Mobility problems and solutions for elderly, handicapped, and poor persons in the United States

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INTRODUCTION

At some time in his life, virtually everyone has been transportation disadvantaged. The most common occurrence that restricts mobility is when a person temporarily does not have an automobile available to make a trip. A good example is when the one-family auto needs repairs and it is out of commission or temporarily being used by another member of the family. The simple solution to this mobility problem is to wait for the auto to return home or get it repaired.

A more serious problem occurs when a person is unable to drive an automobile or is not sufficiently wealthy to purchase and maintain one. It is this group that is generally defined as "transportation disadvantaged".

Practically all of the research, demonstration and legislation concerning persons who could be considered transportation disadvantaged have focused on three sub-sets of this group; namely elderly persons, persons who are physically or mentally handicapped, and poor persons. These groups are by no means small. Various estimates indicate that in the United States between 70 million [3] and 100 million [4] are either elderly, handicapped or poor. This wide numerical range is indicative of the definitional problem inherent in trying to count the number of persons who are transportation disadvantaged. For example, the definition of who is elderly is somewhat arbitrary. Usually persons above 65 years are considered elderly by Federal and State agencies, but some local social service programs are extended to all those over 55. A more serious issue is that not all persons over 65 have severe mobility problems. Equating age with immobility is a gross oversimplification.

Defining all persons who are physically or mentally handicapped as transportation disadvantaged, also poses some problems. First, there is no professional consensus on who is handicapped. Second, not all handicapped persons have severe transportation problems.

The problem of classifying poor persons is one that has vexed every agency that has tried to deal with low-income individuals. What should be the measure of poverty? It is generally accepted that household income is a reasonable measure of wealth and the ability to purchase adequate transportation is directly dependent on income level, as will be seen in another portion of this paper. Since some low-income persons do not own a car, but use other auto-oriented solutions to journey to work, the term "transportation disadvantaged" may apply for some trip purposes but not others.

Adequate public transportation would seem to be the solution for the transportation disadvantaged. But there are many indications that current transit systems are far from being adequate. Both rail rapid transit lines and fixed-route bus operations offer a solution to some transportation demands, but the services they offer are not sufficient to serve all the needs of those with mobility problems. Barriers to the use of conventional mass transit include some which are physical, and others which are operational. For example, the difficulty a handicapped person would have in negotiating a high step on a bus is a physical barrier, whereas insufficient route coverage resulting in long walks to bus stops would be an operational barrier for many of the elderly. In addition to these physical and operational factors are psychological barriers, such as fear of assault which can affect any potential rider. Finally, there is the standard transit fare which can be an economic barrier to the poor.

Perhaps the overriding barrier in conventional public transportation is that it does not take people to where they want to go. On the level of ubiquity, transit is still radially oriented and does not usually allow for good service unless the destination or origin of travel is the central business district. With respect to convenience, conventional transit cannot provide door-to-door service.

Moreover the transit industry has until recently paid very little attention to the mobility needs of the transportation disadvantaged. It is extremely costly to provide the specialized transportation needed by this group. In an era of declining patronage, most operators have been concerned with cutting costs rather than with expanding services for any special sub-groups. Thus, providing special services for elderly, handicapped and poor persons has been a low priority item for transit operations. [1]

There have been a few isolated cases of innovation by the transit operator but this has usually occurred when general services were being substantially improved as a result of a newly implemented dial-a-ride system, as for example in Rochester, New York. At other times innovation has occurred when a public planning agency has made and implemented a specific policy on serving el-

derly and handicapped persons. For example, the Regional Transit District in Denver decided to provide a special service for elderly and handicapped persons and implemented an effective but rather costly system. Few have followed Denver's commitment to a substantial effort to serve the transportation disadvantaged. However, as a result of recent legislation which would deny them federal funds unless they include the transportation disadvantaged in their planning, virtually every transit system in the country now has transportation disadvantaged as one of its priorities.

A plethora of social service and health agencies have responded to the lack of adequate transit for their clients by initiating their own transit systems. These systems range in size from single vehicles that provide monthly trips to large (e.g. 300 vehicles), statewide coordinated systems such as the Delaware Authority for Special Transportation. It is not surprising that these health and social service agencies have opted for non-conventional, para-transit, transportation operations. These para-transit options are usually more demand-responsive than the conventional fixed-route, fixed-schedule transit. Vehicles are dispatched only when some demand has been established. Operations are personalized, and frequently provide door-to-door service in small vehicles.

