeping with the general "deregulation" and budget-cutting policies of the Federal Administration.

The revised rules permit local option in ensuring accessibility to the handicapped: a transit agency can follow the former accessibility guidlines, implement a "parallel" paratransit service, or ensure, in some other way, that there is some service that handicapped persons can use. The nature of localities' and transit agencies' choices in meeting the 504 rules will have a definite impact on the future development of paratransit services for the TH; this issue is addressed in the next chapter: FUTURE DIRECTIONS FOR TH PARATRANSIT SERVICES.

* Only two waivers were granted. The first was an exemption granted the Capital District Transportation Authority (CDTA) of Albany (NY), related to making a portion of its transit fleet accessible. The limited waiver did not define the achievement of "program accessibility," but merely exempted 24 buses which were to be rehabilitated from having to be made accessible. The second waiver was granted the Southeastern Pennsylvania Transportation Authority (SEPTA), and carried a similar exemption to that for CDTA - i.e., involving the planned rehabilitation of a portion of the transit fleet. All other waiver requests were denied.

4 *Future Directions for TH Paratransit Services*

The previous chapters have reviewed the development of TH paratransit services to-date, highlighting the major findings from existing and past projects and discussing the most important issues currently affecting this service area. This chapter moves towards the future, examining those factors which will influence the growth (or decline) of both the supply and demand for such services, as well as potential future organizational and service arrangements.

Factors Influencing the Future of TH Paratransit Service

Two major forces are discussed here: demographic trends (which will influence demand) and the Section 504 regulations (which will influence supply). Other factors such as land use and energy are not believed to have a major impact on specialized services (although they are obviously key factors in the role of paratransit in general), and are thus not addressed specifically in connection with the TH market.

Demographic Factors

Statistics generated by recent survey research describe the current mobility patterns and transportation needs of the TH. These data are relevant for planning for the near future. However, in assessing the potential of paratransit to serve this population over the next few decades, it is also important to consider the effects of demographic trends and the changing socioeconomic characteristics of the target group, as well as the larger groups - the elderly and the handicapped. Among the important demographic factors which may influence the size of the market and its "paratransit dependence" are:

- the total elderly population (number, percentage)
- the total handicapped population (number, percentage)
- the percentage of the elderly and handicapped who drive
- the percentage of the elderly and handicapped in the labor force
- the income levels of the elderly and handicapped

- the residential locations of the elderly and handicapped
- the distribution of disabilities among the elderly and handicapped populations.

Certain noticeable changes which have taken place, or can be projected to take place, in these factors are likely to impact the future market for specialized paratransit.

First, let us consider the elderly. The total number of elderly (age 65 and over) in the population has been growing and is projected to continue to grow. More importantly, the number of elderly persons relative to the total population has been increasing and this trend is also expected to continue. In 1940, 6.8% of the population was elderly; in 1970 the number reached 9.7%; by 1978 the percent was 10.9%. Table 6 shows population projections to the year 2000 of the U.S. as a whole and of the group over 65 years of age.

TABLE 6
POPULATION TRENDS OF THE ELDERLY
(000 Persons)

<u>Year</u>	<u>U.S. Population</u>	<u>U.S. Population 65 yrs.</u>	<u>65 as Percent of Total</u>
1970	204,875	19,972	9.7%
1975	213,450	21,100	9.9%
1977	216,332	23,494	10.9%
1980	222,769	24,523	11.0%
1982	227,207	25,281	11.1%
1984	231,776	26,124	11.3%
1986	236,345	17,132	11.5%
1988	240,809	28,086	11.7%
1990	245,075	28,933	11.8%
1995	254,495	30,307	11.9%
2000	262,494	30,600	11.7%

Source: (22)

In the 1950's, the elderly population increased by annual rates of approximately 15%. This rate dropped to 9-10% in the 1960's, and growth is projected to continue at this rate until about 1990, after which time smaller growth rates are expected. However, by 2010 the post-war "baby boom" generation will begin to reach the senior citizen bracket. This cohort group has caused consistent 15-25% increases in the population of different age groups as it has aged, and can be expected to exert considerable political influence at the end of the current century. Thus, we might expect an even greater emphasis on elderly needs as the baby boom generation reaches its sixth decade in the beginning of the 21st century.

Another interesting trend which may have relevance for the development of paratransit services is the changing ratio of men to women within the elderly population. Table 7 shows the trend towards a decreasing relative number of males. Since the users of TH transportation services tend to be mostly females, this trend suggests a larger potential target market than that indicated by the growth in the total elderly population.

TABLE 7
RATIO OF MALES TO FEMALES AMONG PERSONS
65 YEARS OF AGE AND OLDER

<u>Year</u>	<u>Number of Males Per 100 Females</u>
1940	95.5
1950	89.6
1960	82.8
1970	72.1
1975	69.4
1977	68.7

Source: (22)

The elderly population has shifted its distribution across the nation along with the rest of the population (and probably a bit more so), as many senior citizens choose to retire in the sunbelt. In 1940, 37% of those over 65 lived in the South and West; in 1970, this number reached almost 46%. The impact of this regional shift is rather unclear. There are a number of

factors which suggest that this shift will generate more need for specialized transportation, and others suggest the opposite. The low density of development in the "Sunbelt" areas makes conventional fixed route transit difficult to provide. The TH may be the first in such areas to demand some form of flexible paratransit. The establishment of retirement communities may encourage non-public transportation development. Whether services develop for the general community, or solely as specialized private services is yet to be seen.

