

PART II
SURVEY OF COMPONENTS OF CHANGE
AND RESIDENTIAL FINANCE

Chapter 1. General

As part of the 1960 Census of Housing, the Bureau of the Census conducted a large-scale sample Survey of Components of Change and Residential Finance (SCARF) in the fall of 1959 and early 1960. This survey was developed to provide information about the types of changes that had occurred in the Nation's housing and about the financing of residential properties, for the use of Federal and private agencies engaged in planning, analysis, and research in housing and related fields. The components-of-change part of the survey provided information on changes in the housing inventory from new construction, conversions, and other additions, and from demolitions, mergers, and other losses, and on units that were the same. The residential finance part provided data about mortgaged and mortgage-free properties, characteristics of mortgage financing, and selected characteristics of the properties and owners.

Because of the broad and highly-technical scope of the program, SCARF was one of the most complicated surveys undertaken by the Bureau. The survey design required the use of multiple samples for varying geographic areas, supplementary surveys to improve the reliability of the data, and specialized enumeration techniques to assure accuracy of the results.

The activities of the SCARF program had to be integrated with those of the major censuses--population, housing, and agriculture--which had higher priorities with respect to the assignment of experienced survey and operations personnel as well as other Bureau resources. This difficulty was not entirely unanticipated, but it had been expected that it would be more than offset by the advantages of obtaining SCARF data as near as possible to the date of the censuses.

The Survey of Components of Change and Residential Finance was similar to the December 1956 National Housing Inventory survey, which was the first survey of its kind with respect to components of change in the housing inventory. The 1956 survey provided data on components of change for the 1950 to 1956 period as well as data on the financing of owner-occupied properties. The great interest and response to such data resulted in requests from the Census Housing Advisory Committee, the Federal housing agencies, and other users that the Bureau include a survey of components of change as part of the 1960 Census of Housing. The Components of Change Survey provides data on changes in the housing inventory that occurred between decennial censuses (1950-1959) as well as data for the latter part of the decade (1957-1959).

The data were collected for the United States and its broad geographic regions and for 17 selected metropolitan areas. The 17 metropolitan areas included 9 metropolitan areas which had been in the 1956 National Housing Inventory and 8 additional ones. The 9 areas in both the 1956 and the 1959-60 surveys were the Atlanta, Boston, Dallas, Detroit, Los Angeles-Long Beach, Philadelphia, and Seattle standard metropolitan statistical areas (SMSA's) and the New York-Northwestern New Jersey and the Chicago-Northwestern Indiana standard consolidated areas. The standard consolidated areas included several contiguous SMSA's and additional counties comprising the larger metropolitan complexes around New York and Chicago. The 8 new areas were the Baltimore, Buffalo, Cleveland, Minneapolis-St. Paul, Pittsburgh, San Francisco-Oakland, St. Louis, and Washington, D.C.-Md.-Va. SMSA's.

For the Residential Finance Survey and for the 1950-59 data in the Components of Change Survey, the boundaries of the two standard consolidated areas were the same as in the 1960 census. The boundaries of the 15 SMSA's were those defined by the Bureau of the Budget as of June 8, 1959, and in some cases differed from those in the 1960 census. For the 1956-59 comparisons of components of change, the boundaries of the 9 metropolitan areas were those defined in 1956 for the 1956 National Housing Inventory. In some cases, the 1956 boundaries differed from the 1950 or 1959 boundaries.

The SCARF enumeration was started in October 1959, which was as near to the census date as was feasible if it were not to interfere with the preparatory work for the regular census enumeration. Some of the SCARF enumeration extended into early 1960, and a final phase of data collection for the Residential Finance Survey began in July 1960, after almost all of the population and housing census enumeration was completed.

In the course of exploring various alternative sampling plans for the Components of Change Survey and the Residential Finance Survey, it became apparent that significant economies were possible if the two surveys used the sample design.

The sample design, in general, consists of a stratified multi-stage cluster sample, with a list substratum used as part of the residential finance program. Maximum use was made of available resources from the 1956 National Housing Inventory in the sample selection process and of the 1950 and 1960 decennial census results in the estimation processes. The detailed discussion of the sample design is given in chapter 4 of part II.

Chapter 2. Components of Inventory Change Survey

Representatives of housing agencies and the Bureau of the Census had long recognized the need for measures of changes in the housing inventory and of the characteristics of the dwelling units involved, for agencies and individuals engaged in planning, analysis, or research in housing and related fields. By comparing data from two successive decennial housing censuses, only the net change occurring over the 10-year period can be determined. The types and magnitudes of compensating gross changes, such as the number of dwelling units added by new construction and the number lost through demolition, cannot be determined by analyzing two censuses.

In recognition of the need for such data, the Bureau of the Census in December 1956 conducted the National Housing Inventory, the first survey to collect information on components of inventory change. The 1956 survey provided counts and information on characteristics of the components of change in the housing inventory from the time of the April 1950 census to December 1956 for the United States as a whole, for the four major geographic regions, and for nine standard metropolitan areas.¹

The 1959 Components of Inventory Change Survey conducted as part of the 1960 Census of Housing provided information on the changes in the housing inventory between decennial censuses (April 1950 to December 1959) as well as changes since the 1956 National Housing Inventory (December 1956 to December 1959).

The definitions of the components of inventory change provided in the 1959 survey were the same as those used in the 1956 survey. The components were the following:

1. Same units, units that were enumerated as one dwelling unit at both dates
2. Units changed by conversion, two or more units created from fewer units by structural alteration or change in use
3. Units changed by merger, two or more units combined into fewer units by structural alteration or change in use
4. Units added through new construction
5. Units added through other sources, units created from nondwelling-unit or quasi-unit quarters or from nonresidential space, or units moved to site
6. Units lost through demolition
7. Units lost through other means, units which changed to nondwelling-unit or quasi-unit quarters or to nonresidential use, units moved from site, or units destroyed by fire, flood, or other causes

¹The data were published in 10 parts in 1956 National Housing Inventory, Volume I, Components of Change, 1950 to 1956, and Volume III, Characteristics of the 1956 Inventory. Data on the financing of owner-occupied residential properties were collected concurrently and published for the United States in Volume II, Financing of Owner-Occupied Residential Properties.

Because the comparison of the 1959 inventory with the 1950 or 1956 inventory was made on a unit-by-unit basis, the dwelling unit as defined in 1950 and 1956 was used as the reporting unit of the 1959 survey rather than the housing unit used in the regular 1960 census. Other differences between the December 1959 Components of Change Survey and the April 1960 Census of Housing included the use of a sample of land segments in 1959, in contrast to the 100-percent coverage for some items and a sample of housing units for others in 1960, and the extensive use of self-enumeration in 1960, in contrast to the use of direct interview and of 1956 National Housing Inventory records and 1950 census records in the 1959 survey. In addition, for some SMSA's there were differences in boundaries.

Although information for the April 1960 census was collected as of April 1, 1960, information for the Components of Change Survey was collected as of the date of enumeration. For the latter, the bulk of the enumeration was completed by December 1959, and the statistics may be regarded as referring to that date.

Data had been obtained, in the 1956 National Housing Inventory, for dwelling units located in a sample of clusters or small area segments. The 1959 Components of Change Survey was designed to utilize the 1956 National Housing Inventory sampling materials and data to the extent that they were consistent with the requirements of the new program. Two basic procedures for enumeration of the components were developed for the 1959 Components of Change Survey:

1. For area segments in which 1956 National Housing Inventory data had been collected, the enumerators made a unit-by-unit comparison of 1959 dwelling units with the 1956 information which was pretranscribed to the 1959 enumeration document. The comparison of 1959 dwelling units with 1950 census data was obtained later by an office editing procedure
2. For area segments which had not been included in the 1956 survey, the enumerator made a unit-by-unit comparison of 1959 dwelling units with 1950 census records

Data on the 1959 characteristics of the dwelling units (tenure, condition, plumbing facilities, number of rooms, number of persons, etc.) were obtained for a subsample of the units listed in each area-sample segment by the enumerator. The method used in determining which units were to be included in the subsample varied according to the type of procedure used in the enumeration. In the segments which had been in the 1956 National Housing Inventory, the subsample was essentially the same as the one used in that survey to obtain data on characteristics. In the other segments, units in the subsample were predesignated on a control record. Information on the 1950 and/or 1956 characteristics on the dwelling units was obtained by transcription from the 1950 census and/or the 1956 survey records.

PLANNING THE SURVEY

Selection of Items for Enumeration

The selection of the items of information on which data were to be collected in the Components of Change Survey was largely determined by the principle that items or characteristics were not to duplicate those in the 1960 census program unless they were essential for describing the various components. When it was necessary to collect the same items as in the 1960 census, question wording and definitions of the items were to be identical to those in the 1960 census.

The items on the basic schedules used to determine the components of change were similar to those used in the 1956 National Housing Inventory. They were selected to provide enough information so that the correct comparison with the earlier data could be made. Some of the items enumerated, in addition to the basic components-of-change items, were type of living quarters, number of rooms, year built, and number of dwelling units in the structure.

The majority of the items collected in the 1956 National Housing Inventory on characteristics of the dwelling units and occupants were included in the 1959 survey. However, family income, which had been included in 1956, was not included in 1959 because it was part of the 1960 census program, and also because the collection of data on this subject would have increased the cost of the survey considerably.

Pretest

A pretest was conducted primarily to determine, first, if the 1950-59 components of change could be effectively identified by an enumerator comparing the dwelling units in an area segment with those in the 1950 census records, and, second, if the 1950-59 components could be identified by an office editing procedure for area segments in which the 1959 enumerator had compared the dwelling units with the 1956 National Housing Inventory records (which had been compared in the 1956 survey with the 1950 census records). Several new items were also tested, and procedures to improve the quality of enumeration were evaluated. In addition, time studies were conducted to establish minimum production rates for enumerators and field reviewers.

