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## Chapter 2. The Pretests and Dress Rehearsals

### THE PRETESTS

Planning and testing for 1970 began almost as soon as the 1960 censuses had been taken. This involved a series of pretests in which various questions, questionnaire formats, and enumeration procedures under consideration for 1970 were tried out by actually taking censuses or otherwise obtaining data from the public.

Extensive evaluation was an integral part of the pretest and dress rehearsal program. Both the procedures and the data on population and housing obtained from each test were the subject of statistical analysis, management studies, informal reports by observers, and other studies. Plans for subsequent tests were based upon the conclusions drawn from these evaluations.

The Bureau conducts many special censuses of specific places in the years between decennial censuses of population and housing, at the request and expense of the local government. Usually, only population totals by race and sex for about 25 age brackets are provided. When a city's request for a special census coincided with the Bureau's need for a pretest area, arrangements were made for an appropriate division of the costs; essentially, the city paid for the special census and the Bureau paid for the additional cost of conducting a pretest at the same time.

Where special censuses of cities were conducted, only those census data relating to numbers of persons, age, sex, and race were tabulated and published (even though other information may have been collected for the pretest). Data-processing methods for 1970 were tested more extensively from 1967 on, however, but the data were not carried through all the steps necessary to produce complete tabulations.

#### Fort Smith, Ark., August 1961

The Bureau conducted the first pretest for the 1970 census in August 1961. A special census was taken in Fort Smith, Ark., a city of about 60,000 population, and the procedures were designed to test the compilation of an address register. Enumerators went from house to house, listing the addresses and leaving a brief questionnaire to be completed and mailed in. Approximately 86 percent of the households returned their questionnaires as requested. The Census Bureau also compiled an address register based on the 1960 census records plus subsequent building permits. The addresses in this register were checked by the local post office. The

register was then compared with the address lists prepared by the enumerators, and found to be just as complete.

#### Fort Smith, Ark., and Skokie, Ill., June 1962

In December 1961, arrangements were initiated to return to Fort Smith in June 1962 and also go to Skokie, Ill., another city of about 60,000 people. This time the questionnaires were delivered by mail as well as returned by mail. The Bureau updated the 1961 special census address register for Fort Smith with building permits and another check by the Post Office. Any new addresses were entered on punchcards together with codes for other identification, a new address register was printed out from these cards, and questionnaires were addressed. For Skokie, the address list was compiled from the 1960 decennial census listing books and updated from building permits and a Post Office check. The necessary address cards and registers then were prepared by a private company. The questionnaires in both cities were assigned block and ED (enumeration district) numbers, but not serial numbers. The questionnaires were all of one type: brief (there was no sample), FOSDIC-readable, and designed to be mailed without an envelope. A mail-return rate of 71 to 72 percent was attained in both Fort Smith and Skokie. The quality of the returns indicated that respondents could cope with FOSDIC-readable questionnaires, and that the amount of followup required would not be unreasonable. In addition, a coverage check showed that these mail-out/mail-back procedures missed about 1 percent of the housing units. This was comparable with the 1960 census national experience.

#### Huntington, N.Y., April 1963

In December 1962, after the results of the June pretest had been reviewed, the Bureau began planning for a more extensive test to be taken in April 1963 in the town of Huntington, Suffolk County, Long Island, N.Y. A rapidly growing area with some 150,000 people, Huntington contained a number of post offices of various sizes and represented a wide range of social and economic conditions in urban, suburban, and rural settings. A current address register was developed for the city delivery areas--those parts of Huntington which received at least 90 percent of their mail by city delivery--by updating the 1960 census listing books to include new construction. The resulting addresses were put on magnetic tape in the Bureau and assigned serial numbers. Each household was sent a mailing piece containing either a "basic" (short) or "sample" (long) questionnaire, a separate instruction sheet, and a postage-paid envelope for returning the questionnaire.

The envelope contained a window through which the return address on the questionnaire could be seen. Every fourth household received a long questionnaire. (Only the short questionnaire was FOSDIC-readable.) The Post Office checked the addresses at the time of delivery (rather than before the census) and advised the Census Bureau if any were missing so that questionnaires could be mailed to those addresses. Outside of the city delivery area, enumerators canvassed every block or road, entered the addresses in listing books, and left a mailing piece for each household. This was followed several days later by a reminder letter which the enumerator addressed and mailed. As enumerators were responsible for editing as well as followup, they were given some instruction on handling and correcting FOSDIC materials. The Huntington pretest enumerators also received more extensive training, in terms of time and materials, than in previous tests.

The results of this pretest were encouraging: 85 percent of the short questionnaires and 84 percent of the long questionnaires were returned from occupied units. A coverage check was performed on the address-register portion of the area, and again the miss rate for housing units was found to be about 1 percent. In this pretest, the census return envelope was the same color as the envelope used for the mailing piece itself; the similarity caused confusion among respondents, mail carriers, and census employees alike.

Encouraged by public cooperation, the apparent efficiency of mailing lists, and the feasibility of field editing and followup, the Bureau requested a special appropriation for large-scale testing and other work preparatory for 1970. The Department of Commerce, the Bureau of the Budget, and Congress all concurred in the decision for early preparation, and in 1963 Congress made \$1,370,000 available for two major experimental censuses to be taken in 1964 and 1965.

#### Louisville, Ky., SMSA, May 1964

The budgetary and experimental criteria established for the 1964 field test called for a pretest in a metropolitan area with a population of about 750,000 and with a large central city. During the summer of 1963, the Bureau reviewed the socioeconomic and other characteristics of the areas which met these criteria and selected the Louisville, Ky., SMSA. (Although the Jeffersonville Census Operations Office of the Census Bureau is located in the SMSA, the test was run independently through a special census office in downtown Louisville.)

For the test, the SMSA was divided into two mail delivery areas similar to those defined in Huntington. The city delivery area was defined as the city of Louisville and the several small separately incorporated enclaves contained in it, plus seven cities ranging in size from about 40,000 down to 10,000 inhabitants. Approximately 500,000 people lived in this area. The suburban fringes, including some rural areas, constituted the second area in this test, as they tended to be outside the Post Office's city delivery area and were not appropriate for the planned mail carrier check of the address lists.

The Louisville pretest was conducted from March through mid-June 1964; Thursday, May 14, was designated as "Census Day." The entire SMSA was canvassed by having enumerators go from house to house, listing addresses. Then, for half of the city delivery area, address registers were generated by computer. These registers, based on 1960 census listings, were updated by information on post-census building permits and gas and electric meter installations, and by mail carrier check. The computer serialized the resultant addresses, designated the "special places" (institutions, dormitories, motels, and other group quarters), selected the households which would receive sample questionnaires, and printed out the address labels. In the other half of the city delivery area, and for all of the suburban and rural areas, the sample was selected manually and questionnaires were addressed by hand. The listing books (filled by the enumerators), which paralleled the area covered by the computer address registers, were not used for enumeration, but served as a check on the completeness of the address registers. Mail carriers reported missing addresses in all areas at the time they delivered the census questionnaires.

The questionnaires, which were mailed to most households with the request that they be returned by mail, were of two types--a short questionnaire, which was sent to 75 percent of the addresses, and a long questionnaire, which was sent to 25 percent. Both questionnaires were FOSDIC-readable and were accompanied by separate instruction sheets and return envelopes of a different color from the outgoing envelopes. On May 15, the day after Census Day, mail carriers delivered unaddressed reminder cards to all residences on their routes.

Since certain parts of large central cities had in past censuses been more difficult to enumerate than the rest of the country, a task force on difficult-to-enumerate areas ("X-areas") was formed late in 1963 to define these areas for Louisville and thereby see how accurately these X-areas could be predetermined. For purposes of experimentation, some households in the X-areas received the regular mailing piece, others received the questionnaire together with a notice giving the addresses of five personal-assistance centers or a telephone number to be called, and a third group received only a letter saying that an enumerator would visit. In some neighborhoods, enumerators worked in teams. The enumeration of "special places" was set up as a separate operation.

An intensive radio, television, and newspaper campaign was conducted in the Louisville area to publicize the census; television was found to be the most effective of all the media.

Wherever possible, the local people hired to canvass for addresses also checked the mail returns for completeness (editing); followed up, either by telephone or personal visit, those which required more information (failed-edit followup); and called on those households which did not return a questionnaire (nonresponse followup).

Judging by the amount of followup required, it appeared that the Bureau had accurately identified three out of every four X-areas in advance of the census.

Approximately one out of every 10 ED's not so designated, however, should have been. Experience in Louisville indicated that census questionnaires could have been mailed to all of the X-area households without any significant difference in the response rate.

For the Louisville city delivery area, the updated computer-generated address registers were found to be more complete than the listing books. Households missed most often in the listing books were those in multiunit structures (buildings containing more than one housing unit, and sometimes more than one street address). Thus, using a list based on an enumerator canvass did not seem the ideal way to insure complete coverage in multiunit structures in city delivery areas. With a check on persons who reported address changes immediately before and after Census Day (referred to as the movers check) and with the checks by the Post Office for missing addresses both before and at the time of delivery, the number of entirely missed addresses in Louisville and of housing units missed within them was sharply reduced compared with either the 1960 or the 1950 censuses. There was no material improvement over 1960, however, in detecting additional housing units--and their occupants--within already enumerated addresses. There was evidence that the number of definitionally misclassified housing units in Louisville was somewhat higher than in 1960, although the difference was relatively small. (Definitional errors are cases in which coverage of a group of persons is correct, but the number of housing units they occupy is erroneously reported.) While such failure to report the correct number of housing units does not affect the count of persons, it does affect the count of households and housing units, as well as the statistics on household and housing unit characteristics.

The results of the Louisville Special Census, insofar as the mail-out/mail-back technique was concerned, were favorable. Census questionnaires were mailed back by 85.6 percent of the households in the SMSA. Around 155,000 returns (70 percent of all households) were in the Louisville post office by noon, Friday, May 15--the day after Census Day. This phenomenon of having two-thirds of the population listed on the census questionnaires within a few hours after Census Day--unique at the time--had important implications for accuracy of coverage. Also, the pattern of rapid returns made the need for the fairly costly reminder postcards questionable. The return rates from occupied housing units for the short and long questionnaire were 89 percent and 84 percent, respectively. The latter figure was especially impressive because of the imposing appearance of the long questionnaire. Generally, the responses on about nine-tenths of the short, and almost half of the long, questionnaires returned by mail were accepted without followup by the enumerator. An analysis of the questionnaires, including those received by mail and those completed by interview, showed that the final NA ("not reported") rates for a number of subject items were higher than in the 1960 census (and procedural changes were made accordingly in the next pretest).

