

Workshop on Travel Behavior Characteristics and Analysis

Workshop Summary

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The Workshop on Travel Behavior Characteristics and Analysis was oriented to a review of alternative analytical approaches to the traditional planning and modeling process. The problems outlined in the planning sessions were approached from a different theoretical base: concepts, data-collection methods, and statistical techniques from the behavioral and social sciences were reviewed for their applicability to planning problems.

STATUS OF METHODS

Three papers were presented. Klausner described the development of the social sciences and highlighted their capability to expand the frame of reference for transportation analysis. He noted that in contrast to planning, the social and behavioral sciences provide rules of the social process to order data and a theoretical context for understanding the important relationships. The state of the art in five subject areas was summarized: activity-based approaches; approaches that used subjective variables, or attitudes; population segmentations; experimental approaches; and choice models. The first three involve the introduction of new concepts and require the planner to apply new analytical approaches. The cutting edge of the state of the art is activity analysis, which indicates a broadening of the frame of reference from a psychological to a social-psychological perspective.

As the workshop moved to an evaluation of tools, concepts, and procedures, the consensus emerged that most of the state of the art was sufficiently developed for application. However, some research needs were enumerated, as will be shown later.

Paaswell and Michaels reviewed the state of the practice. In juxtaposition to the wealth of the literature on the art, few planning applications were noted. Workshop members identified several areas where applications can be found: transit marketing studies; impact assessment, particularly socioenvironmental impacts; ridesharing agency reviews; and analysis of service for the elderly and handicapped. The planning levels that have benefited most from these approaches are project and urban microscale. Survey strategies and market segmentation are reasonably well utilized in practice and attitudinal analyses have been performed in a few transit, carpool, and pedestrian planning studies.

The major impact on practice of social and behavioral methods has been an increase in understanding of the behavioral processes of individuals and households. The range of reactions to transportation system management actions and energy shortages can be identified and the implications of transportation options more readily defined. Furthermore, many new concepts and a process mode of thinking appear in planning reports. As Michaels suggested, although research has not necessarily changed the practice, it has changed the perceptions of planners.

PROMISING METHODS

The workshop determined that the methods that could

be incorporated into planning practice with high short-term benefits are

1. Small-scale data-collection activities,
2. Simulations with small groups, and
3. Segmentation and activity concepts and derivative analytical techniques.

The first method emphasizes the developments over the last several years in reduced data requirements, updating prior travel surveys, or project-level planning. Statistical techniques (for example, multiple classification analysis for trip generation and logit analysis for demand estimation) are available to derive the maximum amount of information from these data.

Golob and Golob refer to the application of simulations with small groups to transportation problems. Controlled manipulation of one or two variables with sample sizes of 50 or so is often found in the psychological literature. The methods can be used in an exploratory situation to derive ranges of possible responses and outcomes, to determine elasticities for particular groups, and to generate information on new alternatives.

Market segmentation involves the analysis of subgroups within a population. It is based on the idea that although a population is not homogenous, individuals can be grouped based on a defining categorical variable. The concept of a differentiated market, or market segmentation, as already in use could be broadened for greater application. The defining variables in particular situations need to be documented.

Activity analysis shows promise as a conceptual framework for analyzing complex tripmaking behavior such as trip chaining and for analyzing transportation system management actions. The approaches provide an opportunity to define the impacts of service cuts, unemployment, spending, and destination patterns. Used in an experimental setting with small groups, techniques such as the Household Activity Travel Simulator (HATS) offer the planner a wealth of information without necessitating a large data-collection budget.

PLANNING LEVELS

The workshop participants concluded that the planning levels for which travel behavior analysis techniques are most suited are strategic planning and project planning. To some workshop participants, strategic planning necessarily involves the social and behavioral sciences. Planning for "what if" requires an understanding of the forces in the environment that impinge on transportation decisions. Strategic planning requires a different approach to data collection and more than any other planning activity requires greater understanding of travel behavioral processes. Goal definition, macrosystems analysis, and analysis of system linkages are integral to strategic planning. The testing of future scenarios, monitoring changing lifestyle and consumption patterns, and changes in the ordering of priorities provide part of the capability to perform strategic planning. Determining the direction of change can be accomplished through the use of monitoring techniques: mail and telephone panels, re-

peated focus groups, and cohort analysis of cross-sectional data. Experimental techniques and activity analysis can be used to define changes in societal objectives and to obtain more information about travel patterns. The identification of possible scenarios through use of the Delphi technique can provide expert opinion on possible futures.

Viewing transportation plans from the perspective of determining who benefits and who loses and broadening the perspective of statewide plans to incorporate impacts on state economies accompanies the shift in long-range planning to policy rather than facility planning. This policy aspect of long-term planning could be served by activity analysis and controlled simulation experiments. Project planning could benefit from use of all the approaches in grappling with outlining the implications of such plans. A focus on impact analysis suggests a more active policy analysis role for the planner. Such a perspective permeated the workshop discussion and formed the basis of the workshop recommendations. In order to do so, application of a greater number of tools and concepts in the planning environment is necessary.

BARRIERS TO IMPLEMENTATION

The workshop participants identified several barriers to the ready implementation of social and behavioral science techniques. The first is related to data needs. Activity, motivational, and attitudinal analysis require different types of data than are normally available or generally collected. Sample sizes can be small but the amount of information to be collected from individuals and households is greater than that collected in a typical travel survey. Related to this is the planners' lack of familiarity with detailed survey and inter-sectional data-collection methods.

Second, the literature is not organized in such a way as to be helpful to the planner. Integrative essays are difficult to locate; studies and planning reports are often unpublished. When studies are published, rarely are the sampling and data-collection methods described in detail.

However, the most significant barrier is the lack of evidence that travel behavior approaches would lead to different results and therefore different

decisions than more traditional approaches. Comparative analysis of approaches is a necessary prerequisite for diffusion of the techniques in the planning field.

TRANSFER POSSIBILITIES

Transfer possibilities identified in the workshop center on communication through greater use of NCHRP Synthesis of Highway Practice documents and the development and dissemination of procedural manuals and case studies. It was suggested that social and behavioral scientists should publish in the applied science journals and that planning courses incorporate information and techniques from the behavioral sciences. Universities could perform a major role in developing seminars for local planners and coordinating projects with metropolitan planning organization (MPO) staff. These avenues of communication have long been available, however. It is to be hoped that the conference, in focusing on the relationship between art and practice, will spur interest in relating the two.

CONCLUDING REMARKS

It is important to recognize that research affects practice in many more ways than merely through the transfer of technology. The knowledge base developed through a decade of research has greatly expanded the capability of the planner to meet new requirements. The challenges of the planning profession change and a major evaluation criterion for research is whether it helps us anticipate and adapt to such changes. Although it is essential to the transportation planning field to occasionally review the progress achieved in transferring research into practice, it is equally as important to establish new research horizons. A healthy discipline will always have a gap between research and applications, yet in a field oriented to implementation it is easy to lose sight of the benefits of research. The social and behavioral sciences, in providing a larger framework for understanding travel behavior, can be of assistance in providing information and tools for better performance of planning activities and in anticipating directions for future work.