The pretest was held in Philadelphia in June 1959. Approximately 125 segments were enumerated; roughly 75 required the 1956-59 comparison, and the remainder required the 1950-59 comparison. Emphasis in training was placed on the prec canvassing technique of the enumerators. Upon arriving at the area segment, the enumerator was instructed to list on the back of the segment folder the addresses of all structures. This was done to reduce the bias which might result from the possible tendency of the enumerator in an area which had been in the 1956 National Housing Inventory to list only the 1956 addresses which had been pretranscribed on the schedule instead of making an independent listing of all units in the segment. It also provided the enumerators in the areas which had not been in the 1956 survey with a systematic plan for arranging and transcribing the 1950 census records.

A question on basement shelter areas was tested on the characteristics schedule. It was decided not to include it because of difficulties of enumerating it within the framework of the Components of Inventory Change Survey.

For all owner-occupied units in the pretest, the owner was identified by encircling the number of the

line on which the owner was listed in the list of all members of the household. As a result of the pretest, it was determined that this item could be enumerated more accurately by having a separate item on the schedule for recording the name and address of the owner. This item and one for the name and address of the owner of a renter-occupied or vacant unit were used as a means of identifying owners for the Residential Finance Survey.

An item on whether a demolition resulted from private or government authorization was tested by a special procedure because the number of demolished units in the pretest area-segment sample was expected to be very small. A list of demolitions was compiled by the Philadelphia Urban Renewal Agency and these addresses were transcribed to special schedules. The enumerator visited the location of each of the addresses to determine and record whether the structures had been demolished through private or government authorization. The results were compared with the reasons for demolition as recorded on the municipal permits required for all demolitions. After evaluation of the results, it was determined that it would not be possible to obtain accurate information on this subject in the Components of Change Survey. For single demolitions in residential sections that remained for the most part intact, it was generally possible to determine from respondents living nearby whether the authorization was private or government. For large-scale demolitions where whole residential sections had been demolished, it was difficult and time consuming to obtain a reliable respondent in the vicinity. This item was retained on the basic 1956-59 enumeration schedule at the request of some of the users of housing data but with the understanding that the data would represent, at best, only rough estimates and were not to be published.

Some new procedures designed to raise the quality of the enumeration were instituted in this pretest. To improve coverage, the supervisor or crew leader pre-listed all dwelling units in the first two or three area segments before assigning them to the enumerator. During the field review of the enumerator's work, this prelisting was compared with the dwelling units enumerated in the segments by the enumerator, and all discrepancies were immediately reconciled. Another method to improve the quality of the enumeration was to assign each enumerator a small number of area segments at the beginning of the enumeration. When enumeration of these segments was completed, the enumerator reported to the field office and his work was immediately given a complete review, and all discrepancies and errors and the necessary corrective actions were discussed with the enumerator.

Extensive observation by the Washington staff and comments provided by enumerators, crew leaders, and reviewers served as a basis for determining methods and ways to improve the techniques of the survey. An analysis of the enumeration documents was also made.

PREPARATORY WORK

Screening National Housing Inventory Materials

One of the first major tasks in the preparatory work for the enumeration of the 1959 Components of Change Survey was to ascertain the extent to which National Housing Inventory schedules had been lost or mislaid in the interval between the two surveys, and to evaluate the impact of the incomplete or missing 1956 materials on the 1959 survey. Another important preparatory task was the detailed examination of the National Housing Inventory area-segment maps. Screening for missing

materials and examining the maps were combined into one clerical operation. From the middle of February until the second week of August 1959, the clerical staff examined the contents of approximately 22,000 National Housing Inventory segment folders.

There were approximately 100 area segments for which there were adequate maps but no basic National Housing Inventory schedules. For these segments, a special enumeration and editing procedure was established. There were approximately 2,500 area segments for which maps were entirely missing. New maps were prepared for 2,000 of these and the remaining 500 segments were deleted from the program. For another 800 subsegments, the boundaries as delineated on the maps did not meet the specifications for the 1959 survey. Of these, 150 required special delineation in the field, and for the remaining 650, boundaries were redefined and several special enumeration and processing procedures were established.

About 700 segments were found to be too large. To reduce their size, Current Population Survey enumerators subdivided these segments into subsegments and returned the maps to Washington. In Washington, the maps were reviewed and edited to assure definable subsegment boundaries; sample subsegments were selected to represent the segments, and the information necessary to adjust the weights for these segments was obtained.

New-Construction Universe

In order to improve the estimates of new construction, a separate universe was established. In the areas covered in the 1956 National Housing Inventory program, the new-construction universe was established by updating the 1950-56 new-construction universe used in the 1956 survey. Large clusters of 25 or more new units built during the period 1957-59 were identified by enumerators who made inquiries of informed local persons, such as building permit officials, tax assessors, and builders. Whenever possible, the enumerator obtained subdivision maps, but if none was available he prepared a map for each cluster according to specific instructions in his manual. In the areas that were not covered in the 1956 National Housing Inventory survey, the same procedure was used for establishing the new-construction universe, except that large clusters of new units built during the 10-year period 1950-59, instead of 1957-59, were identified and delineated.

The maps of new-construction clusters were transmitted to Bureau headquarters in Washington where the regular area-segment maps were screened for possible overlap. If the regular area segment was partially or completely overlapped by a new-construction cluster, the basic enumeration procedure for the overlapped segment or part of the segment was changed. A sample of the new-construction clusters was selected and then returned to the field for segmentation into smaller land areas. The subsegmented maps were then sent to Washington where a sample of about 8,500 segments was selected. Intensive editing of these operations was conducted in the field offices and in Washington.

The delineation of large clusters of new construction and the subsequent segmentation of selected clusters was done by Current Population Survey enumerators. The training consisted of approximately 2 hours of reading the specifications for delineation and segmentation of the clusters, and completing several practice exercises.

The identification of large clusters of new construction began in early April 1959, and the bulk of the work

was completed by the middle of August 1959. Work on subsegmentation and selection of the new-construction sample could not begin until mid-August and was not finished in some areas until December 1959, several weeks after enumeration had begun.

Mailing Materials to the Field

All materials for the Components of Change Survey were shipped first to Jeffersonville and from there to the various field offices. The flow of materials to Jeffersonville started when records for 5,000 1950 ED's were shipped from Washington in April 1959. The rest of the 1950 materials were sent periodically throughout the next few months, the last shipment on September 1, 1959. The initial shipment of 1956 National Housing Inventory materials began immediately after the screening operation was completed in August. The mailing of the balance of 1956 materials continued periodically until October 1, 1959, when the last shipment was received in Jeffersonville.

All new materials such as the components-of-change schedules and segment folders were mailed to Jeffersonville from the second week of August through September 15, 1959.

Transcription of 1956 Data to Questionnaires, and Other Preparatory Work

Pretranscription of selected data from the 1956 National Housing Inventory to the basic enumeration schedules was required for all segments which had been in the 1956 National Housing Inventory program. The pretranscribed data included items utilized in the 1956-59 and 1950-59 comparisons, such as complete address of the 1956 dwelling unit, number of rooms, and number of dwelling units in structure. Items that were to be used in the later clerical processing were also transcribed--e.g., the 1956 dwelling-unit number and the 1950-56 comparison. Subsample units for which data on characteristics were to be collected were designated on the basic enumeration schedules for all segments.

This preparatory work, which included also the preparation of segment folders and related materials for all the segments, including those that were not enumerated in the 1956 National Housing Inventory, was carried out in Jeffersonville. The operation began during the middle of August 1959 and was finished by the middle of October.

Field Organization

In order to facilitate the enumeration of approximately 26,000 segments located in 650 counties and cities in the United States, 22 SCARF offices were established. These offices were classified into three groups for administrative purposes:

Group A consisted of 12 SMSA offices located in cities with a permanent Census regional office and administratively responsible to the regional office. They were responsible for the enumeration of their respective SMSA's and also for the enumeration of all the national sample except that done by group C offices. These offices were located in Atlanta, Boston, Chicago, Dallas, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis, St. Paul, and Seattle.

Group B consisted of the five remaining SMSA offices and were located in cities that did not have a regional office. They were located in Baltimore, Buffalo,

Cleveland, San Francisco, and Washington. They were responsible only for the enumeration of their respective SMSA's.

Group C consisted of five offices responsible only for the enumeration of the remainder of the national sample segments outside the regions covered by the 17 SMSA offices, and was located in cities having Census regional offices. These SCARF offices were under the administrative direction of the regional offices, like the offices in group A. The offices were in Charlotte, Cincinnati, Denver, Kansas City, and New Orleans.

The three groups of offices were staffed in general with the following personnel:

Types of personnel	Number in each SCARF office	
	Groups A and B	Group C
SCARF supervisors.....	1	1
Crew leaders.....	2	-
Clerks:		
Reviewers.....	3	1
Assignment control clerk.....	1	
Residential finance chief clerk..	1	1
Residential finance control clerk	1	
Other residential finance clerks.	1	
Enumerators.....	25-40	10-30

In all offices in groups A and B, a number of regular regional office enumerators were assigned to the SCARF enumeration. They were supplemented by temporary enumerators who had passed a qualifying test. All personnel in the group C offices were regular regional office enumerators.

The regular regional office enumerators received their usual hourly rates which averaged \$1.82 an hour. All temporary enumerators and almost all the temporary employees serving as clerks received \$1.69 per hour. A few clerks received the same remuneration as the crew leaders which was approximately \$1.95 per hour.

Training Program

Training materials.--Work on revising the enumerators' manual began immediately after the Philadelphia pretest. For the final program, two manuals were prepared, one for each basic enumeration procedure. The Enumerators' Manual numbered form 60-08-101 contained detailed instructions for enumerating the area segments which had been in the 1956 National Housing Inventory program. The Enumerators' Manual numbered form 60-08-101a contained the instructions for the area segments which had not been in the 1956 National Housing Inventory.

Two training guides were prepared also, but because both basic enumeration procedures were used in all areas, it was necessary to include in each training guide not only the instructions for the basic procedure for the area but also supplemental material for the alternate procedure. The training guides included the lectures to be given by the trainer and also exercises, examples to illustrate the difficult points, mock interviews, and written tests. Two film strips which had been used in training for the 1950 census, "Dwelling Unit and Type of Structure" and "Condition of Unit," were used again for the 1959 training program.