Forces working in the other direction include the fact that the warmer climates of these regions make travel by (accessible) fixed route service easier. The existence of large concentrations of elderly may make it more feasible to serve the target groups with fixed routes, and may also result in many shopping, medical and recreational needs being met at a very local level. High auto ownership levels in these areas may also result in fewer elderly transit dependents; retirees from northern areas may be the most affluent and active elderly. Thus, the effect of migration to the South and West has no clear overall effect on need for specialized transportation services.

Of course, the movement of the population to the South and West is only one migratory trend. Another is that toward lower density areas within particular regions. This movement, which has been continuing for some time now, may mean that, in the future, elderly persons will not be concentrated in central city neighborhoods, but rather will be dispersed in suburban areas where travel needs may be greater and options fewer. The availability of specialized transportation could be crucial in enabling people to remain in suburban communities as their automobility decreases, due to advancing age, decreasing income or reduced fuel availability.

Another potentially important factor is that, over the past few decades, the elderly population has decreased its representation in the work force. Whereas 31.3% of senior citizens were in the 1947 work force, only 16.0% were in the 1970 work force. The earlier retirement of senior citizens has translated into a reduction in work trip travel needs, while simultaneously increasing the isolation that paratransit services often aim at combatting. However, the trend toward earlier retirement may be beginning to change. Reasons for this include the law (which took effect in January, 1980) prohibiting mandatory retirement at age 65, changes to the Social Security

system which permit greater earnings by eligible recipients, affirmative action programs which are eliminating discrimination on the basis of age, and the increased cost of living due to inflation. Later retirement is viewed as beneficial for the healthy individual and the society as a whole; consequently, impacts on the social status and independence of the elderly population may be anticipated.

The work trip has typically not been a major focus of the specialized transportation market, but in view of the incipient trend towards part-time work in later life, this situation may change. Those senior citizens wishing to work often require public transportation so that the increased income gained from part-time work will not be consumed in maintaining an automobile. Scattered suburban location patterns will require systems which include both feeder service to fixed-route transit and door-to-door service. Alternatively, later retirement may generate greater independence, both financially and psychologically, and may thus promote higher auto ownership levels, reduced isolation and less dependence on specialized transportation.

The rising income level of elderly persons is also likely to be a significant factor in paratransit dependency, since present users typically have low incomes. In 1967, average elderly incomes were about 50% of the average for those under 65; in the year 2000 it is projected that the elderly will earn 83-90% of the average under-65 income (23). This increased wealth may imply greater residential mobility, greater automobility, increased travel options and possibly improved health. All of the above imply decreased dependence on specialized transportation.

A high percentage of current elderly users of specialized transportation do not have driver's licenses and/or available automobiles. The percentage of all elderly people who are licensed to drive is much lower today than it will be in the future, as younger cohorts reach senior status. In 1977, 58% of those over 65 years of age were licensed to drive, as compared to 86.3% of those aged 45-64, and 98% of those aged 20-44. While many elderly will not be able to drive due to physical disabilities, regardless of previous driving habits, there is clear evidence of a decreasing transit dependency among the elderly of the future, at least in terms of current levels of drivers and automobility. Of course, if fuel becomes increasingly scarce and/or more expensive, the transit dependency of the elderly may rise, since they may be especially hard hit by fuel price increases.

The change in the social status of women can be expected to affect future generations of elderly and their transportation needs. Particularly significant is the percentage of women drivers. In 1940, 24.3% of drivers were women; by 1976, this number had jumped to 45.8%. With increasing age, women begin to represent a greater percentage of the population and a smaller percentage of drivers. For those over 70, women represent 61% of the population and 37% of the drivers (24). Since the elderly population tends to be disproportionately female, the increase in the number of women drivers may have significant impacts. Assuming that the likelihood of disabling conditions of the elderly does not vary between men and women, we might expect that future generations of elderly will be less transit (and paratransit) dependent.

Participation in the labor force by women has been similarly growing over the last few decades. In 1950, 28.8% of the labor force was comprised of women. By 1977, this number had increased to 40.3%. Table 8 shows the growth by years. The increase is due to a larger percentage of the women in younger cohorts participating in the work force. When these cohorts reach age 65 and over, the profile of elderly women will exhibit different characteristics from those of the present elderly generation. The working experience in younger years will probably create a more mobile, more affluent, less dependent

TABLE 8
PARTICIPATION IN THE LABOR FORCE BY WOMEN

<u>Year</u>	<u>Total Labor Force (000)</u>	<u>Percent of Labor Force Females</u>
1950	63,858	28.8%
1960	72,142	32.3%
1965	77,178	34.0%
1970	85,903	36.7%
1975	94,793	39.1%
1977	99,534	40.3%

Source: (22)

elderly female population in the future. This development may increase the demand for travel, but it is unclear to what extent the private automobile may supply this need.

Another trend influencing demand for public transportation among the elderly is the dispersal of families. In the past, many elderly individuals have either lived with their children or near them and have had many of their transportation needs supplied by family members. Job opportunities, improved transportation options, and generally greater mobility have caused families to disperse. Many current users of specialized services are elderly women who live alone and have limited automobile availability. In 1960, 28.6% of elderly females lived alone; in 1970, this figure had increased to 33.8%; by 1977 it was 39.6%. Although in 1974 over 80% of two (or more) person families owned one or more cars, only about half of the one-person families owned a car.

Thus far, we have concentrated solely on demographic trends for the elderly. Since a sizeable portion of the TH population is elderly, the discussion thus far is more or less applicable for the handicapped population as well. However, although it is more difficult to forecast trends for the handicapped, the analysis of future conditions would be incomplete without some discussion of this group.

