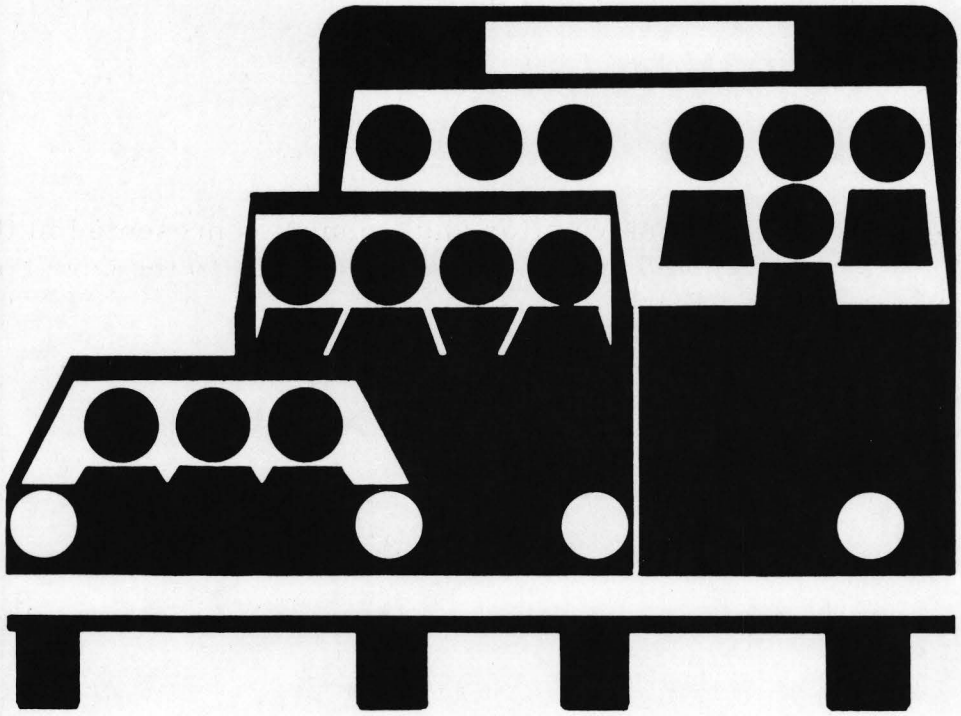
Vanpools



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PREFACE

This report is one of a series dealing with various necessary ingredients for a successful Carpool/Buspool Program. It was developed by Alan M. Voorhees and Associates, Inc. for the United States Department of Transportation.

The goal of a Carpool/Buspool Program should be to satisfy travel requirements more efficiently by increasing passenger occupancy in autos and buses, thereby reducing the number of vehicles using the streets and highways. Achievement of that goal calls for coordination among many institutions within a metropolitan region, including public agencies and citizen and business groups. Participation by all of these groups and their knowledge of necessary program elements are critical to the success of the program.

The information and techniques presented in this series of reports should be considered as a guide to the development of a sound program in a metropolitan area. The program should be designed to make the existing street and highway system more efficient, to have a significant effect relative to energy conservation, and to foster urban and environmental goals.

The other reports prepared as part of this series, as well as other important documents concerning carpooling and buspooling can be obtained from the U. S. Department of Transportation.

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INTRODUCTION

Vanpooling is a concept which is gaining recognition as an attractive way of reducing peak hour congestion, cutting travel costs and conserving energy. Like carpooling and buspooling, vanpooling is oriented primarily to serve a specific type of transportation need --the home to work trips which are generally concentrated in the morning and evening peak periods of travel. Vanpools can also serve as an efficient travel mode for other purposes such as shopping, medical, school, and social-recreational. As discussed in another report in this series on Special Mobility Problems, vanpools have been used to solve the problems of the transportation disadvantaged -- the elderly, handicapped, and economically disadvantaged. Opportunities exist for more widespread organized use of vanpools for such purposes.

Like carpooling, vanpooling affords the convenience of door-to-door service and avoids the higher labor cost of providing special drivers which are required for buses. The primary advantage of the vanpool over the carpool, however, is the higher occupancies which can be achieved. A disadvantage of the vanpool is the extra travel time needed to pick up a greater number of passengers, but this can be minimized if riders are well matched and routes and schedules are properly planned.

This overview of vanpooling is presented in non-technical terms for distribution to employers, public agencies and other groups interested in starting a program. It describes the methods, benefits, costs and problems associated with implementing a vanpool program.