A training innovation for the Components of Change Survey was the use of a "VU-graph" projector, to project slides on a screen or wall, which permitted modifications of the slides to be made with a special pencil by the instructor. For example, the instructor could record the correct answers on the schedule projected on the screen during a mock interview.

Supervisors and crew leaders.--The training of SCARF supervisors and crew leaders was done in five locations by teams from Washington headquarters. It began September 21, 1959, in Boston, Los Angeles, and Pittsburgh, and a week later, September 28, in New Orleans and St. Louis. Training for the supervisors lasted 5 days. The crew leaders attended 3 1/2 days of the sessions. In addition, at least one member of the regular staff of each of the regional offices attended the first 2 days of the training.

During the training period, the supervisors and crew leaders actually enumerated some of the segments while being observed by members of the training team, to obtain practical experience with survey concepts and procedures and to become acquainted with some of the difficulties encountered in enumeration. Also, a half day was devoted to practice training by the supervisors and crew leaders. This gave them the opportunity not only to familiarize themselves with the training guides and visual aids but also to receive suggestions for improving their training techniques. In addition, it gave the supervisors the opportunity to evaluate the training ability of their crew leaders; in some cases, the supervisor then elected to train the enumerators himself or to combine the two training sessions for the enumerators into one and use the better crew leader as the principal trainer.

Enumerators.--In most of the 17 SMSA's, enumerators were trained in two groups, each group conducted by one crew leader. In a few SMSA's, the supervisor elected to combine the sessions. The sessions for the new enumerators began October 19, 1959, and continued 2 days. The regular regional office enumerators were given only 1 day of training because they were already familiar with many of the concepts and definitions.

Offices in group C did not begin training until the following week. Since the personnel were all regular regional office enumerators, they required only 1 day of training.

In all areas, each enumerator was observed by the supervisor, crew leader, or technician from Washington as he conducted the enumeration in the first few segments. Enumerators who had appeared weak in understanding of the instructions during training were the first to be scheduled for observation.

THE ENUMERATION

Enumeration Forms

The basic enumeration documents and control forms are described briefly below. Facsimiles of the schedules are reproduced in a separate publication.²

H-7, Inventory Changes Schedule.--This was the basic enumeration document for determining the components of change in the area segments that had been included

²U.S. Bureau of the Census, Survey of Components of Change and Residential Finance of the United States Census of Housing, 1960: Principal Data-Collection Forms and Procedures, Washington, D.C., U.S. Govt. Print. Off., 1962, 39 pp.

in the 1956 National Housing Inventory. It contained pretranscribed addresses and selected data for the dwelling units reported in the segment in the 1956 National Housing Inventory. It was used by the enumerators to list and compare all 1959 dwelling units in the segments with the data for the 1956 National Housing Inventory units. The subsample of 1959 units for which detailed data on characteristics were to be collected was predesignated on the schedule.

H-7a, Inventory Changes Schedule.--This was the basic enumeration document for establishing the components of change in the area segments that had not been included in the 1956 National Housing Inventory. It was used by the enumerators to list and compare all 1959 dwelling units in the segments with the 1950 census records. It was similar to the H-7 schedule in design except that the enumerator was to record the addresses and selected data for the 1950 dwelling units for purposes of the 1950-59 comparison and the determination of when to fill the H-8 Characteristics Schedule in these segments was established by another form (see H-113, below).

H-14, Address Sample Schedule.--The Address Sample Schedule was generally used in areas where the H-7a was used. The H-14 was used to record the 1950 dwelling units in whole structures that no longer were in existence or no longer contained dwelling units.

H-8 Characteristics Schedule.--This was a FOSDIC schedule which was used by the enumerator to obtain detailed data on characteristics of a subsample of the 1959 dwelling units in each area segment. Space was provided for the clerical transcription of selected 1950 and/or 1956 data for dwelling units classified as "same."

H-113, Enumerator's Control Record.--The Enumerator's Control Record was stapled on the back of the segment folder, or enumerator's kit, and was used by every enumerator. Section I contained control items essential for determining that all schedules were properly filled for each unit in the segment. In addition, in areas where the H-7a schedule was used, selection of the sample of 1959 dwelling units requiring the H-8 Characteristics Schedule was predesignated in section I. Section II was used only in areas where the H-7a schedule was used; in the lower-left corner, serial numbers of 1950 dwelling units for the H-14 Address Sample Schedule were pretranscribed. Section III was used to record special enumeration instructions for a particular segment.

H-117, Segment Folder.--The front of the segment folder, or enumerator's kit, contained all the identification items, such as the area-segment number and the primary sampling-unit number, the name of the city and the county, and the type of enumeration. The front of the segment folder also contained code boxes to be used in the office processing and space for entry of certain control data by the field offices.

For definitions and a detailed description of the items on the schedules, see part III, chapter 3.

Enumeration Procedures

1950-59 procedure.--In segments which were not in the 1956 National Housing Inventory program, primarily in the eight new SMSA's, the 1950-59 procedure was used. The enumerator located a specific area segment by using the grid coordinates on the segment map. He then prec canvassed the segment by walking around the entire segment. During the prec canvassing, he familiarized himself with the exact boundaries of the segment and at the same time listed on the back of the segment

folder the addresses of all structures existing in the segment.

The enumerator then searched the 1950 census P-1 schedules to find all 1950 units with the same addresses as those listed in the prec canvass. He transcribed certain data for these units, such as address, number of rooms, and number of dwelling units in the structure, from the 1950 schedules to the H-7a Inventory Changes Schedule.

He then proceeded to list on the H-7a schedule all living quarters in the segment and to determine the 1950-59 components of change. He obtained the answers for the 1959 items, such as address, number of rooms, number of dwelling units in the structure, and year built. By comparing the 1959 entries with the 1950 entries, he established and marked on the schedule the appropriate 1959 component, i.e., same, conversion, merger, from quasi, from nonresidential use, moved to site, or new construction. For conversions, mergers, and other additions except new construction, he also obtained information on "year of change." At the same time, he entered the 1950 components, e.g., same, conversion, merger, changed to residential use, etc.

For a 1959 unit reported by the respondent as new construction or added from other sources, the enumerator again searched the 1950 census records to verify that the unit did not exist in 1950. If a 1950 unit was found for the same address, the enumerator asked enough probing questions to establish definitely either that the unit had been built since 1950 or that it had existed in 1950.

If the 1950 census records were incomplete or missing, the enumerator determined the correct classification by asking the occupants or informed neighbors a series of questions relating to the past and present status of the unit.

After all necessary entries for a dwelling unit had been recorded on the H-7a schedule, the enumerator checked the box opposite the same 1959 unit number on form H-113, Enumerator's Control Record, to indicate that the unit had been enumerated. If the 1959 unit number was circled on the Enumerator's Control Record, he also completed an H-8 Characteristics Schedule for the unit.

For all segments which were not in the 1956 survey except the new-construction segments, H-14 Address Sample Schedules were used to enumerate losses of 1950 whole structures. Because it was not feasible for the enumerator to identify and list on the H-7a schedule the 1950 addresses for structures that were no longer standing in the segment, a sample of six possible 1950 serial numbers had been selected and transcribed to the Enumerator's Control Record. The enumerator entered these serial numbers on the H-14 schedule and searched the 1950 census schedules for these same serial numbers. Usually about three 1950 serial numbers were found. He then copied the addresses of the 1950 structures containing these dwelling units onto the H-14 schedule and determined whether or not the structure was still standing and still contained dwelling units. If the structure was no longer standing or no longer contained dwelling units, he entered the type and year of change--entirely quasi, entirely for nonresidential use, unfit, demolished, moved from site, or other loss--and recorded on the H-14 schedule the 1950 serial numbers of all units reported in the structure in 1950.

1956-59 procedure.--In segments in which National Housing Inventory data had been collected in 1956, i.e., in the nine SMSA's and the remainder of the national sample, the enumeration procedure was similar to that in the eight new SMSA's except that the 1959 dwelling

units were compared with the 1956 instead of the 1950 dwelling units.

The enumerator located and precanned the segment. He then entered on the H-7 Inventory Change Schedule the data for every 1959 unit existing in the segment and determined the 1959 and the 1956 components by a unit-by-unit comparison with 1956 data which had been transcribed to the schedule.

The design of the survey required an H-8 Characteristics Schedule for essentially the same subsample that was used in the 1956 National Housing Inventory. The units that had been in the 1956 subsample were pre-designated on the H-7 schedule by a circle in which the corresponding 1959 dwelling-unit number was entered and the enumerator filled an H-8 Characteristics Schedule for each 1959 dwelling unit entered within the circle.

For units that had not been in the 1956 subsample--new construction, other additions, and those dwelling units missed entirely by the 1956 enumerator--a special section was provided on the H-7 schedule where the H-8 characteristics subsample for such units had been pre-designated.

Special Situations

For the National Housing Inventory segments which were partially overlapped by the 1956-59 new-construction universe, two different enumeration procedures were required and two separate H-7 schedules were used. Poorly delineated 1956 National Housing Inventory segments also required special enumeration procedures. In addition, the updating of the information on 1950 dwelling units which were lost to the inventory by 1956 but which might have changed their status again by 1959 required still other procedures. Detailed instructions for enumerating these segments were placed inside the segment folder, and a brief resume of the special enumeration instructions was given on the H-113 Enumerator's Control Record.

Callbacks

Except in unusual cases, the enumerator was instructed that callbacks were not generally necessary for the H-7 and H-7a Inventory Changes Schedules because the required data usually could be obtained from a landlord, superintendent, or neighbor. Because of the nature of the items on the H-8 Characteristics Schedule, the enumerator was required to make three visits to the dwelling unit in an attempt to complete a Characteristics Schedule before returning the segment folder to the field office. In mid-November 1959, the offices were instructed to limit the enumerators to only two visits per segment, to expedite completion of the program and to reduce costs.

