

with a print program and all six parts on a computer printout, and

3. Full UTPP tabulations on tape without format with a print program and all six parts furnished on microfiche.

Tables on microfiche may also be purchased at additional cost. All requests for price estimates should be addressed to Philip N. Fulton, Bureau of the Census, at the address given in the front of this Record.

#### CONCLUSION

The UTPP is a substantial data resource for transportation planning and other applications described elsewhere in this Record. This data resource is much improved over the UTPP that was designed in conjunction with the 1970 census. The 1980 UTPP benefited in quantity from the increased number of transportation-related items on the 1980 census questionnaire and in quality from the major improve-

ments in place-of-work coding. Most significantly, the individuals responsible for the UTPP at the Census Bureau recognize that place-of-work coding errors still occur and are willing to make corrections. When purchasers of the UTPP have questioned the contents of their package, the Journey-to-Work and Migration Statistics Branch has reviewed the tabulations and corrected coding errors without additional cost when local information has indicated that there are geographic errors in the file. This responsiveness by the Census Bureau to the transportation community is exemplary of an effective relationship between users and providers of information for public decision making.

#### REFERENCE

1. G.V. Wickstrom. Comparisons of Census Journey-to-Work Findings with Metropolitan Planning Organization Data. Presented at 60th Annual Meeting of the Transportation Research Board, Washington, D.C., 1981.

## Allocating Incomplete Place-of-Work Responses in the 1980 Census Urban Transportation Planning Package

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#### ABSTRACT

Place-of-work data that are included in regular 1980 census data products were not allocated for incomplete responses or nonresponses because of processing limitations. However, this does not apply to special tabulations such as the Urban Transportation Planning Package (UTPP). The place-of-work allocation procedure that was developed by the Bureau of the Census for use in the 1980 UTPP project is described.

Place-of-work data collected in the 1980 census are among the few types of data that were not allocated as part of regular census processing. Allocation is the procedure whereby information is assigned in place of responses that are missing or incomplete. For most of the subject-matter items in the census, the procedure used to change these unacceptable responses was to assign an entry that was consistent with entries for other persons with similar characteristics who lived in the same general vicinity as the respondent. If, for example, a person did not report his wage and salary income, the income was assigned based on the last previous person processed who reported wage and salary income and who

matched the nonrespondent's age, race, sex, occupation, and certain other characteristics. This process ensured that the distribution of wage and salary income assigned by the computer for persons of a given set of characteristics would correspond closely to the wage and salary income distribution of persons who had reported that item in the census.

Allocation based on the responses of persons with similar characteristics has applicability for place-of-work data as well. However, it is also important to know the overall distribution of reported employment across the area into which workers are to be allocated so that the final results will reflect the workplace distribution that was originally coded. Because census data processing is sequenced on the basis of data collection areas (e.g., enumeration districts) by state of residence, the overall distribution of workers by place of work cannot be ascertained until regular census processing has been completed. Because of this limitation, allocation of place-of-work data was not undertaken for standard 1980 census products. The limitation does not apply to special tabulations such as the Urban Transportation Planning Package (UTPP), which are prepared from the final basic record files.

The UTPP is a special tabulation of census data for individual Standard Metropolitan Statistical Areas (SMSAs) tailored to geographic areas that are used in transportation planning. These areas may be census geographic areas such as census tracts or block groups or they may be locally defined traffic

analysis zones. In either instance, it is of critical importance for the place-of-work data contained in the package to give as complete a picture of the commuting patterns within the SMSA as possible. The place-of-work allocation procedure that was developed by the Bureau of the Census for use in the 1980 UTPP project is described.

#### PLACE-OF-WORK CODING

The types of responses with which the allocation scheme must deal are predicated on the procedure that was used to clerically code the place-of-work question during the census processing and the levels of geographic codes that resulted. Therefore, before a description of the allocation procedure, it is important to lay the groundwork with a brief discussion of place-of-work coding.

