

WORK-TRIP DATA

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There are important aspects of the work-trip data available from the 1970 census: (a) the content of the questionnaire, (b) the data contained in machine-readable form on the computer tapes, and (c) the data that will be summarized in the course of the regular census publication program.

There were 2 types of 1970 census questionnaires: short forms used for obtaining information from about 80 percent of the households and long forms used for obtaining information from the remaining 20 percent. All of the long forms contained questions on topics such as age, sex, color, household relationship, place of birth, education, labor force status, occupation and industry, income, and housing characteristics such as tenure and vacancy status, number of rooms, presence of kitchen and plumbing facilities, and value or rent. Long forms that contained questions bearing on work trips were used for 15 percent of the households. These forms contained 2 questions addressed to each person who worked (full time or part time) during the week preceding April 1, 1970. The first question was, "Where did he work last week?" It requested the address of the place of work in terms of state, county, place name, street name, numeric address, and ZIP code and an indication of whether the location was inside the limits of the named city, town, or village. The second question was, "How did he get to work last week?" Space was provided to indicate the principal means of transportation used on the last day of the reference week. The categories were driver of private automobile, passenger in private automobile, bus or streetcar, subway or elevated, railroad, taxicab, walked only, worked at home, and other means. Some, but by no means all, of the questionnaires bear the address of residence; all of them should bear serial numbers that permit us to match them with the enumeration listing books that do contain addresses.

The questionnaires and associated listing books represent the maximum amount of work-trip data available from the census. Not all of this information is actually recorded on the magnetic tapes used for processing the census. In particular, the tape records do not contain the names of persons or their residential addresses. They do contain identification codes that permit us to match them with the listing books. They also contain geographic codes that identify the household location down to the various tabulation areas used in the regular census publications, including block identification for those households in block tabulation areas (roughly the urbanized areas of the country).

The answers to the place-of-work question are also recorded in coded form, coded at 2 levels. The first level is known as the Universal Area Code (UAC). In the UAC system there is one specific code for each place of 25,000 or more and one for that part of each county that is not in a place of 25,000 or more. The tape record for each worker will have such an area code for his place of work based on the county and place name recorded on the questionnaire. There are about 5,000 such distinct codes.

In addition to the UAC identification, the work-place addresses of many (if not most) workers are also coded to the tract and block level. The extent to which this more detailed geographic coding of place of work is done depends on 2 conditions. The first condition is that the worker must, in general, live and work within an SMSA. In a few

selected cases, we will broaden the detailed coding area to cover several neighboring SMSA's. For example, the detailed coding area containing the San Francisco SMSA will also include Vallejo-Napa and San Jose. The second condition is that the place of work must not only be within the coding area of the residence but must also be within the subarea for which we have prepared address coding guides. This subarea can be thought of as roughly corresponding to the urbanized part of the SMSA or SMSA's that constitute the coding area. For each worker who meets these conditions, a coding clerk will examine the ZIP code and street address on the questionnaire, consult an abbreviated version of the address coding guide for the coding area, and enter on the questionnaire in FOSDIC readable form the street code, numeric address, and ZIP code. If the respondent fails to provide a street and number, but rather gives the name of a building or a business establishment, the coding clerk will use a company name list and, if necessary, a local telephone directory to obtain a street and number address. The tape records for the workers whose place of work address have been thus coded will be matched mechanically to the appropriate address coding guide for the area in question and assigned a tract and block number.

The fact that detailed place-of-work coding will be restricted to persons who live and work within the same coding area was forced on us primarily by the need to limit the number of pages of printed reference materials that a single coding clerk would have to handle. Admittedly, some of us did have visions of setting up an interactive computer-based system like that used for entering or confirming airline reservations so that the coding clerks could key in an address or company name and get back the necessary codes to mark on the questionnaires. But the 1960 data indicated that by making judicious combinations of SMSA's we could expect that not more than 5 percent of the workers living in a particular coding area would actually work in the urbanized part of another coding area; so, we concluded that our efforts could be better spent in coping with some of the other problems connected with the census.

At this time it is too early to tell how successful we will be in coding work addresses to tract and block. However our experience in the Madison pretest, together with a hurried look at a sample of 1970 questionnaires returned by mail, leads us to hope that in most SMSA's about 90 percent of the persons who work in the urbanized part of the coding area of their residence will give answers to the place-of-work question that are complete enough for detailed coding, and that 98 percent or more of these coded answers can be matched to the address coding guide file and thus receive tract and block codes.

