with the problems that are being asked by the policy makers. How does the profession acquire a set of new procedures?

- Perceived Data Needs—satisfying the policy makers with the proper data will be very difficult. The problem is, "How should the analyst address the data needs of the customer and keep the costs within reason."

- New Data Requirements—what are the new types of information that will be required to respond to the needs of the customers?

- Staff Experience—considering the fact that many valuable staff analysts have been lost to the profession over the last ten years, there are significant issues of current staff training and skills development.

- Manual of Procedures—need to develop guidance and procedures manuals.

- Training—training requirements; provide training courses; develop course structure, outlines and details.

- Information Sharing Systems—establish an information sharing system that will allow the states and MPOs to communicate with each other with either newsletters or experience-based papers. Under the current system, experience shared through papers lack timeliness because of the significant time between the writing of the papers and having them made available to others. The most significant value derived from a conference like this is in the area of information sharing.

It was generally agreed that it was a successful conference, because it made the participants think about the complex task of designing data programs for their states and MPOs.

The real measure of success is what the participants do when they arrive back at their jobs. This will be answered at the next conference.

Overall, it was concluded that states and MPOs will be looking to the federal government for further guidance.

CONFERENCE RESEARCH RECOMMENDATIONS

Arthur B. Sosslau
COMSIS Corporation

As part of the workshop activities and discussion at the concluding session of the conference, a number of recommendations were made regarding research needs related to data and collection activities. The recommendations are listed in three primary areas:

Analysis, Models, and Measurements

- Enhance the predictive ability of models and procedures to meet current requirements for planning based on air quality requirements and provisions of the ISTEA of 1991. Determine reasonable accuracy and precision levels of the data needed to apply the models in a cost-effective manner within the limits of current "best" practices.

- Quantify the impact of incidents (breakdowns, accidents, etc.) which cause a substantial amount of highway delay. Determine the factors that are common amongst the various random incidents in the past as a first attempt to predict the magnitude of future incidents.

- Determine the performance measures that portray the quality of life aspects of the transportation system. An example might be the ability of inner city people to travel to the suburbs for employment. Transportation should provide equal access to opportunities for all citizens.

- Develop a nationally coordinated approach to ascertain the degree of change in the performance of the network that could be expected from various levels of success of the various traffic demand management techniques being advocated.

Surveys and Data Collections

- Develop more cost-effective data collection methods that provide a greater accuracy as

required by the new requirements of the CAAA of 1990 and the ISTEA of 1991. A good example is urban vehicle counting and vehicle classification on high volume congested facilities.

- Determine the type and amount of goods movement data required for appropriate analytical and planning purposes, and develop the appropriate data collection methods to obtain data that can be used for analyzing the movement. The area of goods movement measurement has been a problem area for some time and currently requires priority attention.

- Research is required to define the data needs and methodologies of collecting data for intermodal planning purposes as recently highlighted in the ISTEA of 1991.

- An initiative is required to promote consistency in various data collection efforts and provide replicable information from multiple sources such as the federal efforts with the Census and NPTS data, MPO data with local travel survey, and state data with counts and classification.

- Research is needed to determine the measurements and analysis required to determine the land use impacts and changes resulting from increasing facility capacity and reducing travel time in a corridor.

- Identify the types and amounts of data needed to determine with a reasonable degree of certainty the degree of impact of various transportation control measures.

Education, Training and Technical Assistance

- Consideration should be given to developing a new set of manuals that were previously developed in the 1950s by the National Committee on Urban Transportation, and in the 1970s by the Highway Users Federation "The Planning Process for Smaller Cities." These manuals provided considerable guidance to the professionals of the time, especially with regard to data and collection methods. This material would provide the best practices with regard to data collection.

- State and MPO work programs should be widely distributed which would provide useful information to agencies to upgrade their own activities. These work programs could be collated by subject and would be a resource for others in the development of their own programs of work.

- Training courses should be developed to provide agency personnel with the current state-of-the-art in survey design, collection, and analyses methods. These courses should be developed in the various media available and should be made available for various audiences in a variety of ways.

- A national conference should be undertaken by the Transportation Research Board every other year in which various state and MPO staffs could highlight their procedures for collecting different types of data. This conference would be developed by the states and MPOs jointly and would illustrate the latest methods and procedures used in their data collection program.

KEYNOTE PAPER
DATA, DATA, AND MORE DATA: THE FOUNDATION TO PERFORMANCE-BASED PLANNING

Michael D. Meyer, Georgia Institute of Technology

"Without a store of basic data, urban transportation problems cannot be accurately defined or measured. Without facts, it is hard to determine the potential solutions; it is even more difficult to select the most practical ones. Moreover, it is virtually impossible to present to legislative bodies and to the general public a clear picture of needs--or to create public understanding of the benefits that will accrue from improvements."

— National Committee on Urban Transportation, Better Transportation For Your City, 1958

How little things have changed over the past 34 years. Just as engineers and planners at the beginning of the highway construction era in this country argued for a decision-making process based on fact, so too we, 34 years later, have gathered to argue for better and higher quality data to support the transportation decisions that must be made over the next several decades. And yet, a great deal has changed since 1958. Certainly, the technology of transportation planning (for example, the widespread use of the microcomputer) provides data handling capabilities that the planners and engineers in 1958 could only dream of. We presumably know more about the fundamental characteristics of transportation systems and their relationships to the such things as the economy, natural environment, and travel behavior. And importantly, the types of decisions that must be made