Place of work refers to the geographic locations at which workers 16 years and older carried out their occupational activities during the week before the census, usually termed the "reference week." The exact address (number and street name) for the place of work was asked as well as the place (city, town, village, or borough), county, state, and ZIP code. Place-of-work information was collected from the residents of all sample households as part of the long-term census questionnaire. Because of budget reductions, only about half of these questionnaires were processed through place-of-work coding, resulting in a sampling rate of approximately 1 in 12 for the place-of-work data compared with the rate of 1 in 6 for other sample items.

The geographic level of coding for which a place of work was eligible depended on whether the worker lived within an SMSA (as defined at the time of the

census) and the general location of his workplace. When a place of work could not be coded to the lowest geographic level for which it was eligible because the respondent provided insufficient information, it was coded to the next lowest level possible. For example, an eligible worker who could not be coded to block was coded to census tract; if he could not be coded to tract, the worker was coded to the place level; and so on. Table 1 shows the levels of place-of-work coding that were undertaken during census processing.

Persons who lived in nonmetropolitan areas were eligible to be coded to place or county of work regardless of whether they worked in nonmetropolitan territory or inside an SMSA. Places of 2,500 or more population (1,000 or more in Alaska and Hawaii) were recognized for coding; persons who reported working in a place whose population was below this criterion were coded to the county in which the place was located. In the nine northeastern states (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont), place-of-work responses were coded to the Minor Civil Division (MCD) as well as to place and county. Thus, those who worked in a place of less than 2,500 in one of the northeastern states were coded to the MCD in which the place was located.

Those who lived within an SMSA but worked in nonmetropolitan territory were eligible for the same geographic levels of place-of-work coding as those who lived in nonmetropolitan areas. This was also the case for those who lived in one SMSA and worked in another SMSA, unless the two SMSAs were designated as part of a commutershed (commutershed coding is discussed in the following).

The place-of-work responses of persons who lived and worked within the same SMSA were eligible to be

TABLE 1 Geographic Levels Used for Place-of-Work Coding in the 1980 Census

Area of residence	Area of work	Eligible level of place-of-work coding
Inside an SMSA that is a commutershed for one or more contiguous SMSA's	SMSA of residence; inside the tract/block coding area	Census tract or block
	SMSA of residence; outside the tract/block coding area	Place or county (MCD in the 9 Northeastern states) if place of work is not in a place
	SMSA for which SMSA of residence is a commutershed; inside the tract/block coding area	Census tract and block
	SMSA for which SMSA of residence is a commutershed; outside the tract/block coding area	Place or county (MCD in the 9 Northeastern states) if place of work is not in a place
	SMSA for which SMSA of residence is not a commutershed	Place or county (MCD in the 9 Northeastern states) if place of work is not in a place
	Outside SMSA's	Place or county (MCD in the 9 Northeastern states) if place of work is not in a place
Inside an SMSA that is not a commutershed for another SMSA	SMSA of residence; inside the tract/block coding area	Census tract and block
	SMSA of residence; outside the tract/block coding area	Place or county (MCD in the 9 Northeastern states) if place of work is not in a place
	Another SMSA or outside SMSA's	Place or county (MCD in the 9 Northeastern states) if place of work is not in a place
Outside SMSA's	Inside an SMSA or outside SMSA's	Place or county (MCD in the 9 Northeastern states) if place of work is not in a place

coded to census tract and block if their workplace location was within the tract or block coding area. The tract or block coding area of the SMSA was defined as the portion of the potential urbanized area that was covered by the bureau's computerized Geographic Base File/Dual Independent Map Encoding (GBF/DIME) file. Where the GBF/DIME file coverage within the SMSA extended beyond the boundary of the potential urbanized area, workplace addresses outside the boundary were also coded to tract and block if that territory had been included in the tract or block coding area under the contract block program. For persons living and working within an SMSA but working outside the tract or block coding area, the place-of-work response was coded to the same level as that for those who lived in nonmetropolitan territory (i.e., place or county or both). Those who lived and worked within SMSAs that had an GBF/DIME file (Bismarck, North Dakota; Elkhart, Indiana; Enid, Oklahoma; Iowa City, Iowa; Janesville-Beloit, Wisconsin; Las Cruces, New Mexico; and Rapid City, South Dakota) were also coded to the same level as residents of nonmetropolitan territory.

