

CONFERENCE SUMMARY

The papers contained in this Special Report emanate from a 2-day conference held at the National Academy of Sciences on July 9 and 10, 1970, and attended by more than 160 representatives from the governmental, industrial, and academic communities.

The primary purpose of the conference was to discuss the types and nature of data that will become available from the 1970 decennial census and relate the uses of these data to the transportation planning process. Base data in many urban areas are now a decade old, and the 1970 information will provide a means of updating and checking the forecasts made. Therefore, providing a working knowledge of what data will be available, what can be made available, and how such information can be used was a major purpose of the conference.

The 4 conference sessions included formal papers, panel discussions, and general discussions of the following topics: continuing transportation planning data requirements, nature and use of census data for transportation planning; practical applications, and limitations, problem areas, and needed programs and research.

CONTINUING TRANSPORTATION PLANNING DATA REQUIREMENTS

Hamburg distinguished between the preparation of the long-range transportation plans and several other functions that are essential to transportation planning and in particular to the continuing transportation planning process. Important differences in data requirements are stated by Hamburg as follows: (a) Greater geographic precision will be required, and block or even block-face data will be utilized if available; (b) greater network detail will be required; (c) temporal detail will be required; (d) data on travel (trips per person, trip purpose, trip length, and so on) will be required but in quantities appropriate to model parameter calibration rather than zonal interchange estimates; and (e) system performance will need to be measured with respect to particular socioeconomic groups in subregions, and these kinds of data must be put into the process.

Taeuber discussed the information that will be made available by the Bureau of the Census and focused on the related questions of when, how, for what areas, and in what form. Generally, he described the current situation as it relates to the broad scope of census data, many of which are of direct concern to transportation planning.

Sosslau and McDonnell stated that an examination of transportation inventories indicates that census data have been valuable to past as well as current transportation planning activities. Of the 4 major transportation inventory items—economic activity and population, land use, travel characteristics, and transportation facilities—census data are most applicable in the area of economic activity and population. They further pointed out that data and services of the Bureau of the Census have not been applied in inventories of travel characteristics and transportation facilities. The authors listed the following 3 products from the census that are applicable to transportation planning: (a) population and housing data that include existing dwelling units by type and character, number of units in group quarters, family size, economic status of family, number of workers by occupation, and number of students by age and school level;

(b) data from the journey-to-work survey that can be summed by work place to provide an estimate of employment, to develop information on income of workers, mode of travel to work, industry, and occupation, and to serve as a bench mark for work trips in checking forecasts and travel models; and (c) geographic basefiles, address coding guides covering SMSA's, that consist of a coded list of block faces giving the street name and census block and tract number of each block face and that can be used for coding addresses in base surveys and secondary source information, for locating highway inventory information, for developing traffic assignment network, and for aggregating and displaying data.

NATURE AND USE OF CENSUS DATA FOR TRANSPORTATION PLANNING

Voight stated that the products of the 1970 census will be the most extensive ever provided by the Bureau of the Census. The bureau has made a concentrated effort to meet the demands for social and economic characteristics of the population and the homes they live in at the finest levels of geographic detail that will still permit the tabulation of meaningful data. He said also that an effort has been made to provide for maximum flexibility in tabulating summaries to permit the recombination of these into administrative or operational areas of significance to local organizations.

Daly outlined the content of the questionnaire on work trips that was used for 15 percent of the households. The questionnaire included 2 questions addressed to each person who worked (full time or part time): "Where did he work last week?" and "How did he get to work last week?" The address of the place of work and zip code were requested for the place of work. Daly further discussed the data of work trips contained in machine-readable form on the computer tapes, and also the data on work trips that will be summarized in the course of the regular census publication program.

Farnsworth discussed the address coding guide (ACG) and dual independent map encoding (DIME) as constituting an invaluable resource for transportation planning, city planning, and administration. These files provide computer-usable data tied directly to the highway and road networks and to all significant census and local geographic codes.

Robertson described the genesis of a standardized set of tabulations of the 1970 journey-to-work statistics. He discussed the need for better data in the urban transportation planning process and the degree to which specially manipulated census data can meet that need. He defined the standard package of tabulations developed in terms of its contents and purpose.

PRACTICAL APPLICATIONS

Paaswell postulated that it is possible through proper studies of trip-determining parameters to isolate views of particular interest for special (micro) study. The group considered in his study are the black residents of Buffalo, New York. Paaswell pointed out that contour maps combined with trip-making curves can show areas of potential neglect in large-scale planning and that isolation of these areas for intense study and the gathering of trip-making data peculiar to the specific area are the preliminary steps to be taken in a more traditional transportation analysis.

Zitter emphasized the ways in which data and programs of the Bureau of the Census can be useful in small-area population and employment projections. Zitter primarily limited his discussion to relatively large geographic areas such as states and SMSA's. The bureau, according to Zitter, in recognition of the need for a comprehensive set of estimates that cover all counties and SMSA's in the counties and that are consistent, comparable, and of relatively high quality, has undertaken a new program working with the states to generate such estimates. In this program, referred to as the Federal-State Cooperative Program for Local Population Estimates, the states will prepare estimates of population by a set of recommended preferred procedures, standardized largely for data input and application mutually agreed to by the states and the bureau.