First of all, as suggested above, the elderly are overrepresented in the TH population due to the disabilities which tend to develop with age (7); see Table 9. While 11% of the urban population is 65 or over, 47% of the urban TH are 65 or over. While 5% of the urban population is considered TH, 22% of those 65 and over are TH. Of course, most of the population aged 65 and over (78%) are not TH; of those elderly who are, 5% are in wheelchairs and 25-30% have disabilities which are classified as visual, hearing, requiring use of mechanical aids, or "other."

Of the urban TH, 19% cannot use public transportation (in its present form) at all, and another 30% can use it only with considerable difficulty. Thus, approximately half of the TH are real candidates for specialized services. Of course, it should be remembered that many of these have access to an automobile (32% of TH drive automobiles; 83% use automobiles as passengers), although many of the TH (i.e., those on fixed incomes) are likely to be hardest hit by increasing fuel prices.

TABLE 9

STATISTICS FROM
NATIONAL SURVEY OF TRANSPORTATION HANDICAPPED

1. Total Urban Population	147,489,000	
2. Total Urban Transportation Handicapped	7,440,000	(5% of 1)
- Wheelchair	6%	
- Mechanical Aids	26%	
- Visual	21%	
- Hearing	21%	
- Other Disability	47%	
3. Total Urban Population 65 and over	16,223,790	(11% of 1)
4. Urban Transportation Handicapped 65 and over	3,496,800	(47% of 2; 22% of 3)
- Wheelchair	5%	
- Mechanical Aids	29%	
- Visual	27%	
- Hearing	30%	
- Other Disability	36%	

Source: (7)

It is difficult to project changes in the distribution of disabilities. Medical science and health services have made great strides in the past 50 years. Further advances may help eliminate diseases which cause disabilities, or make possible new prosthetic or surgical techniques to correct and compensate for disabilities. On the other hand, as medical science has increased longevity, it has enabled those with certain infirmities to live longer. Longevity trends are already reflected in census projections. Thus, the overall impact of advances in medical science on the travel needs of the TH population is rather unclear.

If we assume that both the incidence of disabilities among non-elderly persons and the distribution of these disabilities remain constant in the future, the size of the non-elderly handicapped population can be projected to grow at the same rate as that of the entire non-elderly U.S. population. Currently, handicapped persons exhibit lower mobility rates than non-handicapped persons. Some of the difference in travel rates between the two groups can be accounted for by the lower participation of handicapped persons in the labor force, while some of the difference can be explained by the physical barriers which handicapped people have traditionally experienced. Certain forces however, are now underway which will change the life style of handicapped persons in the future. These changes will affect this group's travel behavior and demands.

As a result of legislation passed over the past decade, physically and mentally handicapped children are now being "mainstreamed" in the public schools. As these generations reach adulthood, they will not only expect, and be better prepared to participate in, a broader range of activities, but the general public will have been better educated to accept handicapped persons.

The Architectural Barriers Act of 1968 initiated the structural changes to the built environment which are now evident in public buildings across the country. This act stated that "any building constructed in whole or part with federal funds must be made accessible to and useable by the physically handicapped." Compliance with this law was initially voluntary and it was not until Section 504 was signed into law (in 1977) that the intent of the earlier law was legally established and the rights of the handicapped guaranteed by legislation.

Section 504 addressed structural, as well as non-structural employment barriers experienced by handicapped persons. It states that an employer cannot refuse to hire a qualified handicapped individual who could perform a job with "reasonable accommodation." As a result, affirmative action programs are promoting the employment of handicapped persons.

These recent developments will undoubtedly contribute towards changing the lives of handicapped persons. They will enter the work force in greater numbers, gain more universal acceptance as they are offered the opportunity to more fully participate in "normal" life, and will move about more freely. A logical consequence of these changes is less dependence - both physically and economically. A higher mobility rate will naturally follow.

504 Rules

As explained in the previous chapter, the U.S. DOT's Section 504 rules now allow local option in ensuring accessibility of public transportation facilities to the handicapped. While this would seem to suggest a significant expansion of the number of paratransit services, the actual impact may be less than expected. Local option would appear to pave the way for the introduction of many new paratransit services. However, although some transit agencies will certainly follow the paratransit route, many agencies will choose the transit accessibility option. The presence of 80% federal capital assistance, coupled with the proposed phase-out of federal operating assistance, will in most instances, make fleet accessibility less costly on the local level (i.e., providing a 20% match) than implementing and operating a new paratransit service. On the other hand, most areas have TH paratransit services in existence - sponsored by transit authorities and/or by social service agencies. Hence, many of those transit authorities electing the paratransit option will likely make use of existing service, rather than implement a new service.

In light of these alternatives (fixed route fleet accessibility or using an existing paratransit service), the introduction of new paratransit services may be rather limited. However, some new services will be introduced, and existing services will, in many cases, be expanded. Thus, the 504 rules will

serve to increase the supply of TH paratransit service (the nature of future service operational arrangements in providing the required service is addressed in the next section). Furthermore, the entire 504 controversy has served to focus public attention on the ability of paratransit to serve the TH in a cost-effective manner, and has thereby created a better environment for the initiation of all paratransit options.

Future Organizational and Service Options

A number of organizational and service options have been implemented to provide TH paratransit service. This range of options is likely to continue, since different alternatives are likely to be preferred in different settings. Furthermore, in light of different possible responses to 504, it is important to explore alternative organizational roles.