Special commutershed coding was undertaken for contiguous SMSAs that make up a larger commuting region. In general, the commutershed of an SMSA extends to include the territory from which its workers flow. Thus, for a given pair of SMSAs where one area sends a significant number of commuters to the other, the sending SMSA is defined as part of the commutershed of the receiving SMSA. Where there are large flows of workers in both directions, each SMSA would be recognized as within the commutershed of the other. Similarly, if an SMSA sends a significant number of commuters to more than one other SMSA, it would be part of the commutershed of each receiving area. As previously described, in the coding of place-of-work responses the usual procedure was to code intermetropolitan commuters only to the place or county level or both. However, residents of SMSAs that were designated as a commutershed of an adjoining SMSA were coded to the census tract and block level if they commuted into that adjacent SMSA.

The place-of-work coding system also contained miscellaneous codes to be used for workers whose place-of-work response was incomplete or an unusual location. For example, some workers could only be coded to the state in which they worked, whereas others reported that they worked in a foreign country or at sea during the week before the census. And, of course, there were those workers who did not report their place of work at all. Such workers were assigned a special code for place of work not reported.

In summary, during place-of-work coding, workers were coded to varying levels of geographic detail depending on the level for which they were eligible and the accuracy of their response to the place-of-work question. It is the workers who were not coded to the fullest geographic detail for which they were eligible who are candidates for allocation. This includes workers who did not report their place of work, those who were coded only to state, those who could be coded only to county within an MCD, and workers coded to a county, MCD, or place that was completely within the tract or block coding area but who could not be coded to tract or block.

#### PLACE-OF-WORK ALLOCATION PROCEDURE

The objective of the place-of-work allocation procedure developed for the UTPP project is to assign workers to workplace locations within the SMSA in the same proportion as the geographic distribution

of workers that resulted from actual place-of-work coding. In addition, the procedure also seeks to maintain the socioeconomic profile of the labor force in a given location by restricting allocated workers to workplace locations where workers with similar characteristics were coded during census processing. The allocation scheme proceeds in stages from one geographic level to the next to keep it as simple as possible and to permit storing in the computer all the information needed at one time to make the particular stage of the allocation. In preparation for the process, all workers in the place-of-work coding sample are stripped from the basic record census file to form a worker allocation file containing the place-of-residence and place-of-work geography necessary for allocation as well as a recode for groups 1 to 19, which are the characteristics control groups into which the workers are stratified.

#### Characteristics Control Groups

Three basic characteristics are cross-tabulated to form the control groups into which workers are stratified during allocation: means of transportation to work, industry of work (including armed forces as a separate category), and travel time to work. Means of transportation was chosen primarily to separate public transit riders from workers using other modes, because it would be erroneous to allocate transit users into areas of work where public transportation does not go. Similarly, industry of work was selected to distinguish, in a general sense, between areas with heavy industry and those that tend to have other types of employment. It would not be desirable to allocate a steel worker to the central business district or an insurance executive to an area typified by heavy manufacturing. Finally, travel time was selected as a control for the length of the work trip. Table 2 provides a description of the characteristics control groups.

#### Steps in the Allocation Procedure

##### Step 1: From Place of Work Not Reported to State of Work

In step 1 workers whose place of work was not reported are assigned a state of work based on the states of work that were reported by other workers with similar characteristics who live in the same general vicinity. First all the workers in the SMSA are sorted by census tract of residence and within tract of residence by characteristics control group. Then within each control group, they are further sorted by state of work. Once the file has been organized in this manner, workers whose state of work was not reported are assigned states in the same proportion as those workers living in the tract in their characteristics control group who reported a state of work. After the completion of step 1, each worker in the SMSA will have a state of work either through coding or allocation.

