

# Incentives and Disincentives to Ride-Sharing Behavior: A Progress Report

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Joseph B. Margolin and Marion Ruth Misch, Program of Policy Studies in Science and Technology, George Washington University

Ricardo D. Dobson, Federal Highway Administration, U.S. Department of Transportation

Ride sharing is a social and economic activity in which a vehicle is shared by two or more individuals. A common form is car pooling, but van pooling and bus pooling are alternative forms. Because the individuals in a pool are members of an organized social group with meaningful functions and roles, participation should be responsive to behavioral and economic principles underlying group formation and maintenance.

Several studies have contributed to the understanding of traveler behavior in ride-sharing situations. Through in-depth interviews with car poolers, Barkow (1) highlighted the role of social factors in ride sharing. He believes that pooler contacts should be handled by humans and not computers. Andrie and Dueker (2) report on a before and after study of car pool matching programs in Iowa City. The farther a person lived from work, the more interested he said he was in joining a pool. After survey data, however, revealed that individuals had overstated their willingness to join car pools. The matching programs were not effective at significantly enhancing the car pooling rate, and it was concluded that a matching program by itself is an insufficient incentive to alter commuting patterns. The California Department of Transportation supported a study to devise a car pool action program (3). The results supported Barkow's emphasis on the importance of differential psychological and social factors affecting various groups in ride sharing.

This investigation of ride sharing differs from previous research in a variety of ways. First, the study is essentially an exploratory examination of behavioral incentives and disincentives for different groups of potential poolers. Second, the study design is a sequence of (a) hypothesis generation, (b) hypothesis testing, and (c) consideration of feasibility. Finally, a combination of survey and panel discussion methodologies is used. The contrasting methodologies are used to check the validity of findings and conclusions from different perspectives.

The behavioral orientation of the study is designed to lead to the development of policy options that induce individuals to join or form car pools. Because not all people are equally responsive to identical policy options, an effort is being made to define homogeneous groups of

potential poolers—groups that show varying sensitivity to different policy scenarios. The study has two specific objectives: to obtain valid and meaningful data about consumer attitudes toward ride sharing and to develop more sensitive methods for such study. The problem addressed is the lack of in-depth information about what specific incentives and disincentives affect different groups of users.

To achieve these objectives, a three-phase study was designed. In the first phase, ride-sharing incentives and disincentives among potential and actual ride sharers were explored in depth. In the second, a survey built from the motivational information derived in phase 1 will be carried out with a larger sample. In phase 3, ride-sharing strategies derived from the incentives and disincentives discovered will be explored with groups of users and of transportation professionals for feasibility on a pilot basis.

## RESEARCH DESIGN

Phase 1 was qualitative and was designed to produce hypotheses about incentives and disincentives for ride sharing. A series of consumer panel discussions was held with small groups of intraurban transportation users. In these, people discussed their transportation experiences, preferences, satisfactions, and dissatisfactions. The panels were homogeneous groups, that is, people who share important life situations or characteristics such as age and type of occupation or socioeconomic status and commuting patterns, as well as combinations of these. Group discussions were used because they elicit information from more people at lower cost and they take advantage of group interaction. In the process of discussing travel problems with each other and with the research staff, people soon go beyond the first answers that come to mind to the less conscious forces that operate when they make transportation decisions.

Phase 2 will survey 500 respondents to quantify the hypothesis by making a first estimate of how widely and to whom the hypothesized incentives and disincentives of phase 1 apply.

In phase 3, those hypotheses that prove to be wide-

spread in the population segments examined will be used to develop program plans and policies that may facilitate car pooling and other forms of ride sharing. Then, as in phase 1, further homogeneous panels will be assembled to react to these strategies and to provide qualitative feedback about their acceptability.

## METHODOLOGY

The validity and reliability of the sequential approach depend on careful design of the behavioral science methodological tools used.

### Phase 1 Consumer Panels

The panels were selected to include groups that were believed to be potential ride sharers. For example, because an increasing majority of intraurban automobile travel is from suburb to suburb, special emphasis was placed on that commuter group. Some of the homogeneous consumer groups interviewed were

1. CBD-CBD blue-collar commuters,
2. Exurban-suburban blue-collar commuters,
3. Suburban-CBD white-collar commuters,
4. Suburban-suburban white-collar commuters,
5. Suburban-suburban commuting executives and professionals,
6. Satellite city-suburb commuters,
7. Suburban high school drivers,
8. Handicapped (varied in terms of disabilities and employment), and
9. Aging (commuting and noncommuting).