The basic service options for providing service to the TH are not expected to change significantly during the coming years; depending on the needs of the target group, service will continue to be either demand-responsive or fixed schedule/subscription, although both types will continue to be largely door-to-door in nature. In terms of organizational arrangements, the current actors will continue to play the major roles, but their relative importance is subject to variation in response to the 504 regulations and the nature of available funding.

The development and provision of paratransit service typically takes place on one of three basic "levels": the individual, the activity center, and the third party. At the first level, individuals are involved on an informal, voluntary basis (e.g., a neighbor offering to take an elderly person for a medical appointment) or on a more organized basis through, for example, a volunteer agency. On a second level of development, activity centers that need transportation to support their activities organize paratransit services. Most common are the social service agencies which transport their clients for nutrition programs and other agency activities. On the third level, many agencies have contracted with a third party,* such as a taxicab

* This term is used since the provider directly represents neither the users of the service nor the activity which generates the demand for transportation.

company or a private non-profit provider, to operate a special service, rather than operating the service on its own. In some cases, cities or transit authorities have organized contract paratransit services. In other cases, the transit authorities themselves operate paratransit service for the TH. Finally, private operators (e.g., taxi companies and chair car carriers) may provide service to the TH on an independent "entrepreneurial" basis. The following discussion briefly examines the future roles at each level of organization.

The Role of the Individual

The role of the individual in organizing and providing TH services may change appreciably as a result of the funding cuts affecting social service agencies. The use of volunteer drivers is currently limited in urban areas, although they are used extensively in rural areas (see the RURAL PARATRANSIT volume for a discussion of this area). Many urban social service agencies do make use of volunteers where possible,* but they generally serve as emergency backups or provide supplementary service. However, as funds for transportation provision (i.e., covering purchase of vehicles and hiring of drivers) are reduced through federal level budget cuts, there may be a much greater need for volunteers providing service in their own vehicles. In addition to playing a valuable role in supplementing regular agency drivers, the use of volunteers can be important for social reasons. The persons volunteering their time are generally doing so out of interest in the program and/or a concern for the agency clients, and they are often contemporaries or neighbors of the persons served, thus understanding their special needs. The role of volunteers will doubtless continue, and may even take on added importance in the event of funding program cutbacks.

The Role of the Activity Center and Third Party

The relative roles of the activity center (predominantly the social service agency) and the third party (transit agency, government agency, or private provider) will be closely tied to the nature of local responses to the 504 requirements, as well as to the availability of funding. The following

* One example of an organized network of volunteers is a Christian organization called FISH, which has branches in many communities.

discussion focuses on the alternative 504 scenarios; funding issues are examined in the next subsection: THE ROLE OF THE FEDERAL GOVERNMENT.

There are two basic scenarios relating to 504 implementation:

1. A transit authority elects to provide "parallel" paratransit service(or to certify that such service is available).
2. A transit authority elects to implement full fixed route accessibility.

Since the 504 rules have been modified to allow local option, many transit properties will opt to follow the first scenario and sponsor - or ensure the existence of - some form of paratransit service. One approach would be for the authority to operate a service directly; however, the evidence to date suggests that this is not a cost-effective way to provide specialized service. A more cost-effective option would be to contract with one or more private operators (e.g., taxi companies) where this is feasible. This approach would be philosophically consistent with the decision not to provide fixed route accessible service, which also reflects the perception that the transit authority is not the appropriate medium for serving the TH. The approach also has many precedents (e.g., Portland, Twin Cities, Pittsburgh).

Of course, in most of these cases, the transit authorities have retained a an administrative role. A small operating role for the transit authority may be necessary or appropriate, particularly if special labor arrangements can be made, as is the case in Cleveland's CRT service. However, in some cases, continued involvement by transit authorities may be dictated more by institutional issues, such as driver protection clauses, than by anything else. Indeed, factors such as "13(c)" may be the most significant barriers to the development of contract service, even in cases where the transit authority has never provided the service directly. For example, a 1979 ruling in Boston, since appealed, would have required that the transit authority-sponsored, privately-operated handicapped service (The RIDE) be operated directly by the Massachusetts Bay Transportation Authority. Such an action would have had the immediate impact of more than doubling the operating cost, bringing it to a level of almost \$25 per trip. It also would have removed the incentive to provide a high quality service which often results from a competitively bid contract. (Of course, this may still prove cheaper, on a per trip basis, than implementing transit accessibility.)

The transit-operated alternative, which is specifically focussed on the needs of the "unaffiliated" TH, may reflect a decision to ignore the possibility that the new service yields yet further duplication/fragmentation of services in the TH marketplace. Indeed, there may be justification for ignoring coordination. Evidence to date does not confirm that possible economies of scale offset the added costs of coordination. One may choose, therefore, to adopt a "free market" approach to the problem. The proliferation of agency services arose out of a lack of suitable public service. If a suitable publicly-provided service is now available, those agencies not really interested in providing their own service may cut back their services (and possibly institute user-side subsidies), thereby achieving a form of coordination. Other agencies may choose to continue providing special service if they perceive the needs of their clients to be unmet by the public service (this occurred in Portland, for instance). Such a situation is probably in the best interest of the TH community if, in fact, the specialized service is warranted. Unnecessary duplication can be restricted by better coordination of the funding sources, if such coordination can be realistically achieved. For example, DOT might work with HHS to tighten up funding eligibility, so that an agency would receive a grant for a transportation purpose only if it could prove that comparable service was not available.

