

User-Side Subsidies: Delivering Special-Needs Transportation Through Private Providers

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The user-side subsidy is a method for delivering low-cost transportation services to selected groups of travelers. Under a user-side subsidy program, certain target groups of users are permitted to purchase trips from a transportation provider at fares that are below those charged to the general public. For each subsidized trip delivered, the provider receives a voucher, scrip, or a ticket from the user, which can be redeemed at the subsidizing agency for an agreed-on value—usually the full-fare value of the trip. Over the past several years, the Service and Methods Demonstration Program of the Urban Mass Transportation Administration has been exploring various applications of the user-side subsidy concept through a number of demonstrations and case-study evaluations. This paper summarizes and compares the major evaluation findings from these projects to make some general statements about the overall feasibility and cost-effectiveness of providing special needs transportation services through user-side subsidies. It examines the concept from the perspective of three principal groups—the subsidizing agency, the user, and the transportation provider. Relevant issues of concern to each of these groups are identified and discussed and those issues most relevant to federal policymakers are highlighted.

The user-side subsidy is a promising technique for delivering low-cost transportation service to selected groups of individuals through private providers. Under a user-side subsidy program, certain target groups of users are permitted to purchase trips from a transportation provider at fares below those charged to the general public. For each subsidized trip delivered, the provider receives a voucher, scrip, or a ticket from the user, which can be redeemed at the subsidizing agency for an agreed-on value—usually the full-fare value of the trip.

User-side subsidies offer several potential advantages over the more common provider-side subsidy arrangement. Under a provider-side subsidy, payments are made directly to a transportation provider to maintain certain specified fare and service levels. Because the provider receives the same subsidy regardless of demand, there is very little incentive to improve service levels beyond the specified minimum or to do anything else to attract additional patronage. Under a user-side subsidy, the total subsidy payment is directly related to the number of subsidized trips carried. Consequently, there is a strong incentive for the transportation provider to attract additional demand and increase productivity.

The user-side subsidy is also a more efficient subsidy arrangement because payment is made only for those trips actually taken by the target group. At low levels of demand, this can result in substantial cost savings for the subsidizing agency. Finally, a user-side subsidy program can be implemented without disrupting existing transportation pricing structures or operating environments.

Over the past several years, the Service and Methods Demonstration (SMD) Program of the Urban Mass Transportation Administration (UMTA) has been exploring various applications of the user-side subsidy concept through a number of demonstrations and case study evaluations. These evaluations have focused, for the most part, on the application of user-side subsidies to provide low-cost, shared-ride taxi service for elderly and handicapped people. Findings from these evaluations have provided valuable information on a number of issues, including program costs, barriers to implementation, alternative payment methods, project use and user characteristics, and impacts on service providers.

The purpose of this paper is to draw on these evaluation findings to make some general statements about the overall feasibility and cost-effectiveness of providing special-needs transportation services through user-side subsidies. The following three sections address the concept of user-side subsidies from the perspective of the subsidizing agency, the user, and the transportation provider. Relevant issues of concern to each of these groups are identified and discussed based on currently available findings. A final summary section highlights those issues most relevant to federal policymakers and discusses the compatibility of user-side subsidies with current national goals and philosophies.

ADMINISTRATIVE ISSUES AND FINDINGS

User-side subsidies, like any subsidy program, involve the expenditure of public funds for designated target groups to achieve objectives that are deemed worthy. In the context of special-needs transportation, the major objective of a user-side subsidy is to satisfy the transportation needs of certain elderly and handicapped individuals at a reasonable cost to the public. From the perspective of the subsidizing agency, therefore, the most important issues concern overall program costs and methods of cost containment, the ease with which the program can be implemented, and its overall acceptability to targeted users, transportation providers, and the general public. These major issues are discussed below based on evidence obtained through SMD evaluation efforts.

Concept Acceptability

User-side subsidies for special-needs transportation services have, in general, been well received by intended target groups, transportation providers, and the general public. Two of the four UMTA demonstration sites (Kinston, North Carolina; and Lawrence, Maine) have continued their programs with local funds after federal demonstration funds ended. In Danville, Illinois, user-subsidized taxi service was replaced by user-subsidized fixed-route bus service, which has also been continued by using local funds. Of the completed SMD demonstration projects, only Montgomery, Alabama, chose not to continue some form of a user-side subsidy program. All the programs in the case-study sites were initiated and continue to operate with local funding.