These systems were not initiated by transportation planners. Agency directors who perceived mobility needs among many of their clients decided to start a system to handle their needs. This is a significant fact and should not be overlooked in the future planning of transit for the transportation disadvantaged. The persons who developed these systems usually had no technical expertise in transit per se. They simply recognized the problem and went at it the best way they knew how.

Fortunately, few of them were aware of the "urban transportation planning process" and did not use sophisticated models to develop their systems. Using a "seat of the pants" approach, they identified the location of their clients and tried to provide door-to-door service to meet their most critical transportation needs.

Various government surplus vehicles were acquired and elderly or unemployed drivers were often hired. Sometimes repairs were being done by local garages or county maintenance departments, and when social service agency vehicles did not have priority, a reliable pattern of vehicle availability was not assured. In most cases a preventive maintenance schedule did not exist.

It is very easy to be critical of the poor planning and management exhibited by most of these systems, but these operations have provided door-to-door services that have had significant positive impact on their passengers.

TRAVEL NEEDS

The introductory statement defined the transportation disadvantaged as those who have no access to an automobile. While this is a useful statement for general descriptive purposes, a more precise and analytical definition is necessary in considering this group's travel needs, as well as proposed solutions. [2] More precision can be achieved by using a measure that can be compared among each of the disadvantaged groups. Thus for describing the degree of disadvantage, data on trip frequency per person will be the prime determinant. A transportation disadvantaged person is defined as one who takes fewer trips per person per day than one who is not disadvantaged. This procedure is modified from one used by researchers on a detailed study on the urban transportation disadvantaged. [6] Some caution is necessary in using this measure. Although the relative degree of transportation disadvantaged can be indicated by comparing trip rates among groups, it should not be assumed that the transportation disadvantaged will utilize as many daily trips as the general population, when a transit, as opposed to a personal auto, mode is available. Thus, planners should be warned against using this gap analysis technique as a way of predicting, for example, the additional trips a group of elderly persons will take if an innovative transit system is provided. Even when provided with vastly improved transit, few among the disadvantaged will take the number of trips per day of the non-disadvantaged population.

Trip rates do however, provide one measure of transportation disadvantage. In the following sections the trip rates, major travel problems, and characteristics of each of the prime groups identified as being transportation disadvantaged, will be discussed.

The poor

The poor are one of the most readily identifiable groups of the transportation disadvantaged. They are, because of lack of sufficient income, unable to meet conveniently their travel needs and desires. Low incomes result in low trip making rates as indicated in Table I. The household trip rate for those with annual income over $4,000 is much higher than for those with lower incomes. Many trips desired by the poor are not being made. Of course, the intervening variable between incomes and trip rates is auto ownership. Data from 1971 show that while only 20% of all U. S. households were without an auto, 46% of households with under $3,000 annual earnings did not own an auto. [6] Furthermore, since many of the autos owned by the poor are old and not in good operating condition, the mere availability of an auto does not necessarily guarantee mobility.

Table I – Annual passenger car trip rates, vehicle-miles of travel per household, and average trip length by household income

Annual Household Income	Trip Rate per Household	Vehicle-miles per Household	Average Trip Length
Dollars	Number	Number	Miles
Under 4,000	580	4,708	8.1
4,000-9,999	1,433	12,262	8.6
10,000-14,999	1,949	17,497	9.0
15,000 and over	2,526	24,410	9.7

Source: Report No. 7 of the National Personal Transportation survey. "Household Travel in the United States," Federal Highway Administration, Washington, D. C., December 1972.

If income is held constant, members of carless households seem to take about one trip less per person per day than did people from one-car households. The difference in the total number of trips is much greater, however, between zero and one-car households than between one and two-car households. [6]

The location of carless individuals also has a considerable effect on available transportation alternatives and, therefore, on trip making rates.

In the larger cities where public transportation is more readily available, the trip frequency gap between individuals with and without an auto is reduced. In these cities,

transit is used for a much larger percentage of trips taken by carless individuals. The situation is different in sparsely populated areas. In smaller cities, ride sharing and car borrowing by carless households exist to a much greater degree.[8] These informal methods, however, do not allow poor residents of smaller cities the mobility afforded them by the better transit systems of the larger cities.