Timing of the Enumeration

The enumeration began on schedule during the week of October 19, 1959, in the 17 metropolitan areas and the following week in the remaining areas, and was expected to be completed in all areas on December 19, 1959, two months later.

In late November, it became apparent that the cost of enumeration would exceed the estimated budget. The number of segments in each of the 8 new SMSA's was reduced from 1,400 to 750, and the staff in each of these offices was reduced to 1 crew leader, 1 reviewer, and 15 to 20 enumerators; at the end of December, the remaining work in the 8 new SMSA's was trans-

ferred to the regional offices and these SCARF offices were closed.

By the scheduled completion date, December 19, about 90 percent of the enumeration was completed; one month later, 95 percent of the segments had been enumerated. Enumeration of the remaining segments was continued by a greatly reduced staff. On March 25, 1960, all field operations were stopped to prevent conflict with the 1960 population and housing census operations. Seventy-eight segment folders were returned to Jeffersonville unfinished. Adjustments were later made for these segments by adjusting the weights of completed segments of similar type.

The average time spent to enumerate an area segment was 4.9 hours in areas in which the basic 1956-59 procedure was used and 5.7 hours in areas where the 1950-59 procedure was used.

Progress Reports

The enumerators maintained cumulative progress reports on a special form and once a week reported by telephone to their crew leaders, who posted the information on another form. The crew leaders summarized the information and reported the results to the field office, which combined the reports from the crew leaders and submitted teletype reports to Washington on the cumulative progress of the enumeration.

Items reported included the number of segments assigned, the number completed, the number of hours worked, and the number of hours spent in travel.

Quality Control of the Enumeration

Procedures used to secure and maintain the quality of enumeration included the following: (1) direct observation of all enumerators during the initial assignments, (2) comparison of a prelisting with enumeration results in certain segments, (3) field office review of the enumerator's work, (4) additional observation by the supervisor or crew leader when required, and (5) verification of enumeration by reinterview.

Instructions on the quality control procedures were included in the SCARF Operations Manual used in the field.

Prelisting segments.--Two of the first five segments to be assigned to each enumerator were prelisted by the crew leaders prior to the training period. The crew leaders visited the segments and by direct interview obtained the name of the household head and the address of every dwelling unit in the segment and entered the information on a prelisting sheet. During the office review of the first group of segments, the units on the prelisting sheet were compared with the 1959 units entered by the enumerator on the H-7 or H-7a Inventory Changes Schedule. If there were discrepancies, the segment was assigned to the crew leader for followup, and if the enumerator was in error, the discrepancies were immediately called to his attention and corrected.

Observation of enumerators.--The assignments for enumeration were scheduled so that each enumerator was observed by the supervisors, crew leaders, or other trained personnel during the enumeration of initial segments.

Field office review.--The office review procedure was divided into two phases: the full review and the partial review. The first five segments completed by each enumerator were given a full review in the presence

of the enumerator, to give the reviewer the opportunity to point out mistakes and the necessary corrective steps to be taken. After the review of these first segments was completed, only every seventh segment was given a full review, and a partial review was performed for the remaining segments.

Both the full and partial reviews included checks to determine if all of the required schedules had been filled and if the identification items on each schedule had been entered properly. In addition, certain critical items on each schedule were examined for incomplete or inconsistent entries: The 1950-59 or 1956-59 comparisons were examined in detail, as well as the selection of the sample for the H-8 Characteristics Schedule. For segments in which the 1950-59 comparison was made, the 1950 records were searched and reviewed to verify the entries on the H-7a and H-14 schedules. In the full review, the assignment of the 1959 dwelling-unit numbers, addresses, and the adequacy of the FOSDIC marking on the H-8 Characteristics Schedules were also checked. In addition, a tally of all missing or incomplete items was made.

Some discrepancies were corrected by the reviewers on the basis of the information provided by the enumerators. In the case of segments for which errors could not be corrected with reasonable certainty, or for which there were several missing entries on a schedule, the material was returned for followup enumeration. When the segment was returned from the followup enumeration, only the items which had been questioned were reedited by the reviewers.

Reobservation of enumerators.--If an enumerator appeared particularly inaccurate during the initial observation, or if a consistent pattern of errors was found in his work, the enumerator was scheduled for reobservation by his crew leader. During the reobservation, the crew leader pointed out mistakes and referred the enumerator to the manual when necessary. If the quality of his work continued to be below acceptable standards, the enumerator was dismissed.

Reinterview by crew leaders.--A sample of households selected from the followup segments was reinterviewed by the crew leaders. If an enumerator completed his assignment without a followup, the sample of dwelling units for reinterview was selected at random from segments which had passed review. In segments which required followup visits, only the units regarding which errors had been made were scheduled for reinterview. The crew leader filled a "Reinterview Report" form for each reinterview and called the enumerator's attention to any errors or discrepancies found.

Phase II Enumeration

The ratio-estimation procedure for estimating the number of dwelling units added to the housing inventory by new construction in the 1950-59 period required a second visit to the area segments to determine how many of the housing units enumerated by the 1960 census enumerators fell into the Components of Change Survey segments. This was referred to as phase II enumeration.

Training and enumeration for phase II were conducted in June and July 1960 under the supervision of the Census Regional Offices.

The enumerator was supplied with the following materials:

1. The segment map
2. The H-141 phase II schedule (on which the dwelling-unit data from the Components of Change Survey basic enumeration were pretranscribed)

3. The appropriate 1960 census listing book

The enumerator visited the segment and listed all structures in it, residential and nonresidential, on the H-141 phase II schedule. He searched the 1960 census listing book for all housing units enumerated in those structures and transcribed data for those units to the H-141 schedule. Each dwelling unit enumerated in the Components of Change Survey was pretranscribed on the H-141 schedule, and the enumerator's last step was to indicate on the H-141 schedule whether each of the Components of Change Survey units was in the list of units he had transcribed from the 1960 listing book.

The sample counts of 1950 and 1960 units from the regular enumeration and from the second visit were used with the 1950 and 1960 census totals (which were based on 100-percent enumeration) to calculate a growth factor for the decade which was applied to new-construction units for the 1950-59 period. In effect, phase II made it possible to provide an improved estimate by taking advantage of the correlation between counts of new construction and the growth between the 1950 and 1960 housing censuses. Phase II counts were also used to adjust the weights of segments for which there was some indication that the enumerators' canvass might have been inadequate.

PROCESSING THE DATA

The Processing Plan

Processing was divided into two major phases: (1) the clerical processing in Jeffersonville, Ind., and (2) the mechanical processing on conventional and electronic equipment in Washington, D.C.

The general clerical operations consisted of the following:

1. Receipt and control
2. Clerical editing and coding of the comparison items on the H-7, H-7a, and H-14 schedules
3. Transcribing 1950 and 1956 characteristics data to H-116 and H-116a transcription forms and H-8 Characteristics Schedules
4. Clerical editing and coding of selected items on the H-8 Characteristics Schedules
5. Punching the data from the H-116, H-116a, H-7, and H-7a forms into punchcards
6. Preparing the H-8 Characteristics Schedules for microfilming, and microfilming them
7. Preparing the H-141 phase II schedules for mechanical data processing

With the exception of some preliminary editing on conventional punchcard equipment, the mechanical processing of the data was done on electronic computers (Univac I and Univac 1105). Approximately 160 programs of varying magnitude and complexity were required to process the counts and characteristics for the Components of Change Survey. The large number of programs was necessary because (1) the tabulations of the 1950-59 comparisons were different from those for the 1956-59 comparisons; (2) different weights and geographic boundaries were used for the two comparisons and for the national versus the SMSA tabulations; and (3) the design of the different schedules differed so much that separate programs for each schedule were required for many of the processing steps. Listed below are the principal steps for the mechanical processing of the data; all except the first were done on the computers.

1. Edit of the punchcards for inconsistent 1950-59 and 1956-59 comparison entries

2. Preparation of a Master Segment Record which contained geographic identifications, various segment weights, etc., for each segment in the survey
3. Collation of all schedules with the Master Segment Record on a segment-by-segment basis
4. Computer edit for inconsistent comparison entries
5. Ratio estimation of the counts of components
6. Computer edit of the Characteristics Schedules for inconsistent entries
7. Ratio estimation of the characteristics sub-sample
8. Recode of the characteristics in preparation for the tabulation
9. Tabulation of the characteristics

After step 4 above, the counts and characteristics for the 1950-59 comparison, which was to be published in part 1 of volume IV of the 1960 Census of Housing, were processed in the computer separately from the 1956-59 comparison which was to be published in part 2 of the same volume. In order to insure early publication of the counts of the components and some of the basic characteristics for the 1950-59 comparison, part 1 was divided into part 1A and part 1B, and the data for part 1A were processed first. Thus, the components-of-change data were processed in the following order: part 1A, part 1B, and part 2.

The procedures are described in more detail in the sections which follow. For an item-by-item treatment, see part III, chapter 3.

Receipt and Control Operation

A receipt and control operation was set up in Jeffersonville to insure that all necessary materials were received from the field offices, and to file and maintain records so that an orderly flow of the materials to each of the processing steps could be maintained. A master file card was prepared for each area segment, and a listing was prepared from the file cards to record the location of each area segment during the many steps in the clerical operation.

Clerical Editing and Coding of Comparison Items

Since the items used for the 1950-59 and 1956-59 comparisons were the most critical ones in the survey, these items on all of the basic enumeration schedules were given a complete and thorough edit.

Editing and coding the H-7 Inventory Changes Schedules.--For the segments which had been in the 1956 National Housing Inventory, the 1956-59 comparison items were edited first, to verify that the enumerator had accounted for all 1959 dwelling units in the segment as well as all 1956 units and had made the proper entries for the comparison. Related items were used in editing the comparison items--year built, year of change, and, when necessary, additional items such as the addresses, number of dwelling units in the structure, and number of rooms for both the 1956 and 1959 units. The enumerator's notes in the "comments" section of the schedule were also used.

The 1950-59 comparison was established for units in these segments by a coding operation which utilized the 1956-59 comparison items and the 1950-56 comparison that had been transcribed from the National Housing Inventory records.