Despite the fact that user-side subsidies are, in effect, a form of public assistance, there has been surprisingly little negative public reaction toward the programs at any of the demonstration or case study sites. On the contrary, public opinion toward the programs has been highly favorable. In Danville, a random telephone survey of households found that 94 percent of those who knew about the user-side subsidy program thought that it was a good idea. More than 75 percent felt that the program should be continued beyond the demonstration period by using local funding. On the other hand, support for extending user-side subsidies to other transportation-disadvantaged groups (specifically, the young nondriver and the nonelderly poor) was much less enthusiastic. This suggests that the intended

target groups may be an important factor in determining the overall acceptability of a user-side subsidy program in a local area.

Implementation Considerations

User-side subsidies have been successfully implemented in a variety of locations that have significantly different taxi regulatory policies and fare structures. The concept itself is extremely adaptable to local conditions and, in most instances, can be implemented without the need to modify any local transportation ordinances or existing fare systems.

One implementation issue that had to be addressed in all UMTA-funded demonstrations concerned local taxi ordinances regarding shared riding. Under a policy that permits shared riding, a taxi operator may pick up additional passengers going in the same general direction as the first passenger and charge each of them a separate trip fare. Current UMTA policy authorizes the expenditure of federal funds for subsidizing taxis only if they allow shared riding. Consequently, in each of the UMTA-sponsored demonstration projects, any local ordinances prohibiting shared riding in taxis had to be repealed, at least for subsidized trips.

None of the demonstration sites encountered strong opposition to the ordinance change from either taxi operators or citizen groups. On the other hand, the ordinance change had virtually no impact on local taxi operations. That is, most taxis continued to provide exclusive-ride service to both subsidized and nonsubsidized passengers. One reason for the ineffectiveness of the ordinance change was that the demand for taxi trips in most of the project sites was too dispersed (geographically, in time, and among competing taxi operators) for any single operator or firm to efficiently group trips on a shared-ride basis. Moreover, most operators were reluctant to degrade existing service levels for fear of losing customers to competing taxi firms who had not instituted a shared-ride policy.

Only one demonstration site (Montgomery) made a serious attempt to promote shared riding through additional regulatory reform. First, a taxi ordinance was introduced that allowed taxi dispatchers to delay project requests for up to 1 h in order to facilitate grouping of shared-ride trips. Next, the existing meter-based taxi fare system was replaced by a grid fare system for shared-ride trips. Last, the city reduced the minimum taxi charge or "flag drop" from \$1.00 to \$0.80 for all subsidized trips, the rationale being that the increased productivity from shared riding would more than offset any reduced revenues from the lowered flag drop.

Although there was no objection in principle from the taxi operators toward shared riding, they were adamantly opposed to any reduction in fares. Many operators threatened to drop out of the user-side subsidy program unless the \$1.00 flag drop was reinstated for project trips. The dispute was ultimately resolved when the program director agreed to reimburse taxi operators the additional \$0.20 for each correctly filled-out subsidy voucher that they turned in.

The issue of whether shared-ride taxi service can be effectively implemented only in conjunction with a zonal-based fare system has not yet been fully resolved. Clearly, a meter-based fare system tends to penalize taxi riders for any diversion made to pick up additional riders. A zonal-based-on-grid system overcomes this problem by allowing fares to be calculated on the basis of the origin and destination of each rider rather than on the total distance traveled. In Montgomery, however, the new grid system proved to be too confusing and too

tedious for many taxi operators, who either dropped out of the program or refused to participate altogether. In three of the locally funded case study sites--Seattle, Milwaukee, and the Los Angeles Harbor Area--user-side subsidy programs were implemented without changing from the existing meter-based fare system. However, it is not clear to what extent shared riding was practiced by taxi operators at these sites or whether the issue of a practical meter-based shared-ride fare structure was even considered.

All evidence from the SMD evaluations suggests that user-side subsidy implementation problems can be minimized by avoiding major changes in local institutional structures or in the existing operating practices of the transportation provider. Major institutional changes not only require the expenditure of substantial amounts of project staff time and effort, they may also create unfavorable local publicity that could ultimately undermine the entire program. Similarly, attempts to change the operating practices of private transportation providers in any way that they perceive to be detrimental to their business may ultimately result in their refusal to participate. Without the cooperation of the private operator, the fundamental advantage of user-side subsidies is lost.