##### Step 2: From State to County of Work

In step 2 workers who have only a state of work are assigned to a county of work within that state. Again the assignment is based on the counties of work that were reported by other workers with similar characteristics who live in the same vicinity as the respondent and who work in the same state. As in step 1, all workers are sorted by census tract of

TABLE 2 Characteristics Control Groups for Place-of-Work Allocation

Control group	Characteristics		
	Travel time	Means of transportation	Industry of work
1	1 to 14 minutes	Public transportation (bus or streetcar, subway or elevated train, railroad)	"Blue-collar" industry (manufacturing; transportation, communications, and other public utilities; construction; wholesale trade)
2	1 to 14 minutes	Public transportation	"White-collar" industry (retail trade; finance, insurance, and real estate; services; public administration)
3	1 to 14 minutes	Public transportation	Armed forces
4	1 to 14 minutes	Other means of transportation (car, truck, van, taxicab, bicycle, motorcycle, walked, worked at home, other means)	Blue-collar industry
5	1 to 14 minutes	Other means of transportation	White-collar industry
6	1 to 14 minutes	Other means of transportation	Armed forces
7	15 to 29 minutes	Public transportation	Blue-collar industry
8	15 to 29 minutes	Public transportation	White-collar industry
9	15 to 29 minutes	Public transportation	Armed forces
10	15 to 29 minutes	Other means of transportation	Blue-collar industry
11	15 to 29 minutes	Other means of transportation	White-collar industry
12	15 to 29 minutes	Other means of transportation	Armed forces
13	30 minutes or more	Public transportation	Blue-collar industry
14	30 minutes or more	Public transportation	White-collar industry
15	30 minutes or more	Public transportation	Armed forces
16	30 minutes or more	Other means of transportation	Blue-collar industry
17	30 minutes or more	Other means of transportation	White-collar industry
18	30 minutes or more	Other means of transportation	Armed forces
19	Any travel time	Any means of transportation	Agriculture, forestry, and fisheries; mining

residence and characteristics control group and within control group by state of work. In addition, for step 2 the workers are further sorted by county of work within each state of work. Then the workers who were coded only to the state level and have no county of work are allocated to counties in the same proportion as the other workers living in the tract in their characteristics control group. At the end of step 2, each worker in the SMSA will have a county of work.

### Step 3: From County to MCD of Work

Step 3 of the allocation procedure applies only to the nine northeastern states where MCDs were recognized for place-of-work coding. This step is omitted when SMSAs or parts of multistate SMSAs that are located outside the Northeast are processed. In step

3 workers who were coded only to the county level in a northeastern state are assigned an MCD of work. However, in contrast to the previous steps in the allocation process, the assignment is based on the overall distribution of workers that were coded to an MCD within a given county.

First, the workers are sorted by county of work and within county of work by characteristics control group. Next, within each control group the workers are sorted by MCD of work. Workers who were coded only to the county level are then allocated to MCDs of work in the same proportion as those working in the county in their characteristics control group who were coded to the MCD level.

After the completion of step 3, those working outside the SMSA are excluded from subsequent steps in the allocation process unless they work in an adjacent SMSA for which their residence SMSA is a commutershed.

## Step 4: From County (or MCD) to Place of Work

Step 4 applies only to workers who worked within the SMSA or within an adjacent SMSA for which their residence SMSA is a commutershed. It is an intermediate step that precedes allocation to the census tract and block levels. In step 4 workers who were coded only to the county level (or to the MCD level in the Northeast) are allocated to a place of work if the county (or MCD) is completely within the tract or block coding area. Workers coded to the county (or MCD) level in counties (or MCDs) that are not completely within the tract or block coding area are left at that level and not allocated further.

For counties (or MCDs) that are completely within the tract or block coding area, workers are again sorted into characteristics control groups and within control group by place of work. Then workers who had been coded only to the county (or MCD) level are allocated to places of work within the county (or MCD) in the same proportion as workers who were originally coded to the place level. Workers who had been coded to parts of the county (or MCD) that are not within a place are treated as working within the place called "balance of county" (or "balance of MCD").