The discussions were operated according to group dynamics theory and techniques established during the last 25 years and widely tested in such diverse areas as industrial psychology and group psychotherapy. Groups were kept small—6 to 10 volunteers met with 2 or 3 research staff members—to allow maximum participation. The advantage of including more than one staff member is that, when staff members raise questions with each other or take exception to each other's point of view, participants see the importance of people expressing their own diverse views. It also avoids that overdependence on the leader that tends to develop when there is only one. The sessions began with a brief, anonymous questionnaire about transportation habits and preferences, including demographic questions, number of automobiles and licensed drivers in the household, access to public transportation, and other personal transportation facts. In addition to focusing attention at the start of the session on the subject matter for discussion, these miniquestionnaires provided information about transportation preferences before the session influenced people.

The discussion began with open-ended and highly general questions raised by the staff, for example, "What are some of your most troublesome transportation problems?" This allowed panel members to discuss what was on their minds without being led by what was on the researchers' minds. Although details of all of the techniques used to manage the discussions cannot be given—for instance, how to deal with the inevitable leader's helper who avoids responding by trying to encourage others to speak—the general approach has been clarified. Sessions were 1½ to 2 hours long. Typically in that period of time, groups aired either complaints or idealistic attitudes, then moved to a more balanced consideration of possibilities and alternatives, and finally brought out some main problem or

point of view.

Data from the panels were analyzed in several ways. First, the brief questionnaires were tallied to identify the profile of each group. Next was a thematic analysis of the discussion in which issues raised, opinions expressed, and experiences reported were examined for recurrent, significant themes. Quantification is only minimally useful here since a group may spend considerable preliminary time on extreme positions or a few individuals may dominate the talk initially. The results of the thematic analysis were then compared with the questionnaire data. This revealed issues not raised in the session. At times it also revealed that the force of peer influence on the discussion broadened the possible transportation alternatives that people are willing to entertain—an important finding in itself inasmuch as the leverage of peer group influence has been little used in a systematic way to increase ride sharing.

A theoretical tool that has proved highly useful in analyzing such data is Kurt Lewin's decision-making theory. This includes a feedback process wherein each decision, or action, modifies the individual decision maker's attitude and thereby affects his or her subsequent decisions. The theory explains the fact that attitudes do not remain fixed: Action commits the individual psychologically to support and justify that action. Thus, a person who submits a car pool application becomes somewhat more committed to car pooling by taking the step. If a person actually joins a car pool, he or she will then be likely to become more confirmed in attitudes and perceptions that favor car pooling. This has important group dynamic ramifications because each car pool member will strengthen not only his or her own attitude toward the car pool but those of fellow members.

### Phase 2 Survey Questionnaire

Survey questionnaires for phase 2 are being constructed in three parts. One covers transportation practices, including past experience with various modes, vehicle ownership, transportation costs, and the like. General demographic data will also be obtained. The main section is being devoted to incentives and disincentives for car pooling derived from phase 1 data.

The particular incentives and disincentives revealed in phase 1 are detailed in as operational a manner as possible. For example, the independence and convenience mentioned so often in the brief questionnaires usually had overlapping meanings during the consumer panel discussions. Independence, for example, was often used to convey, "There is no need to plan. I can move when I want to." "I do not have to rely on anyone else in order to go." On the other hand, convenience often meant, "I do not have to rely on anyone else in order to go." "I do not have to wait." People will therefore be asked operational and explicit questions, rather than the more ambiguous, "Do you find it convenient?"

Two methods of administration will be used: face-to-face individual interviewing and a telephone series so that the costs and benefits of the two approaches can be assessed. Data analysis from the survey will depend on the structure and content of the questionnaire in its final form.

### Phase 3 Strategies and Panels

Phase 3 strategies will be constructed after the effect of the several incentives and disincentives individually and in combination has been determined in phases 1 and 2. Scenarios for the implementation of given strategies will be constructed and discussed with both travelers

and transportation policy makers. If the hypotheses can survive the rigorous testing of this sequential study design, they will have demonstrated considerable credibility.

Through this research we are seeking not only valid information, but also a policy tool. The origin of the issues and hypotheses in the life conditions of travelers and their ultimate testing by those who would decide on, or participate in, the ride-sharing strategies that emerge are expected to lend a quality to the final product that is closer to reality than might be achieved through more classical methods.

Another significant implication of this approach for policy decision making resides in its greater relationship to planning than to forecasting. If we define forecasting as expected developments as extensions of historic patterns, the approach of this study provides the transportation sector with additional tools and options, options not available in extrapolations from past travel patterns. The extensive study of human attitude and interaction and the emphasis on development of principles and scenarios should provide insight into the personal decision-making process itself. This, in turn, will improve our capability for planning to meet unforeseen problems and contingencies as conditions change.

#### EARLY FINDINGS

The following early findings illustrate the kinds of issues and questions being obtained.