Program Administrative Costs

The total direct cost to the public for a user-side subsidy program consists of the subsidy itself plus the costs associated with initiating and administering the program. Subsidy costs are determined for the most part by local policy decisions and are discussed in the next section along with various methods of cost containment.

Administrative costs, on the other hand, are more difficult to predict or control. They are related not only to program policies but integrally to project demand and productivity. The major component of administrative costs is staff labor. In the user-side subsidy demonstrations funded by UMTA, permanent staff requirements averaged about 2.5 full-time positions once the projects were fully operational. Between one-third and one-half of the total staff time was devoted to subsidy distribution and redemption. The one major exception to this was in Danville, where exclusive use of vouchers eliminated the need for subsidy distribution outlets, and a computerized voucher-processing system minimized staff time for subsidy redemption. These features combined to reduce permanent staff requirements to just more than one half-time position.

Typical monthly operating costs for four user-side subsidy demonstrations are shown in Table 1. In every site except Danville, direct labor and overhead formed the bulk of monthly operating costs. Labor cost differences among the other sites reflect differences in wage rates and hours worked.

Looking at project costs on a per-trip basis, it becomes obvious that administrative costs are relatively independent of the number of project trips actually taken. In both Kinston and Danville, for example, total monthly administrative costs were similar in magnitude. However, although Kinston generated only about 3000 project taxi trips per month, Danville's project taxi use averaged more than 7500 trips per month. Because the administrative costs could be spread over a substantially larger base in Danville, the average administrative cost per trip was only \$0.20 compared with \$0.64 in Kinston. Thus, the administrative overhead of running a user-side subsidy program appears to enjoy significant economies of scale, suggesting that the

Table 1. User-side subsidy monthly operating costs.

Item	Danville	Montgomery	Kinston	Lawrence
Administrative (\$)				
Labor ^a				
Direct labor	475	2125	1400	2582
Overhead (25 percent)	75	531	350	646
Total labor	550	2656	1750	3228
Office rental and supplies	350	1773	200	555
Promotion and advertising	100	83	10	63
Computer	500	325	-	-
Total administrative	1500	4837	1960	3846
Avg administrative cost per trip ^b (\$)	0.20	1.60	0.64	0.48
Avg subsidy per trip (\$)	1.02	1.45	0.83	0.76
Total public cost per subsidized trip (\$)	1.22	3.05	1.47	1.24

Note: Danville cost figures reflect a typical project month in 1976; cost figures for the other three sites reflect typical project months in 1979.

^aStaff time and average wage rate: Danville, 88 h/month @ \$5.40; Montgomery, 404 h/month @ \$5.01; Kinston, 367 h/month @ \$3.81; Lawrence, 350 h/month @ \$7.38.

^bAverage number of subsidized taxi trips per month (1979): Danville, 7500; Montgomery, 3016; Kinston, 3070; Lawrence, 8080.

Table 2. User-side subsidy annual program costs.

City	Total Program Costs (\$)	Administrative Cost (\$)	Subsidy Payments (\$)	Project Demand (no. of trips)	Avg Cost per Trip (\$)	Administrative Cost per Trip (\$)
Danville (1976)	109 715	18 000	91 715	89 900	1.22	0.20
Montgomery (1979)	110 447	58 044	52 403	36 187	3.05	1.60
Kinston (1979)	54 251	23 520	30 731	36 832	1.47	0.64
Lawrence (1979)	119 770	46 116	73 654	96 954	1.24	0.48
Kansas City (May 1977-April 1978)	137 479	48 120	89 359	56 383	2.43	0.85
Los Angeles (December 1978-November 1979)	142 250	31 576	110 674	59 323	2.40	0.53
Seattle (1980)	199 000	59 000	149 000	44 600	4.46 ^a	1.12
Milwaukee (1980)	993 348	75 500	917 842	136 770	7.26 ^a	0.55

^aThe relatively high average cost per trip in Seattle and Milwaukee can be attributed to the high meter-based taxi fares in these cities and local policy decisions to not limit subsidy payments by distance traveled.

concept may be financially viable even in larger urban areas.