## Step 5: From Place to Census Tract of Work

In step 5 workers who were coded to the place level in places that are completely within the tract or block coding area are assigned a census tract of work. The allocation is based on the distribution of coded workers with similar characteristics across the census tracts that make up each place. First the workers are sorted by place of work and within place of work by characteristics control group. Next, within each control group, the workers are sorted by census tract of work. Then the workers who had been coded only to the place level are allocated to census tracts of work in the same proportion as those workers working in the place in their characteristics control group who were coded to the census tract level.

## Step 6: From Census Tract to Block of Work

Finally, in step 6 workers who were coded to a census tract of work but not to the block level are assigned a block of work based on the distribution of coded workers with similar characteristics across the blocks in each census tract. The workers are sorted by census tract of work and within tract by characteristics control group. Within each control group, the workers are further sorted by block of work. Then the workers who had been coded only to the census tract level are allocated to blocks of work in the same proportion as those workers working in the tract in their characteristics control group who were coded to the block level.

## RESULTS OF THE ALLOCATION PROCEDURE

A comprehensive analysis of the effect of the place-of-work allocation procedure is beyond the scope of this descriptive paper. However, a few examples of the results of the allocation process for the Washington, D.C., SMSA provide a general view of its impact.

Table 3 shows the overall workplace distribution of workers across the large geographic components of the metropolitan area before and after allocation. Because Washington is a commutershed for the Balti-

TABLE 3 Allocation Summary for Large-Area Commuter Flows for the Washington, D.C.-Md.-Va. SMSA: 1980

Areas of Work	Number of Workers		Percent Distribution	
	After Allocation	Before Allocation	After Allocation	Before Allocation
All workers	1,559,820	1,418,700	100.0	100.0
District of Columbia	614,685	559,311	39.4	39.4
Charles County, Md.	16,913	15,767	1.1	1.1
Montgomery County, Md.	241,656	222,693	15.5	15.7
Prince George's County, Md.	193,319	177,285	12.4	12.5
Arlington County, Va.	118,276	107,373	7.6	7.6
Fairfax County, Va.	176,384	161,553	11.3	11.4
Loudoun County, Va.	17,879	16,192	1.1	1.1
Prince William County, Va.	25,194	23,198	1.6	1.6
Alexandria City, Va.	65,235	58,678	4.2	4.1
Fairfax City, Va.	21,618	19,207	1.4	1.4
Falls Church City, Va.	14,325	12,405	0.9	0.9
Manassas City, Va.	11,411	10,228	0.7	0.7
Manassas Park City, Va.	417	386	-	-
Baltimore, Md. SMSA	20,685	18,663	1.3	1.3
Elsewhere	21,823	15,761	1.4	1.1

more SMSA, Baltimore is also shown as a destination. As can be seen from Table 3, the overall distribution of workers after allocation is nearly identical to that which resulted from actual place-of-work coding.

Table 4 gives an example of the effect of place-of-work allocation on commuter flows between components of the SMSA. The data pertain to the work-place destinations for workers who reside in suburban Fairfax County, Virginia. Again, as in Table 3, the proportion of workers in each flow is virtually the same both before and after allocation.

Table 5 shows the effect of allocation on the number of workers in the census tracts that make up the Washington, D.C., CBD, as well as their characteristics. The second line of the table indicates that the proportion of the District's employment that is attributable to each CBD census tract remained the same after allocation despite the addition of substantial numbers of workers. Furthermore, the characteristics profile of workers within each tract after allocation remained almost identical to the original coded results.

