

Consumer Preference in Transportation

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The objective of this study is to identify the characteristics of an ideal transportation system as conceived by the consumer. The results are based on a sample survey (550 individual interviews) in the Baltimore metropolitan area and selected adjacent rural areas.

The study is based on individual consumer attitudes and motivation rather than on consumer travel performance (the basis of OD and other travel mode analyses). It also measures the relative importance of influencing modal choice in scalar terms.

•IN the last decade several hundred urban area OD-land-use studies have been conducted. From these, plans have been developed based on empirical relationships of travel demand, utilizing such variables as income, cost, residence, land use, and trip purpose. The forecasting of modal choice has been based almost solely on such aggregate travel characteristics. Yet, a review of the literature reveals that relatively little is known about the why of transportation consumer behavior.

For example, all studies have compiled information concerning such facets as the total number of trips taken in a particular area at a certain time, the general purpose of these trips, the mode of travel used, and some of the variables shown to be related to modal choices, e.g., income level, car ownership, land use, and population densities. These data describe consumer activities in detail, but little was learned about the reasons for these activities. There is a scarcity of information concerning the factors that affect consumer behavior in transport, the relative importance of these factors, and the effect of varying trip circumstances on them.

Some progress beyond the above situation is reflected in recent studies made by the Stanford Research Institute (1) and the University of Michigan Survey Research Center (2) into the value of travel time, the importance of cost in transport decisions, and the effect of transportation on consumers' housing location decisions.

The Stanford Research Institute study, for instance, attempts to quantify the importance of travel time for automobile users. Results obtained in preliminary studies to date, however, suggest that route choice cannot be predicted with a high degree of accuracy by using a single variable such as travel time. Decisions of this nature are most likely a function of the existing total need structure of individual decision-makers, and these decisions are likely to vary considerably from time to time for the same individual as his needs fluctuate. It is also likely that the variables which influence his decisions will differ in their importance as the purpose changes.

The Michigan study suggests, perhaps predictably in our affluent society, that the pecuniary cost of alternative transportation modes relative to other factors appears comparatively unimportant for most travelers. A study conducted in Boston (3) found such factors as cost, convenience, comfort, status, parking, flexibility, and traffic and congestion to be among the more important factors in modal choice.

A central problem in modal choice research is illustrated by these studies, i.e., the lack of agreement concerning the definition and saliency of factors.

The University of Michigan study cites the following in their discussion of modal choice factors: frequency of service, whether have to change vehicles, flow of traffic

(stop-starts or moves right along), fastness—speed, convenience, expense, comfort, distance, and crowdedness.

The Stanford Research Institute study considered these factors: tension (fatigue), sense of freedom (escape from routine), challenge (feeling of mastery control), safety, urgency, distance, operating cost, scenery, travel time, stop signs, traffic, and ease of driving (light traffic, few stop lights or signs, no cross traffic).

The study undertaken in Boston resulted in the emergence of the following factors: cost, convenience, comfort, status, traffic and congestion, parking, need to own an automobile, availability of public transportation, flexibility, and weather.

Two conclusions are evident from these studies. First, although there is some similarity among the various lists, there is a marked difference of opinion concerning the most important attributes. Second, differences exist regarding the terminology and apparent connotations attached to various attributes.

In the three studies cited, several factors were assumed to exist, and data were collected about them. The University of Maryland study differs in its approach. It did not begin with a predetermined set of factors, but rather factors emerged through mathematical factor analysis of respondent ranking of the importance of 44 transport characteristic items (questions).

THE STUDY OF CONSUMER DEMAND FOR TRANSPORTATION

The broad objectives of the research effort under way at Maryland are (a) to identify and assess the importance of attributes of an ideal transport system as conceived by the consumer, and (b) to determine the extent to which consumers consider existing systems to satisfy this ideal. This paper reports on a pilot study conducted in Baltimore and directed toward the first objective.

