

### Note About the Contents

This Circular includes excerpts from a report prepared by the Transportation Research Board for the U.S. Department of Transportation on "The Identification of Transportation Data Needs and Measures for Facilitation of Data Flows". This report was published in March 1981.

In addition, the Circular presents papers on the "Outlook for the Supply and Requirements for Transportation Data Under Regulatory Reform" by Robert Torene and Lawrence E. Britt and on the "Institutional Impediments to a Coordinated Data Policy" by Alan E. Pisarski.

#### INTRODUCTION

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Information needs and resources are among the most vital and least glamorous topics in transportation. The awareness of these topics among shippers, carriers, and public agencies is only spreading now because both needs and resources are undergoing dramatic change.

Changes in information needs are hardly surprising given the recent shifts in transportation programs and issues. For example, the shift in emphasis from new construction to preservation of existing transportation facilities could render traditional planning methods and subsequent data needs obsolete. The enactment of deregulation in all modes is causing more immediate consequences by giving rise to new data needs and, at the same time, eliminating many data sources.

Needs and resources are also being affected by changes in information technology. Developments in remote monitoring devices, telecommunications, automatic tracking and billing systems, and distributed data processing systems are improving the accuracy and extent of transportation data, but they are also lending new urgency to issues of privacy, confidentiality, and security. Perhaps the most subtle and far-reaching technological change is the exploding market in microcomputers. Microcomputers can greatly improve methods of data collection and provide the capability for sophisticated analysis to all agencies and firms, regardless of size. The results could be a greater demand for data, for providers of software, and for the services of intermediaries between data collectors and users.

The greatest immediate source of change in information needs and resources is the volatile institutional environment in which transportation data programs are administered. Budgetary constraints are affecting data collection activities at all levels of government. Metropolitan planning organizations are responding by marketing their information services to supplement their dwindling

roles and budgets. Meanwhile, transportation analysts are confronted with declining quantities and quality of data as the demand for more and better information grows.

How can information users discover planned cut-backs in data quality and quantity, and how can they make their needs known to those who control the supply of transportation data? How can suppliers determine whether expressed needs are really important? Who should pay for information collection and processing services? Who should be collecting the data? How can public and private needs be balanced? These questions are central to the papers that follow.

This Circular will not provide final answers to these and other questions, but it does offer a variety of suggestions for dealing with the complex issues of matching information needs and resources in transportation. One such suggestion, i.e., the establishment of a forum to discuss these issues, is reflected in this Circular and through other activities sponsored by TRB's Committee on Transportation Information Systems and Data Requirements. Anyone who is interested in participating in these activities is invited to contact the Committee.

#### IDENTIFICATION OF TRANSPORTATION DATA NEEDS AND MEASURES FOR FACILITATION OF DATA FLOWS

[Ed. note: This article was excerpted from a report prepared by the TRB Steering Committee for the Project on the Identification of Transportation Data Needs and Measures for Facilitation of Data Flows. The report (March 1981) was prepared for the U.S. Department of Transportation.]

The quality of transportation planning and decision-making is highly dependent on the availability and adequacy of statistical data on which plans and decisions are based. For the most part these transportation data are numerical values for various characteristics of (a) transportation facilities

and equipment; (b) passengers and commodities; (c) origins, destinations, and flows; or (d) the socioeconomic environment of transport operations. Some of the basic and needed data are nonexistent, and some exist but are not generally available. Transportation data sources are scattered among all levels of government and throughout the private sector. Even if needed data are located and acquired, the user may all too often find the data to be seriously lacking in timeliness, completeness, or other qualities.

The purposes of this study are (a) to identify the data needs and problems of non-federal users of transportation data and (b) to identify steps that might be taken to improve the quality and accessibility of data that are needed by these users. These objectives were pursued by the task force through a nationwide inquiry that brought substantive responses from 350 data users in state and local governments, transport industries, consulting firms, academic institutions, and other types of private organizations. Many of the respondents were planners and administrators, but other types of work such as research, engineering, and transportation operations were well represented. In addition to the considerable time and care that each respondent spent in completing the inquiry questionnaire, approximately 40 respondents participated in interviews with the project staff and thereby contributed an even greater depth and breadth to the inquiry response.

Over the past 20 years there have been a number of conferences and studies on transportation data needs and issues, but none has specifically addressed the non-federal community. In general, the findings presented here are consistent with those reached in previous studies and are reinforced by the wide range of data users and data concerns covered.

The study was planned and conducted under the guidance of a Steering Committee that represented the major elements of the transportation community and whose collective experience provided first-hand knowledge of the study scope. The conclusions and suggestions that follow reflect the Steering Committee's interpretation of the inquiry results; they represent the Committee's judgment on how best to improve the current status of transportation data and the processes by which data are collected and made available to users.

