transportation services to the elderly. It should not be assumed that a single transportation service or a uniform mix of services will adequately serve the members of all life-style groups. Rather, the results of this study would suggest that there are a number of transportation markets among the elderly population. Although the operation of barrier-free buses and the implementation of fare-reduction programs will increase the accessibility of elderly persons who are relatively poor and live in densely populated areas, these same services will probably not be as effective in improving the mobility of suburban residents. Because many elderly suburbanites live great distances from transit stops and because the level of transit service is low, a relatively inexpensive door-to-door service may be more effective in serving the needs of the elderly in the suburbs. The results of additional studies, including attitudinal and behavioral surveys, should make it possible for transit operators to study more closely the travel needs of the elderly and determine the appropriate locations for the operation of transit and paratransit services.

The possibility of implementing a variety of transit services according to the specific needs of elderly life-style groups becomes especially important when one considers the travel demands of future generations of elderly persons. A recent study completed in Los Angeles County (3) showed that since 1940 there has been a strong and consistent trend toward suburbanization of the elderly population. If present trends continue, in coming decades the elderly can be expected to be more decentralized within urban areas and characterized by life-styles even more diverse than those of the elderly population of today. The transportation needs of the elderly will not be adequately served in the future if it is assumed that the elderly will be a homogeneous group with common transportation requirements.

ACKNOWLEDGMENT

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Evaluation of Pennsylvania's Free Transit Program for Senior Citizens

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The findings of an evaluation of Pennsylvania's Free Transit Program for Senior Citizens are reported. Impacts on both senior citizen users and participating transit operators are analyzed. Personal interviews were conducted with over 2100 elderly persons and 5 participating transit operators. Telephone interviews were conducted with an additional 154 older persons, and 36 transit operators returned written questionnaires. Based on these surveys it was concluded that the program has benefited senior citizens by enhancing their mobility. Individual trip making has increased by an average of 8.2 rides/month. In addition, new riders—generally those with lower incomes—were attracted to transit. Users reported significant cash savings, beyond the fare savings, as a result of being able to travel to lower priced stores. Transit operators generally felt positive about the program despite a dissatisfaction with the compensation received and the method of determining it. Operators enjoy an improved image in the community as a result of their participation while experiencing no major program-related cost increases.

On July 1, 1973, Pennsylvania initiated the first statewide Free Transit Program for Senior Citizens in the United States. The program, funded through the state lottery, involves 72 private and public local transit agencies that serve over 95 percent of all local transit ridership in the state. During 1973 and 1974, approximately 49 million rides were taken by senior citizens under the program at a cost to the state lottery fund of $10.8 mil-

lion. In succeeding years the program's cost and senior citizen ridership have increased. The reimbursement for 60 million free rides during the 1975/1976 fiscal year was approximately $12.8 million.

DESCRIPTION OF THE PROGRAM

The Pennsylvania program provides free transit to all persons aged 65 and older on any participating transit system during off-peak hours on weekdays and all day on weekends and holidays. Regular transit fare must be paid during peak hours—the weekday periods from 6:00 to 9:00 a.m. and from 3:30 to 6:30 p.m. Eligibility is determined when a medicare card or a senior citizen identification card (furnished by the local transit agency) is presented to the transit vehicle operator or cashier at the time the fare would normally be paid. The program is restricted to local public bus, trolley, and subway-elevated systems that operate regular schedules over fixed routes. Travel by intercity carrier, school bus, charter or excursion bus, limousine, and taxi is not covered. Participating transit properties are compensated for the estimated transit losses incurred but are not compensated directly for the additional rides generated as a result of the program.

STUDY DESIGN

In January 1975, the Pennsylvania Bureau of Mass Transit Systems, with support from the Urban Mass Transportation Administration, undertook a study to evaluate the impact of the Pennsylvania program on transit riders and operators. Elderly transit riders were interviewed on board transit vehicles during peak and off-peak hours. Each interview averaged 8 to 10 min and was conducted by a professionally trained interviewer. A total of 2136 interviews were completed in the cities of Pittsburgh, Erie, Lancaster, Lebanon, and Clearfield. The sample was statistically selected to ensure randomness and reliability, and the cities were chosen to reflect geographic distribution, size, and system stability.