The answers to 5 specific questions were sought. They are the first part of a 10-question general design for the total research effort. Answers to these 5 questions are necessary before it is possible to move to the second 5. The questions are:

1. What are the most important trip purposes for which consumers have different preferences for attributes of transport modes?
2. What attributes do consumers regard as salient in typical recent trips?
3. What is the relative importance of the attributes for each trip purpose?
4. What is the perceived relative importance of the attributes for all trip purposes (i.e., of an overall ideal system)?
5. To what extent, and how, are demographic and specific trip characteristics of respondents related to perceived importance of trip mode attributes?

Answers to the last 5 questions are now being sought in another study that compares consumers' satisfaction with their importance rating. These questions are:

1. To what extent do consumers perceive themselves as being satisfied with the attributes of commonly used and available modes?
2. What is the relative frequency of use of existing modes for each trip purpose?
3. How available are the alternative modes for each trip purpose?
4. How do existing modes compare to the ideal generally, and for each trip purpose?
5. To what extent, and how, are demographic characteristics of respondents and trip characteristics related to periodical satisfaction of trip method attributes?

METHODOLOGY

The Maryland study had several objectives. First, a determination of the usefulness of the questionnaire as an information gathering device had to be made. Second, it was necessary to make some generalizations about the importance of criteria for consumer modal decisions in the test area. Finally, the questionnaire had to be perfected for eventual general application on a larger scale. The sample used in this study reflects these objectives.

To assure adequacy of the instrument for larger scale application, both urban and rural areas were included. Thus, an opportunity was provided to identify significant differences between attitudes of urban and non-urban transportation consumers.

Two sampling universes were, therefore, required. One consisted of the Baltimore area. This sample of 300 households included the City of Baltimore and parts of surrounding Baltimore, Anne Arundel, and Howard Counties. The second included that portion of Baltimore County outside the urbanized area and consisted of 50 households.

The total sample of 350 households resulted in the completion of approximately 550 individual personal interviews. The interviewer provided assistance when needed and filled in some demographic data sections of the questionnaire. But for the most part, the questionnaire was selfadministered.

A psychologically-oriented statistical technique of factor analysis was used for the examination of the collected data. Factor analysis is a method of reducing a large set of variables to a smaller set through an analysis of the linear correlations among the original variables. The set of factors which results from the analysis incorporates most of the characteristics and information of the original variables, and thus gives a parsimonious, yet comprehensive, summary of the original data.

The sample contained a larger proportion of women and high-income households in comparison with relevant data of the 1960 Census of Population. Keeping these limitations in mind, and the tentative nature of findings of a small pilot study, the following points emerge.

FINDINGS

Trip Purposes

Respondents were asked to consider various attributes of travel in relation to four trip purposes: (a) to work or school, (b) in-town shopping-personal business, (c) in-town social-recreation, and (d) out-of-town social-recreation. Correlation and factor analysis results suggest that different trip purposes may not be as important a factor in affecting the perceptions of transport mode attributes by consumers as previously thought. The summary of importance of these attributes given in Table 1 suggests that, although absolute differences in the importance of attributes between trip purposes are quite frequent and large, the relative importance varies little. Most attributes were considered to be more important for the work trip and the out-of-town nonbusiness trips than for the in-town shopping, personal business, and social-recreation trips.

Attributes of Transport Modes

In factor analysis, six factors emerge with similar item composition for all four trip purposes: cost, travel time, independence of control, traffic, age of vehicle, and freedom from repairs.

Other factors: diversions, comfort, reliability, and avoidance of annoyances appeared in three or less trip purposes. Although some of the factors include variables which cannot be interpreted conclusively, many of them cluster in seemingly rational configurations.

Importance of Attributes by Trip Purpose

Table 1 suggests that the main differences in the importance ranking of factors between trip purposes were for the "travel time" and "ability to take along family and friends" dimensions. Travel time was regarded as significantly more important on

