

# Transportation Data Used Currently for National Planning Activities

EDWARD WEINER

The informed development and implementation of transportation policies is a continuous process that needs to be supported by an array of data, collected not only about the transportation system, but also about the traveler and goods moved by the system.

## INFORMATION NEEDS

National policy studies range from quick responses to official requests regarding a particular issue, to multiyear comprehensive assessments of the entire transportation system and its consequences. The major studies initiated every 5 to 8 years to satisfy the changing perspective on the "transportation problem" are the focus of this paper.

Major data collection efforts are rarely initiated because of the needs of a specific policy study. When they are, they are very expensive. The critical issues identified in a policy study are varied, making it difficult to anticipate the specific questions of officials who request these national policy studies. Time, expense, and Office of Management and Budget (OMB) review requirements preclude data collection on a national scale during a 6 month or 1 year study effort.

Benchmark surveys such as the Decennial Census, the Commodity Transportation Survey, the Nationwide Personal Travel Survey (NPTS), and the Census Bureau Census of Transportation take several years to design, put in the field, process, and publish.

National transportation studies must therefore be limited to the data available at the time of the study. Unfortunately, each study seems to raise questions that cannot be answered by available data. Like generals who are always preparing to fight the last war, data collection efforts are often designed around yesterday's hot issues. As Edgar Horwood's *third law of data states*, "The data you have for the present crisis was collected to relate to the previous one."

## POLICY NEEDS

It is important to remember that policy makers are generally problem oriented. They need to respond to issues of the day such as the oil shortages, budget constraints, transportation disasters, public outcries, and so forth.

Policy makers therefore need information which is

- Problem specific,

- Timely,
- Easily understandable, and
- Cost efficient.

These constraints are often difficult for analysts who prefer to carry out complete, theoretically sound analyses before rendering a judgment or making a recommendation. Moreover, it remains the task of the analyst to design analytical studies, including data requirements which meet these constraints, and at the same time gain a better understanding of the issues and identifying the options for policy makers.

Consequently, data requirements and survey designs accommodate immediate needs of the policy makers and the longer term needs of the analysts, as well as the costs and respondent burden of collecting information. Generally, no one survey or survey type can fill all the needs for transportation data. A mix of data sources is necessary to address the variety of issues and need for information. This mix requires an integrated, comprehensive, and continuing data collection programs to provide a base for trend analysis.

## BENCHMARK SURVEYS

It is also important to keep in mind the need for and value of time-series data. New surveys rarely can provide us now with a trend of the past. Data collected 5 or 10 years ago is usually lost forever. In addition, when a study is cancelled or postponed now, then that data point is lost forever.

The basic data needed in national transportation planning activities are

- The number, characteristics, and location of the population,
- The travel generated by each sector of the population,
- The movement of goods within the United States and in foreign trade,
- The inventory, condition, and performance of the transportation infrastructure,
- The inventory and use of the equipment used in transportation,
- The characteristics and economics of shippers and transportation carriers,
- Safety and security information, and
- Finance and program administration.

These types of data have been around for years, but often at the wrong level of geography, for the wrong type of characteristics, or in a form that cannot be matched with other

data. Often lacking are the common denominators necessary to perform the required analysis.

### TECHNOLOGICAL IMPROVEMENTS

Technological forces at work now might generate the data when it is needed. These include the development of automated vehicle monitoring and identification systems, geographic information systems including the TIGER system, computer-aided survey methodology, and the use of microcomputers for data management and analysis, satellite-based communication and remote sensing, and electronic interchange of shipping documents.

Although technological forces provide opportunities, institutional forces often work against the planning community. Examples include budgetary and staffing problems for data collection organizations, the loss of data collection programs because of deregulation, paperwork reduction requirements, and efforts to privatize or defederalize data collection programs.

### LOCAL DATA SURVEYS

To cope with these trends, proposals have surfaced over the last few years to encourage local and state planning agencies to collect data that can be used at the national level. As an illustration, urbanized areas have conducted extensive origin-destination personal travel surveys over the years. According to Charles Purvis, 13 major travel surveys have been conducted in the large metro areas in the last 10 years. Spanning the "Census Season" from 1989 to 1992, at least 16 metro areas are planning to conduct household travel surveys. This compares with 7 areas that conducted surveys from 1979 to 1982. These large metropolitan areas comprise almost half the population of the United States.

