TrailPass User Survey for the Philadelphia Regional Commuter Rail Lines

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ABSTRACT

This paper contains a description of the development and findings of a survey conducted among the users of a prepaid discount transit fare program known as the TrailPass. This program enables the holder of the TrailPass to make an unlimited number of trips on any commuter rail, rapid transit, bus, streetcar, or trolley line in the Philadelphia regional transit system, which is operated by the Southeastern Pennsylvania Transportation Authority. The survey was conducted in May 1984 by the Delaware Valley Regional Planning Commission as part of its regular work program for providing technical assistance to the transit operators. The survey results, which are based on a 16-percent sample, indicate that the TrailPass program can be beneficial to both transit operators and passengers. The TrailPass increases mobility and makes transit affordable, convenient, and attractive for the riding public because it allows the user to save time and money as well as make more trips. The increase in TrailPass sales reduces the cost of collecting and managing cash fares for the transit operator. Prepaid transit fare programs similar to the TrailPass could be implemented successfully in any metropolitan area with multimodal transit systems.

The Philadelphia regional high speed lines (commuter rail lines) form a key element in the total transportation system in the Delaware Valley Region. Thirteen lines connect Center City Philadelphia with other parts of the city and with the four suburban counties of Bucks, Chester, Delaware, and Montgomery. Approximately 37,000 commuters use the rail lines on an average weekday (1). Approximately 20 percent (7,100) of the daily commuters ride the commuter rail system using TrailPasses. The monthly TrailPass is valid for unlimited rail travel (peak and off-peak trains) between Center City Philadelphia and one of the other five fare zones for which the TrailPass is purchased. In addition, the TrailPass is good for unlimited transit rides in the City of Philadelphia and adjacent suburban transit fare zones, up to the zone shown on the face of the TrailPass. For example, a Zone 2 TrailPass is valid within the City of Philadelphia transit fare zones 1 and 2 and suburban transit fare zones 1 and 2 (which are adjacent to the city) as well as within fare zones 1 and 2 of the commuter rail system.

The price of the monthly TrailPass to individuals at the time of the survey ranged from $45,000 for the Terminal Zone to $115.00 for fare zone 5. Employees of companies involved in the Southeastern Pennsylvania Transportation Authority (SEPTA) Corporate Pass Program, known as COMPASS, can obtain TrailPasses through a 10-percent discount payroll deduction plan (2).

In May 1984, the Delaware Valley Regional Planning Commission (DVRPC) conducted a survey among the users of the SEPTA TrailPass program to obtain information that would assist SEPTA in (a) developing marketing and promotional programs for the high speed lines and (b) assessing their pricing policies. The purpose of this paper is to describe the TrailPass survey, summarize its results, and highlight the major findings. The results of the survey may be useful to other transit operators in establishing and administering prepaid transit Pass programs that reduce the cost of fare collection and make transit more affordable and convenient for the riding public.

DESIGN OF THE SURVEY QUESTIONNAIRE

The survey questionnaire, shown with survey findings in Figure 1, was designed by DVRPC in cooperation with SEPTA. The questionnaire surveyed TrailPass buyers on three general issues: (a) characteristics and frequency of TrailPass use, (b) attitudes and perceptions, and (c) demographic and socioeconomic characteristics. The questionnaire was made as simple as possible so as to be self-explanatory.

Frequency and Characteristics of TrailPass Use

Past experience from similar surveys indicated that some respondents would have difficulty in correctly specifying the number of trips made using the TrailPass (3). Therefore, an assessment of weekly trips made by the TrailPass users was obtained via two independent questions. Question 5 asked for the number of days per week that the TrailPass was used, and Question 6 asked directly for how many times per week the TrailPass was used on the regional high speed lines for all travel purposes. For example, if a respondent used the Pass five days a week, the answer to Question 6 must have included at least 10 weekly uses.

Question 7a asked for the number of weekly trips made on the SEPTA City Transit Division and Question 7b was included to determine which City Transit Division routes were regularly ridden by TrailPass users when they transferred from the regional high speed lines to transit routes and when they made supplemental trips. Question 7c asked for the purpose of the trips made on the transit system using the TrailPass. (The response to this question defines the type of these transit trips and determines whether they are made to complete the journey-to-work trips, or whether they included new trips that might not have been made if the TrailPass had not been available.) Question 1 was included to measure the frequency of TrailPass purchase. In this question,

(Numbers in boxes are the answers in %.)

