Characteristics and Attitudes of Dial-a-Bus and Park-and-Ride Users in New York State

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This comparison of characteristics and attitudes of users of dial-a-bus and park-and-ride services is based on the results of two on-board surveys conducted in New York State. Survey results show that the two systems have distinctly different ridership use levels but that users of both the park-and-ride and dial-a-bus systems were generally satisfied with the service provided. Preferred service characteristics, user satisfaction with existing system characteristics, and written comments on the questionnaires are used to examine the riders' attitudes. Information is also presented on the riders' demographic characteristics, sensitivity to fare and gasoline price changes, and rates of use.

During 1973, the New York State Department of Transportation undertook a comprehensive study of the public transportation needs, system, and potential in Binghamton (Broome County), New York. As part of the Broome County Transit Study, user surveys of innovative transit services (dial-a-bus and park-and-ride) were required. The objectives of these surveys were to determine the characteristics of the market for such services and the attractiveness of service attributes to different user groups so that the demand for such services in the Broome County area could be estimated (1, 2).

The dial-a-bus service in Batavia, New York, and one of several park-and-ride routes in the Rochester, New York, area were selected to provide this user data. In general, the surveys showed that (a) demographic characteristics of dial-a-bus users in Batavia and park-and-ride users in Henrietta were not the same; (b) users of both services were generally pleased with the service, but thought improvements were needed; (c) park-and-ride users were far more sensitive to fare changes than dial-a-bus users; (d) riders on both systems were not very sensitive to changes in the price of gas or the possible introduction of gas rationing; (e) both systems relied heavily on regular users who made use of special subscription rates; and (f) individuals generally used park-and-ride more frequently than they used the dial-a-bus service, but the reverse is true on the basis of total population. A complete report on these surveys is available from the New York State DOT (6).

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ON-BOARD SURVEYS

On both the dial-a-bus and park-and-ride systems, only riders over 16 years of age were surveyed. There were a considerable number (30 percent of the total ridership) of riders under the age of 16 on the dial-a-bus system, but very few on the park-and-ride system.

All riders over the age of 16 were surveyed on the dial-a-bus system; however, only the riders on selected buses with high ridership levels were surveyed on the park-and-ride system.

RESULTS

User Characteristics

Batavia Dial-a-Bus

The dial-a-bus ridership consists mainly of women, and there is little difference among age categories. It might be expected that the major purpose for the use of the system would be among those more typically ascribed to women, e.g., shopping and social-recreational; however, some 75 percent of the total riders (73 percent of the women) use the B-Line service on a regular basis, either for work or school. Conclusions based on this percentage should not ignore the high proportion (53.4 percent) of females among the Batavia population.

The riders who use the B-Line service most frequently are men, in particular, those between 25 and 54. On the basis of the total population, however, the data indicate that women between the ages of 16 and 24 use the service most often and that women generally use the service at a higher rate than men (Table 1).

Henrietta Park-and-Ride

The majority of people who use park-and-ride are women, and there is a high percentage of younger women. Of the 264 questionnaires returned, only 8 indicated that the

purpose of the trip was other than work or school. This is not surprising if one considers that these park-and-ride services are designed to serve peak hours, as are most such services. The park-and-ride route does not serve shoppers well since there is little or no service during off-peak hours. The riders who use park-and-ride most frequently are women in the 25 to 54 age bracket; not only do more women than men use the service, but they generally use it more often than the men.

Table 1 indicates that, on a population basis, people in the 55+ age category make trips at a higher rate than those in the other age groupings. Women in the 25 to 54 age category, who have the highest trip rate among the riders, rank fifth when one takes into account the large percentage of the area's population they represent.

Comparison

The proportion of riders in certain age groups varies considerably between the systems studied. The most striking differences between the two systems are the percentages of men 25 to 54 and women 55 and older (Table 1). Of the riders on the park-and-ride system, 33 percent are men age 25 to 54; only a little more than 5 percent of the dial-a-bus users are in this group. In contrast, the proportion of older women is much higher on the dial-a-bus system; 34 percent of the riders on the dial-a-bus were women 55 years of age and older, but only 4 percent of the riders on the park-and-ride system are in this group.