Ignoring coordination may yield another benefit: faster implementation. Where getting cooperation is a prerequisite to implementation, the implementation process can be delayed. If coordination is not a pre-condition, one may still attempt to achieve coordination at a later point when operating experience may make it easier to convince individual agencies to subsidize trips by their clients on the "public" system. Of course this raises the question of HHS/DOT cross-subsidization, as discussed in Chapter 3; this issue is tied in to the overall future federal funding question, and is addressed below, under THE ROLE OF THE FEDERAL GOVERNMENT.

Finally, the continued existence of agency services provides a check on the quality of the public service. If none of those agencies choose to eliminate their own services, it may be an indication that the public service is not adequately meeting the needs of the target market.

This alternative need not imply a single operator and a single areawide service, although that is one option. Another approach might be to contract with a number of providers, most probably different ones in designated

geographical areas, to form a "new" service. For example, the model of the ACCESS (Pittsburgh) brokerage project may be valuable. The potential advantages of the brokerage model for providing service include:

1. Existing operators, already familiar with the area in which they provide service, are utilized.
2. Competitive bidding ideally keeps costs down and service quality up; contract provisions and incentives can further help achieve these goals.
3. Utilizing a number of carriers provides flexibility if one carrier does not perform satisfactorily.
4. Service can be begun using existing vehicles, although additional vehicles can be provided as necessary.

The alternative approach to that of establishing an entirely new system or delivery network would be to work for extensive coordination, or perhaps, consolidation of existing services, with an aim of using saved resources to serve additional riders. Continued experience with the coordination/consolidation concept over the next few years could conceivably lead to a point where the administrative costs of coordination are more than offset by the resultant savings.

Under this alternative, the transit authority, or its designate, could assume the responsibility for coordinating existing services so that no (or a minimal amount) of new equipment is required. Nevertheless, it is clear that some new (perhaps transit authority) funding would be needed to expand service for the TH community. To achieve maximum cooperation from social service agencies, those agencies would have to perceive that the accessibility mandate of 504 will, in fact, lead to a unified service which will meet the needs of their clients. Of course, it can be expected that not all agencies will elect to participate in the coordination effort.

Let us now move to the second scenario, in which the transit agency elects to implement full fixed route accessibility. Since this action fulfills the legislative requirements, it may seem doubtful that the transit authority would provide or sponsor any supplemental paratransit service. However, it is clear that accessible fixed route service will not meet all the needs of the transportation handicapped. The Congressional Budget Office estimates that such service would serve only 7% of the target market because of difficulties

getting to and from transit stops which would be encountered by the remainder. Thus, from the perspective of the market, there will be a continuing need for specialized paratransit service.

Over the past decade, literally thousands of agency-sponsored HHS-funded services sprung up because of a perceived need for special service. As long as the need continues to exist and funding remains available (which is unclear at the time of this writing in light of the budget cuts proposed by the new Administration), these agencies are likely to continue to provide such service. Although the scale of paratransit service may be reduced (either because of funding cutbacks or because agencies feel that the needs of their clients are being met, at least in part, by the accessible transit system), the likelihood of achieving some degree of social service agency-transit coordination will undoubtedly be diminished if DOT funding is devoted exclusively to fixed route accessibility.

Under this scenario, the role of privately-initiated and operated services (e.g., chair car carriers, ambulettes, taxi operators) may change somewhat, especially if federal subsidies for paratransit services are reduced. Many such companies currently receive a substantial source of their incomes from contract TH service or, as in the case of many chair car carriers, from medical assistance (social security) funds. Broadly-based "transportation companies" that provide a range of unsubsidized public transportation services (e.g., taxi) will, of course, be less severely affected by cutbacks in federal funding than will other companies such as the chair carriers. Unsubsidized operations may become all that is available, despite the financial burden this would place on service users forced to pay the higher fares charged by the private carriers. Without either agency contracts or user-side subsidies, private operators will be unlikely to provide TH paratransit services, although one can always expect to find some entrepreneurs who rush to fill a perceived need for service. Such entrepreneurs may provide shared-ride type service with accessible vehicles to individuals or to agencies on an occasional basis, in a mode similar to that which existed in some areas before contract services became prevalent.

One response to reduced social service agency funding under scenario 2 is that agencies may increasingly depend upon integration with accessible fixed route transit service. Since many handicapped persons are unable to get to and from bus stops, but can get into accessible buses, there would be an

expanded need for feeder service. Whereas transfers are particularly difficult for handicapped individuals, and the viability of TH feeder services has yet to be demonstrated, feeder services may be much more cost-effective than overlapping paratransit services, particularly in outlying areas where access to the CBD is desired. Of course, "areawide" paratransit service will continue to be needed for those severely handicapped persons who would simply not be able to transfer. The transit agencies themselves, however, are unlikely to develop or support their own feeder services, since such efforts are not required under 504 regulation. Therefore, it will be up to the social service agencies to provide that service element.

Developing a viable feeder system may be quite complex. First of all, there will have to be some degree of cooperation between the feeder provider and the transit operator. Second, since feeder/distributor service may be needed at both ends of a trip, there may be need for coordination with more than one agency and/or paratransit operator. Thus, there will, in fact, be a particular need for coordination, and there will need to be some lead organization willing to develop an overall service plan.

Finally, one additional alternative could be applied under this scenario. In some urban areas, certain communities may provide paratransit service for the general public, rather than fixed route service. Thus, it may be possible to provide adequate mobility for the TH through an accessible general public paratransit system (with or without additional specialized services). In fact, transit properties which question the effectiveness of accessible fixed route service (for meeting the needs of TH) could eliminate fixed route service and replace it with accessible paratransit service in certain areas.