Inner city poor and non-whites

There are special transportation problems associated with the poor and non-whites, including Blacks, Puerto Ricans, Chicanos, Orientals and American Indians, who live in inner cities of major metropolitan areas. The lack of adequate areawide coverage by many inner city public transit systems has been, in part, responsible for the lack of access to jobs, and very critical services. More specifically, the decentralization of jobs and services as a result of suburban growth, has not been followed by the development of a convenient transit system that inner city residents can use to reach desired work and non-work destinations. [9]

The relationship between race and transportation is also an important issue because even when income is held constant, minority group members across the nation take from .4 to .9 fewer non-work trips per person per day than do whites. [5] Non-whites are most disadvantaged, when compared with whites, in their trip rates to social/recreational activities and in the frequency with which they shop.

Mode choice data are also revealing. When comparing the percent of public transportation used by both inner city whites and non-whites, one finds that non-whites are more dependent on public transportation than whites. This relationship is true within each income group of inner city residents.

Finally, many of the trips made by the non-whites and the poor are walking trips, partly because of the densely populated neighborhoods in which many of them live. This larger number of walking trips, however, does not negate the fact that the poor and non-whites make considerably less trips than higher income persons.[6].

The elderly

One group of the transportation disadvantaged which has been the focus of considerable attention from researchers in recent years has been the elderly of our society. The elderly are a significant portion of our population and will continue to increase as a proportion of our total population. In 1970, there were 20 million Americans over age 65, of which about 65 percent lived in urban or suburban areas. It is estimated that there will be 28 million by the year 2000.[10]

There are two major factors associated with the elderly's transportation problems. The first is that many have limited income and are not able to pay for automobile or taxi expenses. The second factor relates to the physical health of the elderly as a handicap in operating an automobile, as well as in riding conventional transit systems. Auditory and visual problems of many senior citizens considerably reduce their ability to operate an automobile in safety.

The elderly are inhibited by a number of problems in using conventional public transportation. The design related problems such as high entrance steps, overhead grips, and fast-acting doors act to their disadvantage. In addition, other problems occur when too many transfers are required, and long waits are necessary at stops. An elderly person subjected to these discomforts and inconveniences, is discouraged from using public transportation.

Some of the effects of not being able to afford an auto and the barriers to using public transit are evident in Table II. The average number of trips per person per day, by income, age, and trip purposes, are given for SMSA residents. Because of the aforementioned factors, the trip-making rate for the elderly is considerably lower than that of the non-elderly within each income group. The effect of income on trip-making rates for the elderly is also shown in Table II. As income increases, the elderly take more trips for both work and non-work purposes.

Mode choice data indicate that although the elderly are described as 'captive riders', they do not use transit for a large number of their trips. In fact, they tend to use transit for a smaller proportion of their total trips than the nonelderly, according to nationwide data on the elderly within SMSA's.[6]

No description of the transportation characteristics of the elderly would be complete without some mention of the importance of transportation used, solely as an activity for many of the elderly. "Transportation for the elderly needs to be provided not purely for getting from "here to there" but also as an "antidote" for the entire process of aging".[10]

Handicapped persons

The major transportation problem of the handicapped, like the elderly, lies in their inability to find a convenient mode of transportation which does not cause them serious discomforts. Of all the handicapped persons in the United States, the Department of Transportation has calculated the total number who cannot use transit or who use transit with difficulty. A list of the dysfunctions of the transportation handicapped is shown in Table III. It should be noted that 53 per cent of the handicapped are elderly persons. As discussed in the previous section, the problems of the elderly in driving and riding conventional modes of transportation are, to a large extent, associated with their physical impairment.

Their difficulties in getting to the bus stop, boarding high entrance steps, safely riding buses, and getting to their destinations mean that the handicapped only ride public transit when absolutely necessary.[10] Their attempts to use inadequate public transit result in both physical endangerment and psychological frustrations.