VANPOOL METHODS

Vanpool Definition

A vanpool can be defined in terms of vehicle and operational characteristics which distinguish it from conventional carpooling and buspooling. In terms of vehicle characteristics, a vanpool is defined as a pool of riders using a van type of vehicle which has a seating capacity greater than a standard passenger car but generally not more than 15 passengers. In other words, the van is larger than a standard sedan but smaller than the conventional bus.

In terms of operation, a vanpool is defined as a pool in which the vehicle is driven by one of the members of the pool rather than by a professional driver.

Vehicle Types and Characteristics

A vanpool operation might utilize a wide range of vehicle types and features. The type of vehicle selected for a given pool may depend on the number of riders in the pool, vehicle capital and operating costs, fuel economy, availability of existing vehicles and other considerations. The special features of the vehicle-- such as air conditioning, carpeting, special seating, etc.--can be varied according to climate, commuting distance and the particular needs and desires of the vanpool riders. Van-type vehicles with seating capacities ranging from 7 to 15 passengers are available as stock items from several manufacturers. Custom models with special seating arrangements can also be ordered from the manufacturers or custom interiors can be prepared by local jobbers if such special features are desired. Special configurations will result in less than maximum seating capacity for a given van size, but can make the van more luxurious and attractive with features such as more leg room, reclining or swivel seats, table tops for writing and games, television and music set-ups, and so forth. The cost of purchasing a van may vary from about $4,000 to $7,000 depending on the size and auxiliary equipment desired.

Recommended options which should be included in a van purchased for use as a vanpool include the following:

- Eight cylinder engine with minimum of about 300 cubic inch displacement
- Heavy duty clutch
- Heavy duty springs and shock absorbers
- Air conditioning, front and rear
- Auxiliary rear-section heater
- Exterior rear-view mirrors, both sides
- Push-out type side windows
- Seat belts on all seats
- Power steering
- Center side door with low step for easy entry
- Vinyl seats for ease of maintenance

The 3M Company in St. Paul, Minnesota operates a successful company-owned vanpool program. They use standard 12-passenger vans, costing about $5,400, equipped with front and rear air conditioning, automatic transmission, power steering, and radio.

A privately owned vanpool used by a group of FHWA employees in Washington, D.C., formed in 1967, first utilized an 11-seat van purchased at a cost of $2,800. The present vehicle used by the vanpool is a 12-seat Ford Custom Club Wagon which was purchased new for $4,800. This vehicle is equipped with heavy duty springs and shocks, two heaters and air conditioning. Independently operated lights are provided in the driver's area, in the center seat reading area, and over the center facing rear seats normally used for a bridge game.

Vehicles other than conventional vans may also be used for vanpooling. For example, with a small investment, some types of recreational vehicles could be converted to serve as vanpools. The existing problem of oversupply of recreational vehicles could potentially be alleviated if manufacturers and dealers were to make such conversions after testing the marketability for such use.

Vehicle Ownership

Several different forms of vehicle ownership might be employed successfully in vanpooling programs, including:

- Individually owned
- Employer owned
- Vanpool service agencies
- Vehicle leasing agencies
- Private group owned

Individually Owned - The FHWA employees vanpool, previously mentioned, is an excellent example of a van owned by an individual. Some people might consider the burden of a personal investment in such a vehicle to be a barrier. However, many persons desire a van-type vehicle for a variety of non-work purposes, such as weekend recreational use. The possibility of using the van for daily vanpool commuting, where riders pay their proper share of the costs, could indeed be an important incentive for purchasing such a vehicle.

Employer Owned - The 3M Commute-a-Van program is a good example of an employer owned vanpool system. This form of ownership usually implies a longer term commitment than an individually owned vanpool and carries with it an added advantage of a more structured organization and management framework. Advantages to the employer include improved employee relations, reduced parking facility costs, and the availability of vehicles for various business purposes during the day. Some employers already own vehicles which are currently used during the day for business purposes, but could easily be converted into commuter vanpools to serve a dual purpose.

Personnel records and other information are available to the employer to assist in matching commuter trips. The employer has the necessary information and can exercise some degree of control over employees who must be responsible for the operation of the vanpool. Finally, the employer operated vanpool is more likely to provide the immediate additional incentives to encourage vanpooling, such as preferential parking.

Smaller employers who can justify only one or two vanpools, might find it more desirable for an external agency to assume responsibility for operating the system. In this case, the employer's responsibilities might be limited to encouraging vanpooling among his workers through incentive techniques such as subsidization of operating costs and preferential parking space assignments.