TABLE 1
SUMMARY OF IMPORTANCE OF FACTORS WITHIN EACH
TRIP PURPOSE^a

Factors	Trip Purpose			
	Work-School	Shopping-Personal Business	In-Town Social	Out-of-Town Social
No repairs	4.52(1)	4.19(1)	4.29(1)	4.42(1)
Reliability	4.07(2)	—	—	—
Travel time	4.01(3)	3.09(4)	2.95(6)	3.36(5)
Cost	3.49(4)	3.29(3)	3.29(4)	3.59(4)
Independence	3.28(5)	3.02(5)	3.06(5)	3.31(6)
Traffic	3.08(6)	2.73(7)	2.79(7)	3.14(8)
Age of vehicle	2.75(7)	2.66(8)	2.71(8)	3.18(7)
With friends	2.03(8)	2.86(6)	3.50(3)	4.02(2)
Diversion	—	2.03(9)	1.93(9)	2.72(9)
Comfort	—	3.48(2)	3.63(2)	—
Avoid annoyances	—	—	—	3.96(3)
(highest possible score: 5.00)				

^aBoth the relative and absolute importance of the dimensions identified in the factor analysis for each trip purpose are summarized. Ranks are presented in parentheses and average importance is indicated on a 5-category interval scale (no importance = 1, of little importance = 2, of some importance = 3, important = 4, and very important = 5). See Appendix Tables 2 through 5 for individual trip purpose analysis.

the work trips than for other trip purposes, and ability to take along family and friends is much more important for the out-of-town and social-recreation trips. Although comfort was unimportant for the work and out-of-town trips, it appeared in the other two trip purposes. The avoidance of annoyances was the third most important factor on the out-of-town trip, but failed to emerge at all for the other trip purposes. The importance of particular items (as opposed to factors) also depends on the purpose of the trip. For example, ability to look at the scenery and not being crowded were more important for the out-of-town and in-town social-recreation trips.

Importance of Attributes for an Ideal System

Although there are absolute differences among the arithmetic means of factors across the trip purposes, the relative rankings of the factors for all trip purposes are similar. Thus, it may be feasible to talk about generalized ideal systems. Based on the findings of the study, the following list indicates the main attributes of such systems from most important to comparatively unimportant:

1. Reliability of destination achievement (probably reflecting both safety and time consideration);
2. Convenience and comfort (with emphasis on flexibility and ease of departure);
3. Travel time (but considerable difference depending on trip purpose);
4. Cost;
5. Independence of control (reflecting autonomy of individual in determining speed, routes, diversions, etc., during trip);
6. Traffic and congestion (probably reflecting annoyance and perhaps safety);
7. Social (reflecting concern about who is being or capable of being traveled with);
8. Age of vehicle (perhaps indicative of a status dimension); and
9. Diversions (with some understatement of the importance of the scenery attribute).

The most important findings concerning each of these attributes are the following factors.

Reliability of Destination Achievement—This factor is most important to respondents on the "to work" trip, which probably reflects the need for appearing on the job at a certain time of day. It is interesting to note that its importance increases to those: (a) with lower incomes, (b) with full-time jobs, (c) who are nonwhites, (d) who are employed and middle aged, and (e) who are non-owners of homes and automobiles.

Convenience and comfort—Waiting in lines and comfort of seats (in that order) were considered most important for the "to work" trip. Comfortable seats, although important for all trips, were considered most important for the out-of-town trip and greater relative importance was placed on not being crowded for the "in-town social-recreation trip" and "out-of-town nonbusiness trip" than for other trip purposes.

Travel Time—Even though travel time is considered important on the work trips, a considerably different picture emerges with regard to other trip purposes. In the latter case, the factors of freedom from repairs, comfort, and cost are considered more important. It should also be noticed that bus users placed greater importance on getting to their destinations in the shortest times and by the shortest distance than did private automobile users. It appears as though a well of dissatisfaction was tapped for bus riders.

Cost—The pattern and variation in responses for the cost items supports conclusions of other studies that people generally do not know what it does or reasonably should cost them to travel (or drive, since about 80 percent of the trips to work in the United States are made by automobile). It is clear that additional investigation is needed in this particular area. It would probably be a mistake to conclude, however, that cost is of little or no importance because consumers do not know their cost accurately. Any significant upward change in cost or decrease in quality (transportation is purchased as a package with cost being related to quality of service) of transportation would likely boost the relative importance of cost. It should also be noted that variable costs might be the only relevant consideration because many people already own an automobile for many reasons unrelated to cost of providing transportation.