The travel patterns of the handicapped, as a result of some of the above mentioned impediments, result in a large gap between the trip frequencies of the handicapped and the non-handicapped. Data from a study in Boston showed that the handicapped took 1.13 trips per day compared to an average of 2.23 trips per day by the general population.[12]

Finally, a look at modal split of the handicapped shows that a significant number of trips by the handicapped are taken by taxi. The handicapped, for example, take 15 per cent of their trips by taxi compared with two per cent of the nonhandicapped. Although the handicapped are generally less able to afford the taxi fare, they need the door-to-door taxi service.[12]

FEDERAL ROLE

This section will trace the various programmatic efforts that have been made to solve the transportation problems of the poor, elderly, and handicapped persons. The focus will be on the advent of federal responses to the problem. The impact at state and local levels, will be emphasized.

The poor

The first use of federal funds for the transportation disadvantaged occurred in the mid-1960's when the Department of Housing and Urban Development (HUD) initiated a series of demonstration projects that were

Table II – Average number of trips per person per day by income, age and trips purposes for SMSA residents

Household Income and Age

Trip Purposes	Poverty $0-4,000		Low $4-6,000		Middle $6-10,000		High $10,000+	
	Elderly	Non-Elderly	Elderly	Non-Elderly	Elderly	Non-Elderly	Elderly	Non-Elderly
Work	.11	.88	.19	.48	.39	.56	.37	.59
Shopping	.29	.24	.27	.28	.24	.42	.27	.44
Social/Recreational	.38	.46	.41	.42	.49	.72	.29	.44
Personal Business	.10	.22	.24	.31	.24	.41	.20	.41
Other	.62	.77	.52	.76	1.07	.63	.69	.67
Total Non-Work	1.39	1.69	1.44	1.77	2.04	2.18	1.45	2.26
Total	1.50	2.07	1.63	2.25	2.43	2.74	1.82	2.85

Sample Size: 5,187 persons SMSA, Standard Metropolitan Statistical areas
Source: Nationwide Personal Transportation Survey, 1969-70 as reported in Abt Associates, *Transportation Needs of the Handicapped.*

Table III – The national numbers of handicapped with transportation dysfunctions*

Handicap Class	Elderly Handicapped	Non-Elderly Handicapped	Total Handicapped
Non-Institutional Chronic Conditions			
Visually impaired	1,460,000	510,000	1,970,000
Deaf	140,000	190,000	330,000
Uses Wheelchair	230,000	200,000	430,000
Uses Walker	350,000	60,000	410,000
Uses Other Special Aids	2,290,000	3,180,000	5,470,000
Other Mobility Limitations	1,540,000	1,770,000	3,310,000
Acute Conditions	90,000	400,000	490,000
Institutionalized	930,000	30,000	960,000
TOTALS	7,030,000	6,340,000	13,370,000

Sources: HEW National Center for Health Statistics 1960 and 1970 Census of Population in *The Handicapped and Elderly Market for Urban Mass Transit* prepared by the Transportation Systems Center for the Urban Mass Transportation Administration, October, 1973.

*1970 Estimate, persons, who cannot use transit or who use transit with difficulty.

Table IV – Transportation projects serving older Americans by type of service as of july 1974

Type of Service	Number	Percent
Demand-Responsive	112	35.77
Combined Demand-Responsive & Fixed Route/Schedule	88	28.0
Fixed Route/Schedule	55	17.5
Volunteer Systems	48	15.2
Taxi: Reduced Fares	11	3.6
Total of Identified Projects	314	100.0%
Not identified by Service	606	—
Total	920	—

Source: Administration on Aging, *Transportation for the Elderly: The State of the Art,* prepared by Joe Revis, Institute of Public Administration, Washington, D. C., January 1975

aimed at solving some of the transportation problems of the poor. [8] These projects were in response to the national prominence that had come to the issue of the immobility of the poor with the 1965 racial riots of Watts. Inadequate transportation to employment centers had been identified by the McCone Commission as a factor leading to high unemployment rates in Watts.[18]

In response to these conditions, federally-supported demonstration projects were launched in riot-prone major metropolitan areas. Buses would provide daily door-to-door service from workers' homes to outlying suburban jobs. These services had a number of demand-responsive characteristics. Routes were usually changed daily or weekly to accommodate new clients. Pickups were made at the clients' door or very close to it and provided direct access to their place of employment. Some of these projects improved employment access enormously, more than justifying the large initial investment in the operation by consequent increase in lifetime earnings of new job holders. Others suffered from waning ridership and were not continued beyond the demonstration phase.