Generally the riders on the park-and-ride system are younger than those using the dial-a-bus. Approximately 37 percent of the dial-a-bus users and only 8 percent of the park-and-ride users are age 55 and older. The total trip rates per rider are generally somewhat higher for park-and-ride users. The trip rates for shopping trips are negligible for park-and-ride users but are somewhat over one-half trip per week for the dial-a-bus patrons. This confirms the notion that the park-and-ride system is designed to service peak-hour needs.

Although the trip rates per rider are approximately of the same magnitude for both systems, the trip rates per resident are much higher for the Batavia system. The rates for female residents are almost 100 times larger for dial-a-bus users, and the rates for men are about 25 times larger for dial-a-bus users than the comparable rates on the park-and-ride service.

Demand Sensitivity to Fare Changes

Questions on both the dial-a-bus and park-and-ride surveys were designed to obtain information on whether fare increases or decreases might significantly affect the riding habits of the present users.

Batavia Dial-a-Bus

Respondents to the dial-a-bus questionnaire were asked, At what maximum fare would you continue to use the B-Line? Respondents were also asked, At this maximum, how many one-way trips per week would you make (using the B-Line service)? Table 1 indicates the maximum fare acceptable to the riders and their anticipated rate of use at this maximum fare. Clearly, ridership rates would not substantially change at these higher fares. In addition, generally women are more sensitive to fare changes, and older women react less strongly to fare increases than younger women.

Henrietta Park-and-Ride

In this survey, riders were asked, How many one-way trips would you make for a given purpose if the cost were 10 cents less, 10 cents more, 15 cents more, or 25 cents more?

It appeared that there were some difficulties in understanding the question, particularly by older riders whose response rate to this question was lower than that of the other groups. Older riders are the most sensitive to fare increases, but generally all groups responded strongly to fare changes. The results of the questions on sensitivity to fare changes are given in Table 1.

Riders' responses to the question, How did you obtain service? revealed that more than half of the riders did not make use of the parking facilities available to them because they extensively used kiss-and-ride (the park-and-ride user's spouse drives the user to the bus stop and has the use of the car for the remainder of the day) and a large number of people walked to the bus stop.

Responses to the question, How far did you travel to reach the park-and-ride lot? indicated that most riders lived fairly close to the point at which they boarded the bus. Of the 253 people who answered this question, 202 traveled less than 4.8 km (3 miles), and only 27 traveled more than 6.4 km (4 miles) to obtain service.

Comparison

It appears that the format of the question on fare sensitivity as asked in Henrietta was somewhat better than that used in Batavia. In both surveys, however, there were surprising responses. In Batavia, the respondents 25 to 54 indicated that they would increase their use if the fare were increased, and, in Henrietta, the respondents 55 and older replied that they would decrease use if the fare were lowered. The surprising response in Henrietta was caused by the small number of people in this category who answered the question; the response in Batavia was probably caused by misunderstanding of the question.

In both surveys, women of all age groups responded more strongly to fare increases than did men of the same age group. The major difference between the results of the two surveys occurred in the responses by the 55 and older group. In Batavia, the older riders were mildly sensitive to fare increases and had an elasticity of approximately -0.53. In contrast, the older users of park-and-ride reacted very strongly to fare increases and had an elasticity of approximately -3.5.

Demand Sensitivity to Gas Price

Batavia Dial-a-Bus

The questionnaire also obtained an estimate of weekly ridership use if the current gasoline price increased to $0.20 and $0.26/liter ($0.75 and $1.00/gal). The results showed little or no change in ridership use rates under each of those circumstances, contrary to what might have been expected.

Henrietta Park-and-Ride

In response to the question, Would you make greater use of park-and-ride if the price of gasoline increased to $0.26/liter ($1.00/gal)? approximately one-fourth of the respondents answered that they did not know or were not sure. The remaining 75 percent of the responses were evenly divided between those indicating that ridership would increase and those who would not make additional trips. The responses to the question, Would you make

Table 1. Population use rates, percentage of riders, and dial-a-bus and park-and-ride ridership use rates based on fares for male and female age groups.