In order to get a complete picture of the public costs for a user-side subsidy trip, the average per-trip subsidy payment must be added to the administrative costs. In the demonstration sites, per-trip subsidies varied from a low of \$0.76 in Lawrence to \$1.45 in Montgomery. Total public cost per subsidized taxi trip ranged from approximately \$1.20 in Lawrence and Danville to \$3.05 in Montgomery. All these costs are substantially lower than those observed for publicly owned or operated specialized demand-responsive transit systems.

Total annual costs for a user-side subsidy program are, of course, largely a function of total project demand. Table 2 presents a comparative summary of annual project costs for those user-side subsidy programs recently studied by the SMD Program. Although no general formula for estimating annual program costs readily emerges from these projects, a reasonable order-of-magnitude estimate can be made by assuming an administrative cost of \$40 000 to \$70 000 per year, depending on local wage rates, and adding to this an estimate of annual project demand times the estimated subsidy per project trip.

Subsidy Costs and Cost Containment

The costs attributable to user-side subsidy payments are the product of the average subsidy per trip and the total demand for trips by eligible users. Therefore, subsidy costs can be influenced through various combinations of adjustments in the per-trip subsidy amount, restrictions on project eligibility, and limitations on total subsidized tripmaking.

These methods of cost containment are discussed below.

Subsidy Limits

Subsidy levels in those projects evaluated by the SMD Program ranged from 50 to 95 percent of the unsubsidized taxi fare. These levels were generally set by local program policy and reflected trade-offs among taxi service quality, transit fare comparability, and overall program funding limits.

The subsidy level influences total subsidy costs in at least two ways. First, the higher the subsidy level, the greater the public expenditure per trip, independent of demand. Second, as the subsidy level increases, the per-trip cost to the user decreases, which causes overall project demand to increase because of negative demand elasticities. Evidence of demand elasticity with respect to changes in fares and subsidy levels comes from the Danville demonstration where a combined taxi rate increase and reduced subsidy level resulted in a 104 percent average fare increase for subsidized users. In response to this fare increase, there was a 28 percent decrease in overall project tripmaking, indicating a fare elasticity of -0.27. Therefore, although per-trip subsidy costs dropped by approximately 24 percent (from \$1.02 to \$0.78), total monthly program subsidy costs dropped by nearly 46 percent (from \$8200 to \$4400).

Besides adjustments in subsidy levels, many projects have placed ceilings on the total subsidy paid per trip. In Los Angeles, for example, a project user could travel any distance less than or equal to a meter fare of \$3.00 for \$0.15. Beyond this limit, the user paid at the metered rate. In Lawrence, any

taxi trip within the city boundaries or to specified locations just beyond the city limits, such as the hospital, can be paid in full with subsidized tickets. Trips to any other location can be paid with tickets up to a limit of \$1.50 (this being the maximum taxi fare for trips within the city). Additional fare charges must be paid in cash. In Milwaukee, the user is required to pay the first dollar of a taxi fare in cash and can then sign a voucher for any additional charges up to a \$7 maximum (\$10 for wheelchair users). For any charges beyond this maximum, the user must again pay out of pocket. The practical effect of a per-trip subsidy ceiling is to eliminate the risk of subsidizing a trip beyond a reasonable trip distance or beyond the boundaries of the program area.

Eligibility Restrictions

Another way to reduce total subsidy costs is to place tighter restrictions on who is eligible for the subsidy. By limiting eligibility to the most disadvantaged groups of potential users, a user-side subsidy program can reduce overall subsidy demand without adversely affecting those who need the subsidy most.

The two principal criteria used to restrict eligibility in user-side subsidy programs have been income and severity of handicap. In Pittsburgh and Milwaukee, eligibility is limited to handicapped people who cannot use conventional transit service because of their disability. The elderly who have no other qualifying disability are not eligible for the subsidies. In Seattle, the able-bodied elderly may register for the user-side subsidy program if their annual incomes are below specified levels.