In addition, 154 telephone interviews were completed in Pottsville, a city whose transit operator was originally involved in the program but later discontinued participation. Finally, a mail-survey questionnaire was sent to all transit operators in the program; this was supplemented by in-depth interviews in the cities where on-board surveys were conducted. Of the 72 participating operators, a total of 36 responded.

The underlying rationale of a free-fare program is to improve the ability of elderly citizens to participate in community life by removing the financial burden of riding public transportation. It is well known that the elderly are generally poorer and more often without access to an automobile than other groups. Free transit, therefore, has intrinsic appeal as a means for assisting the elderly to achieve greater mobility. But the supplier of these services considers the effects of such actions in terms of overall operations and systems management. For these reasons, this study addressed two areas of major program impact: (a) the effects of the program on senior citizens and (b) the perceptions and experiences of transit operators in the program. Potential benefits of program ideas for the nonriding elderly were not within the scope of the study.

SURVEY OF SENIOR CITIZEN TRANSIT RIDERS

The on-board survey yielded information about the free transit program's impact on senior citizens who now ride transit. An analysis of these data led to the findings summarized below, which cover personal and transit-related characteristics, trip characteristics, trip frequency, and personal attitudes and opinions about the program.

Ridership

The effects of the program on ridership were identified for the following categories of riders:

1. Senior citizen riders who used transit before the program and were making new trips;
2. Senior citizen riders who used transit before the program and were not making any more trips than they did before;
3. New senior citizen riders attracted to transit because of the program; and
4. New senior citizen riders attracted to transit for reasons other than the free-fare program.

Of all elderly riders interviewed, 85.5 percent had used transit before the free-fare program and 14.5 percent were new. Nearly one-third of the previous riders reported making more trips than before, and more than half of the new riders began to use transit because of the free fare. More detailed breakdowns of these data are given in Table 1.

Elderly riders who used transit before the program have had the "transit habit" for a long time. The average is 30 years; 60 percent have used transit service for 20 or more years.

The free-fare program was the principal reason for using transit cited by 56.6 percent of new riders. Changes in automobile availability were cited by 23.4 percent, and the remaining 20 percent cited job or residence changes as their principal reason. Publicity in local newspapers was the major source of information about the program cited by 43.1 percent of the respondents. A specially prepared pamphlet describing the program was cited in only 3.7 percent of the responses.

Senior citizen transit riders were found to be primarily female (63.7 percent). This can be attributed to the higher female to male population ratios in recent years and the greater dependency on transit by women who do not drive or own an automobile. However, of new riders attracted to transit by the program, 52.1 percent were women and 47.9 percent were men, which undoubtedly reflects the higher proportion of males in the previously untapped pool of transit riders.

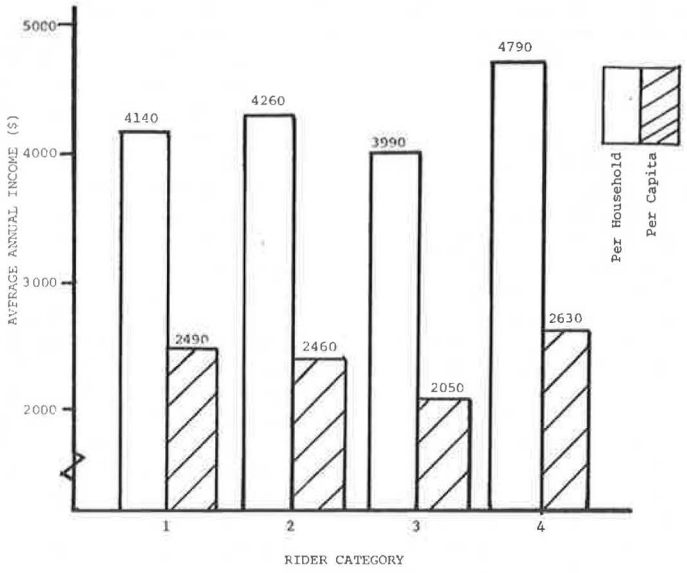
Income-related comparisons by category of transit rider are shown in Figure 1. Income of elderly transit riders was significantly lower than that of elderly persons in the general population. Over 50 percent reported annual household incomes of less than $3000, and about 85 percent reported annual incomes of less than $6000. The average annual household income of all the transit riders who were interviewed is $4220, and their per capita income is $2440. The income of new riders is significantly lower, however, than that of previous riders, which demonstrates the basic effect of the free-fare program—removal of the economic barrier that prevents some elderly persons from riding transit.