Bearing in mind that a substantial amount of the \$550,000 budgeted for the Louisville pretest involved developmental costs and the dual techniques tested, a

general conclusion was drawn that at the current state of development of procedures the cost of a mail census, including certain important improvements over the 1960 approach, would not exceed the cost of a census by enumerator canvass.

### Cleveland, Ohio, April 1965

Early in the planning for the 1965 test, it was decided to select a large industrial city in which substantial enumeration problems had been encountered during the 1960 census. The aim was to try the mail approach under "big city" conditions. Cleveland was selected as the site, as it is a large industrial city with a heterogeneous population, and it contains congested areas of the type that are traditionally difficult to enumerate. In 1960, Cleveland had a population of 876,000, with 270,000 occupied and 13,000 vacant housing units. Of the 283,000 total housing units, 57 percent were in multiunit structures; this proportion was about 10 percentage points higher than the 1960 average for cities of 500,000 to 1,000,000 population, which was about the same as the average for all central cities of SMSA's--roughly 47 percent. This made Cleveland a particularly rigorous test of coverage procedures because, as had been discovered in Louisville, in a mail census the major portion of omitted housing units and population appeared to be in partially enumerated multiunit structures.

It was also decided to test editing mail returns (i.e., reviewing them for completeness) by clerks in the district office, rather than having it done by the enumerators as it was in Louisville. Special attention was also given in Cleveland to the effect of the enumeration procedure on the content items (such as occupation and income) in the census questionnaires.

The address registers for Cleveland were the first for which a commercial mailing list was used as a base; the resulting addresses were also the first to be geographically coded by computer through the use of an ACG (address coding guide).

An operations calendar designating Thursday, April 1, as Census Day was set up by the beginning of 1965. During the fall and winter of 1964-65, the Bureau compiled an ACG for Cleveland, starting with approximately 6,000 punchcards prepared from local property records showing the address range of every Cleveland street by 1960 census tract. These cards were processed on a computer, and separate cards were produced for the even and odd sides of streets and for each block side. Approximately 43,000 cards resulted from this operation. The cards were then coded to each of approximately 5,000 1960 census blocks. After sorting, correction, and transferring to tape, a final deck of about 45,000 punchcards was used to assign census block and tract numbers to a commercial address list for Cleveland, which appeared to be the most complete one available on computer tape. The use of such a tape was tested as an alternative to the previous technique of updating the 1960 listing books.

In obtaining the Cleveland address list, the Bureau also contracted with the firm which compiled it to perform some of the services necessary to bring the

list up to date. The contract specified arrangements for handling the addresses which protected the confidentiality of any changes or additions to the addresses made for purposes of taking the census.

Toward the end of December 1964, the contractor printed out some 300,000 address labels, coded to census tract and block number. These labels were affixed to cards which were given to the Cleveland post office for correction in early January. Each mail carrier checked the cards for his route and prepared a new card for each omitted residential unit, marked for deletion the cards for demolished units, provided exact detail on apartment number or location, and so forth. About 10 percent of the addresses were reported as "no such address" by the Post Office at this time, but about one-third of these addresses were retained for mailing. The reason for retaining these addresses was that the commercial supplier's experience had indicated that about 15 percent of the cases reported by the Post Office as undeliverable on one try were deliverable on a second try. Changes were made in 27 percent of the original Cleveland addresses, primarily as a result of the large number of apartment designations, but only 2 percent of the total addresses were additions. The final address register totaled just over 275,000 households.

At the end of February, the contractor printed out a final set of address labels. These were affixed to the mailing pieces through a window in the outer envelope. Each mailing piece contained a FOSDIC-readable questionnaire (a short questionnaire containing 100-percent questions or a long questionnaire containing 100-percent and sample questions), an instruction sheet, and a return envelope. At the time of delivery, mail carriers prepared cards for any remaining addresses for which there were no questionnaires; these cards were transmitted to the district office, and questionnaires for these addresses were mailed immediately from the district office. The short questionnaire was mailed to 75 percent of the addresses in Cleveland, the long one to 25 percent. (These questionnaires were similar to those used in Louisville, with space for listing nine persons on each. Certain inquiries--notably those on income--were revised, and some questions used in the 1960 census but not in the Louisville pretest, relating to television sets, air conditioning, number of bedrooms, and basement, were restored.)

The census was covered by all the news media, with publicity coordinated by a local public relations specialist. Household interviews during the week of April 5-11 indicated that newspapers and television had provided the most effective publicity. After the questionnaires were received by the households, a 25-line telephone assistance center in the district office handled over 10,000 calls; but less than 350 persons visited the seven neighborhood assistance centers which had been established.

Approximately 137,000 returns (67 percent of the questionnaires mailed out) were received in the Post Office by Friday, April 2. These were checked for completeness by clerks in the district office. In this first major experiment with the use of centralized editing, i.e., editing in the district office, it was

planned to have a work force of at least 200. Even though the total force trained exceeded this figure, the actual number of edit clerks on duty ranged from 177 on the third day to 111 on the last day of editing. The high attrition forced a lengthening of the time schedule and some relaxing of individual production guides. Nevertheless, the basic centralized editing plan seemed feasible.

Because of the high percentage of questionnaires which failed edit--41.9 percent overall--it was decided to try to make some of the repairs from the district office rather than give the incomplete questionnaires to the enumerators to follow up. Telephones were installed, and clerks were assigned to get missing information; they were successful in 65.1 percent of the cases. Further followup for incomplete information or nonresponse was then accomplished by the enumerators between April 10 and May 24. Again, a considerable number of responses were obtained over the telephone.

Particular attention was given to means of identifying "special places"--hotels, hospitals, institutions, dormitories, etc. The Bureau concluded that the Post Office and the telephone company's classified directory were the most effective sources of information for this purpose. Using the techniques developed in Louisville for identifying X-areas, the experience in Cleveland indicated the difficult-to-enumerate neighborhoods could not be predesignated with a sufficient degree of precision.

An attempt was made to capitalize on the district office employees' experience by shifting groups of them from one operation to the next, such as from editing to followup. This was not entirely successful because operations often overlapped, and many clerks had no interest in becoming enumerators. The publicity for a mail census apparently drew applicants who were seeking clerical jobs rather than field work. There also seemed to be inordinate delays and lack of communication between the time of testing and selection and the time when those selected were called to work. Instructions were frequently written or rewritten as the census progressed, and adjustments were made to cope with local problems as they arose. The shortage of enumerators became acute during the last 3 weeks of followup, and assignments had to be planned daily.

Microfilming in Jeffersonville of the Cleveland returns marked the first use of a motorized plexiglas cover which held down the folds on the questionnaire and allowed the camera operator to have both hands free to move documents. The mechanism also could accommodate two pages of a questionnaire at once. The new cover increased camera production from 2,500 questionnaires a day (for Louisville) to 3,000 short and 2,400 long questionnaires, or a total of 5,400 questionnaires a day. In all, the camera operation for Cleveland was very successful, and the first round of filming was finished by July 1, 2 weeks ahead of schedule.

In an effort to improve coverage of occupied housing units within enumerated structures (an area where enumerators and the Post Office had been weak in Louisville), three coverage questions were asked of all households in Cleveland: "Are there any households, other than your own at this street address?", "Is there

anyone living at this street address who is not listed on page 2 [as a household member]?", and "As far as you know, are there any vacant apartments at this address?" These questions proved to be unclear to many respondents, and contributed no significant improvement in coverage for either occupied or vacant units. In view of the high correlation between difficult-to-enumerate persons and the hard-to-find housing units in which they normally live, it appeared that other techniques would have to be developed to find both.

The Cleveland results seemed to indicate that a mail census worked well with reference to single housing units, and at least as well as 1960 procedures in getting a complete list of units within multiunit structures. On the other hand, "definitional errors" were significantly higher in both Louisville and Cleveland than in the 1960 census.

The population coverage by mail compared favorably with that of the 1960 census, for which the net underenumeration has been estimated as ranging between 2.5 and 3.0 percent for the United States; while in the Louisville pretest it was 1.0, and in Cleveland 1.3. Coverage of properly included occupied units in Cleveland, Louisville, and the 1960 census appeared to be at roughly the same level.

Cleveland was representative of large, difficult-to-enumerate cities in the United States, and the pretest afforded a good example of what might be expected in a centralized, mail-out/mail-back census, whereas Louisville was representative of medium-sized cities with no great problems of enumeration. The mail-return rate in Cleveland from occupied housing units, for short and long questionnaires combined, was 79.8 percent, whereas the rate in the Louisville SMSA was 85.6 percent. The Louisville followup rate for all returns was 36.2 percent of the total occupied units, whereas the rate in Cleveland was 50.8 percent. Due to differences in editing rules in the various pretests, these percentages are only roughly comparable.

The Cleveland pretest also demonstrated the advantages of geographic coding, listing, and addressing by computer; and the cumulative experience thus far in the 1970 pretests indicated that the mail-out/mail-back technique was practicable for use in the metropolitan areas of the country. Although the details were not made final until 1967, as a result of the Cleveland special census the Bureau decided in 1965 that it would be feasible and probably desirable to conduct at least part of the 1970 decennial census by the mail-out/mail-back system.

### First Content Pretest, May 1966

The mail-out/mail-back technique required that the questionnaires be easy for the respondent to understand and to fill out. Consequently, the Bureau conducted several tests of variations in content and format; the feasibility and reliability of certain new items proposed for inclusion in the 1970 census were also tested. These items had been selected on the basis of recommendations of the Census Advisory Committee on Population

Statistics, the Federal Council on the 1970 Census, the Advisory Committee for the 1970 Census of Housing, and various other groups. The first of these tests was conducted in two places simultaneously--St. Louis Park, Minn., and Yonkers, N.Y., in the spring of 1966.

The questionnaires used in St. Louis Park and Yonkers were designed to test several new items as well as revisions of questions included in prior censuses. The test items relating to population characteristics covered the following subjects: Age, citizenship, parents' birthplaces, mother tongue, national origin, occupation, place of birth, activity 5 years ago, and Social Security number. New items pertaining to housing characteristics were: Type of cooking facilities; complete kitchen; number of automobiles used by household members to travel to work; number of built-in clothes closets; length and width of each room; ownership, use, and type of second home; and services included in the rent for living quarters. In addition, several questions pertaining to the definition of a housing unit were tested for the first time in a mail-out/mail-back survey.

