

CIRCULAR

**Proceedings of the Special
Conference on Freight
Transportation Data:
The Changing Federal Role
Since Deregulation**

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KEYNOTE ADDRESS

Karen Borlaug Phillips, Interstate Commerce Commission

This conference is examining a really important issue, and I am very honored to be a part of it.

As you are all aware, of course, the transportation industries were deregulated in the late 1970s and early 1980s, starting with the Ford Administration. The Carter Administration got things rolling with a little help from some Republicans in Congress and some administrative reforms on the part of the Interstate Commerce Commission (ICC).

During the Reagan Administration, this pro-deregulation philosophy persisted with a couple more deregulation bills. What also came with it was a desire to reduce the role of government overall, not only in terms of what we are doing here at this conference--deregulation--but as general ideology, that we should be getting the government phased out and sized down. In addition, we have been faced with a mounting federal budget deficit which has called into question what functions we can expect the government to perform.

Given the current degree of regulation of our various transportation industries, the question arises, then, why do we even need transportation data? I think there are a number of reasons. First and foremost--although it may sound a bit like a cliché--the transportation industries do constitute a very important sector of our economy. Without transportation, things would grind rapidly to a halt. It is important that government decision-makers have accurate information on the performance, financial stability, and other factors pertaining to our transportation industries. We need these data in order to do our job right in terms of ensuring an efficient and effective transportation system.

In addition, I think it is important that we remember that these types of data are not important only for transportation decision-makers--the DOT, the ICC, and other agencies--but also for other types of government activities, for instance, tax policy. If we are considering imposing a gas tax, for example, the Senate Finance Committee and other people who are involved are going to need to know if the trucking industry can withstand it? What industry are we talking about? What size of an industry are we talking about in terms of the magnitude of revenues that would be generated? And, if we were to impose a gas tax, what might be the likely effect on that industry?

I think it is also useful for officials in the transportation industries themselves to have these data in order to be able to determine how they are doing relative to their intermodal and intramodal competition.

This will help them in their planning processes, as they assess possibilities for expansion or other opportunities.

Related to this whole concept is the need for this type of information on the transportation industries and how they are performing in order to assess the outcome of deregulation. During the legislative debate over deregulation in each of the industries--railroads, trucks, freight forwarders, everybody--a number of predictions were made as to deregulation's expected effects, and these were all very theoretical and based on sound economic theory, and as an economist, I thought they were just great. But how, in practice, is deregulation working?

I think, generally, most people believe that the various pieces of deregulation legislation have been a success, but the results have not been uniform either among industries or within them. You take the railroads. A number of railroads are doing very, very well; other railroads, not so well. We are seeing a lot of consolidation and merger activity that may or may not have been expected at the time the Staggers Act was being considered.

In the case of the trucking industry, we have a number of LTL carriers that are doing extremely well, and TL carriers as well. However, we have had a lot of bankruptcies. True, bankruptcies were assumed during deregulation. Did we assume there would be quite as many as there are now? I don't know.

But we need to know what, in fact, is going on. Were we right back in 1979-1980? So, as an academic matter of interest, I think it is very beneficial to have this sort of information for purposes of future endeavors and assessing how well the efforts of a decade ago really did work.

I think more importantly, however, for those who favor deregulation, at any rate, is that we remember that deregulation is not necessarily a final act. There has been some interest in Congress in recent years, for example, in re-regulating the airline industry. With respect to freight transportation, last year the so-called CURE bill was working its way through Congress, which would have, in effect, provided a fair degree of re-regulation of the railroad industry.

So I think, to ensure that the clock is not turned back, we must make sure there are sufficient data available on the performance and financial situation of our transportation industries. In addition, should any opportunities for further deregulation arise, it will be crucial that we have meaningful data in order to make the case for deregulation. I think this is particularly true

with respect to the motor carrier industry, where there are some deregulation efforts continuing at this time.

In the meantime, regardless of the future level of regulation, whether we want more deregulation or we want to go back or whatever, it is important that we know what in fact is going on out there in these industries so that we can make reasonable decisions. There are, of course, a host of other reasons, but this is the main direction, I think, in which we need to go.

So what is the problem? Under deregulation, many believe that the need for transportation data, at least the data collected by the government, has been greatly reduced if not eliminated. And as I see it, the argument is twofold. First is that since these industries are largely deregulated, we no longer need this type of information. For railroads, motor carriers, what have you, the degree of government intervention is greatly reduced from what it was 10 or 15 years ago. Do we really need to know that much about what is happening in terms of minute details of these people's performance?

Secondly, if somebody wants the data, they can be collected privately. Let's let the free market do it. Government is in a period of fiscal crisis here, let somebody else do it out there.

This issue was raised in one of the first cases in which I voted last year at the commission on motor carrier reporting requirements. To use this as an example of where the government's thinking is going in some cases, I think it is a good illustration.

There had been some interest within the commission, for some time, in reducing the roughly 50-page annual reporting requirement for trucking companies to only one page and, in addition, we would have eliminated reporting requirements for some of the smaller, Class II carriers and eliminated the Uniform System of Accounts as the measure we use for these data.

I am pleased that the commission chose not to take this action. In recognition of the need to reduce reporting requirements on these carriers, and the fact that the 50-page report contained a lot of data that no one really was using, we did reduce the 50-page requirement to 10 pages, not to one page. And we did this in cooperation with the trucking industry, who had some of their consultants develop a good 10-page document in terms of what types of data would be useful for the government to collect. In addition, we retained the reporting requirements for the Class II carriers.

I think it is very important for the commission to be able to monitor the activities of the trucking industry. As long as we have regulatory responsibilities over the trucking industry or in other cases such as railroads, freight forwarders, what have you, I think it is crucial that we know what is going on in these industries. For

that reason, I just could not go along with the one-page proposal.

In the future, we have other issues to look at. We have exemptions right now for some trucking companies from our reporting requirements. Should we in fact require these people to begin filings? We will be looking at a lot of these types of issues, I hope, in the future at the commission.

I think the ideological issue, though, with respect to data collection and whether somebody else should do it, not the government, is compounded by the fact that we are in the midst of a fiscal crunch with our mounting budget deficit. The government, therefore, is being forced to look at its data collection efforts more carefully to see if, on a cost-benefit basis, at least, it makes sense for us to be continuing to collect these types of data.

If you add to this the fact that the Office of Management and Budget does seek to reduce paperwork burdens and reporting requirements on the public, it makes it rather difficult to get the government involved--for instance, for agencies to get surveys cleared through the Office of Management and Budget.

When I was at DOT doing a lot of work on trucking deregulation, we tried to do a number of studies, and I am pleased to report that OMB was always very cooperative and we did get the survey instruments through clearance, but it was a difficult process. I think now, under the current regime and with current budget constraints, that the process may be more difficult. We need to be very careful to assess what types of data we really need so that if we only have one or two shots to get something through the clearance process we are going to come up with meaningful data.

I think we need to also keep this in mind because it is crucial that the government maintain a role in data collection. Sometimes, for confidentiality reasons due to the magnitude of the issue involved, or for other reasons, the government really is the only entity that is well suited to collect certain types of transportation data. For that reason, we need to make sure the government keeps a hand in that process.

This conference is exploring a critical issue--the whole concept of transportation data needs and resources. I, for one, am very pleased that the U.S. Department of Transportation has asked for information on this issue as a part of its National Transportation Policy Study, and I think the Transportation Research Board and the Transportation Research Forum are to be commended for conducting the conference as part of that process.

The topics that we will be exploring at this conference will cover a wide array of concerns. Judging from the program, I think that at the conclusion of the conference, we are going to have a much better sense

of what our transportation data needs really are, as well as, I hope, an accurate appraisal of how best to obtain these data given budget constraints and other concerns.

Again, I am very pleased to be a part of this conference, and I look forward to hearing the outcome of the discussions in the various sessions here. Thank you again very much for the opportunity to be here this morning.

NEEDS FOR FREIGHT TRANSPORTATION DATA IN A DEREGULATED ENVIRONMENT: PART I

Moderator: Dabney T. Waring, Jr., Motor Common Carrier Association

Speaker: Harvey A. Levine, Association Of American Railroads

My remarks focus on three aspects of the transportation data issue being addressed today: (1) how changes in the railroad environment have lessened the need for government-collected data, (2) what data the government is still collecting, and (3) how the government should change its policies in the data collection area.

Because the railroad industry is highly competitive, public policy toward data collection should not be based on the traditional monopoly mentality. More than 90 percent of railroad rates are deregulated (due to below-the-threshold revenue-cost ratios, contracts, and/or exemptions); railroads face increasing competition from deregulated motor carriers, among others; and the industry has shrunk to a size below that of some individual companies in this country. This competitiveness is reflected by a general decline in freight rates during the 1980s.

