

National Transportation Statistics

ALAN E. PISARSKI, *Consultant*

There are three central elements of national transportation statistics:

- Content;
- Institutions; and
- Technology.

At the century's end, significant changes are occurring in all three elements. These changes can be expected to modify the ways we will function, changing the nature of statistical programs in the new era ahead.

CONTENT

As the new century dawns, we are operating in a post-regulatory mode for data content. Extensive economic deregulation of most of the transport modes began 20 years ago. Transport statisticians still operate in the aftermath of the former regulatory environment, seeking to reestablish systems of data that were gradually abolished as the regulatory warrants for the data disappeared. Many transportation operators resist government data-collection efforts for fear of renewed regulatory control. As a result, data are missing because no statistical programs have yet been put in place to replace information once provided by federal and state regulatory agencies for such modes as air freight and intercity bus. Transportation modes that have risen in importance in the meantime, such as regional or short-line railroads, have little data collected.

The emerging world of the new millennium will have new data needs as we shift our focus in transportation. Among the concerns will be:

- Demographic extremes;
- Globalization;
- The niche society;
- Impact analysis; and
- Economic measurement.

Demographic Extremes

There are major stabilizing forces in personal travel that suggest a decline in historic rates of growth. These include the relative saturation of driver's licenses, vehicle ownership, and labor force participation.

The history of our era since World War II can be seen as effects of the baby-boom generation working its way down the age-cohort decades. Between 1995 and 2005 the

number of people in their fifties in America will grow by 50 percent, exemplifying the dramatic shifts we will undergo as a society. These changes, from the final playing out of the baby boom, will affect almost every facet of our transportation environment. In 2010, the first of the boomers will reach 65 and another dramatic turning point will be reached.

Globalization

International relationships are increasingly important in our very competitive world. The field of transportation statistics must expand its thinking beyond domestic boundaries and prepare our statistical systems to operate in a world environment. One important step has been the development in recent years of the North American Interchange on Transportation Statistics, in which Canadian, Mexican, and U.S. transportation and statistical agencies meet to share experience, coordinate programs, and develop comparable statistical systems. Early in the new century, we will have the first comprehensive North American transportation statistics report.

Today, the United States has little ability to describe the transportation effects of major trade flows, either domestic or international. In the last few years, the Department of Transportation Bureau of Transportation Statistics (DOT BTS) has helped resurrect the surveys begun in the 1970s that measured the intercity movement of both freight and passengers. However, these efforts will need to be extended to produce the information needed for an increasingly global economy.

The dominant focus in states and metropolitan areas is on the economy. The economic thrust today is globalization of almost everything—production, markets, and supply and demand. New economic arrangements such as the North American Free Trade Agreement (NAFTA) and the Common Market are creating new competitive and cooperative patterns. Both freight and passenger transport are affected. It is becoming increasingly clear that domestic markets are sharply influenced by international services and competition.

Among the fields where tremendous data gaps exist are

- Just-in-time patterns and trends;
- Current and prospective NAFTA trade flows;
- Intermodal freight movements;
- Urban goods movement;
- Internal movements of goods in foreign trade;
- Travel and tourism, both intercity and international; and
- Major new trade corridor flows.

Niche Society

We are shifting from a system emphasizing the measurement of large masses of travelers to public policy interests that focus on the smaller units of total travel demand, such as transit users, bicyclists, walkers, households without vehicles, those with low incomes, people with disabilities, people involved in the changing welfare system, and minority populations. These groups are difficult to monitor because they represent small subsets of the general population that are difficult to identify and measure with precision. Obtaining data for special populations of interest has become a major challenge for statistical systems.

Rising incomes will also be a factor, resulting in increasing auto availability and use, trips per household, and average trip lengths.

Impact Analysis

Transportation seems to be linked to everything and is often seen as the universal lever for many public policies. It is called on to support many other goals. There will be a critical need to construct analytical data capabilities to assess the impact of transportation in many areas. Policy makers will increasingly require sophisticated treatment of transportation's impact on safety, the environment, and society, in addition to its economic impact.

As more and more transportation development issues center on moving freight across America to our ports and borders, it is amazing how limited are the skills and resources available to the process. The ability to produce benefit and cost analyses in these areas, as we ask ourselves about trade-offs between modes serving very different functions, needs substantial development.

With diminished public consensus on the desirability of transportation investment, the need for rigorous, quantified, economic, and social arguments for new expenditures will increase. We will need to quantify the value of transportation to our communities.

Many performance measures in transportation fail the relevance test, either because the performance measure is not readily linked to real-world experience, or because the measure fails to capture the desired concept. The commonly used measure of ton-miles illustrates the former; few decision makers can visualize a ton-mile and relate it to an understood quantity.