The primary reason for selecting these particular sites was to gain experience among population groups of different national origins with regard to the ethnic-origin item. St. Louis Park provided an upper middle class suburban community whose foreign stock is predominantly of Scandinavian origin. Yonkers, on the other hand, typified a large northeastern city whose foreign stock is composed of several ethnic groups and represents a greater proportion of its total population than that in St. Louis Park.

A sample of about 2,500 households in each area was selected from the 1960 census sample listings. This was done to compare 1966 responses to the question on "occupation six years ago" with the answers recorded for occupation in 1960.

Geographic work for this pretest included preparation of maps for the two test areas and determination of the ED in which each selected address was located in terms of the ED boundaries existing in 1960 and those determined in a 1965 map revision.

Two versions of a FOSDIC-readable long questionnaire were prepared so that responses to alternative question wording and format for particular items could be compared. For instance, the format of the age item differed slightly between the two questionnaires. Also, the Bureau experimented in collecting ethnic-origin information by requiring the respondent to write his origin on one questionnaire, while on the alternative questionnaire the respondent was instructed to fill the FOSDIC circle for one of 15 possible national groups. Housing items for which alternative versions were tested related to tenure, amount of rent, number of complete and partial bathrooms, and facilities included in the gross rent. A few housing items, such as location of telephone in unit, second home, and size of rooms, appeared on only one or the other questionnaire, so that a greater number of items could be tested through subsampling.



The enumeration procedures in this pretest were generally those used in Cleveland, that is, editing and followup were done from the district offices. About 5 weeks were taken up with mailing out questionnaires and then checking in and following up the returns by telephone or personal visit. Recheck and reconciliation studies required an additional 4 to 6 weeks; approximately 1,500 households in each area were reinterviewed and asked more probing questions on race and ethnic origin. The study indicated that a sizable proportion of the population reported multiple ethnic origins; the proportion of multiple entries was lower on the form where the respondent was given a list from which to select an ethnic group. The results of this pretest influenced the Bureau's decision to obtain ethnic origin information in 1970 from an item on language spoken in the home during childhood. The study also indicated that certain housing items, such as the one on gross rent, should be modified; other items, such as the size of rooms, were eliminated from further consideration.

A validation study of the responses to the question on occupation and industry 6 years ago involved a comparison with the 1960 records. The principal conclusion was that occupational change over this period of time tended to be underreported. This was due in part to the respondents' inability to recall accurately their occupations in 1960, and also in part to the format in which the item appeared on the pretest questionnaire--the respondents were asked to write in their occupation of 6 years ago only if it differed from their present occupation. Some persons made no entry, even though their occupations had changed. The format was consequently revised for 1970: each respondent was requested to write in his occupation of 5 years ago regardless of whether it was the same as, or different from, his present occupation.

In addition to these items, the items on date of birth, activity 5 years ago, and Social Security number were evaluated. For the date of birth, FOSDIC reporting was slightly more accurate on one version of the questionnaire than on the other. For activity 5 years ago, those activities listed in the pretest item were too specific to be reliably reported by the respondents; as a result, several of the activities were collapsed into broader categories for 1970.

The Social Security numbers reported in the pretest were compared with Social Security Administration records. The results were encouraging with respect to the accuracy of reporting and the question on Social Security number was again in the next major pretest. (See "New Haven" below.)

Excluding certain pretest planning and overhead costs which were charged to the overall cost of the 1970 decennial census, the First Content Pretest cost approximately \$45,000, and the three evaluation studies together cost about \$13,000.

## First Questionnaire Format Test, May 1966

Two differently designed long FOSDIC questionnaires were mailed on an alternate basis to a national sample of 2,300 housing units. One version was a booklet, similar to that used in Cleveland, in which all the sample population items for one person appeared on two facing pages; the other version was a columnar questionnaire. The return rates for the two types of questionnaires were virtually the same, but the columnar questionnaires took longer to edit and required a significantly greater amount of followup. When persons who had not mailed back a questionnaire were interviewed, a larger proportion of those who had received the columnar version gave "form too difficult" as the reason. For both formats, about half of the respondents replied that they would prefer to complete and mail back their census questionnaires rather than for interviewers to pick them up.

## Wilmington, Del., SMSA Listing Study, January-October 1966

In the summer of 1965 the Wilmington, Del., SMSA was selected for additional research into mail-out/mail-back methodology, specifically, the compilation of complete address lists. Although a comparatively small area, this SMSA included a good mixture of Post Office city delivery zones for which a commercial mailing list could be obtained and also rural routes and locked boxes. Post Office listings of households in the latter categories, together with the commercial list, would be compared for completeness of coverage with addresses obtained by census canvassers. A total of approximately 43,500 listings were involved. The cost of the study was \$20,891.

In January 1966 the Post Office provided 25,675 rural and locked-box addresses; in April and May, census canvassers went over the same areas and prepared a list of 26,452 addresses. These addresses were compared with those furnished by the Post Office, and duplicates were removed. Of the total number of addresses, 9.4 percent had been missed by the Post Office. Analysis indicated that the Post Office had missed about 5 percent of the occupied housing units and over 20 percent of the vacant ones.

The Post Office checked the commercial mailing list in the city delivery area in March, added some addresses, and reported a number of others as "nixies"--i.e., undeliverable. In October these "nixies," mixed together with a number of "good" addresses, were sent back to the Post Office, and this time 18 percent of the original "nixies" were designated satisfactory. This test indicated that "nixied" addresses probably should not be deleted from an address register before the census mail-out.

Both the canvassers and the mail carriers had difficulty designating "special places" in the rural areas; the Post Office also had trouble listing seasonally vacant housing units, but could indicate the areas where these were clustered. The city postmen were given a review exercise, covering their part in the listing study, in which they referred to their instruction

manuals. The results of this exercise and of observation of the Post Office operation were used for subsequent refinements in census postal instructions.

### Ohio Counties Listing Study, January 1967

In the fall of 1966 five counties in southeastern Ohio (Meigs, Morgan, Perry, Vinton, and Jackson), having 74 post offices, were selected for a study of listing procedures. As these counties were partly rural, this was a test of the feasibility of preparing mail-out address registers for rural areas by having canvassers go from house to house entering addresses in a listing book, a method known as prelisting. The two procedures tested were to (1) knock on every door (and leave a return card if no one was at home) and (2) knock only when necessary to verify the address or the existence of housing units. Further, for both methods certain canvassers were paid on an hourly rate while others were paid on a piece rate. In the early months of 1967, the housing units in ED's in which city postal delivery predominated were listed once by the second procedure; the households in non-city-delivery ED's were listed twice, once by each of the two procedures. In all, about 11,500 housing units were involved.

For each of these ED's, one of the two listings was chosen at random for a mailing list; the other listing was retained as a control to measure completeness both before and after mailout. A mailing piece (a simple form requesting the household to return an enclosed acknowledgment card) was addressed for each housing unit, by street address, household name, or some description of its location. These were then given to the Post Office, which reported missed dwellings or "nixies." About 85 percent of the mailing pieces were deliverable to occupied units, with the majority of the balance being addressed to vacant units. The mailing lists were then annotated to reflect the Post Office changes, and a subsample was taken for field reconciliation of differences.

Analysis indicated that the Post Office was quite efficient in adding occupied units which the listers had missed, but less so in reporting missed vacant units. The listers achieved the greatest production at piece rates. For the best coverage, however, the listers were most effective when on hourly rates (20 percent more expensive than piece rates, when payment for miles driven, training, and supervision are included). With both methods, the "knock-only-when-necessary" method yielded almost as good coverage as knocking on every door. (The area covered had a preponderance of single-family dwellings, and this method might not have worked as well at multiunit structures.) The study also provided an opportunity to observe the types of problems inherent in prelisting rural areas; the most common difficulty was the elementary one of locating a dwelling and spotting it accurately on the map.

### Memphis, Tenn., March 1967

It had already been concluded that as much as 3 percent of the United States population might have been missed in the 1950 and 1960 censuses, and that the censuses were least complete for the very groups for which the need for data was for some purposes the greatest, namely, black and other nonwhite persons. Undercoverage of these groups may have averaged as much as 10 percent, and undercoverage of black males between 18 and 40 years of age was especially high--probably about 20 percent in both 1950 and 1960. Since 1960, these groups had tended to concentrate increasingly in the central cities of metropolitan areas, and further, to be found in particular areas rather than spread uniformly. A Committee on Difficult-to-Enumerate Groups was established in the Bureau in August 1966 to concentrate on this problem and to study ways of overcoming it. Two task forces, one concerned with methods, the other with evaluation, were appointed to prepare recommendations.<sup>1</sup> Most of the 1967 pretests were devoted to devising and perfecting ways of locating and enumerating these groups.

One test of procedures to improve coverage was conducted in Memphis, Tenn., a city of some 540,000. Here, 14 census tracts, containing approximately 80 ED's, with about 25,000 population, were selected. These tracts comprised a compact area characterized by low income, deteriorating housing, and a high concentration of black persons. The ED's were divided into two groups: intensive, or "blitz," enumeration was carried out by teams in one group; the other group was used as a control, with normal enumeration procedures employed (e.g., one enumerator for one ED). Within the first group, certain blocks were selected and prelisted. The households listed were then advised by mail that they would be visited. On the Monday preceding Census Day (Tuesday, March 28), enumerators in teams of three "blitzed" their assigned blocks between the hours of 4:30 and 8:30 p.m., when most residents might be expected to be at home. The team members worked together but, to the extent possible, made separate calls on separate households. In addition to the usual census questions, each respondent was asked, "Was anyone else staying here last night?" and "How about other people who are here right now?" (These two questions were intended to ensure coverage of persons who might be present in the household at the time of the enumeration, but might be missed under normal procedures.) If the response to either question was "Yes," an ICR (Individual Census Report) was filled for any person mentioned and later matched with the questionnaire for that person's reported home address. If he was not listed there, he was added to the census. Twenty-eight persons, half of whom were unrelated to the head of household, were added to the count through matching ICR's with the regular census questionnaires; this represented a coverage gain of 0.1 percent.

<sup>1</sup>The subject of coverage improvement is treated more fully in later chapters.



A total of 960 housing units were enumerated under the "blitz" procedure; the others were canvassed in the normal fashion on Census Day, except that in the selected ED's the two coverage questions cited above were also asked. The enumerators engaged in the "blitz" operation were given special training and paid on an hourly rate; those selected for the normal operation were employed at piece rates.

Tests on average population per household and on sex ratios indicated no significant differences between the "blitz" and the other segments; but, when narrowed to the 15-39-year age group, there were more males per hundred females for the "blitz" segments than could be expected by chance.