In addition to these employment facilitation efforts, the poor have been the focus of a number of other federally-funded demand-responsive transportation services primarily planned for non-work-related trips. Model Cities' agencies in Columbus, Ohio; Detroit and Grand Rapids, Michigan; and Buffalo, New York, each have experimented with dial-a-ride services that are allowing residents better access to health and social service agencies. [8] In Grand Rapids, for example, a special supplement to the fixed route system is providing increased mobility to the poor and elderly. A demonstration grant to the Grand Rapids Transit Authority from

the Urban Mass Transportation Administration (UMTA) has provided for a demand-responsive transportation system within the Model Cities' neighborhood. Five small buses provide services to or from anywhere in the city, as long as one end of the trip is in the Model Cities' neighborhood. [3]

The Office of Economic Opportunity (OEO) was a prime mover behind efforts to provide demand-responsive transportation to the transportation disadvantaged in rural areas. Prototype public transportation systems have been started in rural areas with demonstration grants from OEO. In their effort to help people out of the poverty cycle, local OEO funded Community Action Agencies (CAA's) had consistently identified transportation as a major problem area. In response to these needs by 1972, there had been over 50 rural transportation projects funded by OEO.[19] The dispersed nature of the trips and lack of high population densities have dictated that few of these systems have conventional fixed routes or schedules. These are primarily social service delivery systems that provide door-to-door service for agency clients. The conversion of OEO programs to a new funding basis under the Community Services Act has seen the retention of some financial commitment to transportation services. Typically, the funding is largely federal in source, and spent for a target population of low income. Many programs did not survive federal spending cutbacks.

Elderly and handicapped

UMTA and the Administration on Aging (AOA) are the two federal agencies that have been active in developing demand-responsive transportation to serve the elderly and handicapped.

UMTA

The Urban Mass Transportation Administration (UMTA) of the U. S. Department of Transportation has the Congressional mandate to ensure that elderly and handicapped persons are provided access to mass transit. A series of legislative enactments have indicated the intent of Congress. Starting with the Urban Mass Transportation Act of 1964 as amended in 1970, and more recently the National Mass Transportation Assistance Act of 1974, these enactments have emphasized the need to provide for the mobility of elderly and handicapped persons.

UMTA has funded a number of demonstrations that have included demand-responsive transportation for the elderly and handicapped. Under its Service and Methods Demonstration Program, UMTA is experimenting with innovative transportation services for those with mobility constraints. A project in the Lower Naugatuck Valley, Connecticut, has a demand-responsive component which is providing transportation services to clients of health and social service agencies.[20] Telephone requests for the door-to-door demand service are made in advance and served by six vehicles, five of which were modified to meet the special needs of the elderly and handicapped. The Valley Transit District also offers other specialized transportation services including charters available to the local agencies. The project also features a new concept in automated fare collection which uses credit cards instead of cash and allows agencies to pay all or part of a client's trip through a feature called FAIRSHARE. Demand for the service has grown to the point that the system is saturated and the operators have moved to expand the system by more than doubling the size of the fleet. As the system matured, some demand-responsive service was converted to fixed-route, and the State of Connecticut enters as a larger source of financial support than when the project was first initiated.

Financial support of the project has also been received from AOA. These additional funds have been used to help the agencies pay for client transportation. UMTA and AOA officials are hopeful that the consolidation of social and health service agency transportation needs and the flexible service developed in this demonstration will be a model for serving the transportation needs of many small to medium sized communities.[3]

Another UMTA project started in 1973 in St. Petersburg, Florida, is dubbed "TOTE" which stands for Transportation Of The Elderly. Handicapped and aged persons receive door-to-door service within a ten square mile area which contains the central business district and where a large majority of the citizens are senior citizens. Riders call 24 hours in advance of the intended trip for 35¢ per trip or request a higher priced same day demand-responsive service which is available on a limited basis.