Thus, the role of governmental (i.e., municipal, county, or state) agencies in the organization and provision of TH service within each of these scenarios will depend primarily on the directions of the other actors, as discussed above. The governmental agencies can be expected to serve principally as coordinating agents or public brokers. Certain consolidated systems will continue to be located within the governmental structure, as currently represented by services such as TRADE and DAST. Alternatively, or perhaps additionally, governmental bodies may be called on to facilitate coordination or integration of social service agency and transit-sponsored services, similar to the role played by a private organization in the ACCESS system. Finally, non-federal governmental agencies will serve the

ever-important function of providing funds for TH operations, a responsibility which is about to receive added importance in light of the proposed cutback (and gradual phasing out) of federal transit operating subsidies.* (This last issue is addressed below.)

The Role of the Federal Government

The role of the federal government regarding TH paratransit services is basically related to funding and regulatory issues and future trends in these areas will largely determine the fate of "public" TH paratransit service. At this time, it seems probable that the federal government is heading toward decreased involvement - in both the funding and regulatory areas.

In terms of funding, the current Administration proposes to significantly reduce both DOT operating subsidies and HHS funding for social service programs. Cuts in the former will serve to force transit operators to reduce costs and, therefore likely minimize the amount of specialized TH services provided (if any). This will return the burden of serving the TH to social service agencies and for-profit operators, at least in those locations where the transit systems have not already been made accessible. However, since HHS funds are also likely to be cut, social service agencies will have to rely on accessible transit service (where it is available), greater use of volunteers, and cost-saving forms of coordination with other agencies. In any event, federal budget reductions will result in fewer TH paratransit services.

In conjunction with overall budget reductions, the federal government is leaning toward replacing the present system of HHS categorical grants with social service block grants. Such a switch will have mixed results. In the first place, block grants offer a sort of "local option" to decide which social services (transportation vs. other) and which client groups (low income, physically disabled, elderly, etc.) should receive priority in the struggle for a smaller pot of funds. Once these local issues are resolved, however, block grant funding may facilitate coordination because it should eliminate some of the categorical administrative rules and reporting requirements that have been cited as barriers in the past.

* In terms of providing funds for TH paratransit, states and municipalities can raise funds through a variety of means. For example, Pennsylvania Act 101 (of 1980) provides State lottery revenue to pay for paratransit for the elderly. Other possible sources include state gasoline tax revenue or special local tax referenda.

A final funding-related development which should be discussed relates to cutbacks in two specific funding programs. CETA*, which has already been pared substantially, and the UMTA 16(b)2 program, which may eventually be reduced, are two major sources of "free" resources that have influenced social service agencies to provide service in-house rather than contracting with private for-profit operators. Thus, cutbacks in these programs may make the private for-profit sector more competitive and lead to a strengthening of its position in being considered to provide service.

In addition to limiting funding levels it appears likely that the federal government will push for the easing of current regulations affecting the implementation and operation of TH paratransit services. This implies actions such as loosening the labor restrictions of Section 13(c), thereby enhancing transportation opportunities for the private sector (DOT's 504 rules have already been modified). In a sense, such regulatory changes are necessary if funding is restricted, so as to increase the alternatives for providing service.

Of course, it is possible that the federal government will not undertake the funding and regulatory changes described above. Regulations such as 13(c) may stay as they are now, and funding levels could remain relatively unchanged. If such is the case, the future role of the federal government may not be appreciably different from its present role. One area in which federal activity might expand under this scenario, however, is in demonstrating (and disseminating information about) innovative service delivery frameworks and equipment. For instance, while DOT and HHS have both tested a variety of coordination arrangements, changing needs and operating settings suggest that new techniques and structures should be investigated.

Finally, in addition to improving information dissemination, an important future direction for the federal government - regardless of the nature of budget reductions - would be to foster better coordination of the various federal funding programs (i.e., between HHS and DOT). As operating costs continue to rise, the need to improve the efficiency of service provision will become increasingly crucial. Better inter-agency coordination would serve to cut down on duplication of effort and, hopefully, improve the delivery of service to both unaffiliated TH and agency clients.

* Comprehensive Employment Training Act of 1973.

In terms of attempting to meet its goal of improving the mobility of the TH, the federal government must continue to support, in one form or another, local efforts to provide service for the TH. Whatever the nature of this support and however the 504 issue is finally settled TH paratransit services will continue to be important components of the overall transportation system.

Summary

In the future, paratransit should continue to play an important role in serving the transportation needs of the TH. The total TH population will grow substantially, although other trends, particularly regarding employment patterns and ability to drive, may tend to reduce public transportation needs. On the other hand, high auto operating costs are likely to impact the TH to an even greater extent than the general public, creating additional need for such services.

The market for such services is already large; if there are in fact, over 3000 systems in operation, as has been estimated (3), current annual ridership is probably in the range of 20-40 million trips per year (assuming levels of trip making of 25-50 trips per day on each system). If the entire urban TH population (approximately 7 million) were to gain access to specialized services capable of attracting ridership levels equivalent to the more effective of the current services (i.e., on the order of 15 trips/capita/year), then future ridership could be as high as 100 million trips per year; whether this level will ever be achieved will depend heavily on near term (and longer range) developments in funding and regulation.

The future direction for TH paratransit development will be influenced to a considerable extent by the nature of transit agencies' responses to the "504" requirements for public transit accessibility. Since the 504 rules have been changed to allow more local flexibility, at least some transit authorities will become more involved with paratransit. For the most part, these paratransit services will (or at least should) be operated by private contractors, although some transit authorities will operate some portion, if not all, of a service. In some cases, general public paratransit will be used to serve the TH. Some transit authorities will develop paratransit services without worrying about coordination with social service agency providers, in the hope that some agencies will curtail their own transportation operations

once a reasonable quality paratransit service is in place; in other cases, paratransit will be based on an expanded, coordinated network of existing providers, perhaps featuring more extensive use of user-side subsidies.