The conditions for the "blitz" enumeration in Memphis were made as ideal as possible, including prelisting, a low quota of completions per hour of work, hourly rates of pay, special training, teamwork, and advance notices to respondents. In total, these procedures added considerably to the cost of enumeration, and none could be singled out as producing the desired effect. Benefits were noted, however, in the team approach for areas where single enumerators might feel apprehensive working alone and in the use of additional coverage questions.

## Second Content Pretest, March 1967

Late in 1966, several official changes were made in the definitions to be used by statistical agencies of the Federal Government for measuring employment and unemployment. These changes were implemented in the CPS (Current Population Survey) personal interview program in January 1967, but also required testing for the 1970 mail census questionnaire to make certain that respondents understood the questions and directions in printed form. Information would be needed on length of time looking for work, reasons for temporary absence from work, and availability to work. As it was also intended to test the validity of some questions measuring housing quality, a pretest area was sought which had an above-average proportion of substandard housing, as well as a high unemployment rate.

The area selected consisted of two census tracts which contained about 3,600 housing units in Gretna, La., just outside New Orleans. A high proportion of the housing units were in structures containing two to four units, which was also a desirable condition for an experiment in sample-selection techniques (later abandoned). Addresses for the housing units in the two tracts were listed in March 1967, and questionnaires were mailed to each household, with mail return requested. Two long FOSDIC questionnaires with variations in wording and layout were used alternately, but all housing units within one structure received the same questionnaire. The mail-return rate was very low, 28.7 percent; this was attributed to the lack of advance publicity, the length of the questionnaires, and the socioeconomic level of the respondents. Most respondents were highly cooperative, however, and follow-up was not difficult, although field collection was halted in May before followup was fully completed.

In addition to testing the employment questions, the questionnaires were used to test minor changes in the income questions and in occupation and class-of-worker inquiries, and to verify the results of the First Content Pretest. (See above.) Among new items were screening questions on whether the property included business premises, a medical or dental office, or extensive acreage; and also the following: presence of spouse, whether or not born on a farm, mobility (year moved into this county and year moved into this State), marital history, birth dates of children ever born, and disability.

With regard to the employment status items, the results showed that the labor force data derived from the revised series of inquiries proposed for 1970 did not differ significantly from the 1960 data. This finding coincided generally with the results of the CPS changes. Although it was not statistically significant, there was some indication that the revised series of items produced a slightly higher unemployment rate than that obtained from the 1960 items. This finding was encouraging in view of the fact that unemployment counts derived from decennial censuses tended to be lower than corresponding estimates based on current survey data.

As had been the case in the First Content Pretest, the information gained by asking additional questions on occupation substantially increased the proportion of responses that could be coded without followup, but further minor changes in wording seemed advisable. Using a five-part item for income did not significantly improve the data over those obtained from a three-part income item, so that the latter seemed more appropriate for 1970. Self-reporting of Social Security number proved fairly accurate on the mail returns, but collecting this information during a personal visit tended to lengthen the interview (presumably while the respondent searched for the number). Most of the proposed new items were dropped as part of the subsequent reduction in the size of the sample questionnaire. The wording of several of the housing questions was modified for use in later tests.

There was no attempt to measure completeness of coverage in the Gretna pretest except for one experiment, the results of which were inconclusive. The Police Department furnished a list of 57 persons whose addresses were in the two tracts and who had been arrested between January 1 and April 10. Matching the names with the census list or locating these persons by interview was generally unsuccessful for a variety of possible reasons--such as false addresses, high mobility, and reluctance to give information--so it could not be determined if the persons had been missed in the pretest.

The cost of the Second Content Pretest amounted to approximately \$25,000, excluding certain planning, evaluation, and overhead costs which were charged to the overall cost of the 1970 census. Most of the \$25,000 was spent for activities and services directly related to the collection of the data, such as enumeration and questionnaire design and printing.

## New Haven, Conn., SMSA, April 1967

Large-scale tests to help determine the feasibility of the mail census procedure had been conducted in the Louisville SMSA in May 1964 and in Cleveland in April 1965. (See pp. 2 and 3.) In March 1966, a third major test was planned for April 1967 to (1) further refine the mail-out/mail-back system by testing it in a centralized office operation (i.e., utilizing enumeration procedures similar to those used in Cleveland) staffed completely by temporary, locally hired personnel, (2) try out a number of new census items on the questionnaires--including Social Security number (previously tested in the First and Second Content Pretests), and (3) develop techniques for improving coverage among hard-to-enumerate groups.

The site selected for this third test was the New Haven, Conn., SMSA; in 1967, it had an estimated population of almost 350,000, of which about 140,000 lived in New Haven city. Between 1960 and 1967, the SMSA grew by 8 percent and the city declined by 7 percent. There were about 110,000 occupied housing units and 5,000 vacant units in the SMSA. Nine-tenths of the SMSA was urban; 11 percent of the population of the SMSA and 24 percent of the city population was black or of some race other than white. In 1960, the New Haven area had a substantially greater percentage of foreign-born population than was found in the combined population of all SMSA's, a somewhat higher percentage of workers in manufacturing, and approximately the average percentage of white-collar workers. Twelve percent of its families had incomes under \$3,000, compared with the average of 15 percent for all SMSA's, and both the median education of its population and the percent which had completed at least 4 years of high school were virtually identical with the nationwide SMSA figures. It was in this setting that a local businessman, hired as district supervisor, rented space for an office and recruited a staff of about 500. Census Day was Wednesday, April 5, 1967; this date was selected, rather than the "usual" April 1 date, in order to simulate the 1970 situation, when Census Day would fall on a Wednesday.

The focus of the earlier large-scale pretests in Louisville and Cleveland was on procedural matters. The questionnaires used in those tests closely approximated the 1960 census forms in specific question content and in total number of items. For New Haven, an expanded sample questionnaire was developed, to try to meet the needs of census users. Past experience appeared to suggest that an increase in subject content could be absorbed in the various operations without serious difficulty, although at extra cost. A number of wording and format changes and additions were made to the questions already used in Cleveland; still other items were added. A new question on location of hot piped water, for use in evaluating housing quality, was asked for all housing units.

Among the experimental sample population questions were Social Security number, activity 5 years ago, vocational training, and ZIP code for place of work. For the inquiry on children ever born, the qualifying phrase "ever married" was dropped with reference to mothers (as it had been in Cleveland). This met with no

particular reaction. Rather, New Haven respondents objected to the number of questions on bathroom facilities in particular, and the large number of sample questions in general. The four income items listed in the Cleveland questionnaire were expanded to eight by separating each into two questions--earnings, and income other than earnings--and creating several subgroups for which dollar entries were required. Finally, a coverage question took up most of the back page: "Please list below all persons who stayed here overnight on Tuesday, April 4, 1967, except those you have already listed in column 1, page 2...." The basic information requested by this question was substantially the same as that asked for the 1960 questionnaire, but, perhaps because of its new prominence, the inquiry drew criticism from respondents who objected to being asked about their overnight guests.

An important advance at New Haven for the mail-out/mail-back technique was the creation of an ACG (address coding guide) to give geographic identity to each household questionnaire. There had been a simple ACG in Cleveland, but it required development for large-scale use. Accordingly, the writing of computer programs for the ACG began in May 1966, and a FOSDIC-readable worksheet was designed. An average of six block faces were listed on each worksheet. (A block face usually consisted of one side of a block between two street intersections; for each block face the listing indicated direction--N, S, SW, etc., street name, and type--St., Ave., Pl., etc.) A staff supplied and supervised by the City of New Haven completed these worksheets by entering the address range for each segment (such as houses and buildings numbered from 100 to 198 or 101 to 199), block and census tract number, and the other geographic codes necessary for complete identification. The clerks used materials from the New Haven Metropolitan Map Series, which was being completed at the same time.<sup>2</sup>

This coding was completed in November 1966, and resulted in approximately 30,000 headers (i.e., lines of printed copy identifying particular street segments) which were put on magnetic tape. Due to time pressures, these headers were not completely checked, and no computer edits had been developed for the resultant tape. Difficulties were encountered in matching the tape with the commercial mailing list and making corrections; about 4 percent of the 108,000 addresses on the list could not be matched with the headers on the tape. The unmatched addresses were printed out on labels which were attached to cards, and these were sent to New Haven to have tract and block numbers entered by hand.

The commercial mailing list for New Haven covered, roughly, the part served by city postal delivery. Outside this area, addresses which either received rural delivery or were served by post office boxes were prelisted by rural mail carriers. To test the feasibility of this approach, census employees also did a pre-listing of the rural delivery addresses. The two lists were compared, and the census lists were found to contain 0.1 percent fewer addresses than the mail carriers' lists.

<sup>2</sup>This subject is treated more fully in later chapters.

After subjecting the mailing list to a Post Office check, and comparing any addresses added by the Post Office with the ACG, all the addresses were "structured," in March 1967, into ED's (which were called work units in New Haven). An ED consisted, ideally, of 550 households for which the necessary followup would be a manageable assignment for an enumerator. About 40 percent of the ED's generated by the computer fell within 10 percent--plus or minus--of this size. The computer assigned a serial number to each address, printed an address label for each questionnaire, designated the households which would receive the sample questionnaires, and printed out an address register for each ED. The ED number and serial number for each address were then transferred to the ACG, together with the headers (geographic identification records) from the prelist area, so that the ACG could be used in controlling all the New Haven ED's and also be used to assign a geographic code to the block face for every housing unit. (It was originally intended that the New Haven census data would be tabulated at that level, but this proved impractical at this stage of ACG development.) The error rate in coding addresses to blocks in New Haven was approximately 7 percent--higher than the 5-percent level targeted for 1970. As was true of subsequent ACG's, the construction of this first New Haven ACG involved not only time pressures but also the combined work of many different organizations--the Bureau of the Census, the Post Office, the city management, and the compilers of the mailing list. After the address registers were printed, the New Haven ACG was turned over to the New Haven Census Use Study office for its projects<sup>3</sup> and other postcensus surveys conducted in New Haven.

Mail carriers sorted the questionnaires according to their delivery routes and prepared cards for any missed addresses. The district office prepared the appropriate questionnaires for these addresses, and the postmen checked the questionnaires again at the time they delivered them. Rural mail carriers carried with them the address registers they had prepared earlier and entered new addresses as they delivered questionnaires. An analysis of the additions and deletions which took place during the census again pointed up the difficulties of identifying housing units within multiunit structures. Addresses acceptable for leaving mail did not always aid either postmen or enumerators to locate the housing units. When a sample was later taken of the New Haven listings which had been deleted from the address registers, one in eight was found to be a valid, occupied housing unit, the location of which had been insufficiently described.