Service Agencies - A New York City area vanpooling system was created and operated by Monarch Associates as a private enterprise. Monarch Associates provided the vehicle and took care of gas, maintenance, garaging, insurance, tolls and all other operating expenses. The vanpool riders paid weekly fees ranging from $9.50 to $10.50 each to cover the costs of the van operation. This operation was successful from a customer demand point of view but experienced regulatory problems (which were eventually resolved) and financial difficulties. Operations were discontinued as a result of these problems.

Leasing Agencies - Another type of van ownership form might utilize vehicles leased from automobile leasing agencies. The leasing company would provide the vehicle, special coverage insurance and take care of vehicle maintenance and service functions, while gasoline and administrative costs would be borne by the sponsoring agency and/or vanpool.

Private Group Owned - Many organizations, such as churches, synagogues, service clubs, and citizens' groups of various types may either own vans or wish to purchase van-type vehicles. These vehicles might be used for a multiplicity of functions, including commuting for the group's members and volunteer services to the disadvantaged during the mid-day.

In areas where groups of small employers are located, a vanpool might serve employees from more than one company. In this case, it might be appropriate for an external agency to be responsible for the ownership and management of the vanpool.

The form of van ownership desirable for a given application will vary, depending upon the size of the employer, the availability of existing vehicles, the economic risks involved, and other factors. Regardless of the ownership form selected, however, effective management, promotion and matching of work trips will be essential if the vanpool program is to be successful.

Special Service Vanpool Operations

In addition to the more typical type of vanpool operation with door-to-door service on both ends of the trip and fixed schedules, other types of special services are possible.

Park and ride vanpooling, like park and ride transit, has the disadvantage of requiring an extra car for the commuter trip. Still, park and ride vanpooling is less expensive and requires less energy than individual auto driver travel. The private vehicle is driven by the commuter to a pre-determined point, is parked, and the commuter then joins the vanpool from the central pickup point to his place of employment.

Although rigid adherence to a fixed schedule is usually necessary for successful vanpool operation, flexible scheduling has been successful for two executive vanpools formed at 3M. These vanpools generally arrive a little earlier and leave a little later than other vanpools, and if special meetings or other special activities occur, the vanpool schedule is adjusted accordingly.

Because of the varying work requirements of the vanpooling executives, out of town business trips, times when they need a personal car for business or when special needs arise--the typical 3M executive only uses the van about three days a week. The most significant aspect of

this variation in scheduling and usage is that vanpooling is still an attractive alternative to driving individual cars. Even at 60 percent utilization, the vans still maintain an occupancy of over six passengers.

Multiple Employers/Drivers

Most vanpools operate a "many-to-one" type of service, consolidating work trips from several residential locations bound for a single employment location, usually one employer. A "many-to-many" service with multiple locations of employment is also possible using vanpooling. The Monarch Associates vanpool system in metropolitan New York City typically provided this type of service. Two drivers may be required, one for each end of the vanpool route. In this case, the rider who works the "closest in" would be responsible for keeping the van during the day. The person who lives the farthest out along the vanpool route would drive the van home at night.

VANPOOL COSTS AND BENEFITS

By consolidating work trips, vanpooling results in reduced transportation costs and other advantages which benefit the employee, the employer and the community. These benefits are discussed below by comparing vanpool costs to those associated with conventional passenger car costs.

Van Costs

Vehicle capital and operating costs vary with the type of vehicle, ownership, amount of travel and operating conditions. The cost for operating the 3M vanpool is based upon the following estimates prepared in September 1973.

Fixed Costs

Vehicle Costs		
Retail Price	$5,400	
3-year trade in value	$2,500	
Net 3-year cost	$2,900	
Annualized Capital Costs		$ 967.00
Annual Insurance Costs		460.00
Annual License Costs		80.00
Total Annual Fixed Costs		$1,507.00

Operating Costs

Maintenance $100/10,000 miles	$	0.01/mile
Gasoline 12 mile/gal @ $.36/gal.		0.03/mile
Oil $10/2,000 (incl. filter)		0.005/mile
Tires $200/20,000 miles		0.01/mile
Total Operating Costs	$	0.055/mile

Assuming 250 working days per year, the unit costs for operating a 3M owned van are $6.10 per day plus $0.055 for each mile driven. However, operating costs are obviously higher now than in September and assuming gasoline costs of $0.54 per gallon, the total operating cost would be changed from $0.055 per mile to $0.07 per mile.

The 3M rider fares are paid monthly and are computed on a break-even basis (including ownership costs) and are based on the round trip mileage for each vanpool. The table below presents the cost data upon which fares are based.