Economic Measurement

It will be important to develop sophisticated levels of economic analysis so that appropriate evaluations can be made within and between modes. The ability to interpret global impacts of freight or passenger travel will be critical. As states and regions compete for jobs and new technological opportunities, the ability to make economic assessments will be essential.

Recent research has shown that America's future depends to a high degree on improved competitive access between suppliers, producers, and consumers. Two dominant factors in competitive success are communication and transportation. We will need tools to transmit the basis for investment decisions to the public.

INSTITUTIONS

It can be said that transportation statistics are in better shape today than at any time in recent memory, yet unprecedented demands are being put on those statistics by decision makers. As documented in several reports of the National Research Council, the transportation community requires more complete, detailed, timely, and accurate statistics than ever before. The demand for more thorough coverage of transportation activity recognizes that forms of transportation that are more difficult to measure may contribute as much social and economic impact as the forms we have traditionally measured.

In 1992, the Intermodal Surface Transportation Efficiency Act (ISTEA) reflected such great concern with the deteriorated state of information that a new national statistical agency, BTS, was mandated. In 1998, the Transportation Equity Act for the 21st Century (TEA-21) reaffirmed the programs launched under ISTEA and added new areas to be tackled.

BTS provides a focal point for the expression of data needs and concentrates the efforts to respond to those needs. But there are still institutional issues to resolve. Statistics coordination within the DOT and between agencies of the federal government will require continued attention.

TEA-21 requires BTS to maintain two databases. The Intermodal Transportation Database (ITDB) is to be a complete picture of transportation activity, measured in physical and economic terms. The National Transportation Atlas Database (NTAD) is literally the ITDB on a map, a recognition that transportation exists to overcome the barriers of geography.

TEA-21 and a report of the Committee on National Statistics emphasize the need to improve data quality and comparability throughout the transportation community. This will require the following:

- Adoption of common definitions of variables throughout the profession;
- Adherence to good statistical practice, particularly in the collection and interpretation of sample data;
- Replacement of questionnaires with unobtrusive methods of data collection, either through the use of administration records or remote sensing; and
- Validation of statistics used in performance measures and other applications.

One aspect of the new institutional need overlaps with new technology concerns. As intelligent transportation system (ITS) technologies develop as major sources of data, the institutions are not in place to process and disseminate ITS data. ITS is recognized as a valuable potential resource, but there are gaps in our institutional mechanisms to fully utilize ITS as an information resource.

TECHNOLOGY

Many tools of traditional data collection are failing just as new tools become available. Roadside surveys and household travel surveys are almost things of the past. As security concerns and poor response rates diminish the effectiveness of these traditional tools, new, less-obtrusive, technology-based tools will need to be employed using remote sensing, automated systems, or administrative records processing. ITS, the Internet, and computer-based technologies will all contribute to faster and less-expensive collection mechanisms. However, these new technologies will have their own problems. They may distort information in new ways and require new institutions to develop them, and they will certainly generate new statistical quality questions.

The demand for greater detail in transportation means a need for detail about geography and time, recognizing that congestion and other transportation problems are not the result of average conditions but of concentrating too much activity in one location during the same period. The demand for greater geographic detail also recognizes that transportation's benefits depend on where the flows of people and goods go and which locations are left behind. The demand for more-timely data indicates that the transportation system must respond to rapidly changing conditions, especially in a global economy, and that decisions cannot wait for measurement systems to be devised and put in operation.

FUTURE OF NATIONAL TRANSPORTATION STATISTICS

How policy and planning processes use data tells us a great deal about whether the processes are to be respected. If transportation policy and planning are to be taken seriously, then the statistical professions must address key concerns in the future. Some fundamental concerns are

- Transportation statistics systems will need to focus on objectively describing what exists and how transport relates to other elements of society and the economy.
- Those involved in transportation statistics will need to recognize that most transportation policy and planning is as much about other subjects as it is about transportation. What makes for viable policy and planning information is the combination of transportation *and* demographic data, transportation and economic data, transportation and resource data, etc.
- Transportation statistics will need a valid vocabulary with properly defined and demarcated meanings to aid in better communication in the transportation community.
- Transportation statisticians will need to learn how to justify their programs. There are few guidelines on what to collect, in what detail and with what precision, how often, and why. The ability to justify transportation statistical programs in cost and benefit terms is still in the distant future.
- Transportation statisticians must recognize that anticipating emerging issues is the key to success. The ability to anticipate the policy and planning data needs of the future will be the quintessential skill.
- Transportation statistical systems must be based on the recognition that policy makers are forced to work with what data are available when a policy issue arises, and data programs must be designed with that in mind.

* * *

The story goes that when the staff of first DOT Secretary Alan Boyd told him that his plans for national data collection would take years and that he would not likely benefit from them, he answered: "We'd better get started then, shouldn't we!"

ACKNOWLEDGMENT

The author thanks John Fuller of the University of Iowa for editing this paper.