Yet, the Federal government still collects an abundance of information from the railroad industry. The industry maintains a second accounting system for regulatory purposes, submits an R-1 annual report to the ICC, which is much more extensive than the normal 10-K report, and also is required to submit to the ICC, the following: Quarterly Report of Revenue, Expenses and Income, Quarterly Condensed Balance Sheet, Monthly Report of Number of Employees, Report of Railroad Employees, Service and Compensation, Quarterly Commodity Statistics, Freight Commodity Statistics, and participation in a comprehensive Waybill Sample. Because of these burdensome data requirements, it is probably that more is known about the railroad industry than any other industry in the United States.

In view of the changed, and changing nature of the railroad industry, the federal government should

1. Reexamine its data collection policy every several years in order to collect only what is absolutely necessary for the purpose at hand, and not collect data because "its interesting."

2. Allow the industry's trade association to collect the needed data; the government could audit the process. This type of arrangement already exists with the Rail Cost Adjustment Factor, Freight Commodity Statistics, and Waybill Sample. The association is

efficient and effective in collecting data from its own members.

3. Concentrate on quality, not the quantity of data.

4. Use the data only for what it was intended to be used for.

Speaker: Russell B. Capelle, Jr., Regular Common Carrier Conference

ATA's recent petition to the ICC (to begin a rulemaking to "establish a formal annual reporting mechanism") is a positive step toward inducing equality of reporting among carriers. However, annual expense data should also be collected. Then we would have operating ratios for myriad carriers about whom we know nothing. Since deregulation, the carriers that have grown the most are the ones we know the least about!

In the safety arena, the University of Michigan Transportation Research Institute (UMTRI) has been doing laudatory work over the past decade. Their Trucks in Fatal Accidents (TIFA) database sets an excellent example of meticulous database construction and data quality enhancement that others in the research community should heed, including federal agency personnel. Shouldn't DOT itself have been merging and enhancing its own accident databases long ago, without UMTRI showing what needed doing?

The UMTRI exposure database, National Truck Trip Information Survey (NTTIS), is a giant leap forward. Accident rate calculations too often use "apples" in the numerator and "oranges" in the denominator (FHWA's Highway Statistics for Vehicle Mile Trips (VMT) in the denominator and Fatal Accident Reporting System (FARS) accidents in the numerator, for example). The best of all worlds is to have matched data, but accident rates using NTTIS and TIFA matchable data are far more reliable than rates using unmatched data. Those latter rates when picked up by the media are often counterproductive; the necessary explanation of the caveats surrounding their use obfuscates the public's understanding. Another possible source of exposure data will be FHWA's Nationwide Truck Activity and Commodity Survey (NTACS) after its completion.

The National Highway Traffic Safety Administration's (NHTSA) National Accident Sampling System (NASS) system is the only one that provides "us and them" accident data (comparisons of personal-use-vehicle and heavy-truck accident trends). Budgetary

cutbacks reduced Primary Sample Units (PSU) from a level that would assure reliable generalizations to the whole accident population. A more reliable NASS sample should receive higher priority.

One last positive note: in the early 1980s the Census Bureau was asked to add a number-of-accidents data element in the quinquennial Truck Inventory and Use Survey (TIUS). TIUS had plenty of data for the denominator of an accident rate calculation but nothing on accidents for the numerator. That simple addition will provide unique insights when the 1987 TIUS data are available in 1990. TIUS question number 32 asks about number of fatal, injury and property-damage-only accidents and provides a quantum leap forward toward having matched data--mileage data and accident data from the same trucks. That is a "first"!

As researchers and database builders, we need to keep lofty objectives in our sights and walk the fine lines between comprehensiveness and detail, accuracy versus expediency, and objectivity weighed against subjectivity. We need to promote greater interagency/interorganizational cooperation; to keep the big picture of society's needs in mind; and to build databases that are flexible for an unknown future. Only then can we move toward greater database concinnity.

Speaker: Kyungwoo Kang, Port Authority of New York and New Jersey

Data collection at the Port Authority of New York and New Jersey is both multimodal and multiregional and involves "multi-millions" of dollars. We need data to support our customers: the airports, the sea port, the tunnels and bridges, and the World Trade Center. Our three major airports, Kennedy, LaGuardia and Newark handled about 1.8 million tons of cargo in 1988. Our seaport handled 12 million long tons in 1988. Our two tunnels and four bridges handled about 7.6 million trucks in 1988.

Our freight data needs are driven by our line department operational purposes, such as traffic information for strategic planning. Therefore, we need not only current data but future projections covering origins, destinations, commodities, and types of vehicles. The most difficult but most important part of the data interpretation is how commodities moved, what services the different businesses need, and who is making the freight decisions.

To gather the necessary data we interviewed about 10,000 truckers. To assess transportation needs we interviewed over 2,000 firms in our area. In addition to gathering our own data, we also rely on traditional government sources.

Assembling a huge body of professionally skilled survey agents to supplement our policy efforts is a real

problem. You can imagine what is involved in stopping an 18-wheeler at midnight at the George Washington Bridge to ask some questions. Of course, changing data needs and data sources in a deregulated environment further complicate things.

I think the solution to these problems lies in identifying the key data needs and focusing the effort there, compromising objectives where it is necessary. Next, a public and private partnership in data collection should be in the future.

Speaker: Jerold B. Muskin, Drexel University

At a time when the demand for information is increasing, at a time when the ability to access, store, transmit and process information has ballooned beyond belief, at a time when the competitive nature of the motor carrier industry is as it is, the quality, the availability of that information shrinks. For the same reasons that deregulation has set in, data availability has shrunk.

There are three principal areas of demand for motor carrier information: first is safety, second is public policy (insurance, entry, size and weight regulations and other related activities), and third (and this is critical) so that companies can conduct their affairs appropriately. Companies need data upon which to choose strategies, to achieve or choose positions they wish to occupy in the marketplace, to make capital investments, and to make marketing decisions. For these purposes, valid data is required.

The expected source of this information is the government. However, the census of transportation is, for all intents and purposes, gone, and with it, commodity flow information is gone. The U.S. Industrial Outlook says, "Data for most of the industry's activity measures were available only through 1986, making it necessary to estimate data for 1987 and 1988. Data for 1989 are forecasts." I do not know the difference between estimates and forecasts, but that is "officialese", and in any event none of it deals with traffic flow.

As for safety data, we do not know the kinds of accidents, and separating heavy trucks from others is flimsy at best. And yet, we make decisions without any insight into the social costs of accidents and without any knowledge of the marginal social costs or benefits.

Privately available data is derived, by and large, from government data, which means a lot of manipulation is required to compensate for the drying up of government data.

The third source of data is the carriers. Carriers can derive that data from observing or surveying the

marketplace, but observation yields only that which is observed. Inquiries from prospects and customers are subject to error and may be colored by their desire to put themselves into a position of negotiating strength with the surveyors--the carriers.

Furthermore, carriers are reluctant to represent all the information that is available to them and tend to couch it in language that may disguise proprietary information. This is more so as carriers become more competitive in the deregulatory climate. Further, exchanged information among carriers raises the specter of antitrust, absent government involvement.

There is an immense gap between information needs and the opportunity to deal with information that has been handed to us by the computer and information transmission industries and the availability of valid, reliable information, and I would ask you, what are we going to do about it?

Speaker: David E. Lichy, U.S. Army Corps of Engineers

The U. S. Army Corps of Engineers through its Navigation Data Center collects, processes, manages, and disseminates a variety of statistical data relating to foreign and domestic waterborne commerce, vessel and port facility descriptions, and navigation lockages. The reports include annual statistical tabulations of domestic and foreign commodity movements on U. S. waterways and within ports; annual directory of operating domestic vessels, periodic revisions of ports facility descriptions, and quarterly detailed statistics for each Corps of Engineers operated lock. Information is provided both in published reports and on data processing software.

The WATERBORNE COMMERCE AND VESSEL STATISTICS consists of the "Waterborne Commerce of the United States (WCUS), Parts 1-5", which contains statistics on the commercial movement of foreign and domestic cargo, available in both hardcopy and computer tape. "Public Domain Data Base of WCUS", contains aggregated information on waterborne commodity movement by 26 geographical areas, available both in hardcopy and computer tape. "Principal Ports Tonnage Reports" ranks U. S. ports for a calendar year by total tons, domestic and foreign. "State Tonnage Report" contains total waterborne commerce by state. "Transportation Lines of the United States" lists vessel operators and their addresses, type and physical description of vessels, principal service, location, and commodity served. NDC handles special requests for commerce and vessel statistics on a case-by-case basis which are not contained in standard products. A charge for these will depend upon the nature and complexity.

The PORT FACILITIES data consist of the physical and intermodal characteristics of the coastal, Great Lakes, and inland ports in the United States. Fifty-six Port Series Reports are published at intervals of approximately seven years, covering over 200 individual port areas. Reports consist of complete descriptions of a port area's waterfront facilities, including detailed information on berthing accommodations, petroleum, and bulk handling terminals, grain elevators, warehouses, cranes, transit sheds, marine repair plants, fleeting areas, and floating equipment. A special 1988 report, "Summary of Commodity Handling Terminals of the United States Inland Waterways", groups the various terminals by type of commodity handled and includes location, berthing length, cargo direction, operating rate and storage capacity for each facility.