## SURVEY FINDINGS AND SUGGESTIONS

### Community Concern

The inquiry has proved the existence of important and continuing needs for transportation data. There is strong concern for improvement of the processes by which data are made available to users. The consistency of response over the widespread representation of different types of organizations and types of work indicates that this concern exists throughout both the public and private sectors of the non-federal user community.

### Data Needs

Data needs of the inquiry respondents are quite diverse with respect to types of transportation and types of data. The typical respondent has major concerns for several types of transport and for all types of data. The most pervasive needs are for data that describe the origins and destinations of

passengers and freight, commodity flows, transport facilities, transport system performance, and the energy and environmental impacts of transportation. More than 100 specific types of data in these categories were identified by the respondents.

### Data Practices

The inquiry shows that the average respondent goes to about 10 different data sources to acquire needed data and that the total number of national data sources used by the collective respondents is somewhat less than 200.

The dominant method by which respondents access data in their daily work is to refer to data publications that are in their personal files or in the files of their organizational units. There is need, however, to improve and extend this mode of access to transportation data.

*At least until on-line computer access becomes a dominant mode for acquisition, the U.S. Department of Transportation should encourage developers of transportation data to publish well-indexed and well-documented copies of data sets whose usefulness is warranted by user demand.*

A substantial majority of the respondents have budgets for data acquisition and other data processes. At least two-thirds would pay reasonable charges for data they have been unable to acquire; some would even assume the collection costs of needed data that are available.

### Data Problems

Data timeliness is a primary need. Data released by government agencies are often outdated at the time of their release.

*Data providers should be encouraged by the U.S. Department of Transportation to release partial data sets during the early steps of data processing, perhaps through sampling, and thus provide users with representative preliminary data from sets that will be fully released at a later date.*

After the timeliness problem, the following problems are most significant to data users and justify efforts to reduce their seriousness:

- Unavailability of needed data, including basic data sets whose continuation is made uncertain by deregulation of the transportation industry;
- Insufficient data detail with regard to geographic areas or because of confidentiality constraints on release of details; and
- Insufficient knowledge about existing data sets and their availability.

The following relates to data sets whose termination would have serious impacts on the quality of transportation planning and decisionmaking.

*Alternatives for future provision of basic data now provided by programs that will be discontinued should be prepared by every agency or organization within which such programs exist.*

### Improvement of Data Processes

There is no strong support for specific reallocation of fundamental responsibilities that now exist for the collection and provision of transportation data. There is concern, however, for the continued meeting of basic data needs as changes occur in the present allocation of responsibilities. Better definition is needed for the roles most appropriate to the respective levels of government.

In addition to improved availability of existing data, there is need for improved access to available data, particularly for data sets that represent continuing collection efforts. A most significant need, however, is an improved process for preparing and disseminating up-to-date information on what transportation data are available, how the data may be accessed, and what the data do and do not represent.

*A special group should be established to develop criteria and specifications for data reference services. The group should represent data suppliers and users and should be fully aware of the availability, application, and relative value of data sets to the transportation community. The group should also promote the dissemination of current knowledge about transportation data and the implementation of new data reference services that are needed.*

Although there are many transportation data sets that are generally available from respondent organizations, it appears that many are local in application and do not represent continuing collection efforts. There is a need, however, for the continuing inventory and announcement of data sets that are available in the respondent community.

*Reference services for transportation data should include a regular newsletter that contains reviews of newly available data sets and that identifies important unmet needs for transportation data. The newsletter should reach all users of transportation data who wish to be so informed.*

### Data Collection

General approaches to the collection of transportation data are given in the following statements.

*Transportation data should be collected primarily through the administrative functions of public and private transportation programs, but carefully administered sample surveys should be used to collect data that cannot be acquired otherwise on a cost-effective basis.*

*The U.S. Department of Transportation should identify federal administrative functions and data collection activities that can generate useful transportation data and should develop procedures for making such data available.*

An ancillary approach is through qualified extensions of data collection by the U.S. Bureau of the Census.

*Continued support should be given to the Census of Transportation program, but any extension of the program should be consistent with assured improvements in timeliness of*

*data to be provided. Strong consideration should be given to a continuing survey that would replace many of the present efforts and to the allocation of transportation questions to other surveys that are conducted by the Bureau of the Census.*

### Facilitation of Data Flows

Although there is little support in non-federal sectors for the centralization of federal data programs, there is need and support for a strong U.S. Department of Transportation role in the coordination of federal programs that generate transportation data. To provide representative inputs for coordination functions and for other improvements in data flows, a focal point is needed for the viewpoints of all sectors of the transportation community.