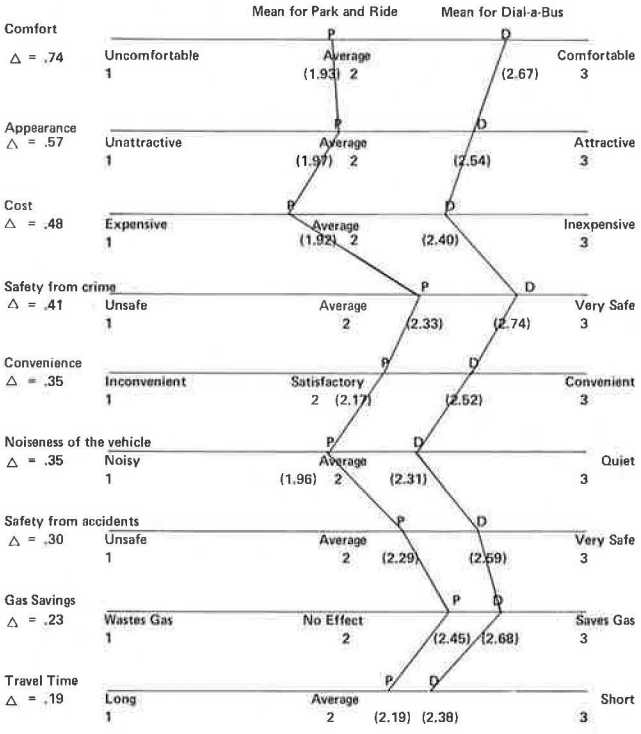
Item	Men			Women		
	16 to 24	25 to 54	55+	16 to 24	25 to 54	55+
Population use rate[a]						
Dial-a-bus	0.03	0.02	0.01	0.16	0.11	0.13
Park-and-ride	0.0014	0.0007	0.0026	0.0019	0.0008	0.0021
Riders, percent						
Dial-a-bus	4.62	5.20	2.89	21.97	31.21	34.10
Park-and-ride	6.53	33.06	4.89	23.28	28.16	4.08
Dial-a-bus						
Present fare, cents	54	49	45	42	49	51
Maximum fare, cents	67	67	57	56	61	62
Ridership use rates[b]						
Present fare	6.0	6.6	5.0	5.8	5.9	5.5
Maximum fare	5.6	7.5	4.2	3.8	6.0	5.2
Park-and-ride						
Present fare, cents	60	56	62	57	62	59
Ridership use rates[b]						
10 cents less	6.56	7.62	6.17	7.95	8.12	6.00
Present fare	6.38	7.59	7.92	7.91	8.57	7.10
10 cents more	5.88	5.91	4.17	5.44	5.83	2.00
15 cents more	3.88	4.38	2.83	4.02	3.42	1.70
25 cents more	3.31	3.52	2.67	2.93	2.12	1.00

[a]Trips per week per resident. [b]One-way trips per week.

Table 2. Park-and-ride users indicating given attribute as most important.

Attribute	Male	Female	Total
Vehicle noisiness	—	—	—
Comfort	3	3	6
Vehicle appearance	—	—	—
Ride cost	11	13	24
Service convenience	23	33	56
Trip travel time	5	6	11
Safety from crime	—	3	3
Safety from accidents	3	5	8
Gasoline savings	9	14	23
Parking fees savings	3	6	9
Service reliability	16	26	42
Scheduled arrival times	12	8	20
No need for extra car	17	14	31

Figure 1. Dial-a-bus and park-and-ride attitudes.



greater use of park-and-ride if gasoline rationing were introduced? were similar, although there was a slightly higher percentage who were unsure of the effect on their use of park-and-ride under this policy.

Satisfaction With System Characteristics

Batavia Dial-a-Bus

In Batavia, the riders' attitudes indicated satisfaction with the present service. The greatest dissatisfaction was expressed about the cost of the ride and the convenience of the service and represented only 6.2 percent of the riders in each case. The least amount of dissatisfaction, on the other hand, was expressed for the vehicle comfort and safety from crime.