The LOCK PERFORMANCE MONITORING (LPM) data consist of information describing the traffic through the locks as well as the physical aspects of lockages. Specifically, data is collected regarding shift and significant weather or navigation condition changes; lockage data, including vessel name, number, river direction, number of cuts, lockage, entry and exit type, arrival time, and lockage time; and vessel data including vessel name and number, flotilla dimensions, number of passengers, barge types, number, and tonnage. Quarterly "Summary of Lock Statistics, Lock Performance Monitoring System" and "Overview of the Lock Performance Monitoring System" are two available products.

NEEDS FOR FREIGHT TRANSPORTATION DATA IN A DEREGULATED ENVIRONMENT: PART II

Moderator: W. Bruce Allen, University of Pennsylvania

Speaker: Ben Lieberman, Maryland Port Administration

Deregulation has forced ports to compete with other ports. It has shifted control of cargo routing from the shippers to the ocean carriers. Many shippers are now port-blind. They select an ocean carrier, who then chooses the US ports through which the cargo will be shipped.

Ports use data: 1) to measure their own performance; 2) to analyze cargo movements of specific customers; and 3) to analyze the activities of competitor ports.

Internally generated billing data at the ports yields ocean-carrier, cargo type, and levels of billing. However, such data does not include inland origin or destination, nor the foreign port or country of origin/destination. External data comes from the US Bureau of the Census, the Army Corps of Engineers, and the Baltimore Maritime Exchange, as well as the Journal of Commerce's PIERS system.

The census data are utilized as the official measure of the port's performance but are not very timely. Such data do not serve the port's marketing efforts well because they do not disclose actual shipments, shippers/receivers, and inland locations.

The PIERS information is extensively used in the marketing effort because it provides customer specific data and its time lag is less. It tells the volumes shipped by customers, the ports that they are using, and origin and destination of the cargo in the US, and also abroad. It complements the internal data of the port for existing customers. For potential customers, it is the only data source which is available to the port. It enables the port to see how much cargo each shipper is sending where, and by what carrier. The port can then develop a strategy involving carriers which serve its port who also serve the same origins and destinations.

The PIERS data shows a port what types of business and levels its competitor ports are able to perform, which carriers are making the shipments, and where the ultimate origins and destinations of those shipments lie.

The Army Corps of Engineers collect data on domestic water-borne cargo and combine them with census data on foreign cargo. It takes two years for users to get this data. Access Route to the Ocean is obtained from the Baltimore Maritime Exchange.

The major characteristics which are desired in a data set are timeliness and the ability to manipulate the data into a form which is desired by the analyst. Accuracy of the data is also desired, e.g., the listing of inland origin

or destination may not be an actual shipping point, but rather a corporate address of the shipper.

Most of the data needed for market planning purposes are available from internal sources and from the private sector.

Speaker: Jeff Gutman, World Bank

The US is a relatively data rich country. In dealing with developing countries, the data are very sparse and the resources for compiling data quite limited. Thus, it is necessary to be very precise and selective in the identification of data requirements. In many instances data needs are quite elementary. At the same time, however, these countries can ill-afford costly investment or policy errors with decisionmaking critically dependent on whatever sources can be provided. Moreover, demand changes in these countries can be very rapid and difficult to project.

Four factors underlie a changing orientation in the data requirements of developing countries:

(1) With basic trunk networks in place in most countries, expenditure focus is on maintenance of and information on the condition of rather than expansion of networks; less attention is being directed at traditional aggregate demand analysis and projections.

(2) Planning orientation has shifted to specific commodity and corridor analyses and away from large, data-intensive models.

(3) Limited budgets and macroeconomic concerns emphasize the need for better understanding of shipper response to sectoral policy reforms.

(4) Trends towards deregulation change government responsibility to monitoring, requiring sampling, as compared with enforcement requiring more complete data sets.

The World Bank, as a data user, is addressing the following issues in developing countries:

(1) Major macroeconomic adjustments in developing countries especially regarding policies affecting the relative prices of imports and exports that can cause substantial shifts in commodity flows

(2) Regulatory and pricing policies to promote efficient utilization of existing infrastructure

(3) Cost recovery for publicly provided infrastructure

(4) Transport as a source of general tax revenues

(5) Impact of excessive swings in government policy with regard to inflation, interest rates, and foreign exchange on the transport sector

(6) Regulatory reform and privatization

(7) Concern about externalities, e.g., safety and environmental issues

These issues call for reliable, selective data on infrastructure, transport services, the linkage of production and trade, and the interaction between transport and macroeconomic policy.

Speaker: Michael Bronzini, Pennsylvania State University

Data are needed to answer research questions. What data are needed, why do we need them, and, once obtained, how do we use them?

Flow data from BEA to BEA for 20 aggregate commodity groups would be sufficient for many transportation researchers. Traffic density information, e.g., net tons, carloads, etc., by traffic corridor would also be useful. Traffic accident and incident data is collected by various sources and is required because of the growing concern about modal safety. Some information is available publicly, but much is not. Modal operating cost information is desirable but tends to be proprietary. This data should include average cost/ton or ton-mile by origin-destination by commodity by shipment type (e.g., truckload, less than truckload). Lastly, information on rates is of interest. Rate data tends to be proprietary.

Once the information on flows, density, accident/incident, operating costs, and rates is available, policy makers and researchers have many uses for it.

Policy formulation on the national and local levels requires intelligent analysis. If data are not available, then such intelligent analysis cannot be accomplished and policy cannot be made to fit the reality of the situation.

Investment in, rehabilitation of, and better management of public infrastructure is being undertaken currently. All of this activity requires planning, and planning requires data. Current demand, projections of demand, and alternatives to the current or proposed system are important parts of a planning process involving investment/rehabilitation/management. In some cases, new investment would not be appropriate. Managing existing facilities better would be the answer, but this cannot be determined without an analysis of the data.

Specific examples include the movement of hazardous materials, energy policy and related environmental policy, planning for temporary diversions due to construction disruption, contingency planning, estimating the cost of moving a commodity for the first

time, and urban passenger mobility problems which impact on urban freight movement.

The collection of flow, density, and accident/incident data are government functions. Many crucial government policy questions require those data. Operating cost data and rate data are most appropriately collected by the private sector.

COVERAGE AND QUALITY PROBLEMS WITH EXISTING DATA RESOURCES FOR FREIGHT TRANSPORTATION

Moderator: T. Q. Hutchinson, U.S. Department of Agriculture

Speaker: David Greene, Oak Ridge National Laboratory

Freight data are needed to determine the extent to which the highway system should be expanded, how well the system is operating now, what costs are involved, and how these costs should be allocated among users and providers.

The basic data needed are truck numbers, truck miles and commodity trips. Within these data elements several breakdowns are needed, such as:

- 1) Truck numbers: configuration (tractor, trailer, single unit), ownership by type of carrier, operating and registered weights, all by type of commodity hauled.
- 2) Truck miles: number of miles driven for each of the above categories.
- 3) Commodity trips: Number and distance driven carrying each commodity type within each of the above cells.

Without considering specific origins and destinations--and some origin/destination (OD) data is needed--160 million cells are required. Considering OD data, 6.4 trillion are needed.

Obviously the data must come from more than one source, and interrelate various data sources. In fact, that is what we do.

Since several sources, several analysts and several models are involved, the national policy analyst must attempt to achieve coordination among surveys and analysts to achieve comparability of data among the several sources.

Oak Ridge National Laboratory has completed a study of the quality and coverage of six sources of truck vehicle miles and numbers. We conclude that the basic source of VMT data, by truck type, state, highway class and weight should be the Federal Highway Administration's Highway Performance Monitoring System and the associated Truck Weight Study Data because the best way to collect such data is to directly sample vehicles operating on the road network. What is needed is for all the states to cooperatively agree to a set of uniform collection procedures and standard definitions of truck type and weight classes.

Truck Inventory and Use Survey (TIUS) is the best source of truck and owner characteristics. TIUS tells us about truck characteristics, such as body type, engine

type, etc., and affords uniform definitions of truck weight classes.

Nationwide Truck Activity and Commodity Survey (NTACS) is not going to give us the comprehensive commodity flow data that some want, but it is going to give us commodity trips on the highway network. One advantage is that it is integrated with TIUS. Current problems are that NTACS does not follow TIUS closely enough in time and, since it samples trucks rather than commodity movements, it cannot tell us all we need to know about intermodal movements.

Using these data sources together--and no single source will do--requires cooperation, coordinating surveys, and data collections to yield comparable data.

Speaker: Paul Roberts, Trans-Mode Consultants

There are three kinds of data needed to answer both public-policy issues and the issues faced by management: 1) data on demand for freight movement; 2) data on the supply of facilities and equipment used (which we will examine shortly); and finally, 3) data on the operating entity--financial statements and the like.