Another basic need served by transit is that of the captive rider, who is characterized by a lack of access to transportation by automobile because of (a) no driver's license, (b) no automobile, or (c) no opportunity to ride with others. Only 22.8 percent of the senior citizen respondents had a valid driver's license, and 14 percent had a license and an automobile. Of the 86 percent without a license or an automobile, approximately 65 percent said that they had difficulty getting a ride from relatives, friends, or neighbors when they wanted to go somewhere.

Table 1. Distribution of senior-citizen transit riders by rider category.

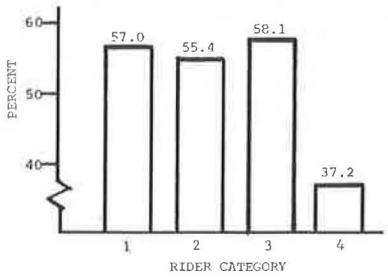
Rider Category	Distribution (%)					
	Pittsburgh	Erie	Lancaster	Lebanon	Clearfield	All Sites
Previous riders taking new trips	27.9	28.1	28.2	23.9	17.1	27.1
Previous riders not taking new trips	60.7	48.9	61.2	62.8	59.2	58.4
New riders attracted by program	7.0	14.8	4.7	5.1	10.5	8.2
New riders not attracted by program	4.4	8.2	5.9	8.3	13.2	6.3

Figure 1. Average annual income per household and per person for senior-citizen transit riders.



If all elderly transit riders are considered, then about 55 percent can be classified as transit captives. Many more new riders than previous riders tended to have a license and an automobile. Nevertheless, if the ability to get a ride by automobile is the criterion, then a slightly higher proportion of new transit riders are transit captives. The proportions of captive transit riders in each of the four rider categories are shown in Figure 2.

Figure 2. Percentage of senior-citizen riders who are captive transit riders.



Trip Characteristics

Access to the transit system is perhaps the single most important level-of-service variable considered by the elderly. Almost all senior citizen transit riders must walk to the bus stop or train station. About 88 percent of those interviewed cited walking as their access mode. Of the remainder, 10.3 percent arrived by bus and only 1.2 percent by automobile. Those elderly who transferred from another bus invariably reached that bus by walking.

Figures 3 and 4 show home-to-transit and destination-to-transit walk times and distances for senior citizen transit riders. The average walking time to a bus stop from home was found to be 4.3 min; only 6 percent of all transit riders reported walking more than 15 min to

Figure 3. Home-to-transit and destination-to-transit walk time for senior-citizen riders.

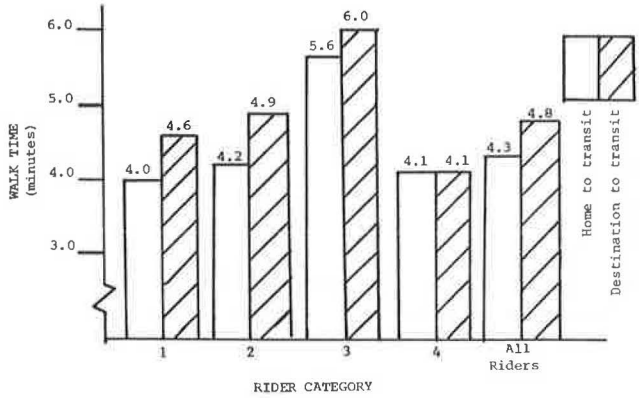
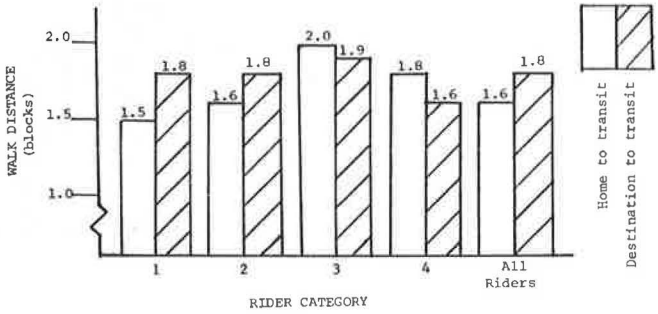