Zitter also stated that, although there is a strong association between employment and population projections, these elements have been treated separately. Employment

projections are a function of the Office of Business Economics in the U. S. Department of Commerce and focus on income and employment for 165 economic areas. The National Planning Association develops employment projections for metropolitan areas. Both of these groups, according to Zitter, see population projection as a function of job opportunities, and most of their attention has been given to employment projections and only the roughest and simplest of techniques have been used to translate them to population. The Bureau of the Census has started to investigate the economic-demographic approach to small-area projections in order to bridge the gap between employment and population. Census data on gross and net migration are receiving much attention in the analysis and, according to Zitter, holds the key to improved and consistent small-area projections.

Worrall discussed the potential use of census data in land use modeling, travel forecasting, impact analysis, and data maintenance and updating. Worrall described the EMPIRIC activities-allocation model that is currently being applied by the Metropolitan Washington Council of Governments. In the area of travel forecasting, Worrall stated that the 1970 census material provides a valuable basis for generating both a zonal and district-level table of origins and destinations of work trips, and that this table when supplemented by information on equivalent zonal or district-level travel times may be used directly as input to a trip-distribution analysis. According to Worrall, the journey-to-work data provide a convenient and inexpensive means for updating many existing data sets and can in themselves serve as an effective base for the design of future facilities. Transportation impact analysis according to Worrall, will be of the most critical areas of analysis during the next decade. Census data can provide at best an initial base for the evaluation of questions related to household education, population relocation, accessibility to employment, incidence of impact on specific demographic and income groups, and potential effects of a new system on existing market areas and overall regional growth.

Shunk discussed the feasibility of using census work-trip data for transportation planning purposes. He said that the use of census work-trip data for transportation planning appears from tests to date to be quite appropriate and accurate, but that further tests may be desirable. Shunk outlined the main tenets of his approach.

LIMITATIONS, PROBLEM AREAS, AND NEEDED PROGRAMS AND RESEARCH

Brand stressed the need for policy-sensitive forecasts and for disaggregate models, i.e., models of consumer decisions (travel decisions) that are behavioral in nature. He pointed out that disaggregation brings with it the possibility of some real advantages of economies in data collection and simpler travel models, but that the case of existing census data in these models has real limitations because of the strict census disclosure rules. Disaggregate models need information on the individual and his address, but with such information the name of the respondent can be traced. Because of the disclosure rules, this is the primary limitation of census travel data with respect to their use in travel forecasting. Brand proposed that the Bureau of the Census might be requested to add the necessary modeling information to the individual trip record. This would consist primarily of adding the transportation price and service information on all available choices to the trip-maker between his origin and destination. This information concerned with individual or household characteristics and his trips would form one trip record. Brand further stated that approximately 500 to 1,000 trip records, randomly selected over a region, would probably suffice to estimate a behavioral work-trip demand model. He suggested, however, that before the Bureau is requested to do this an investigation of the relative costs of a sample survey by conventional home interview and travel inventory means should be performed.

Pisarski emphasized 3 points: (a) the potential use of census data in analyzing the impact of transportation changes; (b) the necessity to transpose the data from a population to a transportation universe because there is now a mismatch of these universes in terms of geography, definition, and structure; and (c) the need to strengthen and improve the 1972 Census of Transportation as an effective instrument for transportation planning at the urban and state levels.

Wickstrom pointed out that the 1970 census data will provide a rich source of data for transit planning purposes including the journey-to-work data and the population data that will assist in identifying areas where transit service is needed to serve the young, the old, and others who have no alternative means of transportation. He further stated that, by matching levels of transit use to measures of transit service, areas where improved service has high potential can be determined. Census data can also be used for routing studies and for determining worker parking needs and relating these to the supply of parking now available.

Barracrough pointed out that, although the 1970 census fills more needs for planning purposes than the 1960 census data did, there are still many important data gaps. The gaps may be considered in terms of types of data, geographic coverage, level of detail, and updating data. Data gaps occur in the comprehensive land use activities information. Use of census data on nonresidential activities (censuses of business and manufactures) is impractical because geocoding is too coarse and data are unavailable at different points in time. Barracrough pointed out that enormous costs and disbenefits are incurred because the census metropolitan data are fragmented into a number of censuses taken at different points in time with different geocoding procedures. He stated that, perhaps, a higher cost-benefit ratio would result if all of these various censuses were handled concurrently, every 5 years.

The DIME or geographic base files that will be available provide a framework for network data on link volumes, speeds, and number of lanes to be added. Some means of providing vehicle-miles of travel data must be found. The biggest limitation with the DIME geographic files is that they will cover only metropolitan areas. Barracrough called for greater communication between the user of data (transportation planners) and the suppliers (the Bureau of the Census).