## SUMMARY

Place-of-work data that are included in regular 1980 census data products were not allocated for incom-

TABLE 4 Allocation Summary for Commuter Flows for Fairfax County, Virginia: 1980

Areas of Work	Number of Workers		Percent Distribution	
	After Allocation	Before Allocation	After Allocation	Before Allocation
All workers	316,497	291,385	100.0	100.0
District of Columbia	80,582	74,953	25.5	25.7
Charles County, Md.	106	82	-	-
Montgomery County, Md.	11,309	10,377	3.6	3.6
Prince George's County, Md.	6,136	5,536	1.9	1.9
Arlington County, Va.	39,426	36,399	12.5	12.5
Fairfax County, Va.	119,175	110,227	37.7	37.8
Loudoun County, Va.	2,528	2,311	0.8	0.8
Prince William County, Va.	1,904	1,760	0.6	0.6
Alexandria City, Va.	28,060	25,925	8.9	8.9
Fairfax City, Va.	12,370	11,268	3.9	3.9
Falls Church City, Va.	7,396	6,458	2.3	2.2
Manassas City, Va.	1,455	1,264	0.5	0.4
Manassas Park City, Va.	79	60	-	-
Baltimore, Md. SMSA	912	852	0.3	0.3
Elsewhere	5,509	3,913	1.6	1.3

TABLE 5 Percentage Distribution of Workers by Characteristics Control Group Before and After Allocation for Census Tracts in the Washington, D.C., CBD: 1980

Characteristics Control group	Census tracts in the central business district											
	0051.00		0052.02		0053.02		0054.02		0057.02		0058.00	
	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before
All workers.....	17,859	13,392	15,379	11,817	23,299	17,820	47,803	36,196	16,990	12,774	42,964	32,511
Percent of total workers working in the District of Columbia.....	2.9	2.9	2.5	2.6	3.8	3.9	7.8	7.9	2.8	2.8	7.0	7.1
PERCENTAGE DISTRIBUTION BY CHARACTERISTICS CONTROL GROUP												
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1-14 min./Public trans./Blue-collar.....	-	-	-	-	-	-	-	-	-	-	0.1	0.1
1-14 min./Public trans./White-collar.....	0.2	0.2	0.3	0.2	0.3	0.3	0.4	0.5	-	0.1	0.3	0.3
1-14 min./Public trans./Armed forces.....	-	-	-	-	-	-	-	-	-	-	-	-
1-14 min./Other means/Blue-collar.....	-	-	3.0	2.9	1.2	0.9	0.6	0.5	-	-	0.6	0.6
1-14 min./Other means/White-collar.....	2.8	3.0	4.5	4.4	3.8	4.3	4.2	4.1	3.4	3.2	2.7	2.8
1-14 min./Other means/Armed forces.....	-	-	-	-	-	-	-	-	0.1	0.2	-	-
15-29 min./Public trans./Blue-collar.....	0.4	0.4	0.3	0.4	0.4	0.5	0.3	0.3	0.3	0.5	0.5	0.5
15-29 min./Public trans./White-collar.....	3.3	3.3	2.7	2.6	3.1	3.3	2.4	2.6	2.3	2.5	2.7	2.9
15-29 min./Public trans./Armed forces.....	-	-	-	-	-	-	-	-	-	-	-	-
15-29 min./Other means/Blue-collar.....	2.2	2.3	6.9	6.4	3.2	2.6	2.4	2.2	0.5	0.5	4.5	4.2
15-29 min./Other means/White-collar.....	16.3	16.5	14.6	14.7	19.1	19.2	19.9	19.0	17.1	17.4	16.6	16.8
15-29 min./Other means/Armed forces.....	-	-	-	-	-	-	-	-	0.1	0.1	0.2	0.1
30+ min./Public trans./Blue-collar.....	1.4	1.2	1.9	2.1	2.3	2.4	1.3	1.5	0.2	0.3	2.7	2.9
30+ min./Public trans./White-collar.....	10.9	10.7	6.5	7.1	11.5	12.6	12.0	13.1	8.2	8.8	8.7	9.1
30+ min./Public trans./Armed forces.....	-	-	-	-	-	-	-	-	-	-	-	-
30+ min./Other means/Blue-collar.....	9.1	7.9	11.6	11.3	9.6	9.1	6.4	6.1	2.6	2.2	10.6	10.4
30+ min./Other means/White-collar.....	50.1	51.9	45.9	46.4	42.5	42.3	47.1	47.8	62.6	62.3	47.3	47.3
30+ min./Other means/Armed forces.....	0.1	0.1	-	-	-	-	-	-	0.4	0.3	0.1	0.1
Agriculture, forestry, fisheries, and mining.....	3.2	2.4	1.7	1.6	3.0	2.3	3.0	2.1	2.1	1.8	2.4	2.0

plete responses or nonresponse because of processing limitations. However, this limitation does not apply to special tabulations such as the UTPP.