1. How often do you buy the TrailPass? [78] Every Month [19] Most Months [3] A Few Times Per Year

2. Why do you use the TrailPass? [20] Saves time [38] Saves money [26] Convenient [14] No Need For Having Cash
   [2] Other (Specify)________

3. How much do you pay for your TrailPass? $________

4. How much do you think you save monthly by using the TrailPass? [9] Less than $5.00 [47] $ 5.00 - $15.00 [23] $15.01 - $25.00 [9] $25.01 $35.00
   [7] $35.01 - $50.00 [4] More than $50.00

5. How many days per week do you use your TrailPass? [3] 4 or less [84] 5 days [10] 6 days [3] 7 days

6. How many times per week do you use your TrailPass for riding SEPTA's commuter rail trains? [3] 8 or less [74] 9 - 10 [15] 11 - 13 [5] 14 - 16 [4] 17 - 24 [1] 25 or more

7. Do you use your TrailPass to ride SEPTA's Subway-El, Trolley or bus routes? [76] Yes [24] No

   a. If yes, how many times per week do you use transit routes? [61] 8 or less [25] 9 - 10 [7] 11 - 13 [4] 14 - 16 [3] 17 - 24 [1] 25 or more

   b. If yes, what SEPTA route(s) do use? [37] Bus or Trolley [37] Market-Frankford [15] Broad St. Subway [11] Subway Surface Lines

   c. If yes, what is the purpose of your trip(s)? [43] Go to Work or School [26] Shopping, Lunch, etc. [20] Midday Work Activities [10] Go Home from Rail Station

8. What do you recommend for increasing the sale of TrailPasses?
   [38] Price Adjust. [5] More Sales Locations [10] More Advertise. [7] Use of Credit Cards
   [19] Parking Privileges [14] Weekly TrailPass [7] Other (Specify)________

9. If TrailPasses were discontinued, would you [2] Purchase Daily Tickets? [56] Purchase 10-Trip Tickets?
   [8] Use Other Transit Routes? [12] Drive Alone? [18] Carpool Vanpool? [3] Use Others (Specify)________

10. Sex: [51] Male [49] Female

11. Age: [1] Under 18 [45] 18-34 [24] 35-44 [17] 45-54 [13] 55-64 [1] 65 or over

12. Annual household income: [11] Under $15,000 [26] $15,000 to $24,999 [21] $25,000 to $34,999 [21] $35,000 $49,999 [21] $50,000 or more

13. Where do you live? [11] Bucks County [9] Chester County [18] Delaware County [28] Montgomery County
    [31] Philadelphia [3] Other (Specify)________

FIGURE 1 TrailPass survey results in percent.

the respondent was to indicate whether he or she purchased the TrailPass every month, most months, or only a few times per year. The third question asked for the price of the TrailPass purchased so that the characteristics of users could be identified by fare zone.

Attitudes and Perceptions of TrailPass Users

Questions 2, 4, 8, and 9 were designed to measure the attitudes and perceptions of TrailPass buyers concerning the TrailPass. The second question solicited the purchaser's reasons for buying the TrailPass. Four specific responses were given relating to time, money savings, and convenience. Because SEPTA desired to decrease costs by reducing the amount of cash fare payment, this aspect of operation was listed separately. Additional space on the questionnaire was also provided in which respondents were asked to indicate any other reasons they may have had for buying the TrailPass.

Question 4 requested the respondent to indicate the amount of money he or she saved monthly by using the TrailPass. This question was included to measure the perceived savings of TrailPass users. The perceived savings could be compared with actual savings computed from the frequency of TrailPass use, including the number of trips made on the transit system, collected in the other sections of the questionnaire.

Question 8 asked for any recommendations that the survey respondent may have had concerning increasing the sale and use of the TrailPasses. The response to this question should give guidance to SEPTA for marketing of the TrailPasses. Six predefined options were given relating to price, sales locations, advertisements, use of credit cards, weekly TrailPasses, and parking privileges. In addition, space is provided for the respondent to recommend other ideas that may increase TrailPass sales.

