

experience that will greatly enhance data collection when the PSCOG conducts its much larger mainland survey in the next fiscal year.

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Nationwide Personal Transportation Study: Experiences with Previous Surveys and Options for the Future

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The Nationwide Personal Transportation Survey (NPTS) is a survey of travel patterns of U.S. households, with a focus on the amount and nature of travel activity. The survey provides a benchmark of travel activity and a measure of the impact of selected demographic factors on travel patterns. The survey was conducted in 1969, 1977, and 1983, with the next survey in the series scheduled for 1988. The surveys conducted to date have been home-interview surveys, but there are current plans to conduct a telephone survey in 1988. Some of the factors pointing to the use of a telephone survey are (a) decreased cost per interview, (b) expanded sample size, (c) centralized interviewing, and (d) the capability of on-line editing. Balancing these advantages are concerns of comparability with the previous surveys, biases inherent in telephone surveys, and whether the overall length and complexity of the data are appropriate for telephone interviewing. Despite these concerns, the telephone methodology will most likely be used for the next NPTS. Telephone surveys are the predominant method of conducting travel surveys today, probably because they provide acceptable response rates at a low unit cost and have the benefit of personal contact with the household.

The National Personal Transportation Survey (NPTS) has much in common with other urban area travel surveys. Data is collected on the economic and demographic characteristics of

the sampled households, vehicle ownership patterns, and trips and travel by all modes of transportation. Like many of the urban area studies, a travel day concept is used in NPTS; that is, all trips and travel made by each household member in a given 24-hr period are collected. However, NPTS differs from urban area travel surveys in several important aspects, most notably

1. The survey area covers the entire United States,
2. Data collection extends over a 1-year period of time, and
3. The survey includes modes such as airplane, and intercity train and bus.

The vast coverage of the survey, both in terms of geography and time, creates problems that are unique to NPTS. The coverage considerations will, of course, affect any changes made in future surveys.

The NPTS is sponsored by four U.S. Department of Transportation (U.S. DOT) agencies: Office of the Secretary of Transportation, National Highway Traffic Safety Administration, Urban Mass Transportation Administration, and the Federal Highway Administration. The U.S. DOT conducts the survey to provide fundamental data on the amount and nature of household travel. The survey provides a benchmark of travel activity and a measure of the impact of selected demographic factors on travel patterns. The data is used within the U.S. DOT

primarily for policy development, planning, and program review and evaluation. In addition, a wide variety of other users rely on NPTS for basic research needs. It is the only source of national information that provides a complete and current measure of travel by all modes of transportation, regardless of trip purpose or trip length. The capability to link travel information to the characteristics of the traveler, vehicle used, or both further enhances the utility of the survey data.

The NPTS has been conducted three times to date: 1969, 1977, and 1983. All three surveys in the series have been fairly similar in content, procedure, and methodology. All three were conducted by the U.S. Census Bureau, and all three were home-interview surveys with some telephone follow up.

EXPERIENCES TO DATE

The home-interview method was originally selected primarily because of survey procedures and content. One of the survey objectives was to obtain a comprehensive record of all household travel. Therefore, the decision was made to interview each household member aged 5 years and over, in order to ensure that all trips made by all household members were reported. The rationale for this approach is that no one could really know all the trips made by any other household member on a given day. The operational rule to interview each household member was coupled with a fairly significant amount of information to be gathered. Both of these pointed to the use of the home interview as the most appropriate methodology.

The choice was further reinforced by the use of the U.S. Census Bureau as the data collection agent. The U.S. Census Bureau has an existing staff of geographically dispersed part-time employees who conduct interviews for a number of nationwide surveys sponsored by various federal agencies. The availability of this interviewer staff provided the flexibility to select a truly nationwide sample, including rural areas.

An additional reason for using the home interview was the timing of the original NPTS. In 1969, the home interview survey and the mail-back survey predominated noncommercial survey operations. At that time few, if any, agencies were using telephone interviews for travel surveys. Given the choice between home interview and the mail-back survey, the detailed content of NPTS and the requirement to interview each person 5 years or older weighed heavily in favor of home interviews.

Because the home interview had been successful for the initial NPTS, it was continued for the surveys conducted in 1977 and 1983. This choice, combined with other decisions about the survey, allowed for a high degree of comparability among all three surveys in the series. Comparability is particularly important for the NPTS because it is the only source of national estimates for certain fundamental travel indicators.

Some of the other advantages obtained by using the home interview are the generally good quality of the data and the high response rates. For example, in the 1983 NPTS, 94 percent of all occupied households in the sample were interviewed. This impressive response rate may be the result of the home interview method, the credibility of the U.S. Census Bureau, or both.

These very substantial advantages are balanced by equally significant disadvantages. First, the home interview is generally

the most expensive survey method. In the case of the NPTS, survey costs rose dramatically, even in the period between the 1977 and 1983 surveys. The same amount of funding was allocated to NPTS in 1977 and 1983. This fixed amount supported a survey of 18,000 households in 1977, but only 6,500 households in 1983.