The overall mail-return rate from occupied housing units in New Haven was 78.1 percent. This paralleled the experience in Cleveland, but in New Haven the gap between the return rates for short and long questionnaires widened to almost 9 percentage points. An inspection of the returns suggested that it might be worthwhile to change the emphasis, to give concentrated effort to the questionnaires with many errors. Accordingly, short questionnaires with one error and long

questionnaires with two errors were allowed to pass. One-third of the remaining short questionnaires which had failed edit were then completed by telephone, together with three-quarters of the long questionnaires which had failed edit; the balance were assigned for personal visits. In New Haven the majority of the telephone staff worked in the daytime, but experience proved that the greatest number of clerks should have worked in the evening when most respondents were at home. It was also intended that nonresponse cases--questionnaires completed by followup enumerators for households which had not mailed in returns--be edited (reviewed) completely, but, due to delays in finishing the census, many questionnaires were accepted with minimum information. A number of experiments were tried relating to the training and performance of the editors, such as confining specific editors to specific parts of each questionnaire or having an editor trained first on one portion of the editing, then after he had concluded that type of editing, training him on the next. The experiments were inconclusive, but suggested that no particular gains were realized in breaking up the editing task.

Two census tracts, containing about 13 percent of the population, were designated as X-areas (difficult to enumerate). These were given no special treatment, except that enumerator assignments were smaller than in other parts of the city. Several community organizations provided checklists of names of persons who might possibly be missed in the census. Followup on these was expensive and not particularly productive. A movers check, similar to that in Cleveland, was conducted, and included persons who moved during the month before and the month after Census Day. This operation seemed useful in increasing coverage among hard-to-enumerate persons; one new household was found for every 7.5 cases checked, but the total increase in population coverage was only 0.18 percent.

In New Haven, the Bureau started preparing for 1970 tabulation needs. Programing was begun with preliminary specifications and modified as necessary after the final ones were received. The SPD-413, a FOSDIC complex similar to the later FOSDIC 70, was used for the first time, permitting tallies and comparisons of totals while the microfilm was being read and converted to tape. Approximately 500 tallies of data at the block-face level were made, but then it was decided that there was insufficient need for such fine detail at that time. The 100-percent data were processed as necessary to produce the special census tabulations (see p. 1) and some experimental tables. A FOSDIC-scan computer program was developed for the sample data, but at that point budgeted funds were exhausted and it seemed more reasonable to concentrate on development for the 1968 dress rehearsals. The New Haven sample data, therefore, were not tabulated, except for selected tallies, and the New Haven Census Use Office was given a special summary tape. The experience, however, permitted development of techniques for using the improved model of FOSDIC for processing the 1970 census results and for designing useful programs for weighting the sample data; it also helped stabilize the specifications for processing the 1970 100-percent data.

<sup>3</sup>This subject is treated more fully in later chapters.

Place-of-work coding of the sample questionnaires was performed at the Jeffersonville Census Operations Office. The coding was judged to be reasonably fast, and the referral rate (i.e., the proportion of cases in which clerks were obliged to ask for assistance in determining the proper code) was only one-tenth that in Cleveland. On the basis of this experience, it appeared that initially tight quality control could eliminate inferior coders and allow relaxed controls for the remainder of the process.

The cost of the Special Census of the New Haven SMSA was approximately \$460,000, including preliminary work, data processing, and evaluation.

Insofar as field office operations were concerned, the prime objective of the New Haven pretest was to see how the mail system worked when managed by temporary, locally hired personnel. In previous pretests, the top supervisory jobs had been filled by experienced Bureau staff members because the procedures and materials were still experimental.

From the start, it was known that the mail system would be more complex to supervise than the traditional census which involved a canvass of households by enumerators. There would be more separate steps to perform and more pieces of paper to process, particularly in district offices employing the centralized technique (tested first in Cleveland; see p. 4), and the administrative complexities would be considerable. However, the New Haven experience also demonstrated that centralization results in better control of certain key operations when they are performed in the office under close supervision by experienced personnel. Another advantage is that recruiting and holding staff for office work is easier than for field work.

The New Haven pretest also yielded valuable planning experience for other portions of the entire census job. It provided the first realistic trial of the development of a large-scale address coding guide and its integration with a set of individual addresses. The burden of response to lengthy questionnaires was underscored by respondents, the press, and in the political area, as well as by the administrative and procedural difficulties which arose. As a result of this experience and certain associated factors, the content of the long questionnaire for 1970 was reduced to about that of 1960. It was also decided that the centralized (New Haven) type of mail census would be used in only about 40 (ultimately 45) of the district offices in the largest cities, and that these offices would be directed by experienced Census Bureau staff members. The decentralized (Louisville) type of operations would be used in the remaining mail census offices, under local direction.

### **Second Questionnaire Format Test, May 1967**

This experiment was designed to test the use of foldout sheets (as opposed to multipage booklets) as questionnaires, other variations in format, and question design. Four different mailing pieces were sent on an alternating basis to a national sample consisting of some 4,900 urban housing units; the addresses were

selected from 1960 listing books updated with addresses of new construction. Each household also received a reminder postcard 5 days later.

The mailing pieces were designated as follows:

- A. A FOSDIC-readable booklet similar to that used in New Haven, with instruction sheet.
- B. A 100-percent questionnaire with a separate sample booklet, both FOSDIC-readable.
- C. A FOSDIC-readable 100-percent questionnaire in columnar form, with a separate booklet to be completed for sample inquiries (not FOSDIC-readable).
- D. A 100-percent questionnaire, a separate sample housing questionnaire, and a separate sample questionnaire for each person. These were all FOSDIC-readable and were inserted with instructions in a special folder. The content of each questionnaire was similar to that used in the Second Content Pretest in March 1967.

Although the overall mail response rate (43 percent) was slightly lower than the 46.2 percent experienced in the 1966 Format Test (see p. 6), the return rate for format D was substantially higher (50 percent) than for the other three (which averaged 41 percent). There was little difference among the forms in the amount of followup necessary, although the followup rate was generally lowest for A and D. Format D required the least followup on the sample questions and also lent itself most easily to having different persons fill the various parts, as separate sample questionnaires were provided for each individual. On balance, however, format A (the type of questionnaire used in New Haven) seemed fairly easy for respondents to complete and seemed the most practical for the Bureau to control.

### **Detroit, Mich., Multiunit Study, August 1967**

A major concern in a mail census is assuring not only that each housing unit receives the appropriate questionnaire, but also that an enumerator is able to find the housing unit to which a questionnaire with a particular serial number has been delivered. Approximately 800 addresses on some 450 postal routes were selected in the city of Detroit, all of them in buildings with two or more housing units. Census canvassers visited these buildings to see how apartments were numbered or, if not identified, how locations could be described, such as floor number and direction (north, south, etc.). The same addresses were given to postal carriers to check for completeness. About 17 percent of the addresses were in "disorganized" structures, i.e., those--usually with two to nine apartments--with no identification on the doors. Results indicated that mail carriers frequently used apartment numbers for convenience even though such numbers did not appear on doors or where census enumerators could find them. No uniform method of identification could be adopted.

## North Philadelphia, Pa., September 1967

Following a Post Office check of the addresses in North Philadelphia, Pa., short and long FOSDIC-readable questionnaires were mailed to all the households in two inner-city census tracts. These two tracts, in which the residents were almost all black, had a population of approximately 21,000 in 1960. The area experienced a significant decrease in population between 1960 and 1967--some 25 percent in the number of persons and 18 percent in the number of households. As a result, the special census in 1967 found only 16,000 persons, despite a number of special procedures and techniques designed to improve coverage. Due to the decrease in population, it was difficult to compare the coverage in 1960 and 1967 quantitatively; the lower sex ratios (fewer males per hundred females) for cohorts in 1967, for example, could have been due to the departure of disproportionate numbers of males from the area.

Deliberate efforts were made to hire enumerators who lived in or were familiar with the two census tracts. To put the applicants at ease, they were given advance training in how to take the selection aid test. The test had been newly revised; compared with the one used previously, the questions were related more specifically to census words and procedures. Persons who were selected were trained, formed into large teams of six to eight persons, and paid by the hour instead of by piece rates. Attrition among the followup crews was reduced almost to zero, but team progress seemed to be slower than that which might be expected from the same number of people organized into groups of two or working separately.

After the Post Office check, enumerators canvassed their assignments, looking for missed buildings and living quarters. This familiarized the enumerators with their assignments and provided a check on item A on the census questionnaire ("How many living quarters, occupied and vacant, are at this address?"). It also resulted in the addition of 2.7 percent occupied and 3.1 percent vacant housing units to the final count, most within structures already listed in the address registers.

Each enumerator filled a "Census Taker's Coverage Check" form as he conducted a followup interview at every occupied housing unit. He probed for additional persons, or for those whose names had been furnished by community organizations as living at the address and susceptible to being missed in the census. The use of this form added an estimated 0.2 percent to the total population, but in general was not considered a successful means of improving coverage in the face of respondents' reluctance to furnish information. There was also a greater percentage of cases--12.3 percent--where questionnaires were turned in with only minimum information than there had been in 1960. The area had been the object of frequent surveys by universities and other agencies, so residents may have built up a certain resistance to interviews, and the census time schedule and budget allowed only minimum time for callbacks. However, there was evidence that households now tended to be smaller, with fewer persons at home at the time of interview.

An attempt was made to use high school students as enumerators, under the direction of their school

counselor, but administrative problems such as work permits and allowable hours were encountered, and the student-enumerators were less readily accepted by respondents. Another plan, which called for close work with a local community action agency in a word-of-mouth public information program, was never implemented. At the last minute, a public education consultant was employed to work with local groups; this effort was not noticeably effective, but indicated some directions for further efforts.

## Kalamazoo, Mich., SMSA Listing Study, October 1967

In experimenting with the use of the commercial mailing lists as bases for address registers and address coding guides, it was known that the mailing lists covered only the Post Office city delivery areas, and that it would be necessary to prelist by canvass the noncity delivery areas to be included in the mail census. There is no correlation between postal boundaries or routes and census boundaries. Thus, there are blocks around the fringe of the city delivery area which include addresses which receive city delivery while others receive rural service. If these blocks were prelisted, city delivery addresses might be duplicated; if the blocks were not listed, a non-city address could be missed.