Question 9 was intended to determine whether TrailPass users would continue to use the regional high speed lines without the TrailPass program. It identifies travel options that TrailPass buyers might have if TrailPasses were discontinued. Responses to the categories "Purchase daily tickets" and "Purchase 10-trip tickets" indicate continued use of the regional high speed lines. Three other travel options are also specified, including the switch from the railroad to the automobile or to the transit system.

Demographic and Socioeconomic Characteristics of TrailPass Users

Questions 10 through 13 were designed to identify the railroad passenger's demographic and socioeconomic characteristics, including sex, age, annual household income, and place of residence. These standardized questions are usually included in DVRPC transit surveys to build a data base for planning purposes and cross-classification of the survey results (3,4,6). This information is also useful for TrailPass marketing research and for identifying population groups that benefit from the TrailPass program.

SAMPLE SIZE

The response to each entry in the questionnaire is a binomial random variable. Assuming that the error distribution of this variable is normal, the sampling error is related to the sample size as follows (6):

$$h = \left\{[(1.96)^2/n]\ p \cdot q\right\}^{1/2} \qquad (1)$$

where

- h = error of sampling expressed in percent variation from the real or true value of the population,
- Z = confidence coefficient (Z) that corresponds to the 95 percent level of confidence in the estimation of the total proportion (P),
- p = probability of the event's taking place (the percent response to a survey question),
- q = 1-p, and
- n = sample size.

The estimation of the sample size (n) for a specified confidence interval (z) and a tolerable error (h) depends on the values of p and q. To ensure that the sample size will be large enough to deliver the precision desired, the most conservative estimate for n is made by assuming p = q = 50 percent. For the purposes of this survey, the tolerable error was specified to be ±3 percent at a confidence level of 95 percent (1.96 from the standard normal probability table). By substituting these values into the formula with p = q = 0.50, the required sample size (n) is 1,067.

To estimate the total number of survey forms for distribution, two additional factors were considered (a) not everyone who receives the questionnaire returns it. From previous experience with similar surveys, it is appropriate to assume that only 35 percent of the questionnaires would be returned for processing; and (b) a portion of the returned questionnaires will be unusable because of incomplete, unreadable, or spurious responses. It is reasonable to consider that approximately 3 percent of the returned survey forms will be unusable for processing. Hence, the total number of survey forms that must be distributed to obtain the required sample size is 3,138 or about 45 percent of all TrailPass buyers in the region.

QUESTIONNAIRE DISTRIBUTION

Twenty-two sales outlets, in which almost 70 percent of all TrailPasses are sold, were selected for distributing the questionnaires. These outlets were scrutinized for representativeness in terms of sales volume, fare zone, and geographic location. These selected outlets are clustered in four major corridors extending southwest, west, north, and northeast from the Philadelphia Central Business District (CBD). Sample sizes ranged from 50 to 100 percent depending on the volume of TrailPass sales. If the volume of sales at a selected outlet was less than 80, then the total number of questionnaires for distribution was equal to the sales volume. Distribution of the TrailPass survey forms at the selected sales outlets was carried out by an agency called Blue Ribbon Services. This agency, under a contract with SEPTA, sells tickets to the users of the Regional High Speed Lines. A package containing the appropriate number of survey forms for each sales outlet was accompanied by a survey instruction sheet indicating that distribution was to be continued on a first-come, first-served basis until all survey forms had been dispensed.

SURVEY RESULTS

Of the 3,138 survey cards distributed, 1,201 (38 percent) were returned. The returned questionnaires were carefully reviewed and responses that were incomplete, biased, or unreadable were discarded before keypunching of the data for computer entry. In all, 1,161 survey forms were processed, representing approximately 16 percent of the total TrailPass sales volume. The number of the processed questionnaires was slightly higher than the required sample size (1,161 versus 1,067) and thus an adequate sample was obtained.

The following paragraphs contain a brief description of the survey findings that are shown in Figure 1. The answers to the survey questions were tabulated by a computer program developed previously by DVRPC for processing responses to similar surveys.

TrailPass Purchasing

The responses to the first question of the survey questionnaire indicated that 78 percent of the TrailPass buyers purchase their Passes every month. An additional 19 percent purchase their Passes most months. TrailPass purchasing consistency increases as the number of days of Pass usage increases. For example, 93 percent of the 7 days-a-week Pass users buy the TrailPass regularly compared to 76 percent of the 5-days-a-week Pass users. This high consistency of TrailPass purchasing reflects the customer's satisfaction with the program.