Figure 4. Home-to-transit and destination-to-transit walk distance for senior-citizen riders.



catch a bus or a trolley. Average walking times at the destination were slightly higher, averaging 4.8 min, which implies that the elderly may be more sensitive to improved services near home and would be willing to walk longer distances in order to reach a destination.

New riders attracted because of the program walked significantly longer distances to reach a bus or a trolley than did others. For trips from home, the average walk time was 5.6 min, and from the transit stop the time was 6 min. This is a positive indication that the elimination of a fare encouraged some who live farther than usual from a bus stop to ride the bus; these represent captive riders who under existing levels of service would normally not ride transit.

Transit riding by the elderly during off-peak hours serves many purposes, including shopping (43.8 percent), social and recreational travel (18.6 percent), personal business (15.6 percent), medical and dental visits (9.1 percent), and work (5.5 percent). Senior citizen group activities accounted for only 1.9 percent of the trip purposes cited by respondents, and only 2.5 percent of the responses cited riding the bus simply to pass the time of day. It is estimated that about 75 percent of all transit trips by the elderly are made for essential purposes include personal business, work, medical and dental visits, and shopping.

Shopping trips accounted for more than 50 percent of new rides attracted by the program. Other kinds of trips that increased significantly were those whose purposes were to ride the bus (4.5 percent) and to participate in senior citizen activities (2.8 percent). Figure 5 shows a comparison by trip purpose of new rides attracted because of the program and all other rides. New trips not previously taken by another mode were made mostly for shopping purposes (57.3 percent); 7.3 percent of such trips were made just for fun. Less than 3 percent of those interviewed had been diverted from another mode because of the free fare, and of these nearly 54 percent rode transit for the purpose of shopping.

The distribution of trip making by the elderly throughout the 9:00 a.m. to 3:30 p.m. free-fare period does not indicate any marked peaking tendencies but rather a uniform level of use. The highest proportions (about 20 percent) occurred between 10:00 and 11:00 a.m. and 2:00 and 3:30 p.m. More than 25 percent of all new rides attracted by the program were taken between 9:00 and 10:00 a.m. or between 2:00 and 3:30 p.m. It was found that some of the rides intended for these periods were inadvertently being taken during peak hours (21 percent of new riders attracted to transit by the program were riding during peak periods).

Trip Frequency

Trip frequency refers to the number of trips made by a transit rider per month or per week—a useful figure for establishing the magnitude of trip making under a variety of circumstances and conditions and for describing the additional trip making that occurred as a result of the free-fare program.

Although no detailed counts are available, the data collected in this study make it possible to compute senior citizen ridership before the program was instituted. Off-peak individual ridership is estimated to have been 19.6 rides/month and peak ridership 5 rides/month. It is estimated that as a result of the program off-peak ridership increased by 45.9 percent, to 28.6 rides/month, and that peak-hour ridership decreased by 12 percent, to 4.4 rides/month. Ridership levels at each survey site are given in Table 2.

The intensity of off-peak transit ridership varies considerably: For example, 20.3 percent of respondents take fewer than 8 rides/month during off-peak periods whereas 23.1 percent take at least 20 rides/month.

Previous transit riders who were making new trips as a result of the program reported their off-peak ridership at 37 rides/month, considerably more than other previous riders (25.2 rides/month) and new riders attracted by the program (25.4 rides/month). The fact that new riders tended to make as many trips as most previous riders indicates that, by removing the cost barrier, the program met the latent travel demand of this economically disadvantaged group. Trip making during the peak hour, when a fare must be paid, averages about 4.4 rides/month for all senior citizen groups except those attracted to transit because of the program, for whom the peak-period trip average is only 1.8 rides/month.