Independence of Control—It is concluded that, although this factor was regarded as of some importance by many respondents for all trips, there was little consensus among demographic groups concerning the degree of its importance. For instance, females consider it to be less important than do males. It is apparently not as crucial in transport user decisions as several of the others.

Traffic and Congestion—Travelers in Baltimore are a long way from the point where they regard traffic congestion to be as significant as travel time, convenience, reliability, and cost. To the conclusion of the Michigan study (2, p. 4) that "It appears unlikely that inconvenience or distance to work will be a major deterrent to further outward migration," could be added that it also appears unlikely that the influence of traffic and congestion will impede the current preference for automobiles in the foreseeable future.

Social—Several items were designed to tap a social factor: ride with people who dress and act like your friends, be able to take along your family or a friend, and assist others. Being able to take along your family or a friend showed a marked trend in its importance across trip purposes. It was considered of little importance except for the out-of-town trip, when it was considered both absolutely and relatively important. The other two factors were of some importance, but not admitted and/or perceived as being of compelling importance in choice among transport alternatives.

Age of Vehicle—A difficulty in the measurement of such a status factor is an aversion by respondents to admit its influence on their decisions. Thus, items were selected which, hopefully, measured this dimension indirectly. The achievement of the goal may be questioned, and the low ranking of age of vehicle may be inaccurate. If this finding is accurate, however, an interesting implication may be that the tendency of American automobile buyers to trade up to a new car is due more to a concern about reliability of their existing vehicle than "keeping up with the Joneses" as is often hypothesized.

Diversions—Diversion items were generally regarded as least important among the factors measured. The only exception was for the scenery variable which was regarded as absolutely and relatively important for out-of-town trips.

RELATIONSHIPS BETWEEN DEMOGRAPHIC CHARACTERISTICS AND TRANSPORT ATTRIBUTES IMPORTANCE

Rational sets of differences in the perceived importance of transport attributes were found among respondents based on their particular demographic characteristics and circumstances. One such difference existed for the attribute "independence," which refers to the amount of freedom the respondent has or perceives in terms of speed, direction, and personal control of the vehicle. The importance of this factor tends to increase with a person's education, income, residence distance from the Central Business District and number of vehicles owned. Furthermore, people between 25 and 44 years of age, males, whites, homeowners, and those with full-time jobs also emphasize the independence attribute.

On the other hand, the importance of travel time and reliability is higher for those people with lower incomes, nonwhites, and those who do not have their own vehicles. Older people and those who live close to the CBD also regard travel time and reliability as important. These results show that the traits associated with a high importance for independence form a set of attributes for a group of people who are relatively affluent. It is well known that people place more importance on such factors, whether it be for transportation or other facets of life, as income levels rise well above the subsistence level. When we consider the increasing affluence of our population, and assuming a continuation of the trend, it is proper to expect the importance of the independence factor to increase in the future.

An expected result appeared with the attribute of cost. The importance of cost is greater for people with lower education, nonwhites, and those who did not own vehicles. Surprisingly, however, cost was not significantly more important for low-income people than for high-income people.

Finally, the transport attributes labeled "traffic," "diversions," and "ability to take along family or friends" had no significant variations in their perceived importance based on demographic characteristics. An individual's demographic characteristics

are apparently irrelevant in determining his attitudes about traffic, congestion, and opportunity to be amused or divert his attention while traveling. That there is no significant relationship between attribute importance and such demographic characteristics as number of people in the household, number in the household under 16 years old, household status, and distance to a public transportation source is not surprising. It is difficult to identify any particular rationale for expecting a relationship for these variables.

ANSWERING THE QUESTION "WHY?"

Modal split models have been only moderately successful. Several studies have found that modal choice decisions appear to be more complex than generally thought. As few as two variables have been used (travel time and cost) to predict modal choice, and most models include only four to six variables. The development of valid prediction models for modal choice seems to rest on incorporating several factors into the prediction milieu, and the sensitivity of the model to the complex interrelationships existing among factors.