It should be noted that the Pass holders from the lower income groups are more consistent buyers than those from the higher income groups. Approximately 85 percent of the buyers with household incomes less than $25,000 purchase the Pass regularly while 72 percent with incomes above $35,000 are regular Pass buyers. Female Pass buyers are somewhat more consistent in purchasing the TrailPass regularly than men (78 percent versus 73 percent).

Pass buyers from Philadelphia are more consistent in buying the TrailPass than buyers from the suburbs. Eighty-two percent of the TrailPass buyers from Philadelphia buy the Pass regularly, while on the average, only 75 percent of the buyers from the four suburban counties are regular Pass Buyers.

Reasons for Using the TrailPass

As is shown in Figure 2, 38 percent of buyers cited money-savings as a reason for using the TrailPass.

FIGURE 2 Percent of TrailPass buyers by reason for purchase.

Twenty-six percent use the TrailPass because it makes travel convenient and another 14 percent use it because it eliminates the need for carrying cash. Some buyers suggested several additional reasons for using the Pass. These included parking availability and cost in Center City, free use of the other transit modes, and avoidance of driving during rush-hour traffic.

Perceived and Actual Savings

The average TrailPass buyer perceives a savings of approximately $18 per month. However, the actual savings computed on the basis of the number of trips actually reported (Questions 6 and 7) is nearly $33. This great underestimation of actual savings (approximately 83 percent) seems to indicate that TrailPass holders considered savings gained only on the commuter rail lines. Apparently, the use of buses or subway lines was not accounted for. It is interesting to note that some TrailPass holders indicated that they did not even know how to estimate their savings.

Nine percent of the users estimate their monthly savings to be less than $5, while 20 percent reported savings in excess of $25. Of the TrailPass users who ride 7 days per week, 35 percent save more than $15; only 9 percent of the 4- or-less days per week TrailPass users save as much. TrailPass buyers from the lower income groups enjoy higher savings than the buyers from the higher income groups because they use the TrailPass not only for work trips but for other travel purposes as well. For example, 50 percent of the TrailPass holders with incomes less than $15,000 save more than $15 a month, while only 40 percent of the TrailPass buyers with incomes over $50,000 save as much.

Weekly Usage of the TrailPass

The vast majority of the TrailPass buyers (84 percent) use the Pass 5 days per week. Only 13 percent use the Pass more than 5 days per week, while a small percentage (3 percent) use it less than 5 days per week. The average usage is 5.1 days per week. The highest average weekly usage was indicated by the buyers from the Terminal Zone (5.4 days per week).

TrailPass buyers with annual household incomes less than $25,000 enjoy higher than average usage (5.3 versus 5.1 days per week). The buyers from the $35,000-and-higher income group indicated the lowest weekly usage of between 5.0 and 5.1 days per week. Philadelphia has the lowest percentage (72 percent) of buyers using the Pass 5 days per week. However, as can be seen from Table 1 (based on responses to survey questions 5 and 13), Philadelphia has a higher percentage of resident TrailPass buyers riding 6 days per week than the suburban TrailPass buyers.

Frequency of TrailPass Usage on the Commuter Rail System

Most (74 percent) of the TrailPass buyers ride the commuter rail system 9 to 10 times per week. Fifteen percent ride from 11 to 13 times, while another 10 percent make more than 13 commuter rail trips per week. On the average, the TrailPass user makes 10.6 weekly commuter rail trips. The highest TrailPass weekly usage was indicated in Delaware and Philadelphia counties. The Terminal Zone Pass holders indicated the highest average usage--11.3 trips per week. This high usage reflects the high density of rail service operating in the Terminal Zone. The lowest average usage (10.0 trips) was indicated by the zone 5 Pass buyers. The TrailPass average weekly usage decreases as income increases. TrailPass holders with incomes under $15,000 make 11.1 trips per week compared to 10.2 commuter rail trips by TrailPass buyers with incomes over $50,000.