Ridership on the TOTE system has increased steadily. The public acceptance and utilization of the service was slower than anticipated by the sponsors but those who did use the service were pleased with it and many of them became steady riders.[20]

In addition to these and other projects of the Service Development Program, there are other UMTA funded projects that provide demand-responsive transportation services. However, the only major demonstration of the dial-a-ride concept, conducted in Haddonfield, New Jersey, was halted in early 1975 for lack of funds. This system was not specifically designed for the elderly and handicapped, but it did have significant impact on their mobility. Elderly and handicapped persons, as well as housewives and young people, found that the new service decreased their dependence on friends or on the family car. One specially equipped bus accommodated wheelchair passengers and others with handicaps which prevent them from using conventional transit vehicles.

AOA

The Administration on Aging (AOA) of the Department of Health, Education and Welfare (HEW) was authorized to conduct transportation research and demonstration programs under Title III and Title VII of the Older Americans Act.

One of the first pilot projects funded by AOA was the YMCA Senior Citizens Mobile Service which was funded from September 1966 through November 1969. Two seven-passenger vans provided door-to-door service to participating elders on request. Service to health centers, welfare agencies, supermarkets, senior citizens, and libraries was provided to senior citizens who called in their requests for transportation one day in advance. The project has shown that isolated persons living in a large city would use a free demand-responsive service to get where they needed and wanted to go.[21]

The foregoing is just one of some 920 projects involving the provision of transportation for the elderly enumerated by a research project conducted for the AOA.[11] All of this activity is being implemented through local and state governments, and a majority of the projects are receiving funds under Titles III and VII of the Older Americans Act and Titles XIX and XX of the Social Security Act.

An enumeration of these services makes a strong case for the superiority of demand-responsive over fixed-route systems. Of the 314 projects that reported on the type of service, some form of demand-responsive service accounted for 36%; fixed-route 18%; combination of fixed-routes and demand-responsive systems 28%; volunteer systems 15%; and taxi reduced fares 4%, as seen in Table IV. There were, thus, 255 projects involved in routing of vehicles. Of these, only 55 or 22% did not

have a demand-responsive component. Clearly, local agencies are recognizing the benefits of demand-responsive transportation for the elderly.

Consolidation of resources

The way to have the most profound impact on transportation for clients of social service agencies is to find ways to utilize more efficiently the equipment and manpower that are currently used to provide para-transit transportation services. This means that if in one county there are ten different agencies providing services for the elderly, they should be able to put their vehicles and drivers into one consolidated system that could provide better service at a lower cost per passenger trip. Recent data suggest that considerable economies occur by spreading management and maintenance costs over larger scales of operations. [24]

But why does not public policy move toward capturing these advantages of large scale operation and what should be done to facilitate this consolidated effort? At the federal level there are a very large number of funding sources for transportation, but the regulations that determine their use are frequently interpreted by local implementing agencies as quite restrictive. Therefore, we must change the regulations that do not allow flexibility in the use of currently available transportation funds. Unfortunately, the institutional impediments to changing these regulations are found at every level of government, starting with laws enacted by Congress which must ultimately be implemented by local agencies. For example, there is legislative intent to restrict use of 16(b)2 vehicles to the service of elderly and handicapped.

Laws that affect rural public transportation are developed by many different Congressional committees. These various pieces of legislation have not in the past been coordinated to see that they do not create overlapping programs, or to ensure that they allow for sufficient flexibility so that some consolidation is possible. Of course this is not unique to the area of transportation. The interfacing of many federal social service programs is made difficult by the uncoordinated nature of the Congressional committee structure.

On a more positive note are some recent efforts towards coordination of transportation legislation by a number of Senate committees, including the Special Committee on Aging and the Subcommittee on Transportation. One task being considered to facilitate this coordination would be a study of the total amount being spent on special transportation services by all federal agencies. The General Accounting Office has been asked to enumerate these programs.

An interagency task force of the Southern Federal Regional Council has been studying rural public transportation. Ms. Suanne Brooks of this task force has documented the administrative jungle created by the many separate sources of federal funds for providing transportation service. She indicated that:

"The Departments of Health, Education, and Welfare; Labor, Transportation and the U. S. Office of Economic Opportunity fund no less than fifty (50) human service categorical and formula grant programs that authorize the provision of a payment for transportation services . . ." Many needful people who are categorically ineligible go unserved as a result (23).