In Kalamazoo, there were approximately 16,500 housing units in such mixed areas; these housing units were all prelisted as part of this study in October 1967. This meant paying the full cost of canvassing--and then discarding--20.6 percent of the listed addresses because they were already on city-delivery address registers. The Bureau then described a hypothetical canvassing area for Kalamazoo County. The boundary eliminated those mixed areas with a high concentration of city delivery addresses, but also introduced a margin of error because some rural addresses would not be prelisted: It was decided not to prelist an area if it contained less than 10 percent noncity addresses. The rule for arriving at this percentage was that if more than two-thirds of the road frontage in the mixed area received city delivery, the area should not be canvassed. By using this rule, the amount of pre-listing required was reduced 15.5 percent, and the proportion of duplication of city delivery addresses was reduced from 20.6 percent to 7.3 percent. The inherent coverage loss was 0.1 percent of all noncity addresses; these would be missed because the Post Office check would not report them. On the other hand, it would be 8 percent cheaper to list this way.

The data resulting from the Kalamazoo Listing Study and the Ohio Counties Listing Study (see p. 7) were also used to test the feasibility of providing ZIP code tabulations by assigning ED's to one or more ZIP codes. This proposal did not seem practical, however, because of the great dispersal of ZIP codes among the ED listings. (It was decided in 1969 to prepare a reference list showing the proportion of addresses of a given ZIP code in each ED or block group, and also to use these proportions to provide tabulations for about 800 data items by ZIP codes on summary tapes for the United States.)

## Housing Quality Study, May 1968

In 1968, the Bureau considered a proposal to identify substandard housing as consisting of two components: (1) units lacking some or all plumbing facilities<sup>4</sup> as defined in previous censuses, and (2) units with all plumbing facilities<sup>4</sup> but with high American Public Health Association (APHA) penalty points. It was understood that the APHA survey techniques could not be utilized in a decennial census to identify poor housing because of the extensive training required of the inspectors, but it seemed possible that a substitute procedure of identification, using a group of objective characteristics (rent, value, heating equipment, and kitchen facilities), might be employed.

To test the proposal, 300 housing units in each of three cities--Austin, Tex., Cleveland, Ohio, and San Francisco, Calif.--were selected. The occupants were interviewed to obtain objective information on housing characteristics; the housing units were rated by APHA building inspectors to determine how many penalty points they had, and the units were also rated by the Census Bureau as to structural condition--sound, deteriorating, or dilapidated. The Bureau wished to discover (1) whether objective characteristics, individually or in combination, provided a shortcut for identifying housing units with high APHA penalty-point scores and (2) whether Census Bureau ratings of structural condition correlated with these scores.

The three-city test showed that objective characteristics could not be used as shortcut indicators, and there was a very low correlation between Bureau structural-condition ratings and APHA penalty points. For example, the median number of penalty points for units rated as dilapidated was 72 in Austin, 69 in Cleveland, and 29 in San Francisco, while the ratio of units with 60 or more penalty points to dilapidated units was about 2-1/2 to 1 in Austin, 2 to 1 in Cleveland, but 1 to 2-1/2 in San Francisco.

This was the last phase of an intercensal research program on housing condition. (The earlier work in this program is described in Bureau of the Census Working Paper No. 25, *Measuring the Quality of Housing*; see bibliography.)

## Subject Response Study, August 1968

"Occupation 5 years ago" was a new item for the 1970 sample questionnaires, and had been tested initially in the First Content Pretest in 1966. (See above.) At that time, it appeared that responses were inaccurate in as many as one-third of the cases. Therefore, a national sample of 2,800 households was drawn from a 1963 CPS (Current Population Survey) interview

<sup>4</sup>Units "with all plumbing facilities" are those which have hot and cold piped water, as well as a flush toilet and a bathtub or shower inside the structure for the exclusive use of the occupants of the unit. "Lacking some or all plumbing facilities" means that the unit does not have all three specified plumbing facilities (hot and cold piped water, as well as flush toilet and bathtub or shower inside the structure), or that the toilet or bathing facilities are also for the use of the occupants of other housing units.

list that showed occupations. These households were sorted into two groups and each group received one of two versions of a mail-back questionnaire. Each questionnaire had two pages and 17 questions, but with different question wording. One version of the question for "occupation 5 years ago" gave the respondent the option of filling a circle for "same as present occupation"; the other version required a write-in answer in this case.

Questionnaires were mailed to some 6,400 named individuals from these households at their 1963 addresses; of these, about 5,000 were delivered, and 60 percent of them ultimately were mailed back. Followup was also conducted by personal interview, so that data concerning occupation 5 years ago and current work status were available for about 4,000 persons. The study indicated that only 57 percent of the respondents accurately reported both items. Seventy percent of those persons not working in 1968 were able to report their 1963 occupations correctly, but only 48 percent of those working in 1968 did so. Accuracy was greater among those in skilled occupations, those who had not changed jobs, and those in the 30-64 age group. By contrast, the quality of the "occupation 5 years ago" data was poor (22 percent accuracy) among occupationally mobile persons. Both versions of the questionnaire had equally high levels of response error, but the existence of a "same as present occupation" circle seemed to bias respondents toward this answer, even when it was incorrect. This response choice was therefore dropped for 1970, and further modifications were developed in the wording of the other industry and occupation questions.

## THE DRESS REHEARSAL PROGRAM

From 1961 through 1967, most of the Census Bureau's planning and testing resources were concentrated on developing the 1970 mail census system. (See ch. 1.) During that time, all procedures had been tested (the last major test of enumeration procedures was the North Philadelphia test in 1967) and all important mail census decisions had been made. Two procedures for handling the mailed-back questionnaires had evolved from the testing programs--decentralized and centralized. The 1970 Census Dress Rehearsal Program was undertaken in 1968 to "dress-rehearse" the 1970 census procedures under as near census-like conditions as possible.

Three procedures were rehearsed as follows:

1. In most mail areas, the receipt, edit, control, and followup of mail-back questionnaires would be *decentralized* among a force of enumerators who would handle the census questionnaires for their assigned areas. The dress rehearsal of the decentralized mail census system was conducted in Dane County (Madison SMSA), Wis., in May 1968.
2. In the core areas of the larger cities, receipt, edit, and control of the mailed-back questionnaires would be *centralized* in census district



offices where clerks under close supervision processed the forms and conducted telephone followup. Enumerators personally would visit those households whose questionnaires could not be completed by telephone. The dress rehearsal of the centralized mail census system was conducted in Trenton, N.J., in September 1968.

3. Since it was not felt that the *conventional* (non-mail) procedures required extensive testing, the Dress Rehearsal Program included the only rehearsal of the conventional direct-enumeration procedure in Sumter and Chesterfield Counties, S.C., in May 1968.

These three dress rehearsals were planned for 1968, rather than 1969, for at least two reasons: (1) the

printing of the FOSDIC questionnaires for the census would require much of 1969, and (2) some time had to be allowed to correct any major defects in the data-collection system uncovered during the dress rehearsals, which might in turn affect the time schedules for computer programing and for printing field materials.

A fourth dress rehearsal of special methods and procedures for hard-to-enumerate areas (X-areas) in large cities was tentatively scheduled for March 5, 1969. Subject to availability of funds, this was to cover a congested urban area with a population of approximately 200,000. By early 1968, it had become evident that there would only be \$533,000 available in the budget for dress rehearsals in fiscal years 1968 and 1969, including only \$18,650 as a reserve for unexpected costs. The Bureau therefore decided to



combine elements of the March 1969 test with the test of the centralized field office edit in Trenton in the fall of 1968.

The following table indicates the costs originally budgeted for the individual dress rehearsals and the estimated actual costs after several budget revisions. (The additional funds were obtained from the overall appropriation for the pretests and dress rehearsals, within which there were unexpended funds remaining after some of the earlier pretests.)

	Budgeted, March 1968	Estimated actual costs, May 1969
Total	\$533,000	\$671,000
Conventional, Sumter- Chesterfield	127,000	138,000
Decentralized, Dane County	245,000	308,000
Centralized, Trenton	161,000	225,000

Because the dress rehearsal program involved the use of the same basic questionnaires and procedures to be used in the national census, certain steps were taken to insure coordination of the three enumeration methods. These included designating a coordinator of all phases of the dress rehearsals and establishing 10 task forces to undertake preparations for printing, quality control, data processing, training, etc. Also, a single series of results memorandums was set up to cover all three dress rehearsals, and several memorandum series were initiated to effect liaison among Washington, the regional offices, and the district offices involved.

In addition to the primary purposes for conducting the dress rehearsals, a test of a movers check proposed for 1970 was conducted as part of the dress rehearsal program in the centralized (Trenton) and decentralized (Dane County) areas. The Post Office check proposed for nonmail areas in 1970 was tested in Sumter and Chesterfield Counties. Also, because the proposed fourth dress rehearsal would not be conducted, funds could be concentrated on efforts to enlist the interest and cooperation of community organizations in obtaining full coverage, to prepare and execute more intensive training programs for enumeration of X-areas, and to test methods of locating missed housing units and household members not initially reported.

In order to test some of the major computer programs and procedures for 1970, it was intended that the data from the dress rehearsals be processed and tabulated through the first tally of sample information ("fourth count"). Due to limited time and resources, however, only the equivalent of special census data (see p. 1) was processed and published.

## Questionnaires

As a result of the resistance in New Haven to answering so many questions (see p. 9), the Bureau decided to divide the 25-percent sample for the dress rehearsals into two subsamples--20 percent and 5 percent. Thus, some sample questions were asked of 20 percent of the households, and others were asked of only 5 percent. Also, some sample inquiries were asked of both the 20-percent and 5-percent samples;

this constituted a 25-percent sample. The sample questionnaires and their mailing envelopes were marked with symbols-- Δ (triangle) for the 20-percent sample and ● (circle) for the 5-percent sample. These same symbols appeared on the sample lines of the address registers, listing books, and sample-selection books for group quarters, so that households or persons identified on these lines would be enumerated on the proper questionnaires.

Extensive changes, both in wording and format, were made on the 100-percent and sample questionnaires, based on the experience gained in New Haven. Item B, for instance, had been displayed prominently on the back page of the New Haven form, and read, "Please list below all persons who stayed here overnight on Tuesday..." and spaces were provided for name, home address, relationship to head of household of usual residence, sex, race, age, and marital status. The possible implications of the question had generated some resistance among respondents in New Haven, so item 12 on the dress rehearsal questionnaires was simply worded, "Did anyone stay here on Tuesday... who is not already listed?" If there was no one at that person's home address to give census information, the name only was to be listed on the back page. Space was also provided there for the names of persons for whom usual residence was uncertain.