Another problem area is the geographic scope of the survey. Conducting a nationwide home-interview survey requires interviewers located throughout the United States. Although the U.S. Census Bureau is staffed to meet this requirement, there is a lack of efficiency and effectiveness in conducting a relatively small survey that is so geographically disbursed. In smaller areas, the interviewers are assigned to complete only one or two NPTS household interviews in a month. Generally, the problem is that the interviewers conduct so few NPTS interviews that they are unable to build up expertise with the survey form. Given the costs and other problems associated with the home interview, it is likely that another methodology will be chosen for the next NPTS.

PLANS FOR THE FUTURE

The next NPTS is tentatively scheduled for 1987–1988. Although planning is progressing for the next survey, there are no guarantees that it will actually be conducted until funding and design issues are resolved.

In order to reduce the cost per interview and adjust the survey content to better meet the sponsors' needs, a redesign effort was initiated to propose alternative survey plans for the conduct of the next NPTS. A wide variety of options are being considered, with the existing survey as one of the options. Alternatives are being considered for all elements of the survey (e.g., content, method, timing, scope, contractor, and data editing).

Although the redesign work is not concluded, there are certain alternatives that appear more promising than others. In the area of survey methodology, it is highly likely that a telephone survey will be used. Some of the factors pointing to the use of a telephone survey are as follows:

- Decreased cost per interview—All indications are that a telephone survey could be accomplished for a considerably lower cost per household than home interview.
- Expanded sample size—This correlates to decreased cost per interview. For the same funding level, the sample size could be increased significantly. Sample sizes being considered are a minimum of 10,000 households and a maximum of 25,000.
- Centralized interviewing—The feature of centralized interviewing has many benefits. First, the interviewers can gain experience and proficiency with the survey form. Second, greater consistency and quality control can be achieved in a centralized setting. And third, adjustments to survey content and procedures can be made as the survey progresses, if necessary.
- Capability of on-line editing—For NPTS, on-line editing represents a significant advantage of a telephone survey. The heart of the NPTS dataset is the daily travel section. This is also the most fragile data for recall purposes. In previous surveys, by the time this data was edited it was impossible to ask the

respondent to add or clarify information. But, with computer-assisted telephone interviewing, a certain amount of editing of this critical data can be accomplished on a real-time basis.

Telephone interviewing would require a reduction of survey content from the amount currently collected. However, there are a number of items that have been of limited use in the past and probably could be deleted. These reductions would probably result in a survey of an appropriate length for telephone use.

There are some areas of concern associated with a telephone survey. First, there is the issue of whether to individually interview each household member. This was the procedure used in the NPTS surveys done to date, but those had the advantage of face-to-face contact. Each person at home was interviewed, and the remaining household members were usually contacted by telephone within 1 or 2 days. If the entire survey is accomplished by telephone, it may be unreasonable to expect that telephone contact can be made with each household member. However, this concern is somewhat alleviated by the fact that today the majority of U.S. households are comprised of one or two persons.

Possible biases in telephone surveys are another area of concern. Specifically, the issue is how to sample households with unlisted telephone numbers, those with frequent travel, and those without telephones. Unlisted telephone numbers may not be a problem if random digit dialing is used. Those households with members who travel frequently are difficult to contact no matter what survey method is used; however, a telephone survey may exacerbate the problem. The most significant bias issue is the household without a telephone. This issue will require much more thought and planning if the NPTS is to remain a representative sample of travel by all U.S. households. Despite the concerns expressed, it appears that a

telephone survey is the most promising of the potential methods.

Other methods are being considered for the next NPTS, but these each have significant potential problems. A mail-back survey has the primary advantage of being the lowest-cost method. However, mail surveys have generally had low response rates and there is a bias in those who respond. The concern is that responses are obtained only from that portion of the population that does not mind responding to mail surveys. This hardly constitutes a representative sample. The final problem in the use of a mail survey is that the NPTS content is probably too long and too detailed to be collected effectively in a mail-survey format. This is true of even a streamlined NPTS.

Although a mail-back survey used alone has severe problems, mail may be effective as a subcomponent of a larger telephone survey. It is likely that either the daily travel log or vehicle odometer readings could be obtained as a mail-back component of a survey conducted primarily via telephone.

Consideration was also given to continued use of the home-interview technique. Cost is the main constraint in continuing a home-interview survey. The main advantage would be in maintaining a greater comparability with the previous surveys.

CONCLUSION

The telephone survey appears to be the predominant method of conducting travel surveys at the present. This probably reflects the fact that telephone surveys provide acceptable response rates at a low unit cost, while having the benefit of personal contact with the household. Based on these advantages, it appears likely that a telephone survey will be the methodology selected for the next NPTS.