Henrietta Park-and-Ride

As in Batavia, the riders' attitudes generally indicated satisfaction with the present service. In Henrietta, the greatest dissatisfaction was expressed about the comfort and the cost. Approximately 15 percent of those who answered this question selected the choices uncomfortable and expensive. Other attributes of the system that were rated below average were appearance and noisiness of the vehicle. The least amount of dissatisfaction was expressed about safety from crime, safety from accidents, gasoline savings, and savings of parking fees. In each of these cases, less than 4 percent of the respondents were dissatisfied.

Possibly a more important question is, What aspect of the service is most important to the rider's reactions? Thus, for example, a person might feel that a vehicle was noisy but that this fact might not be of sufficient importance to influence mode choice. Table 2 indicates convenience and reliability are the most important characteristics of the service.

Comparison

It appears that the riders on the Batavia dial-a-bus system are happier with their service than the riders on the Henrietta park-and-ride system. For most attributes, riders on the Batavia system had a lower percentage of unfavorable responses and a higher percentage of favorable ones than did the respondents on the Henrietta system. Riders on dial-a-bus were most dissatisfied with the cost of the ride and the appearance of the vehicle, and riders on the park-and-ride system were most dissatisfied with the cost of the ride and the comfort of the vehicle.

Figure 1 shows a more complete picture of rider attitudes toward each of these characteristics and shows that, generally, the riders on the dial-a-bus system are more pleased with their service than those on the park-and-ride system. For each characteristic, a value of three was assumed for the response that indicated much satisfaction, a one for a response that was dissatisfied,

and a two for a neutral response. The attributes are listed in order of the decreasing differences in mean responses between dial-a-bus and park-and-ride. For all attributes, the mean response by dial-a-bus users is more favorable than that of park-and-ride users.

A possible explanation of this phenomenon is that the users of the dial-a-bus in many cases had much less mobility before the introduction of dial-a-bus, and park-and-ride users in most cases could have made their desired trips by automobile or ordinary transit service. Thus park-and-ride users are subconsciously comparing their service to automobile service, and dial-a-bus riders compare their current situation with the past when a relatively expensive taxi was the only possible mode for many of the riders. Under these conditions, it is not surprising that the dial-a-bus users are more pleased with their service.

The mean responses closely agree for attributes that both groups rated high, such as safety from accidents and gas savings; for attributes that both groups rated relatively low, such as noisiness of the vehicle; and for attributes that both groups rated slightly above average, such as travel time. One of the reasons for the great disparity in the evaluation of comfort by the two groups is that all buses on the dial-a-bus system have approximately the same comfort level, but buses on the park-and-ride system may have either soft or hard seats.

Preferred Service Improvements

Batavia Dial-a-Bus

Riders were also asked about features they would like to see added to the service and about their attitudes toward certain characteristics of the present service and vehicles. The most frequently selected service feature was special buses and service for the elderly and handicapped. This is important in considering future alternatives open to the system. More important, perhaps, is to note that nearly as many riders chose to indicate their own desired feature and that these responses generally referred to a desire for more service: weekend service and more trips to particular destinations, especially to the area's community college. The survey does not provide information on the possible increase in use that might result from the implementation of these features, but it is clear that service reductions would not meet with the approval of system users.

Henrietta Park-and-Ride

In Henrietta, riders were asked what features they would like to see added to the present park-and-ride service. The greatest interest shown was in a late bus leaving the city of Rochester at 7:00 or 7:30 p.m. Forty-four of the 139 women and 8 of the 109 men were most interested in adding a bus at midday. In contrast, there were almost twice as many men as there were women who indicated they would most like to have coffee and doughnuts available on the bus. Slightly more women than men were most interested in bus service on Saturday. There was relatively little interest in buses to special events.

Comparison

Comparison of the two sets of responses is difficult since the choices were different in both samples. The fact that the nonresponse rate was twice as high in Batavia may indicate that many of the choices offered in the Batavia survey did not appear to be significant improvements. In Batavia, only special buses for the elderly had a significant appeal. In contrast, strong support was given to several choices by the respondents in Henrietta.

Written Responses

Just as the responses to the above questions give some indication of the riders' attitudes toward the service, written comments also are important indicators of rider attitudes.