Figures 6 and 7 show a comparison of monthly ridership levels for peak and off-peak transit trips by senior citizen riders. Because the city of Clearfield has no

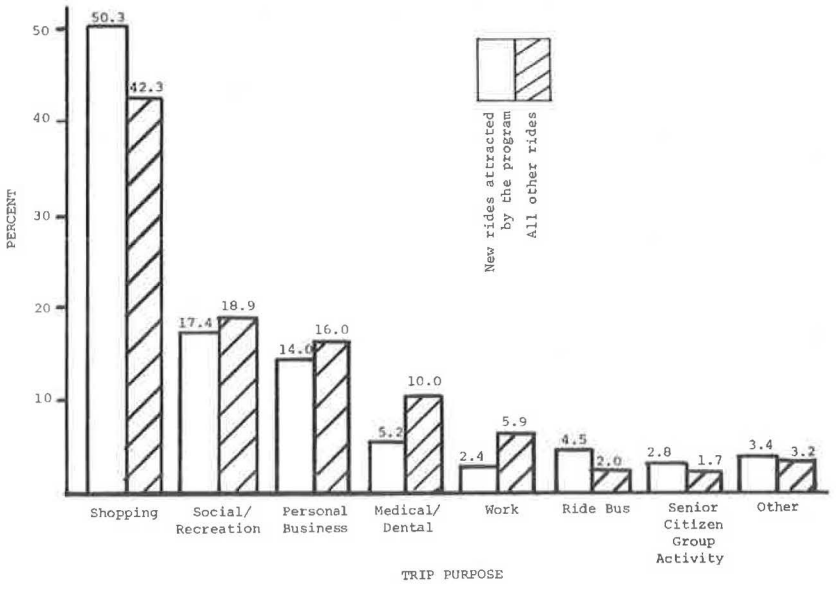


Figure 5. Percentage distribution by trip purpose of new rides attracted by the program and all other rides.

Table 2. Monthly transit trips taken by senior-citizen riders.

Trips	Pittsburgh	Erie	Lancaster	Lebanon	Clearfield*	All Sites
Off-peak						
Number	31.4	26.2	27.0	27.4	20.0	28.6
Standard deviation	24.4	20.4	22.6	16.0	13.2	13.8
Peak						
Number	5.6	2.8	3.2	5.6		4.4
Standard deviation	11.2	6.0	8.4	11.6		5.6
Percent of riders	39.8	32.9	32.8	41.3		35.5
Total						
Number	37.0	29.0	30.2	31.0	20.0	31.0
Standard deviation	26.8	21.2	24.2	18.8	13.2	14.8

*All rides considered off-peak because there are no peak-period restrictions in Clearfield.

Figure 6. Off-peak senior-citizen transit ridership.

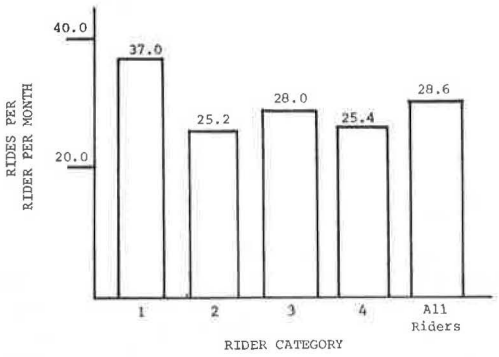
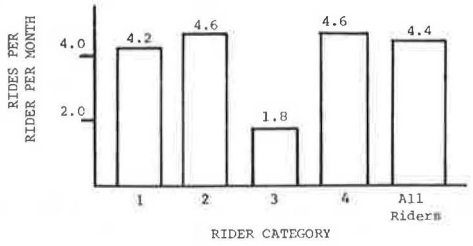


Figure 7. Peak-period senior-citizen transit ridership.



peak-period free-fare restrictions, trips taken there during peak periods are included in the off-peak totals. The average for all riders includes some respondents who could not be placed in one of the four rider categories.