One would expect that these data would be useful for the national studies. However, metropolitan areas do survey work for their own use. They use their own definitions, categories, geography, and factoring procedures. Their mode and trip purpose categories are not standardized, and the linked-multimodal trips are summarized differently. These surveys are expensive and generally funded by federal-aid planning funds, yet they are rarely generalizable for national purposes.

### NATIONWIDE PERSONAL TRANSPORTATION SURVEY

The only meaningful, all-purpose, all-mode, all-trip-length national travel survey is the NPTS which has been collected in 1969, 1977, and 1983. As a consequence of budget constraints, the 1983 survey consisted of only 8,000 households nationwide compared with 18,000 households in 1977. In the 1990 NPTS, there is expected to be 20,000 samples taken nationwide plus another 20,000 samples taken in major metropolitan areas as enhancements to the standard sample for individual areas which choose to fund the supplemental samples. This expansion in sample size was accomplished by using telephone interviews instead of home interviews. The trade-off, however, is a much-reduced content of the survey.

### DECENNIAL CENSUS

From a national perspective, it is well to point out that less than 1 percent of all the trips collected in the NPTS are 100 miles or longer, but they account for 20 percent of the personal vehicle travel miles.

Another excellent source has been the decennial census, in which journey-to-work travel is recorded for 16 percent of the households in the United States. Census has obtained worker travel characteristics ever since the 1960 decennial census. These data are excellent for national studies because of their nationwide uniformity, and for local studies because of their large sample size and geographic detail. The data are also comparable between censuses.

Information on the travel habits of the population, and the location and the characteristics of the population, as estimated annually by the Bureau of the Census, are two powerful data elements for policy analysis for national planning activities.

### DATA GAPS

"Data gaps" is an issue that needs to be divided into two distinct categories. The first is the commercial transportation providers, such as the airlines, railroads, and the trucking companies; and the second is government-provided transportation facilities and services, such as highways, mass transit, and airports.

There is a substantial data gap in the commercial area because of corporate privacy, trade secrets, and deregulation. On the government side, the data gap stems from state and local reluctance to provide data that are viewed as important only to the federal government.

### DATA ACCESSIBILITY

On both public and private sides, there are also "knowledge gaps." Data were or are now generally available in some form. However, it is too old, too difficult to access, and no longer provided in appropriate forms. Data are often available on absolute media using ancient formats. Data are often coded according to geographic areas that are not compatible to the area needs of the particular study underway. Also, only 10 percent of data has been made available on paper. The other 90 percent remains unsummarized, and not printed, generally making it unavailable.

Some of these problems will be mitigated by microcomputer-based data management software, and by the increasingly usable technology of geographical information systems.

In particular, the Census Bureau TIGER file, which consists of all 3.8 million miles of roads in the United States, could be the basis for a universal geographic information system which can tie together all the disparate data sets on highway and transit transportation in one place.

### RECOMMENDATIONS

Some specific proposals could improve the quality of future data. In order to ensure that accurate transportation data is available to policy makers at federal, state and local levels, efforts should be undertaken to foster more efficient methods of data acquisition and dissemination. These efforts should

encompass improved methods of data assembly, including the use of advanced statistical or simulation techniques for estimating missing but pertinent information items. Once collected, these data must be made readily available in a form that is easily accessible to interested groups and analysts.

Improvements should be made in the following areas:

1. Improved accessibility of information sources to more potential users through microcomputer-based media and enhanced communications technology;
2. Improved usefulness of future data to be more directly usable by giving data users a say in the design of data collection programs;
3. Continued adaptation of electronic technology in collecting transportation data;
4. Improved data collection efficiency through the use of statistical samples and electronically-based, unobtrusive monitoring systems;
5. Improved quality and accuracy of data currently collected, particularly through computerized data edit procedures that will result in fewer errors in the data set;
6. Improved coordination of transportation data programs with the activities of the Bureau of the Census to strengthen the value of each data source to each other, and to allow more detailed analysis of issues related to national economic and demographic patterns;
7. Expanded usefulness of the NPTS by development of easy-to-use procedures for accessing the data and providing for correlation of various data sets;
8. Development of a formal process of technology exchange and training of transportation personnel in the field;
9. Development of common data reporting schemes that will enhance both data interchange and encourage development of common analysis procedures; and
10. Increased level of resources devoted to data collection, particularly to basic time series data.