The future role of social service agencies will be tied to the actions of the transit agencies, as well as the availability of funding for social programs. Depending on the nature of service provided by transit authorities, agencies will either cut back on their own services, attempt to coordinate with the transit agencies, coordinate among themselves, or simply continue to operate as they currently do.

Although the results of interagency coordination have been mixed, with benefits to participants not always meeting expectations, many agencies will undoubtedly continue to coordinate resources as a means of promoting efficiency of operation and/or as a way of relieving some agencies of the burden of providing service. In light of anticipated reductions in federal funding levels, pressures will grow for achieving greater economies in all areas of transportation provision. The TH field is no exception; however, since the travel needs of this market are quite varied, there will be a continuing need for different types or levels of service, and any centralization of service provision will have to retain separate elements to respond to the different needs.

Paratransit has been shown to be an effective means of ensuring the mobility of the TH. Thus, as long as we seek to preserve this goal, TH paratransit services will remain a necessary element of our transportation systems.

Glossary

brokerage:

The concept of "brokerage" involves a central party/agency which attempts to match travel demands with the most appropriate available mode and promotes the most efficient provision of these modes. In the transportation handicapped service area, a brokerage operation may involve the central agency contracting with various service providers and assigning travel requests to these providers.

CETA:

Created by the Comprehensive Employment Training Act of 1973, this is a U.S. Department of Labor program which provides funds for public manpower program.

consolidation:

Consolidation is a form of coordination of human service agency transportation services in which participating agencies transfer control of their transportation programs (i.e., vehicles and drivers) to a central organization in exchange for the provision of transportation service for their clients; although a consolidated system is based on bringing together agencies having vehicles, non-provider agencies can also participate through purchase of service contracts with the central provider.

coordination:

"Coordination" generally refers to any type of cooperative arrangement among transportation providers aimed at producing benefits through joint administration and/or operation of transportation-related activities; potential benefits include: 1) eliminating duplication of transportation services, 2) making better use of underutilized resources, 3) matching service providers with service users, and 4) achieving economies of scale through joint purchases; "coordination" can take a range of forms - from simple cooperation to consolidation.

section 3 (e):

This is a provision of the UMT Act of 1964 which prohibits UMTA funding from being used to create competition with private mass transportation carriers.

section 13(c):

This a provision of the UMT Act of 1964 which requires that the position of existing workers "not be diminished" through projects initiated with UMTA funds.

section 16 (b) (2):

This provision of the UMT Act of 1964 authorized a program (created in 1970) which provides capital assistance to private non-profit transportation providers.

section 504:

Section 504 of the Rehabilitation Act of 1973 established a requirement that all facilities, programs or activities receiving federal financial assistance be made accessible to the handicapped. The U.S. DOT's rules for making public transportation facilities and services accessible require that each transit property either make 50% of its transit fleet accessible (via wheelchair lifts) or provide separate but "equivalent," paratransit service.

time-sharing:

This refers to the use of a vehicle by more than one agency (i.e., during different parts of the day).

Title III:

This is a section of the Older Americans Act of 1965 (administered by the U.S. Department of Health and Human Services), which provides funds for state and local programs for the aging.

Title XIX:

This is a section of the Social Security Act of 1935 (administered by the U.S. Department of Health and Human Services), which provides funds for the Medicaid program; transportation provisions vary from state to state, but, in general, eligible users are reimbursed for Medicaid-related trips.

Title XX:

This is a section of the Social Security Act of 1935 (administered by the U.S. Department of Health and Human Services), which provides funds for various programs for needy individuals and families (i.e., those qualifying for AFDC or SSI* aid); covers purchase of transportation service for eligible persons.

transportation handicapped (TH):

The TH is that group of individuals whose physical (or mental) conditions make it difficult for them to use conventional transit.

user-side subsidy:

This a subsidy provided to eligible individuals which enables them to utilize any available transportation service at reduced cost.

vehicle-sharing:

This refers to the use of a vehicle by clients of two or more agencies at the same time.

Cited References

- (1) Kirby, Ronald, Kiran Bhatt, Michael Kemp, Robert McGillivray, and Martin Wohl, Paratransit: Neglected Options for Urban Mobility, the Urban Institute, Washington, D.C., 1974.
- (2) Barb, Charles E. and Cook, Allen R., "Technology Transfer in Paratransit: Case Study Interpretation of Five Leading Programs," presented at the 58th Annual Meeting of the Transportation Research Board, Washington, D.C., January 1979.
- (3) Multisystems, Inc., Applied Resource Integration, Ltd., and Cambridge Systematics, Inc., Benefit-Cost Analysis of Integrated Paratransit Systems, prepared for U.S. DOT/TSC, Cambridge, MA, February 1979.
- (4) Systan, Inc., Paratransit Handbook, prepared for U.S. DOT/TSC, Cambridge, MA, February 1979.
- (5) Alan M. Voorhees & Associates, Study of Future Paratransit Requirements, for U.S. DOT/UMTA, McLean, Virginia, February 1977.
- (6) U.S. DOT, Technical Report of the National Survey of Transportation Handicapped People, Washington, D.C., October 1978.
- (7) Grey Advertising, Inc., Summary Report of the National Survey of Transportation Handicapped People, prepared for U.S. DOT/UMTA, Washington, D.C., June 1978.
- (8) Revis, Joseph, "Social Service Transportation," in Urban Transport-Service Innovations, Transportation Research Board SRL84, Washington, D.C., 1979.
- (9) Spector, Robert Lee, "The Development of a Neighborhood-Based Transportation Service for the Elderly," in U.S. DOT, Transportation for the Elderly and Handicapped, December 1978.
- (10) Applied Resource Integration Ltd., Evaluation Plan for the Mercer County Coordination/Consolidation SMD Project, prepared for U.S. DOT/TSC, Boston, MA, July 1978.
- (11) Ecosometrics, Inc., Coordinated Transportation Demonstration Results: Evaluation of the Office of Human Development Services Transportation Demonstration Program, prepared for U.S. DHEW, Bethesda, MD, February 1980.
- (12) Crain and Associates, The LIFT: Special Needs Transportation in Portland, Oregon, prepared for U.S. DOT/TSC, Cambridge, Massachusetts, June 1978.
- (13) Congressional Budget Office, Urban Transportation for Handicapped Persons: Alternative Federal Approaches, November 1979.