TABLE 1. 3M COMPANY VANPOOL COST SCHEDULE

Round Trip Miles Per Day	Total Cost Per Mile	Total Cost Per Day	Cost per Person Per Day
10	$ .665	$ 6.65	$ .83
20	.360	7.20	.90
30	.259	7.77	.97
40	.208	8.32	1.04
50	.177	8.85	1.11
60	.157	9.42	1.18
80	.131	10.38	1.31
100	.116	11.60	1.45

Summary of Benefits and Incentives

Vanpooling offers potential benefits to the commuter, the employer and the community. Some of these can be measured in economic terms, while others must be considered in terms of their social and environmental value.

The Commuter - The commuter is benefited in many ways, primarily by reducing the amount of personal income he must spend commuting to work, as previously stated. In addition, there are a number of

social and recreational advantages which, according to a recent survey by 3M, are very important to the vanpool riders and to the success of the Commute-a-Van program. New social contacts are made and a camaraderie seems to form between vanpoolers. Commuting becomes a "fun" thing to do. Passengers may indulge in card playing or other games or utilize their time by reading, completing a work assignment, or just relaxing.

3M attributes the major portion of success of their vanpooling program to the driver incentives which were built into the program from the outset. Essentially, the vanpool drivers run the vanpool system. They organize the vanpools, are responsible for maintaining the vehicle, and are responsible for insuring regular,dependable service. For this responsibility he is given:

- A free ride to work.
- All fares collected from additional passengers above that required (8) for the vanpool to meet expenses. (This amounts to about $0.93 per day, on the average.)
- Personal use of van during off-work hours at a rate of seven cents per mile.
- Free option for purchasing vehicle at the end of its service to the system.

Riders of vanpools can be offered a variety of incentives by their employer to join in vanpooling, including:

- Partial subsidies to cover travel costs
- Preferential parking
- Special parking lot entrances and exits (to avoid delay)
- Flexible working hours

The Employer - Several benefits of vanpooling accrue to the employer. First of all, the demand for employee parking can be reduced. Surface parking in moderately developed areas may cost as little as $300.00 per space, which nevertheless is significant. Structure parking in a more heavily developed area may cost as much as $3,000.00 per space or more, with annual maintenance costs of $10/$25 per space. Company overhead costs in many cases can be reduced by a reduction in the number of spaces that normally are paid for by the company. A major vanpooling program might also alleviate traffic access and circulation problems, which would benefit both employee and employer.

Perhaps more important than these direct benefits, a successful vanpool program might have a major impact on employee morale and tend to improve personnel relations. In areas where parking costs are high, a provision for vanpooling on a wide scale might come to be viewed by employees as an important fringe benefit. In order to compete effectively for good personnel, a company may also want to consider providing such a system. The potential value of vanpools, as perceived by the employee, will also rise with increasing fuel prices.

The Community - The community would benefit from vanpooling as a result of reduced congestion during peak periods. On-street parking demand and the need for additional public parking in intensely developed areas could be reduced significantly. Air pollution and fuel consumption would be reduced as a result of decreased automobile travel and improved driving conditions.

VANPOOL PROBLEMS AND SOLUTIONS

Organization and Management

The 3M approach to managing their Commute-a-Van program emphasizes the responsibility and initiative of the van drivers, or "coordinators." The management function is limited to a supporting and guiding role by giving proper attention to:

- Establishment of basic ground rules for operation of the vanpool
- Careful selection of drivers to operate the vanpool in a responsible and reliable manner
- Simple but effective ways for maintaining the necessary records associated with van usage
- A forum for the discussion and exchange of ideas between vanpool drivers

Routing and Scheduling

If a vanpool is to provide travel time comparable to that by private car, passenger pick-up times must be kept to a minimum. This can be done by minimizing the travel distance required for pick-up and by minimizing loading time per passenger.

In order to shorten the travel distance, some riders may be required to wait for the vanpool on the opposite side of the street from their

home, or perhaps walk a block or two to eliminate unnecessary circuitous routing. Maximum waiting times per passenger, say two to three minutes, must be rigidly adhered to. If waiting time becomes routinely excessive, the success of the program could be jeopardized because of impatience of fellow riders who cannot afford the delays and by tardiness at the place of employment which may place the riders' employment in jeopardy as well.

Driver Selection

Because the driver is the key person responsible for operating the vanpool system, drivers must be carefully screened. This can be done by checking his attendance record, driving record, responsibility characteristics and general enthusiasm toward the project. An initial questionnaire form can be completed by each prospective driver and a subsequent interview held. 3M has done this rather successfully without causing the driver to feel that his ability is being "questioned."