The allocation procedure developed for use in the 1980 UTPP assigns workers to workplace locations within a given SMSA in the same proportion as the geographic distribution of workers that resulted from actual place-of-work coding. In addition, the procedure also maintains the socioeconomic profile

of the labor force in a given location by restricting allocated workers to workplace locations where workers with similar characteristics were coded during census processing. By improving the quality of the employment data contained in the UTPP, place-of-work allocation should significantly increase the utility of the package for transportation planning in the next decade.

## Designing the Urban Transportation Planning Package

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### ABSTRACT

The Urban Transportation Planning Package was designed by the Bureau of the Census following specifications that were developed by an ad hoc committee of users. The relationship between the Census Bureau and the ad hoc committee was informal but effective and illustrates a way to bridge the gaps that frequently exist between users and providers of information for public decision making.

Most products of the Bureau of the Census are developed through formal committees of sponsoring agencies and other interested organizations. In contrast, the Urban Transportation Planning Package (UTPP) was designed by an ad hoc committee that had no official status. The largely informal process by which the 1980 UTPP was designed is worth examining because it illustrates an effective way to bridge the gaps that frequently exist between users and providers of information for public decision making.

### THE DESIGN PROCESS

The informal design process for the 1980 UTPP had its roots in a similar effort a decade earlier. The first UTPP was designed for the 1970 census by an informal group of transportation professionals and census officials. Several participants met with other members of the transportation community at a TRB-sponsored conference in Albuquerque in 1973 to assess their experiences and make recommendations for the future (1).

Inspired by the recommendations of the 1973 conference, an ad hoc committee was formed in 1977 to develop specifications for the structure and content of the 1980 UTPP. The group included officials from the Census Bureau, FHWA, and UMTA who would be most immediately responsible for programming the UTPP and securing necessary funds, as well as professionals from other federal and regional agencies and consulting firms who were experienced with the subject

matter. The group was intentionally kept small to keep the discussions manageable, never exceeding a dozen participants. All members were from the Washington, D.C., area so that meetings could be frequent and without travel cost.

Although all participants were members or friends of the TRB Committee on Transportation Information Systems and Data Requirements, the ad hoc committee was not affiliated with TRB or with any other organization. Official status was unnecessary because the Census Bureau would develop cost estimates and other feasibility analyses in response to any reasonable request by an individual or group.

The ad hoc committee met between 1977 and 1979 at the Metropolitan Washington Council of Governments (COG) offices, which provided neutral ground for the Census Bureau and transportation officials. The group started with a table-by-table review of the 1970 UTPP, relying heavily on the proceedings of the Albuquerque conference (1) for initial recommendations and for documentation of the content and procedures of the 1970 UTPP. The group also had to consider the expanded number of journey-to-work questions in the 1980 census, experience with which was limited to the Annual Housing Survey. New ideas were raised and debated, and an initial set of specifications was developed. COG's George Wickstrom served as the unofficial secretary of the ad hoc committee and forwarded the initial specifications to the Census Bureau for a cost estimate. Comments were solicited on the proposed specifications from interested individuals in a number of metropolitan planning organizations (MPOs) and through articles in a newsletter of the Urban and Regional Information Systems Association (URISA). The specifications evolved in response to the comments and further debate among the members of the ad hoc committee, and the cost estimates were revised accordingly.

At this point the process became formal. The FHWA and UMTA participants on the ad hoc committee used the specifications and cost estimates to prepare and obtain approval for a contract with the Census Bureau to develop the requisite software for the UTPP. Potential purchasers of UTPP tabulations were contacted through publications and meetings of the Census Bureau, FHWA, UMTA, TRB, URISA, and other organizations.