Chart 1 illustrates how the 1950-59 comparison was coded for some of the units.

Editing the H-7a Inventory Changes and H-14 Address Sample Schedules.--The editing of the H-7a Inventory Changes Schedule on which the 1950-59 comparison was obtained by direct enumeration was similar to the editing of the H-7 schedule. However, use was made of the 1950 census records instead of the 1956 National Housing Inventory records in the editing.

An H-14 Address Sample Schedule was required for all segments which had not been in the 1956 National Housing Inventory except new-construction segments.

Entries indicating that the 1950 dwelling units corresponding to the P-1 1950 census schedule serial numbers

Chart 1.--Illustration of Office Determination of 1950-1959 Comparisons For Area Segment Which Had Been in 1956 National Housing Inventory

Case	Section B			Section C	
	Status of 1956 units		Status of 1950 units	Status of 1959 units	
	1956-59 comparison (item 5)	1950-56 comparison (item m)	1950-59 comparison (office use) (item o)	1956-59 comparison (item 16)	1950-59 comparison (office use) (item t)
1	Same	Same	Same	Same	Same
2	Conversion	Same	Conversion	Conversion Conversion	Conversion Conversion
3	(¹)	(¹)	(²)	New construction	New construction
4	Same	New construction	(³)	Same	New construction
5	Demolished	Same	Demolished	(⁴)	(⁴)
6	Demolished	Created from nonresidential	(³)	(⁴)	(⁴)

¹ No entries in section B.

² Units did not exist in 1956 nor in 1950.

³ Units did not exist in 1950.

⁴ No entries in section C; units did not exist in 1959.

had not been found by the 1959 enumerator were verified by searching through the 1950 census records. If the 1950 unit was found by the editor, the H-14 schedule was set aside for return to the field.

If the 1950 address on the H-14 schedule represented a structure which was still residential, no further processing was necessary because this structure was not lost from the inventory. If the address represented a structure that was classified as entirely for nonresidential use, unfit for human habitation, demolished, etc., the editor searched through the 1950 census records to verify that the enumerator had entered on the H-14 schedule the 1950 P-1 serial numbers for every 1950 unit in that structure. The enumerator's notes in the section on the schedule for comments were also used in the editing.

Editing the special and combination segments.--Except for minor modifications, editing for combination segments where both H-7 and H-7a Inventory Changes Schedules were used and editing for segments which required special enumeration procedures was done according to the regular specifications for editing of the H-7 and H-7a schedules. In combination segments, the units in each set of schedules were separately identified and each set of schedules was processed separately.

Verifying the characteristics subsample.--The H-8 Characteristics Schedules were verified to determine that they had been filled for the proper 1959 units in the characteristics subsample. Where no bias was apparent, H-8 schedules filled for units not in the characteristics subsample were accepted. Where H-8 schedules were missing, the basic identification and components-of-change data were transcribed from the H-7 or H-7a schedules to blank H-8 schedules, for use in subsequent collation operations and in the Residential Finance Survey.

Problem referrals.--Most of the problems in the editing and coding which were not covered by the clerical specifications were resolved by the clerical supervisors or by housing-subject specialists. Some of these problems required detailed examination of the 1950 census records. Missing or incomplete entries on the basic enumeration schedules (H-7 and H-7a Inventory Changes and H-14 Address Sample Schedules) were supplied where possible by the technicians. A number of segments were returned to the field for reenumeration.

Transcription Operation

To prepare the data on counts and characteristics of the 1950 and 1956 components for tabulating, a transcription operation was performed. For the 1950-59 comparison, data for all 1950 units which were changed by conversion or merger or which were lost to the inventory were transcribed to an H-116a Transcription Form for the 1950 data. Similarly, for the 1956-59 comparison, data for all 1956 units that were involved in a conversion or merger, or that were lost to the inventory after 1956, were transcribed to the H-116 Transcription Form for the 1956 data. The 1950 and/or 1956 data for units that remained the same between 1950 and 1959 and/or between 1956 and 1959 were transcribed to the H-8 Characteristics Schedules. In addition, 1959 items enumerated on the H-7 or H-7a Inventory Changes Schedules were transcribed to the corresponding H-8 Characteristics Schedules in FOSDIC markings for all units in the subsample.

Clerical Editing and Coding of Selected Items on Characteristics

Although the H-8 Characteristics Schedule was basically a FOSDIC schedule, entries for the household

occupying the unit and their previous residence were recorded by the enumerator in a conventional manner. These entries were coded in special FOSDIC markings in the Jeffersonville office. During the coding operation, inconsistent or missing entries in the related items were edited. However, the major edit of the items on the H-8 schedule was done in the computer.

Coding and editing household items.--Data for the household characteristics were coded based on entries in the following items for each member of the household: Relation to the head of the household, sex, and age. Missing entries in these items were edited by using data in related items and special allocation sheets which contained predetermined categories for relationship and age.

Coding previous residence for recent movers.--For all households that had moved during 1958 or 1959, the complete address of the previous dwelling unit (street number, city or town, county, and State) was recorded. The location of the previous unit in relation to the location of the present unit was coded (e.g., "outside SMSA, different State").

Verification Procedures

A verification procedure for each of the major clerical steps was instituted to improve and control the quality of the work. The results were also used to establish a criterion of acceptable performance for the editors, coders, and transcribers.

Verification of clerical editing and coding of H-7, H-7a, and H-14 schedules.--Verification of the editing of the basic schedules for regular segments was done on a line-by-line (dwelling unit-by-dwelling unit) basis. All segments completed during the first 5 days of editing were verified on a 100-percent basis. Errors were recorded and during the qualifying period the errors were pointed out to the editor-trainees individually. If the error rate was more than 3 percent during this period, the trainee failed to qualify as editor and was assigned to other duties. After the qualification period, verification of the editing was done on a sample basis, one segment from each work unit of 10 segments. Because of the varied editing procedures required for special and combination segments, the editing for these segments was verified on a 100-percent basis.

Other verification procedures.--The transcription of 1950 and 1956 data to the H-116a and H-116 transcription forms and to the H-8 Characteristics Schedules was also verified. To qualify as a transcriber, an error rate of less than 4 percent had to be maintained for the first four work units (40 segments). Once the transcriber had qualified, one out of every 20 segments was verified. During the sample verification, if the error rate rose over the established maximum, two work units were verified until the transcriber either performed acceptable work or was removed from the operation.

The coding of the selected 1959 items was verified on a 100-percent basis.

Preparation of Schedules for Mechanical Processing

Card layouts and punching specifications for each type of schedule were prepared, and a card was punched for each dwelling unit. Each H-116a and H-116 transcription form represented one 1950 or 1956 dwelling unit, and each line on an H-7 and H-7a Inventory Changes Schedule represented one 1959 dwelling unit. The punching was verified on a 100-percent basis.

The H-8 Characteristics Schedules, which were FOSDIC schedules, were microfilmed by a procedure

similar to the one for microfilming the 1960 census schedules, described in part I, chapter 8. A breaker sheet was prepared for each tabulation unit. It contained such identifying information as the tabulation-unit number, the geographic area code, and the number of H-8 schedules in the tabulation unit.

Clerical Editing of Phase II H-141 Schedules

After the phase II enumeration had been completed, all related materials were returned to Jeffersonville where the H-141 phase II schedules were edited and the basic 1960 housing unit counts for each segment were prepared for tabulation. The clerical editing was carried out by a small group of clerks in Jeffersonville during the period July-November 1960. The editing procedure consisted mainly of searching the 1960 census listing book and verifying that all housing units in the segment had been transcribed to the phase II schedule. If some 1960 housing units had been missed, they were added; conversely, if some housing units had been transcribed erroneously, they were deleted. The total number of 1960 housing units was later transcribed to a mark-sensing card along with the primary sampling unit and segment number. The data on the mark-sensing cards were then converted to tape and used in the production of the ratio estimates for new construction between 1950 and 1959.

Edit of Punchcards

After the completion of the punching, all punchcards for each schedule (H-7 and H-7a Inventory Changes Schedules and H-116 and H-116a transcription forms) were run through a multicolumn sorter and those cards with inconsistent or impossible entries were rejected. These error listings were examined by housing-subject specialists and were corrected by using the information in entries in other items on the listing as well as the corresponding schedules and the 1950 census and 1956 National Housing Inventory records. The punchcards were then corrected and reedited.

Collation of Schedules with Master Segment Record

Control counts consisting of the number of units by each schedule type had been entered on the H-7 and H-7a

Inventory Changes Schedules for each area segment and subsequently punched on the H-7 and H-7a punchcards.

By using the primary sampling unit and segment numbers, the H-7's and the H-7a's were collated with the Master Segment Record on a segment-by-segment basis on the computer, and the control counts for each schedule type on the H-7 or H-7a were transferred to the Master Segment Record for the segment. The actual number of the H-7 or H-7a punchcard was then compared with the control counts. If the numbers agreed, then the information for the segment on the Master Segment Record was merged with that for each H-7 or H-7a in the segment and put on another tape. If the counts did not agree, both the Master Segment Record for the segment and the H-7's or H-7a's were examined, and the necessary correction made.

The H-8 Characteristics Schedules and the punchcards corresponding to H-116 and H-116a transcription forms were then collated with the Master Segment Record by the same procedure.

The collation of the Master Segment Record with the H-141 cards which contained the total number of 1960 housing units found in the second visit to the segment (phase II) consisted in transferring this total to the Master Segment Record.

Computer Edit of Components of Change

The next step in the computer processing was to edit the components on the computer. A small portion of the computer edit specifications for the H-7 schedules is given below: the specifications for the H-7a, H-116, and H-116a records were roughly the same.