There have been a few other studies with objectives partially overlapping those of this study. However, most other research and the comprehensive transportation land-use studies have focused on what people do, and the demographic variables which are related to what they do. This study is unique in that it provides at least a partial basis for determining not only what people do and say, but also why they do it, by focusing on the fundamental question: "What are the transport attributes which should be investigated and how are they defined in the minds of the consumer?"

Previously, this question has necessarily been answered by the researchers themselves, based on their own or others' conceptualizations and hypotheses. The focus here has been not to begin with a restrictive predetermined set of factors, but to develop a pool of transport-characteristic variables to which responses have been subjected to the statistical tool of factor analysis. (Selectivity was, of course, used in developing the exhaustive pool of characteristics in the first place.) This technique permits interpretation of relationships based on how the respondent has structured his responses, and leads to formation of the underlying factors defining and classifying the attributes perceived by transport users to be independent and important.

The research approach and results of this preliminary study, and the current extension of the study which incorporates questions dealing with both the importance of transport mode attributes and the perceived satisfaction of respondents with alternative transport modes in terms of these same attributes, should lead to an improved understanding of the "Why" of mode choice.

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Appendix

TABLE 2
FACTOR LOADINGS AND COMMUNALITIES FOR TRIP PURPOSE ONE—WORK-SCHOOL^a

	Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Communalities	Mean Factor Importance Scales
Factor 1, traffic										
Avoid varying speed	41	0.66	0.22	0.03	0.08	0.13	0.15	0.15	0.60969	
Avoid fast moving vehicles	42	0.62	0.08	0.04	0.08	0.11	0.02	0.02	0.51830	
Travel one direction	39	0.58	0.14	0.14	0.06	0.09	0.14	0.14	0.62173	
Avoid slow moving vehicles	40	0.55	0.18	0.18	0.07	0.05	0.21	0.21	0.64721	3.08
Travel different route	25	0.39	0.15	0.001	0.16	0.16	0.11	0.11	0.45650	
Factor 2, independence of control										
Control speed—direction	8	0.22	0.78	0.03	0.02	0.05	0.01	0.01	0.68857	
Independent of anyone else	7	0.09	0.74	0.06	0.10	0.03	0.06	0.06	0.65839	
Travel own rate of speed	6	0.19	0.69	0.13	0.13	0.01	0.28	0.28	0.69473	3.28
Listen to radio	10	0.06	0.44	0.002	0.03	0.18	0.08	0.08	0.40247	
Stop when want	14	0.11	0.40	0.08	0.13	0.09	0.18	0.18	0.53122	
Factor 3, travel time										
Short time	43	0.14	0.05	0.69	0.13	0.08	0.40	0.40	0.72869	
Short distance	44	0.11	0.03	0.69	0.07	0.17	0.31	0.31	0.69225	4.01
Factor 4, cost										
10 cents per mile	13	0.11	0.18	0.06	0.81	0.14	0.13	0.13	0.75888	
5 cents per mile	4	0.12	0.01	0.05	0.70	0.20	0.10	0.10	0.72618	
25 cents per mile	29	0.04	0.10	0.01	0.70	0.06	0.14	0.14	0.65847	3.49
Low in cost	32	0.07	0.04	0.28	0.48	0.11	0.26	0.26	0.56806	
Factor 5, age of vehicle										
Avoid old vehicle	22	0.19	0.09	0.13	0.02	0.72	0.14	0.14	0.63608	
Travel modern vehicle	18	0.11	0.08	0.05	0.20	0.66	0.12	0.12	0.62454	
Avoid walking more than a block	21	0.09	0.01	0.13	0.35	0.38	0.28	0.28	0.59210	2.75
Factor 6, reliability										
Leave when want to	3	0.02	0.15	0.03	0.12	0.13	0.64	0.64	0.53898	
On time	33	0.09	0.06	0.22	0.13	0.02	0.59	0.59	0.52201	
Convenient	34	0.10	0.05	0.19	0.07	0.11	0.58	0.58	0.54808	
Get there fast	1	0.06	0.01	0.16	0.08	0.13	0.54	0.54	0.51915	4.07
No repairs	35	0.27	0.19	0.14	0.16	0.16	0.49	0.49	0.53947	
Bad weather	37	0.21	0.08	0.17	0.15	0.10	0.48	0.48	0.55340	
Short time	43	0.14	0.05	0.69	0.13	0.08	0.40	0.40	0.72869	

^aOnly those people in the sample who answered every item in trip purpose one are included in this factor-analysis summary.