Limitations on Tripmaking

A third method of subsidy cost containment that has been employed at several of the evaluation sites is to limit the number of subsidized trips an individual can take in a given time period. At those sites that used prepaid tickets or scrip as their subsidy mechanism, tripmaking limits were enforced by limiting the amount an individual could purchase in any one month. In Montgomery and Danville, where the use of vouchers precluded pretrip monitoring of purchases, redeemed vouchers were collected monthly, sorted by user ID number, and checked for possible violations of the established tripmaking limits. Individuals who were found to exceed the limit were issued warnings stating that continued abuse would result in forfeiture of subsidy privileges.

Other evaluation sites, most notably Seattle and Pittsburgh, have imposed no constraints on the number of trips subsidized users may take and have found little or no evidence of subsidy abuse or frivolous tripmaking. These findings, combined with the fact that effective trip-frequency monitoring procedures are both difficult and expensive, suggest that limitations on project tripmaking may not be an efficient method of cost containment for special-needs user-side subsidy programs.

Prevention of Subsidy Fraud

An issue directly related to cost containment and of major concern to policymakers is the potential for fraud within a subsidy program. Fraud not only drives up total program costs, it also reinforces negative public opinion and undermines the credibility of the program itself. In a user-side subsidy program, the potential for fraud exists with both the user and the transportation provider.

A variety of techniques have been implemented in user-side subsidy demonstrations to safeguard against user fraud. In-person registration was an integral part of many programs, and it effectively screened out individuals who were not eligible for the subsidy. Project identification cards, issued by the subsidizing agency, increased the risk to unauthorized users of being detected, and limits on project tripmaking or subsidy purchases decreased the benefits to eligible users of selling their subsidized trips to others.

In none of the projects studied by the SMD Program was there any significant evidence of user fraud. This observation held for sites that chose not to implement any of the above safeguards as well as those that did. Whether it was the absence of benefits that could be derived from user fraud or some common character trait that makes elderly and handicapped people inherently honest, it seems reasonable to conclude that user fraud is not a significant problem, at least among this target group.

Similarly, there was relatively little indication of fraud on the part of the service providers. In Montgomery, taxi operators who turned in what appeared to be altered or improperly filled out project trip vouchers were first warned and then denied reimbursement. Although this action did cause some operators to withdraw from the program, it also resulted in a substantial improvement in the quality and accuracy of the vouchers that were subsequently submitted. None of the sites that used tickets or scrip reported any evidence of fraud by taxi operators.

IMPACTS OF SUBSIDIES ON TARGETED USERS

User-subsidized taxi service provides eligible users with demand-responsive, curb-to-curb transportation service at a fraction of the cost paid by nonsubsidized taxi users. Moreover, at most of the sites studied by the SMD Program, subsidized users enjoyed the added benefit of exclusive-ride service, even though the programs were designed to subsidize trips on a shared-ride basis. Clearly, this represents a higher level of service than that found in other modes of public transportation typically available to the elderly and the handicapped. These level-of-service differences suggest that user-subsidized taxi service would tend to attract those target group members who are transit dependent and cannot afford to use full-fare taxis for all their travel needs.

Analyses of the four user-side subsidy demonstrations reveal that the projects were in fact successful in attracting those individuals who were most transit dependent and least able to afford full-fare taxi service. Equally important is the evidence of a self-selection process, whereby only those members of the target group most in need of user-side subsidies actually chose to register for and use the service.

The number of people who registered for the user-side subsidy programs in the four demonstration sites ranged from 26 percent of the estimated eligible population in Kinston to nearly 45 percent in Danville. However, registration did not necessarily imply active use of the subsidy program. In Kinston, more than 35 percent of those who registered for the program took no subsidized taxi trips during a typical month. In Montgomery, the percentage was closer to 90 percent. Average subsidized taxi use ranged from 0.56 trip per registrant per month in Montgomery to more than 4.5 trips per registrant per month in Kinston. Even in Kinston, however, average subsidized taxi use was

substantially below the maximum allowable number of trips (16-20) that could be taken.

When project registrants in Kinston and Montgomery were asked why they did not use the subsidized taxis more often, more than one third of them said that they did not need the service more than they were already using it. A substantial number of people who registered but did not use the service indicated that they registered simply to have a back-up means of transportation in case their primary (and preferred) means were ever unavailable.