Frequency of TrailPass Usage on Transit Modes

As mentioned previously, the TrailPass enables the holder to ride any bus, subway, and streetcar route in addition to the commuter rail. Thus, nearly 8 of 10 TrailPass buyers indicated that they use the Pass to ride SEPTA's transit routes besides commuter rail. The majority (61 percent) of the TrailPass buyers use SEPTA's transit modes 8 or fewer times per week. Twenty-five percent of the TrailPass buyers use transit 9 to 10 times per week, while 7 and 4 percent ride the subway, buses, and trolleys 11-13 and 14-16 times per week, respectively. Sixty-three percent of these buyers ride the buses, subways, and trolleys to go to work, school, and other midday, work-related activities. Another 26 percent of the buyers use the Pass to go shopping, to lunch, and so forth, and 10 percent use the Pass to travel home from the commuter rail station.

Recommendations for Increasing TrailPass Sales

Nearly 40 percent of the TrailPass buyers recommended price reduction as a means of increasing sales. However, both parking privileges and the offering of weekly TrailPasses were favored by 19 and 14 percent of the buyers, respectively. An additional 10 per-

TABLE 1 Percentage of Resident TrailPass Buyers by County

No. of Days TrailPass Is Used per Week	Percentage of Residents by County					
	Bucks	Chester	Delaware	Montgomery	Philadelphia	Other
4 or less	2	1	4	3	4	3
5	93	94	81	90	72	89
6	4	5	12	6	18	8
7	1	0	3	1	6	0

cent recommended greater advertising to increase sales. This would make nontransit users as well as transit users aware of all the advantages of the TrailPass program.

There were some differences among the buyers' recommendations from the various fare zones (see Figure 3). For instance, more advertising was recommended by 20 percent of the buyers in the Terminal Zone but by only 5 percent of buyers in fare zone 5.

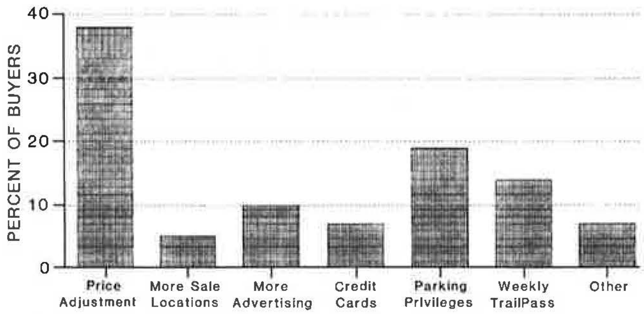

FIGURE 3 Percent of TrailPass buyers by buyers' recommendations.

Parking privileges were considered as important as money savings (35 percent) by TrailPass buyers in Chester County (fare zone 4), whereas only 11 percent of the Pass buyers in Philadelphia recommended parking privileges to increase sales. Some respondents recommended other strategies and actions that could increase the sales and use of TrailPasses. Following are the major suggestions:

1. Prepare a TrailPass lost-and-found policy that will clearly specify the information needed for refund or replacement.
2. Prepare complete information on the convenience, use, and benefits of the TrailPass and point out savings per month. Allow the use of credit cards at local stations. Offer more corporate discounts, especially to large companies with employee payroll deduction, and introduce discounts for students.
3. Provide free parking at stations, increase parking spaces at some stations and paved parking lots. Improve the appearance of some stations (i.e., remove graffiti) and clean train windows.
4. Run the trains on time. Increase the frequency of service and run more express trains from the outlying stations. Coordinate and update bus schedules to coincide with train service.

Travel Options in Case of TrailPass Discontinuation

In the event of TrailPass Program discontinuation, more than one-half of the present TrailPass buyers (57 percent) would seek other discount fares (10-trip tickets), and only 2 percent would buy daily tickets. Nearly one-third of the TrailPass holders would resort to the highway system and, of these, 18 percent would use cars or vanpools and 12 percent would drive alone. (These responses are shown in Figure 4.) The responses to this question are similar for the individual counties of the rail service area. However, the preferred travel options vary among the different income groups of TrailPass buyers as can be seen from Table 2 (based on responses to questions 9 and 12).