TABLE 3
FACTOR LOADINGS AND COMMUNALITIES FOR TRIP PURPOSE TWO—SHOPPING-PERSONAL BUSINESS

	Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Communalities	Mean Factor Importance Scales
Factor 1, traffic										
Travel one direction	39	0.65	0.12	0.13	0.03	0.08	0.10	0.08	0.54215	
Avoid varying speed	41	0.65	0.10	0.05	0.06	0.07	0.33	0.06	0.59144	
Avoid fast moving vehicles	42	0.62	0.05	0.01	0.07	0.01	0.04	0.07	0.53353	2.73
Avoid slow moving vehicles	40	0.56	0.13	0.27	0.06	0.04	0.29	0.10	0.58312	
Bad weather	37	0.39	0.02	0.35	0.39	0.15	0.07	0.29	0.53455	
Factor 2, independence of control										
Control speed—direction	8	0.12	0.74	0.07	0.02	0.02	0.06	0.05	0.58506	
Independent of anyone else	7	0.05	0.72	0.01	0.10	0.02	0.07	0.16	0.58272	
Travel own rate of speed	6	0.11	0.62	0.22	0.10	0.04	0.10	0.07	0.53256	3.02
Factor 3, travel time										
Short time	43	0.15	0.01	0.77	0.11	0.11	0.12	0.02	0.72187	
Short distance	44	0.11	0.04	0.75	0.10	0.04	0.15	0.003	0.70555	
On time	33	0.17	0.003	0.69	0.13	0.04	0.07	0.15	0.63486	
Convenient	34	0.12	0.04	0.64	0.15	0.12	0.01	0.19	0.5559	
Get there fast	1	0.07	0.03	0.57	0.07	0.12	0.15	0.07	0.53927	3.09
Leave when want to	3	0.02	0.14	0.57	0.05	0.05	0.10	0.12	0.53401	
Get ready easily	26	0.14	0.02	0.40	0.27	0.12	0.08	0.19	0.48264	
Avoid waiting	20	0.05	0.14	0.39	0.21	0.11	0.11	0.31	0.46248	
Avoid walking block or more	21	0.03	0.09	0.37	0.23	0.23	0.04	0.27	0.43572	
Avoid slow downs	24	0.32	0.10	0.36	0.11	0.17	0.33	0.02	0.48225	
Factor 4, cost										
10 cents per mile	13	0.04	0.14	0.18	0.71	0.07	0.05	0.17	0.63388	
25 cents per mile	29	0.02	0.10	0.10	0.70	0.01	0.05	0.004	0.60956	
5 cents per mile	4	0.05	0.07	0.24	0.50	0.08	0.31	0.12	0.61516	3.29
Low in cost	32	0.13	0.02	0.34	0.48	0.12	0.12	0.20	0.51783	
Factor 5, age of vehicle										
Avoid old vehicle	22	0.10	0.03	0.21	0.04	0.61	0.25	0.05	0.54947	
Travel modern vehicle	18	0.07	0.01	0.23	0.15	0.53	0.37	0.14	0.55132	2.68
Factor 6, diversions										
Keep busy	31	0.04	0.03	0.08	0.002	0.07	0.71	0.03	0.55206	
Travel different route	25	0.13	0.12	0.13	0.08	0.07	0.63	0.05	0.55856	
Eat or sleep	17	0.09	0.09	0.03	0.04	0.03	0.62	0.09	0.49944	
Move around inside	27	0.19	0.04	0.09	0.13	0.03	0.58	0.004	0.49770	
Scenery	23	0.08	0.01	0.24	0.14	0.20	0.52	0.07	0.50562	2.03
Act and dress like friends	19	0.16	0.10	0.03	0.02	0.25	0.43	0.15	0.39321	
Travel modern vehicle	18	0.07	0.01	0.23	0.15	0.53	0.37	0.14	0.55132	
Take family or friends	2	0.03	0.14	0.11	0.02	0.05	0.37	0.02	0.38926	
Factor 7, comfort of traveler										
Protected—weather	9	0.01	0.16	0.22	0.17	0.06	0.06	0.59	0.47703	
Not crowded	16	0.16	0.03	0.27	0.17	0.21	0.05	0.44	0.59081	3.48

^aOnly those people in the sample who answered every item pertaining to trip purpose two are included in this factor-analysis summary.