Computer Edit of Characteristics

The computer consistency edits of the 1959 items on the H-8 Characteristics Schedules were divided into two parts, one for the components transcribed from the H-7 or H-7a Inventory Changes Schedules and the other for the characteristics. The edits for the components were done first, and, for the most part, were identical to the computer edits for the components on the basic H-7 and H-7a schedules. The items on 1959

Item 14 (Type quarters)	Item 16 (1956 to 1959)	Item 15 (Year built)	Item t (1950 to 1959)	Action
House, apartment, flat	Same	1957 or later	New construction	Edit item 16 to "New construction"
			Blank	Edit item 15 to NA and item t to "Same"
			All other	Edit item 15 to NA
		1955-1956	New construction	OK
			All other, Blank	Edit item t to "New construction"
			Entry	OK
		1950-1954	Blank	Edit item t to "New construction"
			New construction	Edit item 15 to NA
			Blank	Edit item t to "Same"
		1949 or earlier	All other	OK
			Entry	OK
			Blank	Edit item t to "Same"

characteristics were edited for consistency in much the same manner as the corresponding 1960 housing items.

The method of imputing the nonresponses (NA's) for characteristics was different from the one used for the 1960 census. Responses for the NA's in the 1959 items for condition, rooms, year built, and number of dwelling units in the structure were allocated in the case of "same" units by using the entries in the corresponding 1956 or 1950 items if they were available. For other units, these items, except for the one on the year the structure was built, were edited by using data from the preceding 1959 unit. For the item on the year the structure was built, when the 1956 or 1950 data were not available or applicable, and for the one on location of previous residence, the NA's were imputed on the basis of the 1956 National Housing Inventory distributions. Blanks in items on value, acreage and sales, contract rent, amounts spent for utilities, and plumbing were allocated directly from the preceding units. The use of data from the preceding unit in allocating where necessary for most of the 1959 items instead of the various imputation patterns used for the same 1960 housing items was due to the limited storage capacity of the Univac I computer on which most of the edits were made.

Nonresponses in the 1959 items for value and for contract rent, and for the related utilities items used in the computation of gross rent, were allocated for the simple distributions of the 1959 characteristics. When these 1959 items were cross-tabulated with the corresponding 1950 or 1956 items for same units or with rent and value of previous units for recent movers, the NA's were retained to avoid unrealistic comparison of a reported amount with an imputed amount on a unit-by-unit basis.

The edits for the 1950 and 1956 characteristics of dwelling units classified as "same" were, in general, similar to the edits for the 1959 items. NA's for items on condition, number of rooms, number of units in structure, year built, and plumbing were edited by using the entries in the corresponding 1959 items. The blanks in the remaining items were edited by using data in related items. The NA's were retained for items on value, contract rent, and gross rent.

The data on 1950 characteristics transcribed to the H-116a transcription form and those on 1956 characteristics transcribed to the H-116 transcription form for units which were changed or lost to the 1950 or 1956 inventory were edited in the same manner as the 1950 or 1956 characteristics on the H-8 Characteristics Schedule, except that responses for certain NA's that could not be ascertained from related items were allocated from entries in the preceding unit.

Recode of Characteristics

Substantially more programing would have been required to produce final publication tables on characteristics from the high-speed printers like the 1960 census tabulations. Therefore, a special tabulation program which had been prepared for the Univac I computer for the 1956 National Housing Inventory was used. This program required that the data in each item be recoded in the computer by categories according to tabulation specifications. Restrictions for certain items were included in the recode program. For example, the entry on value of a dwelling unit was recoded into one of the predetermined categories only if the unit was owner-occupied, nonfarm, not a trailer, and was a one-unit structure on a one-unit property with no business on the property.

Preparing Final Tables for Reproduction

After the data had been tabulated, they were posted to work sheets and the percents and medians were computed. All the work was completely verified. Certain 1950 and 1956 historical data were also posted to the work sheets.

The tables were given a preliminary internal consistency check by the clerks, then were reviewed for subject matter by housing-subject specialists. Sampling specialists prepared the variance tables for the publications and reviewed the summary findings.

The tables, text, and variances were then typed; the tables were typed on preprinted table formats. After the typing, the tables were verified. The publication report was then assembled and sent to the printer.

PUBLICATION PROGRAM

Prior to detailed reports, press releases were issued containing the counts of the 1950-59 components of change with a brief analysis of their relation to the 1950 and 1959 housing inventory. The initial press release was issued in September 1961 for the Washington, D.C.-Md.-Va. SMSA. The last release, for the United States, was issued in March 1962.

The final results of the Components of Change Survey were issued as a series of reports which together constitute volume IV of the 1960 Census of Housing. In addition to the tables, each report contained a text including definitions and a summary of findings on the subject content, as well as a statement on sample design and sampling variability, and a map showing the boundaries of the area covered in the report.

The first SMSA report for the series comprising volume IV of the 1960 Census of Housing, Components of Inventory Change, Part 1A, 1950-1959 Components, was published in December 1961. The last report of part 1A, for the United States and regions, was published in October 1962. Part 1A presents statistics on the counts and characteristics of the components of change in the housing inventory, 1950 to 1959, for the United States, by regions, and for the 17 SMSA's. Counts describing the source of the 1959 inventory as well as the disposition of the 1950 inventory are presented--i.e., new construction, conversions, and other additions, and mergers, demolitions, and other losses, and units that were the same in 1950 and 1959. Characteristics of the individual components, such as occupancy, structural and financial characteristics, and condition and plumbing facilities, are included. Additional selected household characteristics are shown for the total 1959 inventory and for new-construction units. The boundaries of the areas covered in the series were defined as of 1959 (see individual reports for detailed description of each area).

Volume IV, Components of Inventory Change, Part 1B, Inventory Characteristics, presents statistics on the current and previous residences of recent movers (households that moved in 1958 and 1959), additional characteristics of units in new construction and "same" units for 1950-59, and characteristics of available vacant units. Reports were issued for the United States by regions and for the 17 SMSA's. The 18 reports were published from May to November 1962.

Volume IV, Components of Inventory Change, Part 2, 1957-1959 Components, presents statistics, similar to those presented in part 1A, on the counts and characteristics of changes in the housing inventory after the December 1956 National Housing Inventory. Reports

were issued for the United States by regions and for the nine metropolitan areas for which separate statistics were provided in the 1956 National Housing Inventory. The geographic boundaries of the areas presented in this series are the same as those used in the 1956 National Housing Inventory. The first report in this series appeared in December 1962 and the last in June 1963.

During the processing of the Components of Change Survey data for publication, more data were tabulated than it was possible to include in the final reports. These unpublished data are available to users on a reimbursable basis upon arrangement with the chief of the Housing Division. In general, they include additional tabulations relating to the total inventory, new construction, and recent movers.

Chapter 3. Residential Finance Survey

The Residential Finance Survey was conducted as a mail survey from late 1959 through the spring of 1960. The basic unit for the survey was the property. Questionnaires were mailed to a sample of property owners and to lenders who held mortgages on those properties. The sample was selected to represent a cross section of all nonfarm residential properties in the country. The principal objectives of the survey were: (1) to provide information on (a) the current mortgage status of nonfarm residential properties, (b) how these properties were acquired, (c) the number and amount of mortgages outstanding on these properties, (d) the characteristics of this indebtedness with respect to interest rates, terms of loans, Federal insurance or guaranty, extent of junior mortgages, and types of lenders; and (2) to relate the characteristics of the mortgages to the characteristics of the properties and, in the case of owner-occupied properties, to the characteristics of the occupants.

As early as 1890, the Bureau (then the Census Division of the Department of Interior) collected detailed statistics on real estate mortgages. In 1920, a special mail survey was made on financing of nonfarm owner-occupied homes.

In the 1940 Census of Housing, information was obtained on a limited number of mortgage finance items as part of the regular enumeration, but only for owner-occupied 1- to 4-family homes containing no business.

In 1950, a separate sample survey on residential financing, very similar to the 1960 survey, was conducted by mail after the basic population and housing enumeration had been completed.

In 1956, as part of the National Housing Inventory, a sample survey was made of owner-occupied properties having from 1 to 4 dwelling units, to obtain information on mortgage status and on the characteristics of the mortgages, properties, and owners.

The 1959-60 Residential Finance Survey provided data on the financing of residential properties which was not covered in the 1960 Census of Housing. Information on certain of the property and structural characteristics collected in the Residential Finance Survey were also collected in the 1960 census, and the definitions were generally the same. However, there were several differences:

1. The basic unit of tabulation in the Residential Finance Survey was the "property" and not the "housing unit" used in the 1960 census or the "dwelling unit" used in the 1959 Components of Change Survey.
2. The Residential Finance Survey was restricted to nonfarm, privately-owned properties whereas in the 1960 census publicly-owned properties were included and only the data on value and rent were restricted to nonfarm properties.
3. The Residential Finance Survey was based on a subsample of dwelling units from a sample of land-area segments--the dwelling units enumerated in the Components of Change Survey to provide data on the 1959 characteristics of the components--supplemented by a sample of large rental properties. Data

for the 1960 census were based on 100-percent coverage of all housing units for some items and on a systematic sample of housing.

4. The boundaries used in the Residential Finance Survey were as of June 8, 1959. In most cases these were the same as the boundaries used in the April 1960 census.

PLANNING THE SURVEY

Consultation

In the summer of 1957, the Bureau conducted an informal survey among lenders, research personnel, educators, representatives of Government agencies, members of the Housing Advisory Committee, and members of the Bureau of the Budget's Committee on Residential Finance for the 1960 Census of Housing, to obtain information on the uses of the residential finance data provided in the past and to elicit suggestions concerning the relative importance of the several aspects of the subject. The general conclusions reached were the following:

1. The users of the 1950 census data on residential finance found them to be useful and important.
2. The varied interests of the users and the diverse ways in which the data were employed suggested that the 1960 census program should include collection of data from all participants in the mortgage-financing processes, lenders as well as owners, and owners of rental properties as well as homeowners.
3. Owner-occupied 1-dwelling-unit properties should be given priority in detailed cross-tabulations.
4. Data on selected SMSA's should have high priority but no attempt should be made to supply data on areas smaller than SMSA's.