The same problem exists among the various state sponsored special transportation services. There are too many uncoordinated, restricted funding sources for transportation programs. Suggested improvements for state governments, however, need not stop with better coordination. In addition to enacting better legislation and implementing coordinated programs, the states can establish umbrella agencies that are empowered to consolidate disparate sources of funds. Probably the best example of a state-created agency which was established to coordinate specialized transportation service is found in Delaware. The Delaware Authority for Specialized Transportation (DAST) embodies a successful approach for funding and operating specialized transportation services on a statewide basis. In essence, the legislature created an authority that could provide transportation services to a wide range of client agencies under purchase-of-service contracts.

Local county governments, the United Fund of Delaware and numerous private agencies now contract with DAST to provide transportation services for their clients. In almost every case, the cost to the agency is less than was previously the case. This may not be a feasible solution in every area, but it is certainly indicative of the strong role a state agency can play in coordinating specialized transportation services.

Local efforts at coordination are also helpful in reducing costs and providing better services. Some rural transit systems have been successful in providing transportation services to more than just one agency. Typically, these systems were started as a result of a grant from OEO and were initially used to provide service to clients of local Community Action Agencies (CAA's). A number of enterprising CAA directors recognized that they were not fully utilizing their vehicles, while other agencies in same county were experiencing transportation problems associated with delivery of services to their clients. Thus, in a number of counties arrangements were made by CAA's to provide transportation to clients from other agencies. Of course, this was feasible only where the regulations mentioned earlier were flexible enough to allow for purchase-of-service arrangements.

THE FEDERAL OUTLOOK

Although legislation designed to enhance the mobility of elderly and handicapped persons was enacted in the early 1970's, many representatives of disadvantaged groups felt that there had been little or no changes because of this law. Thus during 1974-75, a number of court cases were initiated to force the Federal Department of Transportation to implement the legislation that was passed by Congress. In Baltimore for example, the city was enjoined from purchasing a large number of vehicles for its public transit system because they were not designed to accept a person in a wheelchair. UMTA finally agreed to provide a set of rules governing the provision of transit for elderly and handicapped persons. An initial set of rules was published for comment and a number of hearings were held to receive transit industry and public input, before final publication of the UMTA rules.

Major issues addressed in the rules are:

1. *Accessibility versus Mobility:*

Should every vehicle in transit service be accessible to all handicapped persons including those in wheelchairs or is it sufficient that some mobility is provided to elderly and handicapped persons by a specialized service?

2. *Service Levels:*

What are appropriate service levels for providing transit for elderly and handicapped persons?

3. *Vehicle Design:*

Some vehicle design criteria are being developed. These engineering specifications will be mandatory for any vehicles purchased with federal funds.

4. *Planning Needs:*

What specific planning tasks that relate to the transportation disadvantaged will be required before a city is deemed eligible for federal funds?

The majority of subsidy monies going to social service

agencies to furnish transportation services have resulted in proliferation of independent, uncoordinated services. Some funds to reimburse clients for use of existing public transit or taxi facilities; but, in the main, the expenditures result in a proliferation of inefficient transportation units. In general, the services provided by social service agencies are fragmented, very costly, and not widely advertised to the general public. Poor or high-cost maintenance of vehicles results from nonconsolidation. Social service agency staffs divert time from important professional duties to engage in chauffering functions.

The staffs of the agencies recognize these problems; but in the absence of an adequate public transit system, especially in small areas, these staffs prefer to retain the agency-based system. The vehicles used for clients are also a visible sign of an organization. They play a role in advertising the current operations of a nonprofit organization.

In general, bus and taxi operators in small and mid-sized cities are not aware of the many forms of indirect subsidies to transportation available to social service agencies. Transit operators are aware of the existence of some of the more prominent organizations, but do not typically interact with the agency directors to plan route or schedule changes. The more vocal social service agency professionals are often highly critical of public transit, citing inconvenience, slow speed, and poor schedules. The social service agency staffs, in general, are unfamiliar with routes and schedules, taxi fare structures, or the transportation planning process.

The transportation planners in many small and mid-sized cities could derive useful information from social service agencies about travel needs of clients; but, in general, the agencies are not invited or funded to conduct such studies. Transportation planners, operating under the time constraint of deadlines for proposal submission, frequently express the view that there are too many disparate agencies and that it is too much work to try to get them together. Planners also fear that agencies will not be in agreement among themselves on transit priorities, and thus will compound the political difficulties in getting a plan inplemented. Planners at the state level, in general, appear willing to offer financial incentives to encourage moves toward consolidation, but are timid about applying sanctions against localities which tolerate costly, inefficient proliferation of independent transportation programs. Despite the potential for gubernatorial encouragement to consolidation, few states currently promote this approach.