1. Why different groups drive and what driving means to them are based on varied motivational patterns. Teenagers frankly admit that they derive considerable satisfaction from "having the wheel." They prefer not to car pool because, in a car pool, they do not drive all the time. Closely related is the feeling of freedom from parents that comes while driving. Exurban laborers, on the other hand, do not need the automobile as an expression of either adulthood or physical mastery of the environment. Instead, they need urgently to get to the job on time and are less tied to the driver role by psychological bonds.

2. Ride-sharing matches offered through computerized car pool systems revealed some interesting incentives and disincentives. (a) The request to send name, address, telephone number, and hours of employment to a downtown address runs counter to current concerns about privacy, as well as to police department urging that this information not be given to strangers; (b) when the printout is received, potential car poolers have a powerful resistance to telephoning a stranger; and (c) the process takes from several weeks to several months or more. The desire for a prompt, simple response in which the potential car pooler can see and assess possible car pool mates was directly expressed in many panels.

3. A number of additional incentives and disincentives were highlighted by the following observations: (a) Fringe parking is less acceptable than parking in a shopping center because of robbery and vandalism problems; (b) suburbanites bemoaned the lack of circumferential public transportation; and (c) many panelists objected to the trend toward small cars because they limit car pools to two or three people and because of their safety problems.

#### POLICY IMPLICATIONS

These findings suggest a number of strategies that have policy implications for the design of car pooling pro-

grams. Factors that are relevant for these strategies include characteristics of the traveler, interpersonal needs, program locus, and program mechanisms. The following strategies are illustrative:

1. Organizing car pools quickly and on a face-to-face basis within the place of work;
2. Organizing car pools at the home end under the auspices of a civic association, PTA, or similar group; and
3. Appointing, training, and perhaps reimbursing a car pool coordinator whose functions would be (a) getting together pools made up of people who are likely to stay together, (b) salvaging and reassembling car pools that break up, and (c) identifying the forces that hold groups together or weaken them and feeding this information to ride-sharing program planners and decision makers.

These strategies apply particularly, although not exclusively, to commuters. They are based on the facts that (a) many travelers desire a more personal introduction to car pooling and to potential car pool mates because of fears of crime and violence that frequently prevail; (b) assistance is needed to overcome people's frequent reluctance to take the initiative in forming car pools; (c) people will react more favorably to a quick response to their expressed interest; (d) they want a reliable means of transportation; and (e) group decision making is a potent factor in car pooling behavior.

The structure of the strategy, however, must also meet the differing needs of highly diverse population groups. Two other strategies are suggested.

1. Commuting buses or company van pools should be organized for exurban laborers to bring them as close to their widely dispersed homes as possible and to provide a service in which the company shares the problem of getting laborers to work on time. At present, data reveal that a significant portion of these workers have no special attachment to driving, but they are pressured (by threatened loss of pay for even minor tardiness) not to rely on the promptness of coworkers.

2. For teenagers, informal car pooling should be encouraged. The well-known urge of the teenager to drive is tied to an acute need for autonomy. Advantage can nevertheless be taken of their gregariousness, so long as car pooling is not stringently formalized with schedules and assigned riders, which appear to the average teenager to be yet another schoollike burden imposed by adults. The program would need to be organized by the teenagers themselves and provide for flexible picking up of friends as the occasion permits.

#### SUMMARY

This has been a progress report on a three-phased behavioral and exploratory study of incentives and disincentives to ride sharing. This study falls in the category of planning research, rather than travel forecasting, because it investigates not what people are projected to do but what they currently do and why. The rationale is to provide causal, as well as historical, information about ride-sharing behavior.

Because the study uses a small number of population segments and is exploratory in nature, generalization of findings is limited. Nevertheless, it is anticipated that the validity of the conclusions will be considerably strengthened if the hypotheses derived from the phase 1 consumer panels are reaffirmed by the phase 2 survey and the phase 3 group discussions of possible ride-sharing strategies based on these hypotheses. Those hypotheses supported by all phases of the study will be

ready for larger scale research. Certainly, the distinct differences among groups explored to date suggest the need for expanded explorations of carefully delineated, homogeneous population segments.

Finally, if the methodology tested in the study proves to be valuable for producing viable hypotheses about ride-sharing behavior, its application to behavioral aspects of other travel modes should be tested.

#### REFERENCES

1. B. Barkow. The Psychology of Car Pooling. Ontario Ministry of Transportation and Communications, 1974.
2. S. Andrie and K. J. Dueker. Attitudes Toward and Evaluation of Car Pooling. Institute of Urban and Regional Research, Univ. of Iowa, Iowa City, Technical Rept. 32, 1974.
3. A Study of Techniques to Increase Commuter Vehicles Occupancy on the Hollywood Freeway. Alan M. Voorhees and Associates and Behavioral Science Corporation, 1973.