To receive the benefit of advice from mortgage-finance experts outside the Bureau, a Residential Finance Technical Advisory Committee was established in 1958. An effort was made to include individuals who could contribute to the solution of the many technical problems associated with the program. Each committee member was requested to serve in the capacity of an individual expert rather than as a representative of the organization for which he worked. Some of the members had served in a similar capacity in connection with the 1950 Residential Finance Survey. (See appendix C for a list of the members and dates of meetings.)

In addition to attending the committee meetings, the members gave advice in informal conferences with the Bureau of the Census staff members and in answer to inquiries by mail. Some committee members gave generously of their time by contacting lenders concerning the availability of information and the willingness of lenders to supply certain types of information to the Bureau.

In the course of conferences with users, several gaps in existing knowledge of mortgage markets and home financing were discovered. A list of the items needed to help fill these gaps, together with items for which data

were collected in 1950, were placed on a ballot and submitted to members of the Residential Finance Technical Advisory Committee in the fall of 1958 with the request that they indicate the priority of each item. This helped to determine which items should be omitted and which subject areas required additional information. Two subject areas became the basis of pretests--secondary mortgage market activity (i.e., purchase and sale of mortgages by financial institutions) and costs of maintenance and repairs for homeowners.

Advice was also sought from housing and mortgage-finance specialists in other Government agencies who were in a position to evaluate the relative value of alternate proposals from the point of view of their agencies.

Determination of Scope and Coverage

Type of property included.--Although most Technical Advisory Committee members and other users agreed that priority should be given to single-family homeowner properties, it was decided that rental properties should also be included in the survey. It was the consensus that rental housing construction was likely to increase significantly in the future and that there was need for more information on the characteristics of the predominating conventional loans.

Items of information collected.--Because changes had occurred in housing and mortgage markets after 1950, some 1950 items were dropped from the program and some new items were added. Among the 1950 items dropped from the 1960 survey were those on reasons for refinancing, relationship of owner to the head of the household, and occupation of owner. Because mortgage payments generally were paid monthly, it was decided not to publish data relating to frequency of payments, but, because this information was needed to compute mortgage payments, it was retained on the questionnaires.

During the planning stage for the 1960 survey, most users agreed on the importance of collecting data on the prices paid for mortgages transferred from the original holders to lenders during recent years. Because concern was expressed concerning the willingness of lenders to report these data, Technical Advisory Committee members and Bureau personnel interviewed lenders in some principal cities including New York, Washington, Chicago, Philadelphia, and San Francisco. There was general agreement among those conducting the interviews that lenders would be willing to supply the data. These items were included in the 1960 residential finance questionnaires with the understanding that the resulting tabulations would be of an experimental nature and that they would not be included in the final publication.

Another group of new items recommended for inclusion in 1960 by many users was concerned with owners' expenditures for maintenance, repair, and property improvement, since these items together with data on mortgage payments, taxes, and insurance would provide the complete picture on expenses of property ownership. The feasibility of collecting data on these items in a mail survey was tested in the Washington Pilot Study and the Philadelphia pretests described below. On the basis of the tests, it was decided that reasonable expenditure data could be collected in this type of survey but that the required additional testing and refining of concepts and wording of the questions could not be accomplished in the time prior to the date when the Residential Finance Survey schedules would have to be in final form. Moreover, more time would be needed to determine whether a mail survey would be the most desirable method of securing this type of data. (The Bureau subsequently undertook an extensive study of the problems, and initiated a quarterly Survey of Residential Alterations

and Repairs, using the personal interview technique for homeowners and a mail survey for owners of rental properties.)

Pretests

Washington Pilot Study.--The first field test of the residential finance schedule was held during March 1959. This pilot study was designed to explore three aspects of the coming Residential Finance Survey: (1) the overall schedule design, i.e., the wording of questions, arrangement, etc.; (2) the effectiveness of a telephone followup in comparison with a mail followup; and (3) the feasibility of obtaining data regarding expenditures for maintenance and repair.

The sample included approximately 400 dwelling units in southeast Washington, D.C., and nearby Maryland. In order to validate the information received on expenditures for maintenance and repairs, the sample was drawn from the three sources: (1) local hardware and lumber dealers, electricians, and plumbers, who were asked to supply names and addresses of homeowners who had made substantial purchases during the preceding year, and the date, amount, and nature of the purchases; (2) a list, provided the Bureau of the Census by the Federal Housing Administration, of owners who had recently received loans for improvement of their residences; and (3) a small area sample which supplemented the other two parts of the sample.

The schedules were mailed March 5, 1959. Five days later, one-half of those owners who had not responded were called by telephone and asked to return the questionnaire and the other half received a followup letter.

A total of 232 completed schedules were eventually returned by the respondents. There was no significant difference in the response rate between those respondents who were contacted by telephone and those who had received a followup letter only.

Fifty-one of the respondents who returned questionnaires were selected for reinterview by members of the Bureau staff and by Federal Housing Administration personnel sworn in as census agents. The primary purpose of the reinterview was to probe further into questions of expenditures to determine (1) the accuracy of the mailed report, (2) how well respondents remembered expenditures, and (3) whether or not the respondent had consulted records in answering the original questionnaire. The reinterview program was also used to determine whether or not the respondent had any difficulty in completing the original questionnaire.

The amounts spent for maintenance and repairs as initially reported by each of the 51 respondents who were reinterviewed were compared with revised figures based on data obtained from the interviews and from Federal Housing Administration records and the dealers. The aggregate amounts were virtually the same, although there was some variation among the three types of cases by source--dealer, Federal Housing Administration, or area sample.

Philadelphia pretest.--A pretest of the Residential Finance Survey was held during June and July 1959 in Philadelphia, Pa. It was designed to accomplish the same purposes as the Washington Pilot Study and, in addition, to determine the following: (1) The effectiveness of the proposed field office procedures, including the control system and the procedures developed to determine whether a rental property in the area sample had been included in the universe of large rental properties; (2) whether the homeowner questionnaire (i.e., the questionnaire for owner-occupied properties with 1 to 4 dwelling

units) should be given to the respondent by the Components of Change Survey interviewer at the conclusion of the personal interview or mailed to the owner at a later date; and (3) whether transcription of all the information on property and owner characteristics collected on the Components of Change Survey H-8 Characteristics Schedules and used in the residential finance tabulation should be done in the field offices or at a later stage in the processing.

The sample of 1,100 addresses which had been obtained for the Components of Change Survey yielded a subsample of approximately 330 dwelling units for the study of characteristics of the properties involved in change. This subsample, in turn, became the basis of the Residential Finance Survey sample of approximately 180 owner-occupied properties and 130 renter-occupied properties. The properties in the pretest were located in 125 land-area segments, 100 of which were in the city of Philadelphia and the rest in the surrounding counties of Bucks, Montgomery, and Delaware.

Response was eventually received for about 90 percent of the homeowner properties in the sample. About 37 percent responded almost immediately without any followup. A comparison of the response rates of owners who received telephone calls as the first followup and the response rates of those who received letters revealed that telephone reminder calls and letters were about equally effective. Since letters are less expensive, it was decided to use the mail followup approach in the Residential Finance Survey to secure the questionnaires, and to use telephone contacts only to correct questionnaires having blanks or inconsistencies.

In Philadelphia, as in Washington, some respondents were reinterviewed to check the accuracy of the amounts they reported spending for home repairs and upkeep. The total of such expenditures as first reported was approximately 4 percent greater than that reported in the reinterviews. Individual items showed much greater variation.

The questionnaires returned by lenders revealed a willingness to supply data on secondary market transactions relating to the price paid for mortgages and the type of lender from whom purchased as well as the other items.

The procedure worked smoothly, for the most part, but some problems were uncovered. It was obvious that the field office procedure was so complex that high-quality supervision would be required. Because the SCARF supervisor would probably be able to devote only a small fraction of his time to supervision of the residential finance portion of the program, it was decided that there should be a residential-finance chief clerk trained in all the necessary details of the operating procedure. The pretest also indicated that the quality of the enumeration of the Components of Change Survey greatly affected the efficiency of the Residential Finance Survey operation, because if the address and tenure information were not accurate, it was difficult to assure that the proper questionnaire (i.e., Homeowner Questionnaire or Rental Property Questionnaire) was mailed to an owner. It was decided that this point should be stressed in the Components of Change Survey enumerator training. Experience in Philadelphia with cooperatively-owned properties also indicated that it was necessary to develop a procedure for identifying these properties.

As a result of the pretest, the procedure was revised as follows: (1) All questionnaires including the homeowner questionnaires were to be mailed, and (2) field office transcription of information on property and owner characteristics from the Components of Change Survey

H-8 Characteristics Schedule to the Residential Finance Survey records was to be limited to the minimum of items required for record control purposes and to insure proper collation of the H-8 Characteristics Schedules with the Residential Finance Survey records in the later operations.

General Survey Plan

Nearly all privately-owned, nontransient, nonfarm-residential properties were included in the scope of the Residential Finance Survey. Data were collected on both mortgaged and nonmortgaged properties. The sample size was sufficient to publish separate data on homeowner properties and on rental and vacant properties for the United States, and on homeowner properties for geographic regions and each of the 17 metropolitan areas.

The data were collected primarily by mail. Personal interviews were limited to respondents reluctant to submit a mailed form or those who had submitted a form containing inconsistencies or blanks and who had not supplied the correct information when contacted by letter or telephone.

The mailing list of owners was derived from two sources: (1) the area sample of properties, containing approximately 75,000 dwelling units, which had been selected for the Components of Change Survey subsample for data on characteristics; and (2) a sample of large rental properties which was selected from a list of all known apartment houses and rental developments containing 50 or more units. One out of every four properties having 50 to 74 units was selected for the sample, and one out of every two having 75 to 99 units, and all properties having 100 or more units except in the New York-Northeastern New Jersey standard consolidated area where, because of the large number of such properties in this area, only one of every two properties with 100 to 149 units, and all properties with 150 or more units, were selected.

The mailing list of lenders was derived from the owners' answers to the questions asking for the names and addresses of the persons or institutions to whom mortgage payments were paid.