Records and Fare Collection

At 3M, the driver is made responsible for maintaining, servicing and operating his vehicle. Maintenance and fuel expenses are submitted each month as part of the driver's expense report. Fares are paid directly to the company on a monthly basis by the riders, regardless of whether or not he fully utilizes the service. At the same time, reimbursement for operating expenses and for fares exceeding the break even cost of the vanpool operation are remitted to the driver.

"Rap Sessions"

Problems with the 3M Commuter Van Program have been minimal and these have generally been worked out by the drivers themselves. "Rap" sessions are conducted periodically so that drivers can get together to discuss common solutions. In addition, items of interest and suggestions are mailed out to the drivers from time to time concerning such items as people problems, operating problems, etc.

Organizing Vanpools

An initial study was conducted by the 3M Company to determine the feasibility of vanpooling. Based upon that analysis, a vanpool plan was formulated and management guidelines were established. From that point, the organization of the vanpool program became the responsibility of the drivers.

The basic steps used to organize the initial program were as follows:

1. Employees desiring to participate in the vanpool program, either as riders or drivers, were asked to register their name, address and phone number.

2. Potential drivers were carefully screened and selected for vanpooling.

3. After being selected, it became the responsibility of the driver to contact residents who lived in his area and to organize his vanpool, including a back-up driver. Once he had completed the organization of his vanpool, his name was put on the waiting list for a new vehicle.

4. When the vanpool vehicle arrived, the driver made several "dry" runs in order to determine the overall route mileage, (which is the basis for determining fares) and to refine his route and schedule.

5. The vanpool driver then notified the members of his vanpool of when service would begin and informed them of the schedule and routing.

Competition with Existing Transit and Taxi Service

Although more apparent than real, the existing transit and taxi operators may feel that vanpooling will compete with the type of service they already offer and thus reduce their patronage level. In spite of the fact that vanpooling is intended primarily to serve a different type of trip maker, this potential problem could discourage implementation of vanpool service. Taxi and transit operators should understand that the more people who use vanpools, the greater the need should be for taxi and bus service during the day for those who desire to make shopping trips, trips to lunch, business trips, etc. In essence, vanpooling could break the "single car habit" which would be beneficial to taxi and transit operations.

Legal Problems

In the case of a private enterprise type of vanpool operation, restrictions may also be imposed due to existing city franchises, contracts, and state and federal regulations. Legal problems are discussed in a separate report in this series entitled Legal and Institutional Issues.

An example of a vanpool system which met with regulatory problems was that of Monarch Associates, Inc. The system served several communities in the New York City metropolitan area and was quite popular with its patrons after its inception in 1964. The vanpool system regulatory problems arose out of its operation as a private interstate carrier. The initial problems were overcome, because it was determined that the system served areas not serviced by common carriers. However, the system failed several years later because of financial problems encountered by the company.

Insurance Problems

Operation of vanpool service may expose vanpool drivers and their employers to additional civil liabilities which might arise from traffic accidents or loss of personal items by vanpool riders. Additional insurance will likely be needed to take care of this problem. The insurance regulations within each state or region may vary and it is suggested that the Insurance Commission and/or an insurance company representative be contacted to determine the needs to meet local requirements. These issues are discussed in the report concerning legal and institutional issues.

SUMMARY

1. Vanpooling can produce many kinds of benefits for commuters who participate in the program, the most important of which are reduced travel costs and the convenience of door-to-door service.

2. If practiced on a wide scale, vanpooling can be an effective means of reducing travel demand during peak hours. Effective occupancy can approach that of conventional bus operations. Furthermore, vanpooling is applicable in areas not suitable for conventional transit operations.

3. Vanpooling can result in substantial savings to sponsors and users while, at the same time, helping to achieve the goals of improved mobility, air quality, and energy conservation.

4. Incentives must be built into a vanpooling program for maximum success. These incentives must include advantages to the vanpool rider, the driver, the employer and the community.

5. The active participation and support of employers should be enlisted for organizing and promoting vanpooling (as well as carpooling, buspooling and conventional transit) for their employees.

6. The organizational form selected should be based upon the size of the employer. Generally, larger employers should organize and operate the vanpool system. Smaller employers may find it more convenient to enlist an outside agency or private organization to organize and operate the vanpool system in coordination with existing carpool, buspool, taxi and transit programs in the community.

7. Vanpools can also be developed from an outgrowth of two or more carpools wishing to combine as one group.

8. Vans can serve multipurposes for a company in addition to transporting employees. Such purposes may include special usage during working hours for attending outside meetings, for other motor pool purposes, transporting goods within the community and as a back-up system for people who miss their regular vanpool.

9. Vanpools do not require the conventional van design. The definition of vanpools infers usage of vehicles to carry a range of seven to fifteen passengers.