There is no conclusive evidence from the evaluations that user-subsidized taxi services significantly increased the mobility of individuals who could not otherwise use conventional fixed-route bus service. In most of the demonstration sites, between 60 and 70 percent of project registrants were able-bodied elderly. Moreover, the percentages of the transportation-handicapped who registered for the subsidy programs were not significantly greater than those of eligible nonregistrants. Similarly, there was no indication from the demonstrations that transportation-handicapped registrants made greater use of the subsidized taxis than nonhandicapped registrants did.

Looking at the former travel modes of project users, it was found that 45 and 50 percent of the subsidized taxi trips in Montgomery and Danville, respectively, and 84 percent of the trips in Kinston were previously made by taxi at full fare. This suggests that many project users had no alternative to taxis and that the principal benefit that accrued to them because of the subsidy was a decrease in their overall cost of travel. After taxis, other formerly used travel modes included riding with others (16-26 percent), walking (6-15 percent) and, in Montgomery (which was the only site that had fixed-route bus service), the bus (15 percent).

There is as yet little quantitative evidence from the evaluations that user-side subsidies significantly increased the overall number of trips made by eligible users or that users traveled to different destinations or at different times than they did previously. Nevertheless, a substantial number of subsidized tripmakers at each site reported that their travel opportunities increased as a result of the subsidy program. Regardless of whether these travel and mobility changes are real or not, it may be concluded that those individuals who avail themselves of the subsidy are in fact deriving some measure of benefit from their actions.

IMPACTS OF SUBSIDIES ON TRANSPORTATION PROVIDERS

After the subsidized users themselves, private transportation providers receive the greatest benefits from a user-side subsidy program. In most of the projects evaluated by the SMD Program, the subsidies effectively lowered taxi fares for project users without reducing the per-trip revenues of the taxi operator. As discussed in the previous section, the lowered taxi fares resulted in significant mode shifts and possibly some induced taxi tripmaking by subsidized users. In either case, taxi operators realized an increase in the total number of taxi trips and hence an increase in their revenues.

The expectation of increased demand was sufficient incentive for most taxi operators to agree to participate in the user-side subsidy programs. Taxi operators were also willing to accept the additional administrative burdens and cash-flow risks of accepting noncash payments for project trips. As shown in Montgomery, however, taxi operators were not willing to accept less than full-fare reimburse-

ment in return for the expectation of increased demand.

A potential drawback to using private transportation providers to deliver special-needs transportation services concerns differences in service quality between subsidized and nonsubsidized trips. If, for example, taxi operators believed that subsidized trips were less profitable or more onerous than other trips, they might deliver lower-quality service (e.g., longer wait times, less courteous service, or even service refusals) to subsidized tripmakers. To date, however, there has been little or no evidence of unauthorized service discrimination toward subsidized taxi users in the SMD evaluations. In Montgomery, taxi operators were authorized by a local ordinance to hold service requests from subsidized tripmakers for up to 1 h in order to facilitate grouping of project trips. At most other sites, however, there was no foolproof way for taxi operators to identify the subsidized trips prior to payment.

It has been postulated that the extra demand for taxi service created by a user-side subsidy program would help to stimulate competition in the local taxi industry and encourage innovation. Findings from the SMD evaluations generally support this hypothesis, although much of the evidence tends to be anecdotal and site specific. In Kinston, for example, three taxi drivers, each with a significant clientele of subsidized users, ended their affiliations with established companies and began their own independent operations. In Lawrence, one highly entrepreneurial taxi operator purchased a lift-equipped minibus and then negotiated with the city to provide service for wheelchair-confined tripmakers, with the city subsidizing two-thirds of the fare. The wheelchair clients enjoyed a significant cost savings and the taxi operator effectively cornered the market for this specialized service. Finally, in Seattle, some taxi operators have filed lower fare rates for the elderly and the handicapped, presumably to increase their share of this market.

SUMMARY AND IMPLICATIONS FOR FEDERAL POLICY

The recent findings from the SMD Program and case-study evaluations have shown the user-side subsidy to be an efficient yet popular method of providing special-needs transportation services through private providers. The significant features of user-side subsidies that have been confirmed through SMD evaluation are summarized below:

1. User-side subsidies for elderly and handicapped tripmakers have been generally well received by the public.
2. User-side subsidies are adaptable to most local conditions and can be implemented without major changes to local transportation ordinances, fare structures, or operating practices.
3. Administrative costs for a locally funded user-side subsidy program are relatively modest and largely independent of total project demand.
4. The cost to the public to subsidize a trip through a user-side subsidy program is substantially less than the average per-trip cost of a publicly operated specialized transportation service.
5. Subsidy costs in a user-side program can be effectively controlled through such mechanisms as limits on per-trip subsidy payments, eligibility restrictions, and limits on total subsidized travel.
6. There has been little evidence of fraud by project users or transportation providers in user-side subsidy programs for the elderly and the handicapped.