*A national forum should be established to represent all categories of transportation data suppliers and users. The forum should make continuing assessments of user needs and should make recommendations on priorities and mechanisms for improvement of transportation data processes. The forum should be independent of, but responsive to, all major elements of the transportation community in both the public and the private sectors. Consideration should be given to combining the functions of the forum with those of the group proposed in the section above on improvement of data processes.*

*The U.S. Department of Transportation should lead the coordination of all federal transportation data programs and should provide the transportation community with information on the status, content, and availability of data produced by such programs.*

It is assumed that the Department's coordination would be consistent with the more general functions of the Office of Federal Statistical Policy and Standards. The forum agenda would include items submitted by the U.S. Department of Transportation and other members of the forum.

### Data Program Costs and Funding

The inquiry did not reveal a need for a greater total amount of funds for data collection and data provision than is currently available. Needs were expressed, however for better targeting of available funds and for greater efficiency in their use. For example, data estimation through sample surveys and modeling will become a more and more important means for meeting data needs within budgetary constraints. Savings that are achieved through appropriate use of these techniques can be applied to other data needs that are not now fulfilled.

*The U.S. Department of Transportation should encourage and support the development of cost-effective sampling and modeling techniques for the collection and provision of transportation data.*

Transportation programs will continue to be primary sources of funds for transportation data programs, but data users can be expected to provide a fair share of support for the costs of data collection and provision.

*Major financial support for federal transportation data programs should be derived from federal-aid and grant funds that are applicable to transportation programs. Remaining program costs should be derived from an equitable system of charges to transportation data users.*

#### IMPLICATIONS OF THE SURVEY FINDINGS

The foregoing conclusions and suggestions imply that a number of follow-up tasks should be performed. The implied tasks are listed below in five categories. First are those suggested for performance by the U.S. Department of Transportation. Tasks in the second and third categories would be performed by groups that would come into existence if all tasks in the first category were carried out. Tasks in the last two groups would generally be performed by any federal agency to which the tasks were applicable.

##### Tasks for the U.S. Department of Transportation

- Lead the coordination of federal transportation data programs and provide the transportation community with information on the status, content, and availability of data produced by federal programs.
- Identify federal administrative functions and data collection activities that do or can generate useful transportation data, and develop procedures for making such data available wherever such is not now the case.
- Encourage data providers to release representative preliminary data sets in advance of their full release and encourage developers of transportation data to make their respective data sets available in published form.
- Encourage and support the development and proper use of sampling and modeling techniques that are cost-effective for the collection and provision of transportation data.
- Support the establishment of a national forum to represent data suppliers and users in the continuing assessment of user needs and data programs, and support the establishment of a special group for the facilitation of data reference services that include newsletters on data availability.

##### Tasks for a National Forum of Data Suppliers and Users

- Make a continuing assessment of user needs and recommend priorities and mechanisms for cost-effective improvements that include the filling of existing or imminent gaps in the provision of needed data.
- Address specific data issues that are raised by the U.S. Department of Transportation or other elements of the transportation community and that include the respective data collection roles of the various elements.

##### Tasks for Facilitation of Data Reference Services

- Develop criteria and specifications for transportation data reference services and promote

the implementation of new reference services that are needed.

- Promote the dissemination of knowledge about existing data sets and publicize the nature of new data sets that become available.

##### Tasks for Agencies and Organizations That Discontinue Basic Data Programs

- Evaluate the losses and impacts of program discontinuation and give users adequate opportunities to make their views known.
- Develop alternatives for future provision of data now provided by programs whose discontinuation will seriously impair transportation planning and decisionmaking.

##### Tasks for Federal Agencies

- Collect transportation data primarily through the administrative functions of transportation programs.
- Continue support for the Census of Transportation program, but with assured improvements in timeliness.

Successful accomplishment of the foregoing tasks can provide benefits for many users of transportation data and thereby enhance the planning, development, operation, and maintenance of the nation's transportation systems.

#### OUTLOOK FOR THE SUPPLY AND REQUIREMENTS FOR TRANSPORTATION DATA UNDER REGULATORY REFORM

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The transportation industry and, in particular, transportation policymakers and analysts have both benefited and been handicapped by the existence of data collected by regulatory agencies for regulatory purposes. They have benefited because regulated transportation companies were required to report very detailed financial and operating data. Because most data supplied for regulatory purposes are a matter of public record, there were few problems with confidentiality. This situation is ideal for an analyst interested in microanalyses of a company or group of companies on the hypothesis that the specifics of the study sample reflect the general case.

On the other hand, the analyst interested in macroanalyses of the transportation universe has been handicapped by a potpourri of statistics that have no common basis of comparison. The detailed regulatory data available can never be satisfactorily aggregated to accurately reflect the transportation universe. Moreover, the availability of the regulatory data has inhibited the development of alternative sources of data that describe the transportation universe. Also, the wealth of micro-observations for the regulated part of the transportation universe has no counterpart in the nonregulated portion of the universe. The Census of Transportation is not, by any means, a complete count. The inhibitions to alternate data sources