Commodity flow data: There are really only five major aspects of all freight movements: what moved, when did it move, from where to where, who moved it and how much did it cost to move it. More detail is needed to answer each of these questions.

Under what moved: what was the commodity, how large was the shipment, and what packaging was required?

When did it move: Date and times of pickup and delivery.

From where to where: Geocoding becomes important.

Who moved it: The carrier, the mode, the type of service. The carriers may well not own any transportation equipment and information tends to be proprietary.

What did it cost: I am always a little suspect of costing systems, so I am going to say the cost to the shipper is equal to the revenue to the carrier. Subcontractors and/or handling parties can complicate things.

To understand the ability to move freight we need data covering both facilities and equipment. Usually we use a jointly owned network with individual links. We need data concerning these networks, how are they

organized and this requires definitions of the system and its components. We need to know physical attributes, capacity, utilization, age of equipment, condition, etc.

Operating entities: These are the organizations that provide the actual freight movements for a fee. You need financial information on their operating characteristics, something about the number of vehicles they own, the number of owner-operators, the number of trips, and miles, the amount of utilization.

Existing data sources are uneven and of differential quality. The Commodity Transportation Survey of 1977 is an antique more than anything else. The truck data area seems to be where the least data is available. The biggest gaps are in truck data, but especially those with no relationship to the ICC. For railroads we lack intermodal data. In the maritime area, operating statistics are very sporadic. A lot of the players are offshore.

The data supply problem can be solved, and at a reasonable price. The answer lies in using lots of small, disaggregate samples designed to answer specific questions.

Speaker: Rolf Schmitt, U.S. Department of Transportation

Tremendous unevenness exists in data resources from mode to mode.

In aviation, information is maintained by the federal government for each plane. On the other hand, we do not really know how many trucks there are in the country. We have a good handle on those registered in the states through the Truck Inventory and Use Survey, but government-owned vehicles are excluded (leaving out, for example 99,000 Jeeps owned by the Postal Service).

The quality of data varies all over the map, and it has been affected by some sources of decline over the past few years, and it has been even more affected by some sources of change that have been alluded to earlier today. There are three major sources of decline.

The first big source of change is money. As costs of traditional data-collection programs go up, we run into problems stemming from the federal deficit.

Second, deregulation has taken its toll. Using the aviation example again, aircraft manufacturers who design aircraft based on information that is collected from the regulatory regime and government agencies who use that data for a variety of nonregulatory

purposes managed to salvage their data during airline deregulation.

In trucking, we have had some signs of recent change. The Census Bureau is now collecting through surveys some data once collected through reporting requirements. So, for strategic planning and national scale analysis, we are starting to fill some of the data gaps, but deregulation has taken its toll.

Third, paperwork reductions. Respondent burden is a very real problem. People are tired of filling out long questionnaires, thus, long questionnaires lower response rates. Respondent burden is also a political issue. Under the Paperwork Reduction Act, the Office of Management and Budget (OMB) is responsible for clearance of questionnaires and has insisted on a lengthy review process.

Survey designers tend to ask for everything because the cost of getting the survey through the process is so high. Thus, you end up with a fairly large and complex questionnaire to avoid coming back time after time with little surveys.

A lot has changed in the transportation industry since deregulation, and our data collection programs must not be targeted to the old way in which transportation business was done. For example, intermodalism affects the rail waybill data. A container is moving under a container rate, but what is inside the box is unknown. Freight-of-all-kinds rates also conceal what is moving and contract rates conceal the real freight bill.

The role of third parties also muddies traditional categories. At what point does a customs broker that provides local pickup and delivery stop being a broker and become a trucker? When you have a motor carrier subsidiary of a railroad that is using independent owner-operators, the chances for double counting are horrendous.

The technology we are using to measure things is changing the nature of the game. Once we stopped trucks to weigh them and to ask the driver what was onboard. New automatic vehicle identification and weigh-in-motion equipment can monitor a truck going 55 miles an hour, but not what is inside the truck. So there is better information about the weight distribution of trucks, but not about commodity movements.

Our methods of analysis are also affecting our data needs. Microcomputers run geographically specific models which create a demand for detailed data because local planners can process it. So technology is creating both problems and opportunities for us.

As previously mentioned, uniform definitions are a must. In relying on state furnished data, we learn that all 50 states, Puerto Rico and the District of Columbia have different definitions. To link separate data sources or to be able to overcome differences in definitions of things like, "what is a truck," we need some overlap in the kinds of data we collect.

Speaker: Frank Smith, Eno Foundation for Transportation

In the 1950s and 60s there was a lot more data because there was a lot more regulation and under regulation it was collected from everybody whether they liked it or not. Congress did not police the process. Most of the deregulation of data has been administrative, it has not been by Congress.

Who used this data? The regulators, obviously. Investors, obviously, to analyze the financial stability of carriers. Fortunately for them, if they are going to put their money in, they still get a lot of data. Consultants--they, obviously, want as much as they can get, especially if it doesn't cost them anything, if the government provides it. Finally, policy makers. They judge regulatory needs for legislation.

For aviation, adequacy of data is excellent. Massive financial and operating data is available for each carrier. As far as individual commodities, Census data tend to be outdated but are useful as guidelines.

Oil pipeline data: The Federal Energy Regulatory Commission still collects fairly detailed data from all of the carriers. Unfortunately they do not collate or publish them. the Oil and Gas Journal, Oil Pipeline Research Institute, Association of Oil Pipelines, American Petroleum Institute and the U.S. Department of Energy all publish some information.

Rail freight data sources: the ICC collects only from Class I carriers, and the Association of American Railroads(AAR) publishes it. Data on Class I carriers is quite comprehensive.

In the past, regional, shortlines, terminal and switching railroads have been neglected, but the AAR is trying a survey of their own. The non-Class I carriers account for about 10 percent of carloads and about 13 percent of ton-miles.

Truck data is covered pretty well, but most of it is published by the American Trucking Associations. They offer financial data for Class I and II carriers, but omit a lot of the others.

Highway statistics are published by the Federal Highway Administration. Maybe the information could be a lot better, but what is available--registrations, user taxes, and vehicle miles--is very useful.

Finally, water carriers. The best source of date are the Corps of Engineers' reports. These are quite comprehensive. Unfortunately they tend to have a built-in delay, and nobody collects revenue and expense data.

ALTERNATIVES TO PUBLIC DATA SOURCES

Moderator: K. Eric Wolfe, Association of American Railroads

Speaker: William H. Oderwald, ALK Associates, Inc.

I am going to talk about how to better use the data we have through transportation data enhancement and network analysis. ALK enhances the ICC's Carload Waybill Sample by adding mileages and other geographic codings, and also uses data with networks. Networks are a principal representation of transportation problems and opportunities. In essence, data sources can be thought of as the supply and the network as the demand. The network shows you the structures, the sources, the origins, destinations, and whatever, in a coherent way.

Networks allow researchers to not only verify the data through visualization but also analyze it. Without networks, irregularities or errors could slip through in the reams of printouts associated with a large project. To be useful networks must have several attributes. These include (1) transportation attributes associated with each link such as distance or service quality, (2) analysis attributes which allow assignment of traffic to the network--the software, (3) some sort of geographical reference such as BEAs, and (4) timely maintenance of the network.

For example, the ALK highway model contains over 40,000 links at the present time and is anticipated to have over 60,000 by the end of 1989. These links will cover over one half million miles of highway. Each link contains various attributes related to the type of analysis performed, such as recent studies for clients involved routing of hazardous materials. With population densities associated with the links in the network, risk assessments could be made. Studies answering a variety of "what if" questions could also be performed.

In conclusion, though data may be less than satisfactory, the application of some network tools can create some analyses that enhance the information.

Speaker: Joseph B. Riker, Reebie Associates

Reebie Associates has been providing freight transportation consulting services for over 20 years. In the early 1970s, to support our consulting practice, a highly detailed point-to-point data base was established using a combination of then-public sources and proprietary carrier data. From this work, our TRANSEARCH project began. TRANSEARCH in its

most basic form is a data base of U.S. domestic freight movements. It is a comprehensive source which provides detailed information on movements among 285 specific market areas. Commodities are defined at the four-digit level of Standard Transportation Commodity Code (STCC) detail and separate volumes are shown for seven modes of transportation. Our current data base contains over 1 million records, with an aggregate volume of over 5 billion tons. Market areas can be defined as BEA's states or other specialized areas. This data base is built on a combination of public and private sources, each of which is individually enhanced and normalized into a common format so that it may be combined into a single data base.

TRANSEARCH has had a very wide range of applications by its users, who represent all segments of the transportation sector of the economy. An important feature of our service is the ability to customize TRANSEARCH--in terms of geographic area, units of measure and shipment characteristics--to meet specific user requirements.