Peak-period riding occurs mostly for purposes of work or to meet scheduled appointments. Almost 30 percent of peak-hour senior citizen riders either missed a bus or could not use the less frequently scheduled off-peak service. About 13 percent of respondents who were riding during the free-fare period would have shifted from the off-peak to the peak if fares were lifted for the entire day. Most of these trips would be taken during the 8:00 to 9:00 a.m. period.

New riders who were attracted by the program indicated that 19.7 percent of their trips were diverted from two other modes—automobile (47.9 percent) and walking (52.1 percent)—and that none of the trips would have been taken by taxi.

Attitudes of Transit Users

Without exception, senior citizen transit riders are grateful for the free transit program. Most know that the lottery supports it, and many purchase lottery tickets in return. Many, however, do not fully understand the financial arrangements: A common misconception is that the operators are compensated a full fare for each ride.

Most respondents, even when asked, were reluctant to be critical or to suggest service changes. Many expressed the hope that the program would be continued and that abuses such as excessive trip making would not jeopardize it.

Table 3 gives data on the benefits of the program cited by elderly riders. Financial savings were cited as a direct benefit of the free transit program by 85 percent of all senior citizens interviewed. Many indicated that the program was helping them to get around more than before (37.8 percent) and some that they were now less dependent on friends and relatives for transportation than before (11.1 percent). About 10 percent mentioned that it was no longer necessary to carry exact change—an annoyance that would probably have been cited by a larger number of riders if a list of suggested benefits had been provided. Approximately 6 percent cited courteous and helpful drivers as a benefit, indicating that personal attention is seen as an important attribute by older people.

A significant proportion of the respondents (56.3 percent) reported that the program had helped them to save money by taking advantage of lower prices in different stores. Because they could travel more freely, some comparison shopping was possible and they could take advantage of special sales. About 12 percent of those who reported savings thought that these had been substantial; 37 percent thought the financial savings were moderate. More than 75 percent of transit riders who were making more trips because of the program reported saving money by comparison shopping.

When asked for specific suggestions concerning any changes or improvements in the free transit program, almost 58 percent of the respondents indicated complete satisfaction with the program and the service provided. Although this result is gratifying, two factors must be kept in mind: the understandable desire of some riders not to criticize a benefactor and the fact that those using the service do so either because it serves them well or because no other alternative exists.

Table 4 gives the service improvements suggested by respondents. Of those who responded with suggestions, 51.7 percent asked for some extension of the free-fare time period. Most were not seeking to ride free during the height of the peak when conditions are crowded or rushed but rather to urge some additional flexibility in arrival and departure times. The next most cited suggestion was increased frequency of service, an improvement that ties in with extending the free-fare period. Seven percent of the respondents cited the need for a better attitude and greater courtesy on the part of drivers. Other suggested improvements included new buses, more extensive transit service, better vehicle design, and stops closer to the curb.

SURVEY OF TRANSIT OPERATORS

Operators' experience with the free transit program for

Table 3. Benefits of the free transit program cited by senior-citizen riders.

Benefit	Previous Riders Taking New Trips (%)	Previous Riders Not Taking New Trips (%)	New Riders Attracted by Program (%)	New Riders Not Attracted by Program (%)
Financial savings	86.9	85.1	85.0	75.2
Increased mobility	62.0	27.4	33.8	25.6
Greater convenience	12.3	13.8	25.4	20.1
No need to carry change	13.1	10.1	10.2	7.0
Less dependence on other modes	10.5	11.5	9.6	12.5
Courteous drivers	5.5	6.3	7.2	8.5
Other	7.7	10.9	14.5	10.9

Table 4. Service improvements suggested by senior-citizen riders.

Benefit	Previous Riders Taking New Trips (%)	Previous Riders Not Taking New Trips (%)	New Riders Attracted by Program (%)	New Riders Not Attracted by Program (%)
Lifting of peak-period restriction	57.1	50.5	43.2	40.3
More frequent service	26.7	25.6	33.3	32.7
Improved driver attitude	6.3	7.9	5.9	3.8
More extensive service	5.1	5.6	3.9	7.7
New buses and other specific improvements	23.1	27.2	29.4	25.0

the elderly was surveyed by means of personal interviews and a written questionnaire. The primary issues of concern were effects on ridership and revenue, problems of senior citizen identification, maintenance of published schedules and service, and administrative needs and costs.