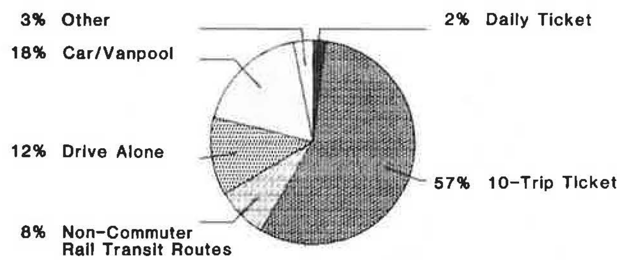

FIGURE 4 Percent of TrailPass buyers' options for alternative transportation means in the event of TrailPass Program discontinuation.

Age and Sex

The average age of the TrailPass buyer is 38. Sixty-nine percent of the riders are in the 18-44 age group and approximately 33 percent are in the 45-65 age group. Only 1 percent are over 65 or under 18. There are more female TrailPass buyers than male in the 18-34 age group (51 percent versus 38 percent), and more male buyers than female (27 percent versus 20 percent) in the 35-44 age group.

There is no significant difference between the total number of female and male TrailPass buyers (49 percent versus 51 percent) although, on the average, female TrailPass buyers are two years younger than male buyers. More than 50 percent of the female buyers are in the 18-34 age group while barely 40 percent of the male buyers are from this age group.

Annual Household Income

One-fourth of the TrailPass holders have an annual household income of $15,000-$25,000. An equal number (21 percent) of TrailPass buyers are in each of the three income groups over $25,000. The average TrailPass buyer's household income is $32,000 per year.

Nearly one-half of the TrailPass buyers from Philadelphia (48 percent) and Delaware (45 percent) Counties have an annual income of less than $25,000 a year, while the remaining counties have large

TABLE 2 Percentage of TrailPass Buyers Who Would Use Alternative by Type of Alternative and Annual Household Income

	Percentage of Buyers by Annual Household Income				
Alternatives to TrailPasses	Under $15,000	$15,000–$24,999	$25,000–$34,999	$35,000–$49,999	$50,000 or More
Purchase daily tickets	5	3	3	1	1
Purchase 10-trip tickets	45	56	57	56	65
Use other transit routes	14	11	6	6	4
Drive alone	12	10	11	15	15
Car or vanpool	19	18	20	19	14
Other	6	2	4	3	1

percentages of TrailPass buyer residents with incomes over $25,000. For example, 73 and 72 percent of the TrailPass buyers from Montgomery and Chester Counties, respectively, have annual incomes of over $25,000. The percentage of female TrailPass buyers in each income group declines as the income increases. Seventy-two percent of the female TrailPass holders have annual incomes under $15,000, while only 34 percent have annual incomes over $50,000.

FINDINGS AND CONCLUSIONS

The survey yielded the following data:

1. The TrailPass patrons are consistent buyers--nearly 97 percent purchase their Passes regularly;
2. Money savings were cited as the principal reason for buying the TrailPass--approximately 91 percent of the buyers save more than $5 per month;
3. Convenience and time saving were indicated by the buyers as other major reasons for purchasing the TrailPass;
4. The buyers recommended price reduction as a way to increase sales; however, both parking privileges at stations and the issuing of weekly TrailPasses were significantly favored by the buyers;
5. If the TrailPass program was discontinued, more than one-half of the buyers would seek another discount program (10-trip ticket). Vans and carpools would be chosen by 18 percent of the TrailPass buyers, while 12 percent would drive alone;
6. The average TrailPass buyer is 38 years old;
7. There is no significant difference between the number of female and male TrailPass buyers; and
8. The average household income of the buyers is $32,000 per year.

Because they regularly commute to work, the overwhelming majority of the buyers use the Pass 5 days a week. A TrailPass user makes about 10.6 commuter rail trips per week. The majority of the Pass buyers use the TrailPass an average of 6.9 times a week to ride other SEPTA modes. The TrailPass is used for making many trips on the transit system that would not be made if the TrailPass were not available (such as lunch hour or weekend shopping trips). The survey indicated that the TrailPass program increases the mobility of the lower income groups, particularly those who live in dense urban areas.

The survey also indicates that the TrailPass program can be beneficial to passengers as well as transit operators because it saves time and money. In addition, it advances cash flow, reduces the operating cost involved in administering cash fares, and makes the transit system more attractive and affordable for passengers. It can be applied successfully in any large region with extensive commuter rail network similar to the Philadelphia system.

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