One of our biggest challenges has been to develop and improve TRANSEARCH over time as fundamental changes have occurred in the availability and quality of some of the underlying data sources. The recent trend toward the shrinking of available public sector data has not been--and is not likely to be--offset by additional data provided by carrier organizations. While carriers want data that will help their operations, they do not want to provide a resource that will be helpful to competitors--either within their own mode or in other modes.

Thus, we see the need for increased primary data collection by firms in the information business. These private efforts, however, cannot hope to achieve the efficiency or scope of a well conceived federally-based effort. Instead, a combined effort--with a significant Federal role in primary data collection and private sector firms focusing on customizations/enhancements--would generate the highest quality information at the lowest cost to the user. This in turn, would maximize the use of freight movement data in the analysis of transportation issues.

Speaker: Forrest Baker, Transportation Research and Marketing

Transportation Research and Marketing (TRAM) operates the National Motor Transportation Data Base

(NMTDB). Unlike those presented earlier, it is a homemade, do-it-yourself project.

We interview, in depth, approximately 25,000 long-haul truck drivers yearly. Each questionnaire contains over 40 questions and takes about five minutes to complete. Interviews are taken at 19 locations across the county. The locations were predetermined by inventorying every truck stop in the U.S. in the early 1970s, determining gallonages sold by truck stop and route, and then locating interview sites to cut the heavily-travelled, long-haul, competitive truck routes. We do not generate data on short-haul traffic.

The data base generates approximately 50,000 sets of data annually, which contain movement origin-destination pairs, commodity moved, and trailer type. All data is mileages by point of interview. We include mileage of all of each movement's component segments: the deadhead miles to load the outhaul; the deadhaul between the two loads; the mileages of headhauls and backhauls.

The data is not necessarily commodity-specific, market-penetration data; in fact, in many instances, it is poor data for that use. We generate data on the equipment: the width, length, horsepower, make and model of the tractor, year of manufacture; domicile of the driver; ownership of the equipment; and if the driver is not an owner-operator, was he ever one? Driver profiles are also drawn based on reported age, years of driving, length of time employed with his present company, driving characteristics, hours driven, and miles driven per month and year.

Purchasing habits of the drivers are also defined--where he fueled; how much fuel he bought; how much he spent for food; how he is eating. We find the meal consumption pattern of drivers is the best barometer of the economic welfare of the driver. In the 1970s he was eating four meals a day. Now he is down to less than 2.5.

We have gathered this data since 1977. We have a data set that goes through the period of deregulation. You can watch the rate patterns, you can watch driver compensation, you can watch driver turnover; you can see the age of the equipment being stretched out. The TRAM data base profiles the long-haul trucking industry quite accurately.

Speaker: Alan E. Pisarski, Falls Church, Virginia

A central concern about data collection activities is technical skills that are a requisite for designing and carrying out a program. Large amounts of money and large amounts of logistical skills--the ability to move people, paper, and things around as needed and to make things happen--are clearly also required. These requirements place severe pressures on the types of institutions that conduct and sponsor large scale data

collection efforts. It has always been the institutional problems that were the foremost concerns in establishing viable, continuing data series.

As we approach perhaps the most important legislative decisions our country has seen in transportation--including highways, transit, and aviation --the needs are great to be effective and to form viable policies. It would be wonderful to be assured that the best available data and analytical resources are being brought to bear on these multi-trillion dollar public decisions that will leverage even larger private decisions over the coming years. Yet we have no national travel survey to know about passenger flows, no bus survey to know about intercity bus travel, no commodity flow surveys to know about freight flows. Our ability to forecast future flows is even worse. Not a great score card! We approach these major national decision issues in ignorance.

Clearly our institutions have failed us. There has been lack of interest, lack of support, and lack of recognition of need from our public institutions. The decline of regulation permitted a much-needed attic cleaning in our available data programs. While we should not mourn the loss of some of these sources, we should regret the failure to take the opportunity to replace them with better public or private programs. The push to privatize impelled a policy of getting government out of the data business as well. Thus no public institutions have moved forward to fill the gap. We may have to invent those institutions.

Can the private sector fill this void? How do they fit in for the long term? After ten years the answers are still very tentative. Most of our vendors are value-added purveyors of public sources, and they would be the first to support better public sources. If the private sector is going to be a serious provider, then the government, often the main buyer, is going to have to use serious resources as a buyer, or there will be no marketplace for private vendors to sell in.

For better institutions and more resources to come about, the government will have to at least recognize its needs for data to illuminate its own decision, much less recognize any responsibility to others to produce a data rich environment for public and private decision-making. Government will have to recognize that better data are a serious part of the national transportation infrastructure for which it has responsibility.

DINNER ADDRESS

Robert A. Knisely, U.S. Department of Transportation

To my mind a quotation from William Blake sums up the transportation dilemma:

"He who would do good to another must do it in Minute Particulars:
General Good is the plea of the scoundrel, hypocrite, and flatterer.
For Art and Science cannot exist but in minutely organized Particulars.
And not in generalizing Demonstrations of the Rational Power."

The National Transportation Policy Task Force and the Department strongly support the need for more and better data. Without data the government cannot see what is happening, cannot tell what to do, or whether to do anything. How much more and how much better are the key questions.

The "real market"--some call this private enterprise--needs data for the same reasons. Adam Smith's perfect information. This market must be the focus of our efforts.

Within the "real market" is a "little market" which buys and sells data. This market may not work alone. If the "little market" in data is not self-sustaining, the "real market" suffers. A minimal intervention policy implicitly assumes that the "little market" is "OK". If the assumption is wrong, the government is justified in intervening, but it does not follow that the government should do it all. Some federal subsidy, some federal collection may be called for. This is a justification for federal involvement in data that would satisfy all but a libertarian.

There are lots of obstacles to intervention: the Paperwork Reduction Act, OMB procedures, reluctance on the part of carriers to cooperate (we all need to agree on what a reasonable burden is), tight budgets, Congressional processes. Any program proposals must fit into the Budget Cycle.

The largest single obstacle is that data costs money. Transportation is no longer a freight exercise. People are transported. Some people have special needs. Some people are employees. Equipment is needed. Safety is a major issue. Infrastructure is needed. Finally, money spent on data is not spent on concrete, avionics, training, and other more visible goods and services.

KEYNOTE ADDRESS: The Census of Transportation and Related Surveys: 1987 and Beyond

Charles Waite, U.S. Bureau of the Census

We're here today to talk about transportation data and the decisions that will be made with that data. Certainly the Census Bureau's highest priority at the moment is expanding our information on the service sector and the transportation area is an important part of that sector. Service industries account for nine out of ten new jobs in our economy and transportation issues are critical throughout the economy. Recently, Cabinet level groups have called for better service industries data. Our challenge is to focus this broad support and coordinate effective responses.

What I am going to try and do this morning is to aid and abet this effort with three contributions: one, a review of available Census Bureau data sources; two, a summary of planned improvements that we have in mind; and third, a discussion of the issues for the 1990s.

First, let's look at existing information. Economic and population censuses are our most important information resources. They provide encyclopedic detail. You can look at the Census information as an encyclopedia. We like to look at the annual reports as a book and the monthly numbers that you see all the time like a newspaper.

The first information resource, of course, is the Census of Transportation. This has been taken every five years since 1963. The latest is for 1987. Each census has three components: first, an enumeration of 140,000 transportation establishments; second, a sample survey of 135,000 registered trucks; and finally, a detailed survey of truck activities.

If you look at the establishment count, you'll see that we have improved in 1987 over 1982. We have complete coverage of SIC's 42, 44, and 47 (water transportation, freight forwarding and transportation arrangement services). We have implemented the 1987 SIC revision. New classifications include travel agencies, tour operators, and courier services. We have data for non-employers, such as owner-operator truckers. These data, because of certain problems that we had in 1982, were not previously available. And we're publishing sooner. We're going to be two or three months ahead of the 1982 schedule.

We also have a survey well known to this audience, the Truck Inventory and Use Survey, covering the use of our commercial and private trucking fleet, the products it hauls and personal uses.

We have new data on truck accidents: type of truck involved, resulting injury or property damage, and of

course, the basic data on the physical and operating characteristics, vehicle type, weight, engine size and use.

Finally, we conduct the Nationwide Truck Activity and Commodity Survey (NTACS), which provides details such as the truck's specific size, weight, materials, and stops made, for the period from October 1989 through November of 1990. We are in the process of mailing the questionnaires, a very complex, twelve page request. We're monitoring response quality very closely.

The second category of information resources are the other economic censuses. Data from these may be relevant to transportation issues. In the Census of Manufacturers, we cover over 10,000 manufacturers of transportation equipment. We have information relevant to questions about the size and the nature of equipment stocks, information on the value of shipments, the value added, capital expenditures, operating expenses, assets and inventories of these companies. And for the first time for 1987, we'll show the percent of foreign-made parts and supplies consumed by these U.S. manufacturers.