Effects on Ridership and Revenue

Transit operators were able to furnish few data on the number of senior citizens who patronized their systems before the start of the free transit program. Among the approximately 40 percent who cited ridership figures, estimated increases in off-peak elderly ridership ranged from 50 to 140 percent. The average increase reported by operators was about 80 to 100 percent over 2 years, but no basic pattern could be identified to explain variations in reported figures.

The absence of necessary data hinders the state from estimating losses accurately, and both parties (the state and the operator) can claim hardship. Most operators (about 75 percent) expressed the feeling that according to the "estimated transit loss" formula they are being undercompensated. Although operators felt that they would be better off financially without the program, many also said that the image of public transit has been considerably enhanced.

Suggested ways to remedy the situation include full-fare reimbursement for each passenger carried, reimbursement for the actual cost of the ride, and reimbursement for a percentage of the actual fare. Some operators felt that senior citizens should pay a nominal fare—$0.05 or $0.10—and that the state should reimburse the transit operator for the remainder. One suggested method would involve the purchase of a ticket that, once used for a ride, could then be used by operators to claim payment from the state.

One deficiency in the reimbursement formula mentioned by some operators related to significant increases in ridership among the elderly that would have occurred even without the program. The base figures used in contracts with the state do not reflect increases in senior citizen population or recent developments such as new housing projects, shopping malls, and activity centers for the elderly. Operators are reluctant to furnish additional service to these new travel generators without further incentives.

Identification of Senior Citizen Riders

The use of a medicare card for identification of elderly riders appears to be working satisfactorily although some cheating is suspected. About 93 percent of all holders of medicare cards in Pennsylvania are 65 or older, but one operator claimed that a third of the free-fare riders on his system were ineligible. Little evidence was found to indicate that the free-fare privilege was being abused. To maintain strict control, however, and to avoid transfer of cards to ineligible persons, a personal identification card with a photograph would be desirable (though expensive).

Maintenance of Service and Schedules

In general, service capacity appeared sufficient to absorb riding increases during off-peak hours. Only three operators claimed that additional buses were needed because of increased ridership, but several operators did report changes in schedules to meet new demands. Little impact on peak-period loads was noted and, with one exception, no reduction in peak service was possible.

A significant number of operators complained that increased riding by the elderly seriously affected running times. Increased stopping and starting to pick up and deliver passengers and slower than average boarding and alighting times were cited as the principal causes of delay. Some vehicle operators were especially annoyed when schedule delays were caused by senior citizen riders making very short trips. In one case, the drivers' union was asked to request a schedule change to reflect longer run times on a route that was heavily used by senior citizens.

Although the program compensates for elderly riders attracted by the new service, little use has been made of this provision and many operators expressed reluctance to add routes where the rate of senior citizen patronage would be high. Contributing factors were uncertainty about compensation and the fear that permission to discontinue unprofitable service would be withheld. On the other hand, many operators stated that if the program were discontinued it would be necessary to reduce or eliminate service on lines where the rate of senior citizen ridership was significant.

Administrative Needs and Costs

The safety record of the program appears to be good.

No significant increases in accidents or personal injuries have been reported, and thus the program has caused no increase in insurance costs. But administrative and operating costs have increased, principally because of added stops and starts, heavier loads, and general wear and tear on equipment. Increases in fuel and repair costs are not easily determined, but it is reasonable to agree with the operators that they do exist. Further, detailed studies of maintenance and operating experience are required to determine the full effect of the program.

Administrative costs related to record keeping, report preparation, and rider identification represent a small fraction of the totals involved. Although few data are available to justify additional reimbursement to operators, about 40 percent of the operators do not feel that their compensation is adequate. Smaller operators in particular feel that the paper work related to the program poses a relatively greater burden for them than for larger properties that have more administrative staff assistance.