- (14) Fleishman, Daniel, Mercer County (NJ) Coordination/Consolidation Demonstration Project, Final Report, Multisystems, Inc., prepared for U.S. DOT/TSC, Cambridge, MA, September 1981.
- (15) Cutler, Dolores A., "The Reality of Coordinating Transportation Services: Major Issues," presented at Mid-Year Conference of the Transportation Research Board, Williamsburg, Virginia, February 1978.
- (16) Revis, Joseph, "Coordination Barriers and Policy Considerations," Transportation for the Elderly and Handicapped: Programs and Problems, U.S. DOT, Washington, D.C., December 1978.
- (17) Spear, Bruce, "User-Side Subsidies: Delivering Special Needs Transportation Through Private Providers," Transportation Research Record 850, 1982.
- (18) National Research Council, NRC Transbus Study. August 1979.
- (19) Casey, Robert, "Recent Experience with Accessible Bus Service," paper prepared for presentation at the UMTA Regional Seminars on Interim and Specialized Transportation for Handicapped and Elderly Persons, U.S. DOT, 1979.
- (20) Englisher, Larry and Amy Wexler, Evaluation of the Washington, D.C. Accessible Bus Demonstration, Draft Final Report, Multisystems, Inc., prepared for U.S. DOT/TSC, Cambridge, MA, March 1982.
- (21) Englisher, Larry and Amy Wexler, Evaluation of the Palm Beach, Florida Accessible Bus Demonstration, Draft Final Report, Multisystems, Inc., prepared for U.S. DOT/TSC, Cambridge, MA, March 1982.
- (22) U.S. Department of Commerce, Bureau of Census, 1978 Statistical Abstract of the U.S.
- (23) Wiener, Anthony, et al., Future Directions for Public Transportation: A Basis for Decision, Polytechnic Institute of New York, prepared for U.S. DOT/UMTA, New York, N.Y. December 1978.
- (24) Motor Vehicle Manufacturers Association, Motor Vehicle Facts and Figures '79, Detroit, MI, 1979.

General References

Applied Resource Integration, Ltd., Comparative Analysis of Handicapped Special Systems - Project Mobility Evaluation Program, Boston, MA, June 1977.

Crain and Associates, Transportation Problems of the Transportation Handicapped, prepared for U.S. DOT/UMTA, Washington, D.C., December 1979.

Cutler, Dolores A. and Sue F. Knapp, Coordinating Transportation Services for the Elderly and Handicapped, U.S. DOT, May 1979.

Dorfman, Mark and Dawn Glascock, "The Implementation of Project FARE/SHARE," presented at the the Sixth National Conference on Transportation of the Elderly and Handicapped, November 1977.

Ellis, Raymond, "Potential Approaches for Improving the Mobility of Different Market Segments of the Transportation Handicapped," presented at the 56th Annual Meeting of the Transportation Research Board, Washington, D.C., January 1977.

Garcia, Jesus, Hugh Griffin, John Van Berkel, "Caltrans' Role in Transportation for the Elderly and Handicapped, " in U.S. DOT/TSC Transportation for the Elderly and Handicapped, Cambridge, MA, December 1978.

Institute of Public Administration, Coordinating Transportation for the Elderly and Handicapped, prepared for U.S. DOT/UMTA, Washington, D.C., November 1976.

McBrayer, Daniel, Management Audit of Community Responsive Transit and Extra Lift Programs, prepared for the Greater Cleveland REgional Transit Authority, October 1978.

Multisystems, Inc., Feasibility of Adapting Existing Algorithms for Scheduling the handyride Service, prepared for the Denver RTD, Cambridge, Massachusetts, 1976.

Multisystems, Inc., Paratransit Alternatives Study: Working Paper No. 3, prepared for Metropolitan Council of Twin Cities, November 1976.

Myhre, Elizabeth, "YMCA Coordinated Interagency Motor Pool for the Elderly and Handicapped," in U.S. DOT, Transportation for the Elderly and Handicapped, December 1978.

"Portland Plans More Economical Special Services," in Passenger Transport, March 23, 1979.

Public Technology, Inc., Elderly and Handicapped Transportation: Local Government Approaches, prepared for U.S. DOT, March 1979.

U.S. DOT, Transportation of the Elderly and Handicapped: A Literature Capsule, January 1977.

U.S. General Accounting Office, Hindrances to Coordinating Transportation of People Participating in Federally-Funded Grant Programs, Vol. I and II, October 1977.

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