We have a Census of Governments. We're going out there and getting data on something like 83,000 units of state and local governments, including 1,300 special transportation districts. Getting information of interest to you, about infrastructure, spending and revenues, separate expenditure and employment data, highways, mass transit, air transportation, water transportation, and parking facilities are provided for with great geographic detail.

We have a Census of Construction which includes over 12,000 establishments involved in highway, street, bridge, and tunnel construction. Data are available at the state level. We changed in 1987 from a value of receipts to value of work completed during that year.

Finally, a Census of Agriculture, covering over 2 million farm operators, produces detailed operating information for each state and county in the U.S. As an example, 700 farmers in one Iowa county used nearly 2,300 trucks, three quarters of them more than five years old, to transport 30 million bushels of corn. I mean, come on, this is detailed stuff.

Let's talk about another available source of information, surveys and geographic information. It's been said by a colleague of mine at the Bureau that if you think about the Bureau's information, it's like drinking from a fireplug. You have lots of water, but

how do you get a only a glass full? There's so much. The Census Catalogue and Guide, is a definitive source, but it's one inch thick. Today, my colleague has a handout showing relevant resources in the transportation area.

Let me give you a little bit of the feel for some of that.

One, we have a Motor Freight Transportation and Warehousing Survey, an annual sample of 1,500 for-hire trucking firms. National estimates are available for 1984 through 1987. You've got 50 data items including operating revenues and expenses, number of truck tractors and trailers, and products hauled.

We have information on journeys to work. This comes from the periodic Journey to Work Surveys and includes information on method of transportation to work, travel time and distance, work location and special items, such as the use of public transportation.

We have seven separate surveys on transportation equipment manufacturers. These include manufacturing and investment surveys, quarterly financial surveys, and current industrial reports. Their frequencies include annual, quarterly, and monthly. We have data on equipment production, capital investments, and the financial status of these firms.

Our Center for Economic Studies has constructed longitudinal data bases, which trace individual manufacturing firms from as early as 1963. This has been used for in-house research. We've done some interesting work on the impact of leveraged buyouts through this data base. I believe that this experience suggests an even more interesting opportunity to start a longitudinal data base for the transportation industries.

I mentioned the Census of Governments. We have current government reports as well. Surveys of state and local government expenditures, covering 22,000 large governmental units, providing transportation spending categories comparable to the five year census. For example, data for 1988 show that since 1987 parking receipts increased nationwide to more than \$700 billion. Highway spending by cities is also included. You can see that a major northeastern city recently increased highway spending by 18 percent.

We have a new National Clearinghouse for Single Audit Reports which provides a library of audit reports from each recipient of \$100,000 or more in federal aid (over 20,000 recipients). Data are very detailed. For example, 20 percent of one Nevada airport's operating revenues came from slot machines.

We have data for business patterns by county. These summarize the business location, employment and payroll for each state and county since 1948. Data span virtually all economic sectors, including 44 three-and four-digit transportation industries.

We have detailed reports on merchandise trade and the trade balance. Here you have data items on commodity value and quantity by port, location of shipments to and from ports, and shipments by vessel, air or surface transportation. We've got vessel name and flag, the type of vessel. All on a monthly basis.

We do a quarterly Consumer Expenditures Survey of 5,000 U.S. households, providing data on how consumers spend their money. Data profiles of the transportation industry show that consumers spend just one heck of a lot of money on vehicle gas and oil.

We have new information, geographic information, through our TIGER files. TIGER is an acronym for Topologically Integrated Geographic Encoding and Referencing. What it means is that the Census Bureau together with the U.S. Geological Survey has created a cartographic data base, automated maps, down to the block level for the USA--an amazing accomplishment in an era of very, very tight budgets. This data base includes all the data found on the census maps. It's in a form that can be manipulated by computer, so you can update it readily. It's a new, consistent, nationwide framework for transportation planners.

Let me turn now to what's coming, already planned improvements at the Census Bureau. These are in the pipeline of improvements that we have in mind. We have a three part strategy: one, complete census coverage, two, an expansion of current data items, and three, an enhancement of our basic data series.

First, in terms of complete census coverage, for the 1992 Census of Transportation, we plan to cover all of the remaining four-digit transportation industries. New coverage will include railroad, highway passenger, pipeline and air transportation industries. For the first time, comparable and detailed measures will be available.

This full transportation coverage is part of the largest economic census expansion in 40 years. It's very ambitious. We have, in the field, a Record Keeping Practices Survey to help us understand what information is available in the newly covered industries, and how best to collect it. This is a formidable task. We're surveying something like 2,400 companies and conducting 299 personal interviews. We have a 1990 pretest, a data collection instrument to help us identify problems and frame how we can solve them.

You can appreciate the problems that we perceive in collecting new transportation data. For example, what is a transportation establishment? Census collects data for separate operating locations. What does this mean for an airline with thousands of ticketing locations, regional hubs, and support activities in far flung areas. What geographic detail is needed? Generally we provide it for county and sub-county areas, but what detail is feasible and most useful for railroads or airline traffic?

We plan to expand current data. Our effort here is to fill high priority data gaps. We have planned three new annual transportation surveys; each will update industry changes in between the Censuses. One is Charter Rural and Intercity Bus Survey (CRIBS). This industry adds more than 1,500 new firms a year, and has up to eight billion dollars in revenues. We would like to get data on revenues, expenses, inventories and ridership. An earlier CRIBS proposal was not approved, but we plan to resubmit.

An Annual Survey of Transportation Services, another substantial industry, 12 to 14 billion dollars of revenues, is proposed. Regulatory reform led to major changes in this industry. We need information here. We hope to get it.

We propose an Annual Survey of Water Transportation. Again, a big industry, seven to nine billion dollars. This industry has some 20 percent of all intercity freight.

Another area that we focused on is our industrial classification system. It does not pick up newly emerging industries and sometimes masks these under all other categories. We want to identify some of these high growth industries and get information about them. Tour operators, and courier services are examples. We plan a program of one-time surveys of sub-industry changes, between censuses, to target these high growth industries.

We plan to enhance basic data. A good example of this is the Decennial Population Census. 1990 will be the first census to cover the time people leave home to go to work. Other improvements include: better information on bus versus street car transportation, ferryboat transportation, "drive alone" commuting and multiple vehicle ownership. We are particularly grateful for DOT's continuing assistance in developing software to support the 1990 Census Transportation Planning Package.

I've talked about what's available, and some of the things that are in the pipeline. Let me end by exploring briefly some of the transportation issues that I see ahead. Transportation needs will grow, industry will be dynamic, and money is going to be lean. But because and in spite of this situation, I suggest five questions that may merit the attention of all of us.

The first question, can we make better use of existing data? There is no question that the answer here is yes. Some transportation data has been too voluminous to publish. Recent program changes may make new applications possible. Two examples from the Census Bureau will illustrate.

One example relates to unanswered questions about the structure of transportation establishments and the composition of owning enterprises, the impact of the births and deaths on these establishments, and

longitudinal changes in company location, size and organization. We feel that our County Business Patterns and Standards Statistical Establishment List files contain very valuable, and previously unpublished information that could support annual publications describing these kinds of industry change. Developing such new data products would involve some costs, around a million and a half dollars, but this is valuable information, untapped information. It would be very informative and would not involve the cost of new data collection. No additional burden on the private sector would be entailed.

The other example relates to getting new information about international and domestic equipment markets is now possible. A major step was made in 1989, when we implemented a Harmonized System of commodity classifications. Now all international trade transactions are classified the same way by the United States and virtually all of our major trading partners. More direct comparisons of exports and imports flowing between the U.S. and these other countries are now possible. These will allow more precise and timely analyses of international trade in transportation equipment. We have also been working to try to harmonize our domestic product and international trade codes, to support better analyses of domestically produced equipment as compared to imported equipment.

The second question is can federal-state cooperation be strengthened? Again the answer is yes. States have important transportation program and oversight responsibilities. I suspect federal-state working relationships tend to be program-based and bilateral in character. The Census Bureau has a very rich data base of state and local government data, not fully published. We have a new Audit Clearinghouse with a large, untapped pool of information, and we have a highly automated system of state and local data collection that could be extended to include new information and uses. One thing about these state and local data to keep in mind is that they are not under Title 13 and are not subject to our usual confidentiality rules. So we can provide a lot more detail from this data set than we can from our conventional measurement surveys ordinarily subject to Title 13.

Another area is geographic information systems. Here, work with the states would be extremely profitable. Applying, expanding, and maintaining the TIGER files affords a big opportunity for the federal government to strengthen federal-state cooperation.

The third question is how should data needs and quality be balanced? Here I would suggest, "quite carefully". We have resources and burden limitations. We must be very careful to prioritize data needs and to recognize that quality is a subjective standard. A good starting point is, will the data be fit for use? Do

we need a Mercedes or will a pair of sandals do? What's good enough? Does it meet the standard? Does it meet the needs of the users?