SUMMARY AND CONCLUSIONS

Pennsylvania's free transit program for the elderly has resulted in significant social and economic benefits for elderly transit riders. Its major objective—to enhance the mobility of senior citizens and open up to them a greater range of opportunities—appears to be fulfilled.

Respondents reported taking an average of 9 more off-peak rides a month because of the program. These consisted of 8.2 entirely new transit rides and 0.8 ride shifted from the peak periods. This represents a 45.9 percent increase in off-peak ridership by senior citizens. On the other hand, the combination of shifted rides and new peak-period rides generated by the program indicates a decline in peak-period ridership of 12 percent.

The program induced 37.2 percent of respondents to take additional trips by transit. These additional rides were primarily shopping trips although there were a considerable number of personal business, recreational, and medical-dental trips. Less than 20 percent of these trips had been diverted from other modes, among which the major alternative mode was walking.

New senior citizen riders attracted to transit by the program comprised 8.2 percent of current senior citizen riders. A further indication of the program's success in attracting new riders is the finding that the two survey sites where senior citizens had enjoyed reduced-fare service before the program had high proportions of new riders. The program has had considerable impact on these riders, who were found to have lower incomes and fewer opportunities to travel by other modes and to live farther away from a bus stop than riders who had previously used transit. They are now riding as frequently as most previous transit riders and account for 28.3 percent of all new trips generated by the program.

Current individual transit ridership among senior citizens at the five survey sites was found to be 28.6 rides/month during off-peak hours and 4.4 rides/month during peak hours for a total of 33 rides/rider/month.

Senior citizen riders reported experiencing substantial economic benefits under the program. In addition to saving the transit fare, 56.3 percent of the respondents were able to shop around more and take advantage of lower prices. Increased mobility and the related benefit of being less dependent on relatives and friends for rides were also cited by many respondents.

Among suggestions for changes and improvements in the program and in transit service, partial or complete elimination of restrictions on peak-period, free-fare riding and the availability of more frequent bus service were emphasized. Some common problems cited by senior citizen riders were the height of the first step on buses, the failure of buses to pull up close to the curb, and driver discourtesy.

The complete elimination of peak-period restrictions would result in a 65 percent increase in peak-period ridership by senior citizens and would require a 25 percent increase in the reimbursement participating transit operators receive under the program. The increase in mobility would not, however, be appreciable.

Most participating transit operators felt positive about the program despite their general dissatisfaction with the compensation they received. A common benefit that was reported was an improved working relationship with the communities served by transit. In a number of instances, driver morale appears to have been adversely affected because of increases in ridership and the associated pressure to meet schedules. Some drivers feel that senior citizens are frequently "joyriding" at the operators' and the public's expense. Undoubtedly, some elderly riders do make frequent short trips, but this type of trip making appears to be much less common now than it was early in the program.

Operators have for the most part been able to absorb higher off-peak loads without having to make major service changes. Only a few cases were reported in which additional buses had to be scheduled during off-peak hours. On the other hand, the incidence of senior citizens shifting from peak to off-peak riding was not of sufficient magnitude to allow operators to curtail peak-period service. A heartening result was that the high personal injury rates anticipated by many operators before the start of the program did not materialize.

The simplification of certain requirements and the clarification of the procedures by which operators are compensated for lost revenues would alleviate some of the confusion and poor communication experienced by many operators. Greater financial incentives may be needed to induce transit operators to improve service and to add new routes.

It would be advantageous for the state to subsidize the cost of advertisements for senior citizen transit services in local newspapers, which appears to be the most effective means of communication about the program. Periodic advertisements could be placed in local newspapers to inform persons who are just reaching the age of 65 or who have just moved into the area about available regular and special transit services for the elderly.

The current level and nature of transit service are inadequate to meet the needs of many senior citizens. Identifying the overall, statewide transportation problems of the elderly would help in evaluating this program's total impact as well as suggest possible ways in which it could be extended. A systemwide approach to addressing the travel-related needs of the elderly in Pennsylvania is yet to be developed. Such an effort might indicate other, more cost-effective ways of extending the program's impact.

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