

The 1980 Census as a New Foundation for Urban Transportation Planning: User Activities for Supplementing and Updating

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ABSTRACT

The special package of commuting data from the 1980 census available for 277 metropolitan areas makes it possible to obtain, at a reasonable cost, information on home-to-work trips. Each metropolitan area (or state) must decide whether to purchase the package and how to incorporate it into the local transportation planning process. A survey of the 6 states and 44 metropolitan areas who have ordered the package was conducted to provide guidance on current and planned activities. Supplemental data collected during the census period are summarized as well as plans for updating the information and the type of geographical areas used.

The 1980 Urban Transportation Planning Package (UTPP) provides an extraordinary opportunity for transportation planners to obtain commuting data collected by the Census Bureau and coded to locally defined transportation analysis zones. This information is included in a one-in-six sample of the basic census questionnaire, which has all of the authority, prestige, and quality control of the Census Bureau behind it. In addition, both the home and work locations are coded to block, which makes it possible to aggregate the data to geographic areas that are relevant to local planners (1). It is equivalent to having each metropolitan area decide to conduct a survey of commuters in 1980 and having the Census Bureau collect the data along with the standard information already collected in the census. This nationwide survey of urban commuters represents a unique data base for one component of urban travel at one time. Because the decision to purchase this package and how to incorporate it into the urban transportation planning process is a local option, this study was designed to catalogue these local decisions. The results were used in a workshop on the UTPP held at the Annual Meeting of the Urban and Regional Information Systems Association (URISA) and the Transportation Research Board in August 1983.

SURVEY OF USERS

In order to determine the types of information already collected to supplement the census data and plans for updating the information, a mail survey of users was conducted. The inventory used for the sample was the Census Bureau's list of funded contracts (those agencies that had agreed to purchase the UTPP), dated July 5, 1983. The questionnaire was sent to each of the Census Bureau's contact persons with a stamped, self-addressed envelope; this included 6 states and 44 regional agencies. The re-

sponse rates were excellent for a mail survey, indicating the high level of interest in the UTPP. As shown in Table 1, responses were received by 5 out of every 6 regional agencies with fewer than 1 million persons, 2 out of every 3 regional agencies with more than 1 million persons, and 5 out of the 6 states surveyed, even with no follow-up. Responses from the regional agencies are divided about equally between those with more than 1 million, those with 0.25 to 1 million, and those with less than 0.25 million.

TABLE 1 Summary of Responses to UTPP Survey

Agency	No. Surveyed	No. Responding	Survey Rate (%)
State	6	5	
Metropolitan area			
> 1 million	19	15	79
< 1 million	25	21	84
0.5-1 million	5	3	60
0.25-0.5 million	9	9	100
< 0.25 million	11	9	82

SUPPLEMENTING THE 1980 CENSUS DATA

Sharp differences were found between the larger and smaller regions in terms of their activities to supplement the 1980 census data. As shown in the following tabulation, three out of every four large regions (more than 1 million population) had conducted supplemental data collection to adjust or extend census data, whereas only one-third of the smaller regions had done so.

Agency	Supplemental Data Collection (no. of regions)			
	Yes	No	Total	Percentage
State	2	3	5	40
Metropolitan area	18	19	37	49
> 1 million	11	4	15	73
< 1 million	7	15	22	32

Two of the five states responded that supplemental data had been collected, although individual agencies in these states have collected their own data. The difference between the larger and smaller metropolitan areas may reflect different concerns about the necessity of developing localized factors to convert census data into formats commonly used by transportation planners. It may also reflect a higher level of resources in larger agencies to collect supplemental data.

There is quite a diversity in the types of supplemental data that have been collected; as shown in Table 2, there were 10 different types. The two most common supplemental data activities, for both larger and smaller metropolitan planning organizations

TABLE 2 Types of Supplemental Data Collected by Regional Agencies

Type of Data	No. of Agencies Reporting by Size of Area	
	> 1 Million	< 1 Million
Household travel surveys	6	2
Employment inventories	6	2
Traveler surveys		
On-board transit ridership	4	1
Park and ride	2	-
Automobile use	2	-
Workplace	2	-
Counts and field inventories		
Traffic counts	2	1
Residential trip generation	-	2
Vehicle occupancy	-	1
Parking costs	-	1

(MPOs) were household travel surveys and employment inventories.

Household travel surveys, generally with small sample rates, were conducted in New York, Chicago, San Francisco, Denver, Twin Cities, Phoenix, Albany, and Shreveport. These surveys produce the factors necessary to convert work trips from those of a typical day, the census definition, to those of an average day, the transportation planner's definition. They also estimate the amount of nonwork travel, which is not included in the census data. In addition, questions of local interest can be addressed, such as mode of access to rail systems and travel by minority groups.

The second most common type of supplemental data collection was an employment inventory. Surveys of employment by place of work in 1980 were conducted in Seattle, Atlanta, Baltimore, St. Louis, Phoenix, and Washington, D.C. The popularity of such inventories substantiates the importance of the workplace data that will be available from the UTPP. For the first time, there will be data available on the characteristics of the labor force at their workplace as well as their home location, which will be consistent for different parts of an area as well as between metropolitan areas. Because of the importance of such data and because the census is subject to sampling error, many regions have elected to develop their own data base on workplace characteristics. Through the use of secondary sources, this also makes it possible to update the employment data in future years (2).