The request for Social Security number was dropped from the questionnaires, but several new questions were added to the 5-percent sample. The new questions covered citizenship; year of immigration; language spoken in childhood home; presence and duration of disability for persons 14 to 64 years of age; and industry, occupation, and class of worker 5 years ago. Several of the housing items, notably those on heating equipment and appliances, were revised significantly.<sup>5</sup>

By mid-September 1967 the format of both sample and 100-percent questionnaires in conventional and decentralized areas, as well as instruction sheets and envelopes, had been approved. The mailing pieces for the centralized dress rehearsal were developed after the first two rehearsals were underway and a certain amount of experience had been gained on the response to those questionnaires.

## Dane County (Madison SMSA), Wis., May 1968

In mid-August 1967 Dane County was selected as the site of the decentralized dress rehearsal, and the final plan for procedures and methods was adopted. Early in 1968, space was obtained for the district office in a new, one-story building in suburban Madison, where crowding was minimal and parking space ample. With the exception of the regional technician, who was a career Census Bureau employee, all of the Dane County census staff were hired locally, either through referral or recruiting. There were no difficulties in obtaining qualified applicants, but many of them obtained other employment during the month's delay that frequently occurred between the test dates and the job offers. A total of 193 persons were employed; enumerators were

<sup>5</sup>The subject of questionnaire content is treated more fully in a later chapter.

paid piece rates designed to yield approximately \$1.90 per hour, plus training fees, and office employees were paid comparable rates.

The address registers for the mail census of Dane County were compiled from two sources: (1) a commercial mailing list containing approximately 64,000 addresses, most of which had geographic codes added by the Bureau, for the Post Office's city delivery area, and (2) a house-to-house canvass by census enumerators who listed and coded addresses for the remaining portion of the county (called the prelist area). The prelist area contained some 24,000 addresses, for which the appropriate mailing pieces were hand-addressed, while the mailing pieces for the city delivery area were prepared with computer-generated address labels by the commercial mailing list firm. The Bureau also printed out the city-delivery address registers and produced cards for those addresses which still required geographic coding. Certain difficulties were encountered because of errors in the ACG, and it was found that approximately 5 percent of the housing units in the city delivery area were coded to the wrong block. (A higher error rate was noted in the suburbs, where blocks are more irregular and house-numbering less rigidly established.) While most of the block-coding errors were cases of addresses actually across the street or in the next block, more serious problems occurred because the computer created some ED's consisting of scattered pieces of blocks. These cases required adjustment before enumeration and readjustment after. There were also a number of addresses which were duplicated in ACG and prelist-area address registers, even though "mixed" area blocks were included in the ACG only if at least 75 percent of the frontage road addresses received city postal delivery. (See Kalamazoo Listing Study, p. 12.)

The census received wide publicity in all of the Madison-area news media, and also through the use of billboards, Post Office truck posters, and school flyers. Also contributing to public awareness of the enumeration were two daily newspapers which devoted substantial space to the census and to reaction against it. One of the Wisconsin State assemblymen urged his constituents not to answer questions other than those asking name, address, sex, and marital status. The National Right to Privacy Committee mailed a newsletter attacking the census to residents in Dane County on May 7, and also purchased half-page advertisements in two newspapers for 2 days immediately preceding Census Day, May 15. These stated, "Dane County Residents, Census test violates your privacy . . ." urged noncompliance, and listed the names and addresses of elected officials to whom letters of complaint should be mailed.

The newspaper articles and advertisements reportedly disturbed some of the enumerators then in training, but apparently had no adverse effect on the quality of the mail returns. The response rate of 91.1 percent from occupied housing units (higher than the 85.6 percent encountered in Louisville) indicated that there was little hesitancy on the part of the public to answer the questions, and very few of the questionnaires were returned completely blank.

The large volume of mail returns indicated a need for faster handling, particularly in opening envelopes. A perforated "easy open" return envelope ultimately was designed for 1970.

The normal movers check, telephone assistance, special place, population and housing count, and quality control operations were carried out with little incident. There were a number of returns from University of Wisconsin students which were incomplete because of confusion over the residence item on the individual census report used. The respondent was instructed here not to complete the form if he had another usual address, which students away from home normally do. Enumerators also had difficulties deciding who was head of a household when several students roomed together.

For editing the returned questionnaires, the Dane County enumerators received sequential training at 10 different training sites. They first learned to edit short questionnaires, and then went to their respective homes to do the actual work; upon completion, they were trained to edit long questionnaires, and returned to their homes to do that. About 29 percent of the short-questionnaire and 89 percent of the long-questionnaire mail returns (or 43 percent of all questionnaires) required followup, but nearly 90 percent of these cases were resolved by telephone. Enumerators were allowed to settle inconsistencies or nonresponse in item A (number of housing units at this address) by telephone instead of by personal observation, and this speeded completion. A significant proportion of the long questionnaires contained 20 or more deficiencies, most often in the areas of industry, occupation, and income.

Although 43 percent of the mail returns failed edit and required followup, the budget provided for the followup of only 25 percent. It was therefore recommended that the edit rules be changed for 1970 so that short questionnaires having two errors and long questionnaires having five would be accepted. This would allow concentration of funds on following up those cases having larger numbers of errors.

The first-count tallies of the 100-percent data for ED's in Dane County were microfilmed and put on magnetic tape. The tape, with some of the statistics for small areas merged to prevent disclosure of data for any individual or housing unit and with minor errors in geography noted, was then made available to census data users for testing on their own computer equipment in preparation for using 1970 summary tapes.

One of the major intentions of the dress rehearsals was to test the effectiveness of projections of field progress and cost reports. The highest and lowest predictions for Dane County, respectively, were 6.1 percent above and 9.3 percent below the final cost projection. Final field costs were \$89,865, but \$93,199 had been allocated. The total costs for Dane County, including data processing, were approximately \$308,000. (The budget was originally set at \$245,000 and later increased to \$300,000.)

## Sumter and Chesterfield Counties, S.C., May 1968

By the summer of 1967, Sumter and Chesterfield Counties, S.C., had been selected as the site of the conventional dress rehearsal; this area was largely rural and contained approximately 112,000 people. The census date was established for Wednesday, May 15, 1968, to coincide with the Dane County dress rehearsal.

Early in 1968, the Bureau secured space in an empty store in downtown Sumter; the office was opened there in April with a locally recruited staff of over 100 clerks and enumerators. Crew leaders were paid \$2.25 an hour, and enumerators and clerks received \$1.75 an hour, unless they worked on piece rates. Many persons who passed the selection aid test later refused employment or could not accept positions as enumerators because they did not have automobiles. (This latter condition was particularly true of otherwise qualified Negroes.) All-black crews were favorably received in all-black areas.

At the end of April, local mail carriers distributed approximately 44,000 unaddressed ACR's (Advance Census Reports), with wraparound instruction sheets. Inside, the ACR's were the same as the short questionnaires used for the mail census. The covers contained a message informing respondents that May 15 was Census Day and asking them to complete and keep the forms for the enumerators to collect. Enumerators were given maps of their assigned ED's, blank address register books, and a supply of additional short questionnaires, plus the 20-percent and 5-percent questionnaires to be used when the housing units they visited were listed on sample lines in the address register. The enumerators collected the ACR's and checked them for completeness. If a long questionnaire was to be used, the enumerator interviewed the respondent to obtain the sample data and later transcribed the 100-percent information from the ACR to the long questionnaire at home. A serial number was assigned to each questionnaire and was entered, along with the ED number, on the label. No block numbers were used here, and the more complicated geographic coding required in the mail census was not involved. ICR's (Individual Census Reports) could be left for absentees, but enumerators had to devise their own systems for contacting these respondents, such as leaving notes, telephoning for appointments, and arranging to have questionnaires left in mailboxes.

Maps, particularly those for the more rural areas, were rudimentary and did not show many unmarked "tracks" through wooded areas. Canvassers apparently had difficulties following the maps, perhaps due in part to lack of map-reading skills. On the other hand, many of the enumerators were well acquainted with their assigned neighborhoods. The conventional procedures used in Sumter did not involve prelisting; enumerators were supposed to list housing units systematically as they visited them. This allowed a certain amount of discretion on their part and led to instances where the sampling rules were not observed. For example, some enumerators arranged their listings so that vacant housing units would fall on the sample lines of the address register, or made certain that households with

many members were enumerated only on 100-percent questionnaires. In some situations, personal relationships between respondent and enumerator may have led to the use of one or the other type of questionnaire. Since enumerators were paid per questionnaire and not per person interviewed, and the fee for the sample form was the same whether or not the housing unit was occupied, there were temptations to alter the sampling plan. As a result of the experience in Sumter, the enumerators' path-of-travel instructions were amplified for 1970 to stress the importance of the listing order, and in conventional areas payment was changed to include a rate per person, as well as by housing unit, on long questionnaires.

As enumerators completed questionnaires for housing units, either occupied or vacant, they filled out white address cards, which were then checked against postal routes by the mail carriers. For any addresses found to be missing, the postmen prepared blue cards. These blue cards were then sent to the Jeffersonville Census Operations Office. A questionnaire was mailed to each address listed on a blue card, with the request that it be returned by mail; every fourth address received the appropriate sample questionnaire. Following comparison of the mail returns with the address registers, the final totals were adjusted upward by approximately 2 percent to include the missed units. Analysis indicated that the average size of the missed households was significantly smaller than that of households canvassed by the enumerators.

About half of the respondents completed the census questionnaires they had received and had them ready for the enumerators' visits. However, for respondents who had not completed the questionnaire, enumerators often had to take time to explain the purposes and methods of the census, then conduct an interview and fill out the questionnaires themselves. This in effect defeated the purpose of saving time by delivering the questionnaire before the census. While respondents were basically cooperative, both their attitudes and those of the enumerators were affected by the invasion-of-privacy issue, which was raised in South Carolina as it had been in Dane County and in New Haven. The combination of physical difficulty inherent in canvassing a rural area, together with a large number of callbacks, initial reluctance on the part of respondents, and the piece-rate system of payment, led to a high turnover among enumerators.

Generally, the conventional procedures being rehearsed worked well, but the Sumter experience indicated several needs for 1970: (1) enumerators and the public would need to know why specific census questions were being asked, so that invasion of privacy would not arise as an issue, and (2) the enumeration would need more supervision. It was demonstrated that small district offices face the same range of problems, such as public relations, logistics, recruiting, training, and administrative detail, as the larger offices, but have less staff available to deal with them.