Batavia Dial-a-Bus

A categorization of the written comments permits some comparisons to be made with the previous attitudinal data. Of those dial-a-bus riders who wrote a specific comment, the most frequent comment referred to the length of time that passes between the request for service and the vehicle's arrival. All of the 17 comments on this subject can be classified as complaints: the bus was too early and the rider would miss the ride or the bus was late and got the rider to his or her destination late.

The second most frequent comment concerned the convenience of the service. These comments were all favorable and indicated either that the service was available when needed or that particular activities could not be undertaken without the service. Only two written comments referred to special service or benefits for the elderly or handicapped; however this characteristic was selected as the most desired feature that could be included in the service.

Henrietta Park-and-Ride

Written comments are particularly important since they reflect the issues that are most important to the riders. The riders, by taking the extra effort to comment, are trying to ensure that someone is aware of their thoughts on the subject they address in their comments. Thus one would expect that the service attributes discussed by the riders in their comments would be those that riders indicated were the most important characteristics.

There is indeed a strong correlation. The attribute considered most important by the largest percentage of those using park-and-ride was convenience, and most comments dealt with route and schedule changes. Similarly the attribute considered most important by the second largest group of riders was reliability of service, and there were many written comments about the reliability of service. The third largest group of riders considered the elimination of the need for an extra car as the most important service characteristic. To some extent this is reflected by a number of the miscellaneous comments in favor of buses that formed the second largest group of comments.

Comparison

The written comments by both the users of the park-and-ride system and the dial-a-bus service indicated a deep concern about the convenience and reliability of the service that they use.

In the Batavia survey, waiting time (reliability), convenience of the service, and general comments in favor of the system were the most prevalent responses. Similarly, in the Henrietta survey, route and schedule changes (convenience), general comments in favor of the system, and comments on the reliability of the service were the most prevalent responses.

This agreement is a partial confirmation of the re-

sults of other studies (3, 4, 5) that have shown that reliability, frequency, and convenience are major concerns of transit users.

Comfort appeared to be of much greater concern to park-and-ride users than to dial-a-bus users. There were several comments about the seats, the need for air conditioning, and the need for enforcement of smoking regulations. There were almost no comments in these areas by respondents on the Batavia system.

CONCLUSIONS

Batavia Dial-a-Bus

1. Most riders are women;
2. Most riders use the subscription service;
3. Men use the system most frequently;
4. Riders are insensitive to changes in gasoline prices, and this implies that they are captive;
5. The riders would not substantially change their habits if the price of a one-way trip increased by as much as 10 cents;
6. Special buses and services for the elderly and handicapped and more frequent service are generally the most desired improvements to the present service;
7. Riders were generally satisfied with the vehicle and service, were dissatisfied with vehicle noisiness, and reacted most favorably to the safety from crime aspect; and
8. General unreliability of the service was the aspect most frequently commented on, but this was balanced by comments on the basic convenience and necessity of the service.

Henrietta Park-and-Ride

1. Most riders are women;
2. Most riders use a 10-trip discounted ticket;
3. Females 25 to 54 use the system most frequently;
4. Riders, particularly those who are 55 and older, would react strongly to a fare increase;
5. Ridership would increase somewhat if gasoline rationing was introduced or if the price of gas rose to $0.26/liter ($1.00/gal);
6. More than half the riders do not park their cars in the lot available for them;
7. Almost all riders travel less than 6.4 km (4 miles) to obtain service;
8. A late bus is the most desired improvement, but women are more interested in additional midday service;
9. Most dissatisfaction was expressed over the comfort and cost of the ride; and
10. Most important service characteristics were convenience and reliability of the service.

Comparative Conclusions

1. More men use park-and-ride than the dial-a-bus;
2. More elderly women use dial-a-bus than park-and-ride;
3. Park-and-ride users are more concerned about the comfort of the service than dial-a-bus riders;
4. Trip rates per rider are generally higher for park-and-ride than for dial-a-bus;
5. Trip rates per resident are much higher for the dial-a-bus than for park-and-ride;
6. Older riders on dial-a-bus are much less sensitive to fare changes than older riders on the park-and-ride services; and
7. Riders on the dial-a-bus rated a higher percentage of attributes of their service favorably and a lower percentage of attributes unfavorably than did users of park-and-ride.

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