Other types of supplemental data collection mentioned can be grouped into two categories:

1. Traveler surveys and
2. Counts and field inventories.

Traveler surveys were the more common type of supplemental data collected by the larger regions, whereas smaller regions relied more heavily on counts and field inventories. Although passenger surveys are usually more expensive, they provide more information than counts.

Traveler Surveys

The most common types of surveys reported by large regions were on-board transit ridership and park-and-ride surveys. The one survey reported by a smaller agency was also a transit survey. There was one automobile use survey and one workplace survey reported by a large MPO.

Counts

Traffic counts were reported by two large regions (the only field inventory indicated among that group) and one smaller region. It is likely that many other agencies with counting programs did not report them because they are regular programs not related to the 1980 census. Three other types of counts were reported by different agencies:

1. Vehicle occupancy,
2. Residential trip generation, and
3. Parking costs.

It appears that a considerable amount of data has already been collected by regional agencies to supplement the 1980 census data. The next logical question is how it can be kept up to date.

UPDATING CENSUS DATA

In response to the question of whether they planned to update the 1980 census data, there was much more similarity between large (more than 1 million population) and small metropolitan areas:

1. Among areas of more than 1 million people, 6 out of 10 responded positively and
2. Among areas of less than 1 million people, 20 out of 21 responded positively.

At this time, however, there appears to be a great deal of uncertainty on this issue. Two respondents reported that they did not even have time to think about this issue, although they knew it would be important. The uncertainty about future direction appears to be much greater among smaller agencies. Only 6 out of the 10 smaller regions reporting that they planned to update the census data actually identified planned activities. Among the six larger regions planning to update the census data, five identified work programs. As indicated in the following tabulation, there were sharp differences in the methods of updating planned.

Update Technique	No. of Agencies by Size of Area	
	> 1 Million	< 1 Million
Model	4	2
Update input	1	4

The principal updating technique by larger agencies was the use of models, by a ratio of 4 to 1. In most cases, this means that a forecasting model will project small-area demographic and employment variables for an intercensal year, say 1984. These data will then provide inputs to traffic forecasting models, which estimate current travel patterns. Among smaller regions, four agencies planned to update the inputs directly compared with only two that anticipated the use of models. For smaller areas, it appears that the agency is able to collect data on the location of new development, which can be used to update the 1980 census population and employment totals. The difficulty of collecting such land use data in larger regions appears to be directing the regional agencies more toward the land use models rather than field data collection. They have invested data collection resources into collecting travel data to supplement the census. These observations, however, only apply to those agencies with firm plans to update the census. There remains a great deal of uncertainty among agencies on whether and how to update the census data. These

plans will become clearer after the agencies have had some experience in using the UTPP.

AREA SYSTEMS

The principal feature of the UTPP for most transportation planners is that it provides the data by locally specified transportation zones rather than the tracts more common to most census geography. The difficulty of maintaining two different area systems has recently led some agencies to consider using census tracts as their basic analysis unit. In order to determine the amount of interest in these alternative area systems, respondents were asked to indicate the level of geography they expected to use in projections:

Level of Geography	No. of Agencies by Size of Area		Total Respondents
	> 1 Million	< 1 Million	
Zone only	5	14	19
Tract only	1	-	1
Zone and tract	2	4	6
Other	1	1	2

As indicated in the preceding tabulation, the majority of agencies, both large and small, expected to use zones as their only analysis unit. About one-third as many agencies, in both larger and smaller regions, expected to use both tract and zone. Only one agency [Atlanta Regional Commission (ARC)] reported tract only. The ARC staff explained that budget constraints forced them to purchase the UTPP at the tract level, even though they would have preferred to analyze the data by zone.

A significant finding of this survey is the importance regional agencies place on obtaining and analyzing data by transportation zones. It appears that this area system serves such a unique and important function in urban transportation planning that agencies are willing to make a substantial investment to obtain it. The coding of home and work address to block by the Census Bureau was critical in obtaining this important local feature.

CONCLUSIONS

The excellent response to this survey of UTPP users confirms the intense interest in the product demonstrated by the large number of agencies who have already purchased the package. Some of the key findings of user experiences and plans are as follows:

1. Availability of census data by zone is central to the value of the package. It appears that

providing the same data items by tract only would be inadequate for transportation planning.

2. Availability of labor force characteristics at the place of work appears to be a major feature of the 1980 census. Many agencies have recognized the importance of these data by conducting their own inventories of small-area employment.

3. Most MPOs in larger regions (more than 1 million) collected additional data around 1980 in order to adjust and supplement the census data. The most common data collected were employment inventories and small-scale travel surveys. Other common data efforts were traveler surveys of bus riders and drivers.

4. Most MPOs in smaller regions (less than 1 million population) did not collect data to supplement the census. Those that did were more likely to rely on different types of counts rather than travel surveys.

5. Only about half of the agency respondents reported plans to update the census data; there was little difference in the ratio for large and small regions.

6. Smaller regions are more likely to update the census data by actual measurements of changes in the land use inputs, whereas larger regions are more likely to model the changes in population and employment.

Looking ahead, there is great uncertainty in exactly how the UTPP will be incorporated into the transportation planning process of each region. These plans will become better defined as users have more experience with the data. By that time, there will also be a better understanding of how to match the UTPP files with the supplemental data. There may be some transferability of adjustment factors between regions. Once there are a sufficient number of applications of the UTPP by regional agencies, it will be possible to identify appropriate measures of updating this valuable data base. The current level of uncertainty expressed by users on how the updates should be done suggests that the profession needs to address this question and provide technical guidance to participants.

REFERENCES

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