7. User-side subsidies attract those individuals who are most transit dependent and most in need of the subsidized services. Eligible individuals with other means of transportation take few, if any, subsidized trips.

8. The principal benefits that accrue to subsidized users are a decrease in their travel costs for those trips that would otherwise have been made at full fare and a change from less-attractive travel modes such as fixed-route transit or walking.

9. Private transportation providers are generally supportive of user-side subsidy programs and are willing to absorb small administrative costs in return for the expectation of increased business.

10. There is some evidence that user-side subsidies stimulate competition among private transportation providers and serve as catalysts for innovation within the industry.

However, the most attractive feature of a user-side subsidy by far is its inherent efficiency. A user-side subsidy enables the subsidizing agency to target its program at those groups who are deemed to be most in need without having to extend benefits to other less needy individuals. Moreover, a user-side subsidy can be implemented with minimal interference in the operations and pricing structure of the local transportation industry. It therefore enables the subsidizing agency to utilize the efficiencies and productivities inherent in a competitive, free-market economy to obtain high-quality transportation service at the lowest cost. This combination of targeted benefits and competitive pricing minimizes waste and allows the subsidizing agency to allocate a greater proportion of its budget to direct subsidy benefits.

From a federal policymaking perspective, user-side subsidies seem to offer an efficient way of providing low-cost transportation services to those who really need them without the burden of substantial government intervention in private enterprise operations. Moreover, their ability to separate

income transfer payments from transportation operating costs could ultimately lead to more efficient allocation of federal, state, and local transportation funds. Social service agencies, for example, could extricate themselves from providing separate transportation services for their clients by sponsoring user-side subsidies on existing public and private transportation services. Public transportation would also benefit from widespread adoption of user-side subsidies. With the burden of providing low-cost transportation services to the transit-dependent borne by user-side subsidies, public transit operators could set fares to be more representative of actual operating costs and thereby reduce their operating deficits. Overall transportation subsidies should decrease under such a scenario, since only a subset of the total transit would be eligible for the user-side subsidies.

The application of user-side subsidies to fixed-route public transit services has already been successfully demonstrated in three SMD sites--Danville, Montgomery, and Lawrence. In each of these sites, the subsidized target group consisted primarily of the elderly and the handicapped. In future evaluation efforts, the SMD Program plans to investigate the feasibility of employing user-side subsidies for low-income transit users to offset the adverse effects of a systemwide fare increase.

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Economies of Scale in Transportation for the Elderly and the Handicapped

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The costs of 36 transportation services for the elderly and the handicapped were analyzed to determine whether there are economies of scale in the provision of special transportation. A U-shaped cost curve was found for unit costs as ridership is increased by increasing the service area. In the case of increasing ridership by increasing the number of trips within a fixed service area, there are decreasing costs per passenger trip and a U-shaped curve for costs per passenger mile. However, because small agencies receive more unpriced resources in the form of shared overhead and volunteer labor and because of increased management costs and quality of services, coordinated or consolidated services may not lead to lower unit cost.

The number of programs that provide transportation to the elderly and the handicapped either as a primary function or as a support function for an organization with another purpose has grown significantly. As a result, several agencies often provide similar transportation services to a similar or to

the same client group within the same service area. Many (1-3) have raised questions about the efficiency of this duplication of service and have suggested that such services should be coordinated or consolidated in order to save money or to produce more service for the same money. This recommendation is based on an underlying assumption that there are economies of scale in provision of special transportation. This paper presents the findings of a study undertaken for the Urban Mass Transportation Administration to test this hypothesis (4).

Increases in the scale of operation as measured by ridership can occur in two separate ways: by increasing the number of riders within a given area (for instance, by broadening the criteria for use of the system) or by increasing the service area of the system. Therefore the hypothesis of economies of