In this connection, let me acknowledge a "C" word, commodity, as in commodity flows. Solid information on point-to-point commodity flows are a recognized need. Existing data are more than ten years old. Yet, quite frankly, collection methods that are effective and affordable have been beyond our grasp at the bureau. We think that the approach of this conference is encouraging, and we share a responsibility to work through commodity transportation data use and collection and financing issues. We are now working on "do-able" proposals. Let us continue and conclude this discussion at an early date.

The fourth question is a very simple question, an elementary question, one that we should know, but we do not is, what is the size of major transportation sectors? We do not know that, because we do not know much about transportation activities in non-transportation establishments. For the trucking industry, these captive or in-house transportation activities are estimated to represent half of the industry total. The present SIC system is based on the principal activity of each measured establishment or company. And in-house transportation activities do not get adequate coverage unless they generate a majority of business revenues. A near-term information priority would be to one, document the scope of unmeasured transportation activities and two, to develop new data collection methods adequate to describe the total industry scope and composition.

The fifth question is should there be a Center for Transportation Statistics? I would suggest that the time is ripe for this. Statutory centers have provided useful leadership, research and coordination functions for federal education and health statistics, and we need one in transportation. In these fields where information is fragmented, federal, state and private interests are strong, it is important that unresolved data questions merit collective attention.

A center might serve a number of functions. I know that the Transportation Research Forum provided a Transportation Users Guide as part of this conference, that is very valuable and could be expanded, extended by the center. The center could play an honest broker's role in prioritizing data needs regarding commodity transportation, sub-industry detail, and geographic detail, but also be an agent, a middle man, a facilitator of how best to implement expanded 1990 coverage of the transportation sector in the Census.

There are certainly a host of problems in the transportation area, coverage, classification, other data issues which I have mentioned, lots and lots of problems.

Thank you very much for the opportunity to talk to you today about transportation needs, and to tell you about what data resources we have at the Census Bureau. Certainly, we at the bureau appreciate the opportunity for this. We have a major program. We can be, I think, of substantial assistance here, and I would be happy to take your questions.

INSTITUTIONAL OPPORTUNITIES AND CONSTRAINTS FOR DATA COLLECTION

Moderator: Diane A. Pecor, Perryplace

Speaker: Paul Bugg, Office of Management and Budget

Through balancing the multiple and often conflicting forces that exist within any decentralized statistical system, the Statistical Policy Office provides general policy guidance to government agencies on statistical matters. I would like to focus on five areas where balancing is necessary: data collection, dissemination of data, confidentiality, autonomous agencies vs. a government-wide agenda, and quality of our statistical system given the reality of the budget deficit.

Data collection in a democracy is essential for making informed choices about issues of the individual citizen as well as the public policy level. In addition, the fact that federal statistics are a "public good," products that would not be provided by the private sector but which benefit the society as a whole, justifies federal provision of data. However, the burden of providing such data costs the taxpayer and those on whom the requirement is imposed.

OMB tries to balance data needs with data costs. Public dialogue between users and producers has proven to be the best way of achieving an acceptable balance. To improve the quality of our information, we need to continually establish a current consensus among those who use and those who provide information about what, when, and quality of information is needed.

Federal statistical agencies must present their information in ways accessible to a wide range of users. Even with technological advances, information in "hard copy" will continue to be available and accessible. Increasingly, though, agencies will provide information that is electronically accessible, searchable for ad hoc queries with a database language, and provided in graphical form.

Federal agencies, however, should not attempt to compete with entrepreneurial products of the private sector. A fine line between public and private roles exists, and the line changes as technology and societal needs change. A balance must be struck between them. Products with the characteristics mentioned in the paragraph above are appropriate to agencies' development of entrepreneurial products to the private sector.

An increasing tension exists between the responsibility to maintain the confidentiality of data with the requirement to disseminate data. We think this tension will be a central issue facing the statistical community during the 1990s. In general, we believe

confidentiality takes precedence over dissemination. Without it, we simply would not have data of sufficient quality to use.

Some believe these conflicts can be worked out over time through developing disclosure avoidance techniques (security) and increased user ethical requirements. We support efforts being made in these arenas, but it must be understood that solutions will only evolve over time and will require the participation of the academic community, businesses, states and others.

The U.S., to a degree not found in most other countries, enjoys a decentralized statistical system. Its statistical agencies are organizationally manageable, personnel are knowledgeable about program content, and products are generally relevant and focused. A decentralized system does, however, create coordination problems. Thus, coordination is one of the principal responsibilities of the Statistical Policy Office. It tries to balance the benefits of autonomous expertise with those of interagency coordination to achieve an overall statistical program that is coherent, consistent, and working on the right problems.

Not including the Decennial Census, the annual budget for statistical agencies in FY1990 will be between \$1.5-1.7 billion. While that sounds like a lot, some would argue that it is not, given the size of our economy, and the need to resolve problems about the quality of the data being collected. Our system was designed to collect information about an economy in place 30 years ago but has not kept pace with the one operating today. For example, we need to increase basic research on concepts and definitions about the domestic service sector and international trade.

Speaker: Fritz R. Kahn, Verner, Liipfert, Bernhard, McPherson and Hand

A central theme pervading this conference is the drastic reduction of available transportation data resulting from substantial deregulation of the transportation industries. The ICC's reliance upon the marketplace to restrain the excesses of railroad and motor carrier entrepreneurial initiatives has been greater than expected post deregulation, and its enthusiasm for suspension of statistical and economic reports cannot be ascribed to the agency's diminishing workforce and

budgets alone. Indeed, the ICC has so reduced its data collection and analysis activities that it would be difficult, if not impossible, to replicate the statistical and economic reports issued by the agency. By its decision in Docket No. 39953, Elimination of Accounting and Reporting Requirements for Motor Carriers of Passengers (served May 29, 1987), the ICC relieved Class II and III bus lines of filing any reports at all, and reduced to a single page the quarterly and annual reports that Class I bus lines must file.

Under its new agenda, the ICC called on affected industries to pick up where it was leaving off. It stated, "The Commission now believed that it is incumbent on the rate bureaus and carriers to develop a data collection system capable of sustaining any ratemaking process utilized in the present free market environment."

Mostly, it got what it hoped for: carriers, through their rate bureaus and trade associations adopted alternative data collection systems supporting their rate proposals. However, their rate proposals, except for across-the-board general rate increases, no longer call for any supporting data. Much rail and motor carrier traffic is exempt, meaning rates thereon are not published generally. The balance of traffic increasingly moves under contracts, the terms of which need not be divulged, much less justified. In short, the preponderance of today's rail and motor carrier rates are the products of negotiations with shippers. As such, the carriers' interests dictate less transportation data, not more.

The Association of American Railroads publishes a wealth of useful statistical and economic data: weekly carloads, freight commodity statistics, cost recovery index, and analyses of Class I railroads. The American Trucking Association publishes financial and operating statistics, trucking trends, and a directory among its reports. They and other industry groups might well do more. The law is not a significant constraint; it is a convenient crutch.

On the grounds that it prohibits disclosure of "information about the nature, kind, quantity, destination, consignee, or routing of property tendered or delivered," industry groups and carriers cite 49 U.S.C. 11910 as disallowing additional data collection efforts. The section, though, is intended to protect shippers and consignees in their business relationships, and its strictures can be waived by them. The section was decidedly not designed as a means for carriers to avoid surrendering data, particularly if aggregated sufficiently to safeguard proprietary information. Finally, it bears noting that this section does not cover a carrier's rates, fares or charges, and costs. These are well within the carriers' power to divulge, should they choose.

Regulated common carriers must, of course, publish and file their rates with the ICC, but not their exempt or contract rates. The law, whether 49 U.S.C. 10713 covering railroad contracts or 49 U.S.C.10762(c)(2) pertaining to motor carrier contracts, does not prohibit disclosure of exempt and contract rates. Rather, the carriers themselves are directly responsible for current inaccessibility of contract rate data.

Carriers also say the Sherman Act prohibits carrier exchange of information about rates, charges and costs. An association's collection and dissemination of trade statistics could be unlawful if determined to be part of a plan to curtail production or raise prices, but mere gathering and reporting of information about prices and costs, even if it brought about a measure of uniformity among competitors, does not necessarily violate the Sherman Act. Indeed, the effect could be enhanced competition.

There may be good and ample reasons for rail and motor carriers not to divulge more transportation data than currently do. The constraints of the law, however, are not foremost among them.

Speaker: Linda B. Morgan, Staff of Senate Committee on Commerce, Science and Transportation

This panel is about opportunity and constraints with and to data collection. I would add a third word, "challenges." The challenge is to define and maintain useful data in the changed environment created by deregulation. Constraints are policies and resources that get in the way of collecting useful data for policy decisions. Opportunities are the chance to restructure positively, even given some of the constraints and challenges that face us.