Again, in Sumter, the field costs were projected as the census was being taken. With fewer factors affecting projections than were found in the mail census, the projected figure of \$44,666 was very close

to the final cost of \$44,795; the total cost of the conventional dress rehearsal was approximately \$138,000--\$11,000 over the amount budgeted.

### Trenton, N.J., September 1968

To test the centralized office procedures, the city of Trenton was selected as representative of the problems expected in inner-city areas elsewhere in the country. Trenton had a population of approximately 100,000, of which 64 percent was white and 36 percent black.

As Census Day had been set for September 15, the district office was established in early August, with two Census Bureau professionals detailed as district manager and office supervisor. An inner-city location was selected for the office, on the premise that it would be situated where the need for coverage was greatest and would be handy for assistance to respondents and for recruiting staff. In practice, it was found that most of the potential clerical staff lived outside the areas most difficult to enumerate. In Trenton, many of these people were reluctant to work in the inner city, where public transportation, personal safety, and parking were problems.

Lines of communication were established with community organizations, and extensive publicity was begun. Trenton had no local television stations, however; this was a handicap, as television is a major source of information, particularly for those groups of the population that are most difficult to enumerate.

Several recruiting centers were opened, but there were difficulties obtaining sufficient staff for the census. Even after lowering the passing score on the selection aid test, only 27 percent of the applicants qualified. Persons hired after scoring below 20 (23 was the original cutoff point) were found to have difficulty reading and interpreting the census questionnaires. Twenty percent of the office staff was black and 80 percent white; but the ratio was reversed in the field staff, so that respondents and enumerators were frequently of different races. There was a marked attrition among the enumerators, possibly due to the inner-city tensions then present in Trenton and also to lack of experience in public contact.

Minor changes were made in the questionnaires used in Trenton, based on the experience gained in Dane County and in Sumter and Chesterfield Counties, and the results of all three dress rehearsals led to further questionnaire changes for 1970. Some of the changes made for Trenton were as follows: (1) The telephone-assistance number printed on the mail-return envelope (tried in Dane County) was dropped, and publicity through the news media tried instead; (2) the heating equipment question was further revised; (3) the property-value categories were changed to give a more precise indication of poverty levels; and (4) there were a number of alterations in format, such as wider separation between parts of questions, repositioning of directional arrows and instructions to skip inappropriate questions, and redesign of the questionnaire flap instructions to ensure that entries were made in the correct places.

As in Dane County, addressing of the questionnaires began with a commercial mailing list, updated by a Post Office check. An address coding guide was prepared from preprinted worksheets which were coded by the local planning commission, and address registers were printed out for the use of enumerators. The advance Post Office check and the actual delivery of the questionnaires indicated that the mail carriers (and later, the enumerators) had real problems identifying the designated housing units in multiunit structures, where over one-third of the addresses in Trenton occurred. This hampered delivery of the appropriate questionnaires to their designated addresses, so that strict sampling procedures were violated.

The mail return rate from occupied housing units in Trenton was 67.4 percent, lower than that experienced in any of the earlier major pretests. The percentage-point difference in the return of long and short questionnaires, 9.3 percent, was also the greatest to date.

The centralized office procedures for handling the mail returns and the ensuing followup were closely structured, with a strict time table, so that the office staff could move from one operation to the next with a minimum of change in personnel. This meant that a delay in one operation could cause a delay in those remaining to be done. Editing was done in two phases: the first involved the mail returns; the second, several weeks later, was for questionnaires turned in by the enumerators for households that had not previously responded.

Trenton editing rules for the mail returns allowed one error or deficiency on the short questionnaires (excluding the race inquiry) and two on the long questionnaires (also excluding race). A personal visit was required, however, if there were coverage discrepancies or the possibility that someone had been missed. Even with this upward adjustment in the number of allowable errors from that permitted in Dane County, the failed-edit rate on mail-return short questionnaires was nearly two and one-half times larger than expected. Telephone resolution was highly successful, however; 65 percent of all the failed-edit mail returns were completed in this manner. A long or a short questionnaire failing the second type of edit--any questionnaire turned in by an enumerator after nonresponse followup that contained three or more errors--was given to a cleanup crew.

At no time was there a full staff of enumerators working; the shortage of personnel, combined with a high nonresponse rate (two and one-half times that expected), caused the census to run into December, far beyond schedule. (Ultimately, the enumeration process had to be cut short.) This situation was compounded by tense local conditions, plus the approach of Christmas, which made it even more difficult to keep the operation staffed. As time and cost became critical, extensive closeout procedures became necessary; these entailed making calls on Sunday and limiting questions to a specified minimum. The piece-rate method of payment, with its hourly equivalent of \$2.00, was generally maintained; only 10 percent of the work was paid for on an hourly basis.



In Trenton, the movers operation was conducted after "merge"--i.e., when all records were accounted for. When unmatched movers' records were followed up in the field, 53 percent of them resulted in the addition of persons to the census (as compared with 37 percent in Dane County; there was no such operation in Sumter), or 0.2 percent of the total population. On the basis of the dress rehearsal experience, it was decided to restrict the movers operation to centralized offices in 1970.

Coverage improvement was one of the main points of emphasis in the Trenton dress rehearsal. In 1967, a local community action agency had expressed interest in conducting a population survey; as the dress rehearsal plans moved forward, a plan was developed whereby this agency would sponsor a public information program and advocate cooperation with the census for the benefit of the community. This agency applied for and received private foundation funds to support its activities on behalf of the census. These activities took the form of block parties, receptions, publishing a newspaper, and other efforts designed to stir up local interest in the census in difficult-to-enumerate areas.

The agency also conducted a new type of missed-persons campaign, in which its representatives visited places such as bars, street corners, and pool halls, where people who had no fixed residence or were likely not to be reported in the census might congregate. Cards with space for name, address, age, sex, race, and marital status were filled out for persons who might be missed in the census. After these cards were matched with the census records, there were indications that the campaign had caused a potential 4-percent improvement in coverage of black male adults--the population group where the most serious undercount had occurred

in 1960. Other methods of coverage improvement, such as comparing lists of construction workers and U.S. Bureau of Labor Statistics questionnaires with the census records, were less successful.

Many respondents in Trenton seemed to have no pronounced attitudes either for or against the census; this indifference appeared to be a principal cause for the low mail-response rate and the consequent need for followup. The racial tensions prevailing at the time made it hard to obtain information by personal interview, as some respondents were reluctant to open their doors to visitors. Even when admitted, enumerators had difficulty completing their assignments because some respondents tended to identify these Census Bureau representatives with other governmental authorities, both Federal and local, and were reluctant to divulge any information they thought might be used against them.

Trenton data provided additional material for verifying and modifying existing computer programs for 1970. The complete-count data were also used to simulate the tabulations planned for the first computer count in 1970; the resulting measurements were found to be within established tolerance limits. The Trenton sample was not coded or processed.

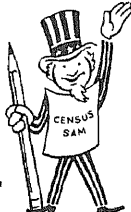
The Trenton field cost projections were fairly accurate, but the cumulative reports obtained from the district office on a number of items were found to be inadequate. These reports were changed to a current-week basis for 1970. The final overall cost of the Trenton dress rehearsal, including field work and data processing, was estimated to be \$225,000, compared with an original estimate in March 1968 of \$161,000 and a revised estimate in December 1968 of \$257,000 (before the enumeration process was cut short).



Publicity Materials Used in the Trenton, N.J., Dress Rehearsal

**HOLD IT!**

Fill out  
Your  
**CENSUS FORM**  
MAIL IT  
**Wed.-Sept. 18**



**CENSUS of TRENTON**

TRENTON DAILIES

Sept. 14-17

Sept. 18

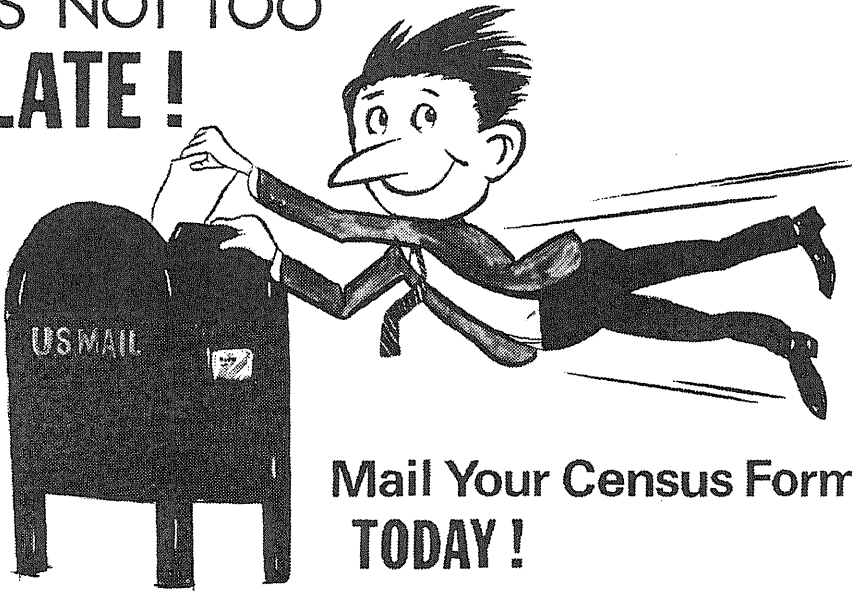
**Today's  
the Day!**



Mail Your  
Census Form  
**TODAY**

**CENSUS of TRENTON**

**IT'S NOT TOO  
LATE!**



Mail Your Census Form  
**TODAY!**

## BIBLIOGRAPHY

Kaplan, David L. "Plans for the 1970 Census of Population and Housing." Demography, Vol. VII (February 1970), pp. 1-18.

U.S. Bureau of the Census. Needs and Plans for the 1970 Censuses, Series GE-40, No. 2, Census Tract Papers. Washington, D.C. U.S. Government Printing Office, 1967. 46 pp.

-----, The 1950 Censuses--How They Were Taken. Washington, D.C. U.S. Government Printing Office, 1955. 222 pp.

-----, 1960 Census of Population and Housing: Procedural History. Washington, D.C. U.S. Government Printing Office, 1966. 387 pp.

-----, Self-Enumeration as a Method for the 1970 Census of Housing. Working Paper No. 24. Washington, D.C. U.S. Government Printing Office, 1966. 27 pp.

-----, Measuring the Quality of Housing, An Appraisal of Census Statistics and Methods. Working Paper No. 25. Washington, D.C. U.S. Government Printing Office, 1967. 99 pp.