TABLE 4
FACTOR LOADINGS AND COMMUNALITIES FOR TRIP PURPOSE THREE—SOCIAL-RECREATION^a

	Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Communalities	Mean Factor Importance Scales
Factor 1, traffic										
Avoid varying speed	41	0.73	0.10	0.04	0.08	0.09	0.05	0.03	0.58926	
Travel one direction	39	0.68	0.08	0.02	0.01	0.03	0.15	0.08	0.56340	2.79
Avoid fast moving vehicles	42	0.65	0.07	0.04	0.05	0.07	0.15	0.02	0.56122	
Avoid slow moving vehicles	40	0.59	0.19	0.26	0.10	0.06	0.02	0.004	0.55828	
Factor 2, independence of control										
Independent of anyone else	7	0.04	0.71	0.04	0.08	0.21	0.01	0.13	0.57315	
Control speed and direction	8	0.19	0.71	0.03	0.05	0.03	0.06	0.05	0.58058	
Travel own rate of speed	6	0.12	0.65	0.16	0.06	0.01	0.06	0.06	0.55740	3.06
Stop when want	14	0.17	0.45	0.12	0.09	0.03	0.22	0.12	0.46338	
Listen to radio	10	0.07	0.37	0.26	0.01	0.10	0.22	0.01	0.45445	
Factor 3, travel time										
Short time	43	0.04	0.01	0.83	0.09	0.07	0.10	0.08	0.75933	
Short distance	44	0.08	0.02	0.79	0.12	0.07	0.07	0.04	0.76936	
On time	33	0.18	0.04	0.62	0.11	0.08	0.09	0.21	0.56361	
Convenient	34	0.11	0.08	0.58	0.14	0.06	0.02	0.26	0.55351	2.95
Get there fast	1	0.04	0.003	0.52	0.03	0.12	0.17	0.07	0.52948	
Leave when want to	3	0.04	0.19	0.49	0.08	0.10	0.07	0.18	0.53799	
Get ready easily	26	0.13	0.09	0.38	0.29	0.17	0.16	0.29	0.54747	
Factor 4, cost										
25 cents per mile	29	0.07	0.15	0.03	0.73	0.01	0.01	0.02	0.60137	
10 cents per mile	13	0.05	0.12	0.13	0.73	0.08	0.11	0.22	0.66323	
5 cents per mile	4	0.09	0.05	0.16	0.60	0.10	0.25	0.12	0.60547	3.29
Low in cost	32	0.14	0.02	0.32	0.54	0.14	0.12	0.23	0.59336	
Factor 5, age of vehicle										
Avoid old vehicle	22	0.17	0.06	0.19	0.07	0.63	0.07	0.13	0.57641	
Travel modern vehicle	18	0.14	0.04	0.18	0.15	0.57	0.23	0.18	0.58366	2.71
Factor 6, diversions										
Keep busy	31	0.05	0.03	0.16	0.09	0.06	0.57	0.07	0.44314	
Eat or sleep	17	0.12	0.13	0.03	0.08	0.09	0.54	0.11	0.42981	
Move around inside	27	0.20	0.03	0.11	0.15	0.06	0.45	0.10	0.40712	1.93
Different route	25	0.23	0.18	0.05	0.15	0.13	0.37	0.003	0.45032	
Factor 7, comfort of traveler										
Not crowded	16	0.07	0.17	0.22	0.14	0.08	0.21	0.53	0.53129	
Protected—weather	9	0.01	0.11	0.21	0.21	0.09	0.12	0.52	0.46274	
Stay in same vehicle	12	0.10	0.18	0.17	0.18	0.14	0.04	0.46	0.50101	3.63
Avoid waiting	20	0.09	0.12	0.28	0.21	0.22	0.09	0.37	0.45029	
Comfortable seats	30	0.16	0.06	0.27	0.26	0.19	0.08	0.36	0.53266	

^aOnly those people in the sample who answered every item pertaining to trip purpose three are included in this factor-analysis summary.