The underlying assumption of federal revenue sharing is that local governments close to the people will best be able to spend tax dollars in an efficient manner. Knowledge of local conditions is claimed to foster rationality, and consolidation of budgetary power in the hands of local elected officials is expected to permit agencies under those officials to coordinate efforts at the local level. In fact, the actual behavior of system participants suggests that these assumptions are unwarranted in many instances. Even where several social service agencies expend public monies at the city or county level, they may be under no pressure to rationalize the supply of transit services. Transportation planners working for mayors or county commissioners do not, in many instances, interact with local welfare officials for the purposes of improving transportation services to social agencies.

The reasons for these problems seem to be that even in "small" cities there are too many bureaucracies, too many intermediaries, and too many rules which inhibit the development of consolidated transportation systems. No one agency is charged as the "lead" agency; no one agency is taxed by the diseconomies of the current approach to transportation services. No one agency is to blame as the individual agencies cope unsuccessfully with the issue of mobility for the disadvantaged.

Since it may be posited that lack of transportation services decreases access to jobs, medical services, food stamps, and many other programs which raise the standard of living for the poor, the state of nonconsolidation has important long-run consequences for the well-being of the citizenry.

Cost studies show great diversity in system costs despite some similarity in purpose, clientele, and market prices of the inputs used in the system. There is a need for good prior planning to achieve economies of scale.

Currently public policy in the area of transportation for social service agency clients does not appear to promote the formation of large coordinated systems, since agencies can obtain vehicles under the 16(b)2 program without belonging to a coordinated program such as the Rhode Island or Delaware systems. More research should be done to explore how to achieve a higher level of coordination, thus effecting greater economies.

Public transit companies which fear that demand-responsive service for the elderly and handicapped is very expensive may be interested in the findings that some well-managed systems are able to operate on a cost per passenger mile of less than twenty cents (See Table V). Success in keeping unit costs low appears to involve:

a. agglomerations of elderly which facilitate the bunching of demand

b. spreading management costs thinly over a large scale of operation

c. avoiding a large artificial distortion of costs resulting from a short-term massive federal demonstration grant

d. controlling wage costs by using drivers part-time as needed

CONCLUSION

In the United States between 70 million and 100 mil-

Table V – Costs and selected characteristics by system type

	Number of Passenger Miles Per Annum		*Cost Per Passenger Mile*		*Name of Lowest Cost System*
Fixed Route Systems with Special Service to Elderly & Handicapped	Range:	212,000 to 677,000	Range:	$ .25 to $1.35	Broward County, Florida
	Mean:	417,000	Mean:	$ .72	
	Median:	361,000	Median:	$ .56	
Demand-Responsive Other Than Taxi	Range:	9,900 to 1,520,000			Logansport, Indiana
	Mean:	485,000	Mean:	$1.19	
	Median:	280,000	Median:	.70	
Taxi	Range:	161,112 to 4,800,000	Range:	$ 42 to $ .69	Hicksville, New York
	Mean:	—	Mean:	—	
	Median:	—	Median:	—	
Mixed Demand/Responsive and Fixed Route	Range:	1,951,000	Range:	—	Merritt Island, Florida
	Mean:	—	Mean:	—	
	Median:	—	Median:	$ .13	

lion persons are either elderly, handicapped or poor. From these population classes come the preponderance of the transportation disadvantaged, the autoless in an auto-oriented society. Funding to solve the transportation problems of these groups has flowed from many channels, federal, state, and local as well as non-profit agencies.

The problem has been tackled by addressing particular needs of a selected client target group, usually only a fraction of the transportation disadvantaged. Recently, researchers and planners are starting to address the issue of a public transportation problem to be solved through the consolidation of separate programs into a local para-transit operation. Alternatively sharing of experiences and problems at the local level begins to reveal the extent of duplicative services or unmet needs. The diversity of local conditions makes difficult any blanket federal policy but public funds might well be invested in the startup costs of providing the organizational impetus for coordination and/or consolidation of these vital transportation programs.

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