When Congress passed the transportation regulatory reform measures, it did so from the view that a cumbersome regulatory process, including a cumbersome information gathering process that existed mostly to sustain itself, was stifling healthy competition in the marketplace. One clear result of the reform efforts was reduction of information collection. Probably the clearest example of showing this is aviation deregulation. With it, Congress eliminated economic regulation, its regulatory agency, the Civil Aeronautics Board, and its fare and service structure. Congress treated the railroad and motor carrier industries differently and kept in place (partly, at least) the Interstate Commerce Commission and some elements of the regulatory and data collection system.

Since passage of the reform legislation, both Congress and the executive branch have been in transition, i.e., busy implementing the reform measures. Over time, I think, a conflict among objectives has

emerged. Regulatory reform's philosophy called for reduced federal involvement. At the same time, oversight responsibilities warranted some level of involvement and access to reliable information. Some members of Congress wonder whether we have regulated too far, and have asked the General Accounting Office to perform studies on some of these questions.

Some specific examples might help here. First with aviation, Congress has found itself struggling with oversight of the airline industry because information to evaluate, especially fares and service, does not exist post-deregulation. For lack of information, we cannot get a handle on perceived problems, and that frustration has led to several legislative proposals. No legislation has been passed recently, but members have introduced several bills focusing on service, fare re-regulation, and leveraged buyouts of air lines.

With regard to rail and Congress' oversight responsibilities, Congress wants to know what is the financial health of the rail industry and whether more or less regulation is warranted. Once again, it has asked GAO to analyze the issue so that Congress has the appropriate data from which to make a decision.

After reducing common carrier economic regulation, Congress' focus shifted to the commitment of the deregulated industries to safety. It asked what philosophy would guide federal involvement in safety. The Office of Technology Assessment performed several studies on this issue: aviation safety, motor carrier safety, hazardous materials safety, and, data collection requirements for assessment. Two points about the ICC that reflect the conflict alluded to above are the electronic tariff filing procedure and the motor carrier proceeding involving information collection from smaller carriers. The first conflict stems from a need to implement an efficient, useful, electronic system vs. a need to have information for policy decisions. What should the federal role be here? Should the ICC be actually issuing guidelines about how the tariff should work and how filings should be made? A similar conflict exists in the second case: a need for oversight on the financial health of the whole motor carrier industry, and deregulation's objective of reduced federal involvement.

Where does this bring us today? First, from the perspective of policy makers, there is no question we need data to perform our jobs. Maybe, with the reduction of available executive branch data, using the GAO and OTA adds a new layer of analysis that we need. In any case, we are searching constantly for better data. Second, a frustration level exists that stems from the philosophy that the federal role should be minimal or lessened. Members of Congress sometimes have come to distrust federally collected data, feeling it has been "massaged" from a policy perspective.

Whether right or wrong, that distrust exists and we are looking to sources to supply the kind of data we need.

We hope that the discussion ensuing now will lead to a reevaluation of what the federal role is in data collection and what other sectors' roles should be. We now realize that reform did not mean getting rid of data or that a reduced federal role meant no federal role. We need to relook at these issues. This same discussion is going on outside transportation, e.g, trade, technology, and supercomputer initiatives. The issue of funding a National Supercomputer Network focuses on coordinating information needs of the government and private sector entities alike.

In closing, I would say during this transition period we should take this opportunity to reevaluate and refocus what our needs are with respect to data. The challenge, to me, is to derive a system that is useful for making the kinds of policy decisions we need to make down the road. Because we are in transition, NOW is the time to ask some of the hard questions.

Speaker: Edith B. Page, Office of Technology Assessment

Do we need better data at the federal level to make transportation decisions? Let's look at some recent experiences at the Office of Technology Assessment (OTA). In 1984, during its study of the transport of hazardous materials, a high level DOT official could not provide the basis for his answer to the question, "What is the annual level of shipments of chemicals and controlled products in this country?" During OTA's truck safety study, it could not get agreement among DOT agencies about the number of heavy truck accidents because the agencies do not collect data the same way or look for the same items. Furthermore, the reporting criteria for accidents has changed in the last few years, so historical comparison is difficult. And, no one in industry or government has a really good estimate of vehicle miles travelled by trucks, so no good denominators exist to analyze accident data. Even though U.S. data are among the best in the world, the barriers to collecting and analyzing good transportation data at the federal level are substantial. First is the cost of this labor-intensive and highly technically skilled process. The only research budget that has not collapsed over the past ten years is Federal Aviation Administration because its money is spent to monitor the air traffic control system, not to improve data collection.

As federal budgets have fallen, consulting firms and industry associations have become the main repositories for valuable industry data. Government quality control and priority setting are impossible under these

circumstances. The fees they charge, including those for policy makers, are very high, as OTA has learned. The major data firms would have been delighted to provide OTA with information, but at a cost far higher than OTA could afford. In some instances industry has shared proprietary data with OTA, providing it with some capability to estimate correction factors needed for federal data. The good news is OTA was able to make some correction factor estimates; the bad news is it discovered enormous gaps in the federal data, meaning federal decisions in a number of critical areas are based on poor information.

Second are two institutional issues: lack of consensus about priorities for gathering statistics, and lack of effective coordination among the many agencies that engage in collection and analysis of data. Each transportation agency, industry association and individual company has its own particular mission and policy goals, and business reasons for collecting data. Even within a single agency, the computers, software, and criteria for data collection are different. For example, despite FAA's major mission, safety, it has no centrally focused guiding philosophy, and what might be regarded as a "central data base" is a black hole from which historical records cannot be retrieved. It is small wonder that analysis of the transportation system is so difficult.

The 1980's goal of getting government off the back of the people, the A-76 order, the Paperwork Reduction Act, the budget deficit and changes in national spending priorities have all eroded our data capabilities. OTA's recent infrastructure study highlights in staggeringly clear terms how national spending priorities have changed. Transportation infrastructure and resources are getting a much, much smaller and continually shrinking piece of the pie. No wonder our data collection infrastructure is in such poor condition. These problems are compounded by rapid industry change after deregulation, an increasingly global economy that has spawned just-in-time delivery, and a huge increase in intermodal transport. Businesses have responded, but government is much slower to act. What are some positive steps to take? One, to continue working with state and industry groups that collect data to standardize their report criteria. Two, establish public/private partnerships for data collection. Three, perform specialized studies that require pulling together data from an assortment of agencies.

The key ingredient is agreement on what data are important. Here is where federal leadership, clear DOT statements of mission, and a focus on the need for better data could be extremely important. Industry cannot be expected to do this on its own, because each group has its own specific goals for meeting business priorities. We need to look at better forms of information sharing. In the long term, I hope that

exchanges of views, like the one represented at this conference, will lead to consensus on a more concerted effort to address these tough questions.

AUDIENCE DISCUSSION: AN ACTION AGENDA FOR THE TRB, TRF, AND THE FEDERAL GOVERNMENT

Moderator: Samuel E. Eastman, Interstate Commerce Commission

Comments by the moderator

Let me start this session with a brief summary of the transportation data needs and opportunities that have been identified by the participants in this conference over the past day and one-half, and then turn the meeting over to a general discussion.

While in some instances the quality and availability of transportation data has improved since 1980, many gaps remain. In particular, industry performance data and other information needed to support infrastructure investment and other economic decisions are lacking. Transportation has changed significantly since 1980, and new types of data are required. Obvious examples are data on intermodal shipments, international trade, regional railroads, and hazardous materials.

Federal funds for the collection of transportation data are limited, and deregulation has eliminated the voluminous data collection activities of regulatory agencies. The Bureau of the Census has replaced some of these large data collections efforts with more efficient surveys, and the private sector in some cases has developed proprietary data alternatives.

Given the emerging transportation environment and the changing cast of players in data collection, it would not be desirable merely to recreate the old data collection and dissemination systems. We need combined efforts of the public and private sectors using creative financing arrangements, new data collection technology, and modern statistical methods to meet evolving data needs in a more timely fashion within our limited available funds.

Synthesis of the audience discussion

Initial discussion focused on whether the last decade of retrenchment in data collection had truly turned around, at least on the regulatory side. For example, some very large trucking companies have developed since deregulation and now escape all information reporting to the ICC.

The need for coordination of data collection activities by federal, state, and local governments and the private sector was emphasized as a way of spreading costs and respondent burden. Some participants argued that better coordination would also improve comparability of data, avoiding the "apple and orange" comparisons that must often be made today. Other participants noted that such coordination would be difficult to

achieve and may cause problems by reducing some data to an unusable lowest common denominator.

The coordination issue was brought into sharpest focus by the discussion of the proposal in Charles Waite's presentation for the creation of a Center for Transportation Statistics. He noted that other agencies maintain such centers, and creation of an interagency working group on transportation data might help get the center launched without a large budget. Others noted that a successful center required a strong mandate and a stable funding source. It was pointed out that many of the coordination and related functions have been assigned to DOT's Transportation Systems Center in Cambridge, Massachusetts, but that funding has not been made available to carry out the functions.