TABLE 5
FACTOR LOADINGS AND COMMUNALITIES FOR TRIP PURPOSE FOUR—OUT-OF-TOWN NONBUSINESS^a

	Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 10	Communalities	Mean Factor Importance Scales
Factor 1, traffic										
Avoid slow moving vehicles	40	0.66	0.13	0.27	0.05	0.08	0.18	0.004	0.60831	
Avoid varying speed	41	0.50	0.14	0.11	0.16	0.14	0.32	0.10	0.61478	
Avoid slow downs	24	0.49	0.07	0.26	0.05	0.10	0.18	0.20	0.55029	3.14
Travel one direction	39	0.36	0.08	0.03	0.01	0.01	0.09	0.42	0.51728	
Factor 2, independence of control										
Control speed and direction	8	0.09	0.75	0.01	0.04	0.02	0.02	0.01	0.58259	
Independent of anyone else	7	0.01	0.71	0.01	0.07	0.03	0.01	0.03	0.58593	3.31
Travel own rate of speed	6	0.12	0.65	0.09	0.11	0.04	0.03	0.11	0.57553	
Factor 3, travel time										
Short time	43	0.22	0.03	0.76	0.05	0.11	0.18	0.09	0.70583	
Short distance	44	0.08	0.09	0.73	0.05	0.10	0.07	0.16	0.67772	
Get there fast	1	0.09	0.08	0.48	0.10	0.11	0.16	0.06	0.51216	3.36
On time	33	0.09	0.07	0.45	0.08	0.12	0.08	0.28	0.55410	
Convenient	34	0.17	0.01	0.42	0.13	0.06	0.09	0.33	0.47417	
Leave when want to	3	0.04	0.14	0.38	0.07	0.03	0.05	0.21	0.40393	
Factor 4, cost										
10 cents per mile	13	0.09	0.08	0.12	0.71	0.17	0.12	0.11	0.62166	
5 cents per mile	4	0.02	0.10	0.05	0.63	0.06	0.21	0.14	0.58949	
25 cents per mile	29	0.06	0.13	0.02	0.63	0.0004	0.09	0.36	0.61916	3.59
Low in cost	32	0.11	0.003	0.19	0.36	0.08	0.10	0.43	0.50359	
Factor 5, age of vehicle										
Avoid old vehicle	22	0.04	0.06	0.13	0.10	0.58	0.11	0.16	0.44931	
Travel modern vehicle	18	0.10	0.01	0.15	0.13	0.56	0.18	0.14	0.46867	3.18
Factor 6, diversions										
Keep busy	31	0.08	0.06	0.11	0.12	0.15	0.63	0.12	0.51896	
Move around inside	27	0.13	0.004	0.11	0.14	0.003	0.61	0.09	0.49179	
Eat or sleep	17	0.11	0.04	0.11	0.09	0.29	0.52	0.003	0.49896	2.72
Factor 10, avoidance of annoyances										
Not crowded	16	0.09	0.10	0.02	0.01	0.11	0.01	0.68	0.60039	
No repairs	35	0.01	0.05	0.05	0.06	0.11	0.09	0.67	0.55629	
Bad weather	37	0.15	0.04	0.23	0.01	0.17	0.02	0.45	0.48470	
Get ready easily	26	0.05	0.01	0.24	0.16	0.11	0.03	0.45	0.45956	3.96
Low in cost	32	0.11	0.003	0.19	0.36	0.08	0.10	0.43	0.50359	
Travel one direction	39	0.36	0.08	0.03	0.01	0.01	0.09	0.42	0.51728	
Ride with people who talk	38	0.002	0.01	0.14	0.02	0.11	0.06	0.40	0.39651	

^aOnly those people in the sample who answered every item pertaining to trip purpose four are included in this factor-analysis summary.