Data related to work trips will appear in a number of the regular census tabulations. Here the smallest geographic unit will be the census tract or its equivalent.

1. Tract reports. For each tract of residence in an SMSA, we will show the number of persons reported as working in the central business district of the central city, in the remainder of the central city, in the central county outside the central city, in each other county of the SMSA and outside the SMSA. The number of workers who did not provide a codable work-place address will also be shown.

2. PC state reports. For each place of 10,000 or more and for each county, we will report the number of workers who live in the area, the number classified as working in the county of residence, the number classified as working outside the county of residence, and the number whose place of work could not be coded at the county level.

3. PD state reports. For each SMSA of 100,000 or more, we will show data on age, sex, color, means of transportation, industry and earnings of resident workers who (a) live in central city and work in central city either in central business district or in remainder of central city, work in remainder of SMSA, work outside SMSA, and did not report place of work; and (b) live in remainder of SMSA and work in central city either in central business district or in remainder of central city, work in remainder of SMSA, work outside SMSA, and did not report place of work.

4. Special subject report on journey to work. In this report there are 2 types of tables: (a) Table 1 that is restricted to workers who live in an SMSA or who work in an SMSA and that gives each commutation stream of 50 or more between areas at the UAC level (similar to Table 1 of the 1960 report on journey to work); and (b) Table 2

that is restricted to SMSA's of 250,000 or more and that gives a 1-page stub of socioeconomic characteristics of the persons who work in each tract, provided that the tract has 1,000 or more workers. This latter tabulation raises a still unresolved question. It may well happen that the workers in a particular tract are almost all employed by a single enterprise. Publication of a statistical summary showing the number of workers in a tract who fall into each of a limited number of socioeconomic categories does not constitute disclosure in the strict sense because the information was obtained from the individuals and not from the enterprise that employed them. The real question is whether the publication by the government of tables showing that most of the workers in the tract are male or that a substantial number of them have low incomes or so on might be used by someone to attack the employment policy of the dominant employer in the tract. I personally believe that the users of census data are sufficiently well informed about the limitations of such data that they will not leap to any unwarranted conclusions about a particular employer on the basis of such a table. However, because we want to have the census results used for constructive purposes and not merely as fuel for confrontation and because, on the other hand, we do not wish to withhold information that may lead to a better understanding of transportation problems and resources, we will have to consider carefully just what information should be presented.

5. Other summary data. In the course of compiling the tract reports mentioned in item 1, we will have compiled data on number of workers by more detailed place of work and place of residence. The residence categories will be tracts within tracted areas and places of 2,500 or more and minor civil divisions outside of tracted areas. For each county of residence, we have predesignated 20 UAC areas. The summary tabulations for any area of residence will show the number of residents who work in each of the 20 associated UAC areas.

As has been indicated, the basic census record tape for the 15 percent sample will contain residence information at the enumeration district level for all households and at the block level within urbanized areas. The records for workers will show place of work at the UAC level; and for most workers who live in an SMSA and work in an urbanized area, the record will contain the block number and street code of place of work. (In addition, for persons living in an SMSA, there will be cases where the place of work cannot be coded to block but can be coded to ZIP code.) This level of geographic coding should make possible a wide variety of special tabulations. A rather elaborate set of such tabulations by traffic zone is being planned with the support of the U.S. Department of Transportation.

In considering special tabulations, it should be kept in mind that the basic record tapes are confidential and that any tabulations requiring the use of these tapes must be done by the bureau and screened for possible disclosure of the detailed characteristics of any individual. The bureau must, of course, be reimbursed for the cost of its work. It should be further kept in mind that the results are based on a 15 percent sample of the population, so that data for very small subgroups are subject to substantial sampling variability. For example, an estimated total of 1,000 can be expected to have a coefficient of variation of about 7 percent. Roughly speaking, the coefficient of variation will be inversely proportional to the square root of the size of the total being estimated. It is quite possible that in areas where place of residence and place of work are coded to block we may in the next 2 years be able with appropriate support to produce a basic record tape containing fairly accurate map coordinates of residence and work place.