The field office preparatory work for the Residential Finance Survey started early in November 1959, about one month after the start of the Components of Change Survey. The field office staff initiated Residential Finance Survey control cards by transcribing selected items from the Components of Change Survey schedules for dwelling units in the characteristics subsample. The H-10 Homeowner Questionnaires and H-11 Rental Property Questionnaires were prepared by entering property identification and owner's address information from the control cards. The questionnaires were mailed to the owners in late December 1959. Followup letters and enumerators were directed to respondents who failed to submit completed questionnaires. The control cards and questionnaires for the owners of large rental properties, on the other hand, were prepared in the central processing office in Jeffersonville and the questionnaires were mailed to respondents in mid-November 1959.

Each questionnaire returned by an owner was reviewed for completeness. If the property was reported as mortgaged, a Lender Questionnaire was prepared. The questionnaires to lenders were mailed during the months of January, February, and March of 1960. Each questionnaire returned by a lender was checked for completeness.

PREPARATORY WORK

General

By August 1959, the decisions on the general survey plan and the items to be collected had been made. It was then necessary to (1) decide on the final format for the questionnaires, (2) design the various field office control forms and the progress report form, (3) compose the form letters to be used to contact respondents who failed to return the questionnaires or who submitted incomplete questionnaires, (4) prepare a field office procedures manual, (5) prepare a technical guide, and (6) prepare the materials to be used for training the residential-finance chief clerks. All of this material was prepared, printed, and shipped to the field offices before November 1, 1959, when the data collection began.

Preparations for Collecting Data on Large Rental Properties

A sampling universe of large rental properties (i.e., those with 50 or more dwelling units) was prepared, principally from the following sources:

1. Large rental properties included in the 1950 survey of residential financing. This group provided for the new list those properties which were in the inventory at the time of the 1950 survey
2. A listing of new construction made in connection with the 1956 National Housing Inventory. This listing provided the large rental properties added to the inventory during 1950-56
3. A listing of new construction made in 1959 in connection with the Components of Change Survey. This listing provided the large rental properties added to the inventory during 1956-59
4. Listings of rental and cooperative properties involved in the mortgage insurance programs of the Federal Housing Administration. These Federal Housing Administration listings were used to supplement the other listings and to improve identification of properties included in the other listings.

The property name, address, and number of dwelling units were entered on a card for each property in the sampling universe, that is, for known large rental properties. This set of cards was called the "skip list" because if it contained a card for a rental property also picked up in the area sample, that property was to be "skipped"; i.e., excluded from the area sample. This operation was to be performed in the field offices and each field office was supplied with a copy of the skip list for the large rental properties in its territory.

The universe of large rental properties was divided into three strata by size of property, and a sample of

large rental properties to be enumerated in the Residential Finance Survey was selected from each stratum. A control card and a Rental Property Questionnaire containing the property address information from the skip-list card were prepared for each sample large rental property. The questionnaires were mailed from Washington. Control cards were supplied to each SCARF office for the sample large rental properties in its territory, for controlling the receipt and followup of the questionnaires. An "owner-seeker" letter, in an envelope and ready for mailing, was also supplied to the field offices for each property in the large-rental-property sample. This letter was to be used to locate the owners in cases where the questionnaires had presumably been delivered to the property but had not been returned to the SCARF office by November 25, 1959.

Field Organization

Each of the 22 SCARF offices had a Residential Finance Section. Each of the 17 group A and B offices in the table below had a residential-finance chief clerk, a control clerk who maintained the control records, and from 1 to 3 editors and other clerks assigned to the Residential Finance Survey. Of these 17 offices, 12 (group A) were in Regional Office cities and the other 5 (group B) were in SCARF SMSA's where there was no Census Regional Office. The remaining 5 of the SCARF offices were located in Census Regional Offices (group C) and were the offices which covered only the national sample outside the 17 selected SMSA's; these offices had a relatively light workload, and the functions of the residential-finance chief clerk and the control clerk were performed by one person.

The workload varied from about 1,000 to 2,000 properties for each of the five offices in Regional Office cities which collected only national-sample data and from about 4,000 to 7,000 for each SMSA office except in New York City where the SCARF office had a workload of about 10,000 properties--roughly 10 times that of the smallest office.

The five offices not in regional office cities were closed at the end of 1959.

All Residential Finance Survey personnel served in temporary appointments and all were required to pass the appropriate aptitude tests.

The Residential Finance Survey enumerators were recruited from the Components of Change Survey enumerators. Many were experienced census enumerators who worked for continuing Bureau of the Census programs such as the Current Population Survey. The enumerators were used only for final followup in cases of nonresponse to the mailed questionnaires and followup letters.

RESIDENTIAL FINANCE FIELD OFFICE PERSONNEL

Personnel	Number of persons			Approximate number of months worked on Residential Finance Survey	
	Type of office			Type of office	
	A	B	C	A&C	B
SCARF supervisor (approximately 10 percent of whose time was devoted to the Residential Finance Survey), GS-9..	1	1	1	5	2
Residential-finance chief clerk, GS-5.....	1	1	-	5	-
Residential-finance control clerk, GS-3.....	1	1	1	5	2
Editors and other clerks, GS-3.....	3	3	1	5	2

The beginning salary for enumerators was \$1.69 an hour. The average for experienced enumerators was \$1.82.

Training Program

The residential-finance chief clerks were trained between October 29 and November 5, 1959, at three sites-- Washington, Kansas City, Mo., and Denver. The training sessions lasted 2 days and included background information on the uses of the data, detailed instructions for the main field office operations, and explanations of the uses of the operations manual and the technical guide for the survey. Among the materials used in training the residential-finance chief clerks were a training guide; a filmstrip covering the purposes of the survey and definitions of terms used on the questionnaires or likely to be encountered by the enumerators; slides covering the basic steps in the control, preparation, mailout, editing, and reporting procedures; and the operations manual and the technical guide.

The chief clerks in turn trained the editors and clerks.

The residential-finance followup enumerators were trained between January 25 and 29, 1960, in each of the 17 Regional Offices. The training was conducted by personnel from Washington headquarters of the Bureau. The following materials were prepared for the training of the Residential Finance Survey enumerators: a training guide (to be followed by all the trainers, to insure uniformity of instructions), mock interviews, practice exercises, the Residential Finance Enumerator's Reference Manual, and the same filmstrip that had been used in training the residential-finance chief clerks.

Two manuals were prepared for the use of the office personnel, and a third was prepared for the followup enumerators.

The Residential Finance Operations Manual provided detailed instructions on the procedures to be followed in the field office in securing completed questionnaires from owners and lenders and in editing the questionnaires. The steps are summarized in chart 2. The manual also contained special instructions pertaining to the match of rental properties in the area sample with large rental properties on the skip list, and the preparation of progress reports.

The Residential Finance Technical Guide was prepared for reference use by the SCARF supervisor, the residential-finance chief clerk, and other office personnel. It provided general background information concerning the purposes of the survey and the sample design and answers to questions of a technical nature expected to arise in connection with cases of unusual financial arrangements. The purpose and intent of each question on the owner and lender questionnaires was discussed in the Guide. Instructions for clarifying the intent of the question to the respondent and for handling problem situations were also included. There was a glossary which gave the meaning of some of the specialized mortgage and financial terms adopted for the residential finance program.

The Residential Finance Enumerator's Manual contained essentially the same material as the Residential Finance Technical Guide. It was written, however, from the viewpoint of the enumerator and contained an additional chapter on special interview requirements for the Residential Finance Survey.

Public Information Program

Press releases were prepared for distribution by the SCARF offices to local newspapers and radio stations

just before the Residential Finance Survey field work was begun. These releases indicated the types of information to be collected, and pointed out that reports were required by law and would be used for statistical purposes only.

COLLECTING THE DATA

Enumeration Forms

Three different questionnaires¹ were used to obtain the information in the 1960 Residential Finance Survey:

1. Homeowner Questionnaire, Form H-10.-- Mailed to owners of properties with 1 to 4 dwelling units one of which was owner-occupied
2. Rental Property Questionnaire, Form H-11.-- Mailed to owners of all other residential properties
3. Lender Questionnaire, Form H-12.-- Mailed to firm or person to whom mortgage payments were made, as reported on the H-10 and H-11 questionnaires

Enumeration Procedures

The first step in the office procedure was the preparation of a residential-finance control card for each dwelling unit in the Components of Change Survey characteristics subsample. The name and address of the owner of the dwelling unit, together with other information about the unit, were transcribed to the control card from the Components of Change H-8 Characteristics Schedule. The address of the property and the owner's name and address were then transcribed from the control card to the appropriate Residential Finance Survey questionnaire--the H-10 Homeowner Questionnaire if the property was owner-occupied, or the H-11 Rental Property Questionnaire if it was rented or vacant. If there was more than one control card, i.e., dwelling unit, for a property, only one questionnaire was prepared and mailed to the owner.

The Homeowner Questionnaires and the Rental Property Questionnaires for properties in the characteristics subsample were mailed to the owners from the SCARF field offices during December 1959. The Rental Property Questionnaires in the supplemental sample of large rental properties were mailed to owners earlier, during November 1959, from Washington.

Questionnaires returned to the field offices by the respondents were reviewed for completeness. Missing information was collected by phone or mail. If the returned questionnaire from the owner showed that the property was mortgaged, the name and address of the mortgage lender reported by the owner was transcribed to a Lender Questionnaire. The field offices mailed the Lender Questionnaires during the months of January, February, and March of 1960.

Owners who failed to return their completed questionnaires within a 10-day period were sent a mail reminder and, if that did not secure a response within a week, a second and stronger followup letter was sent.

Owners who failed to respond to the second followup letter was visited by enumerators. At the conclusion of the enumerator training session, each enumerator received the questionnaires to be followed up for his assignment. The questionnaires were identified as to

¹The questionnaires are reproduced in a separate publication of the Bureau, Survey of Components of Change and Residential Finance of the United States Census of Housing, 1960: Principal Data-Collection Forms and Procedures, Washington, D.C., U.S. Government Printing Office, 1962, 39 pp.

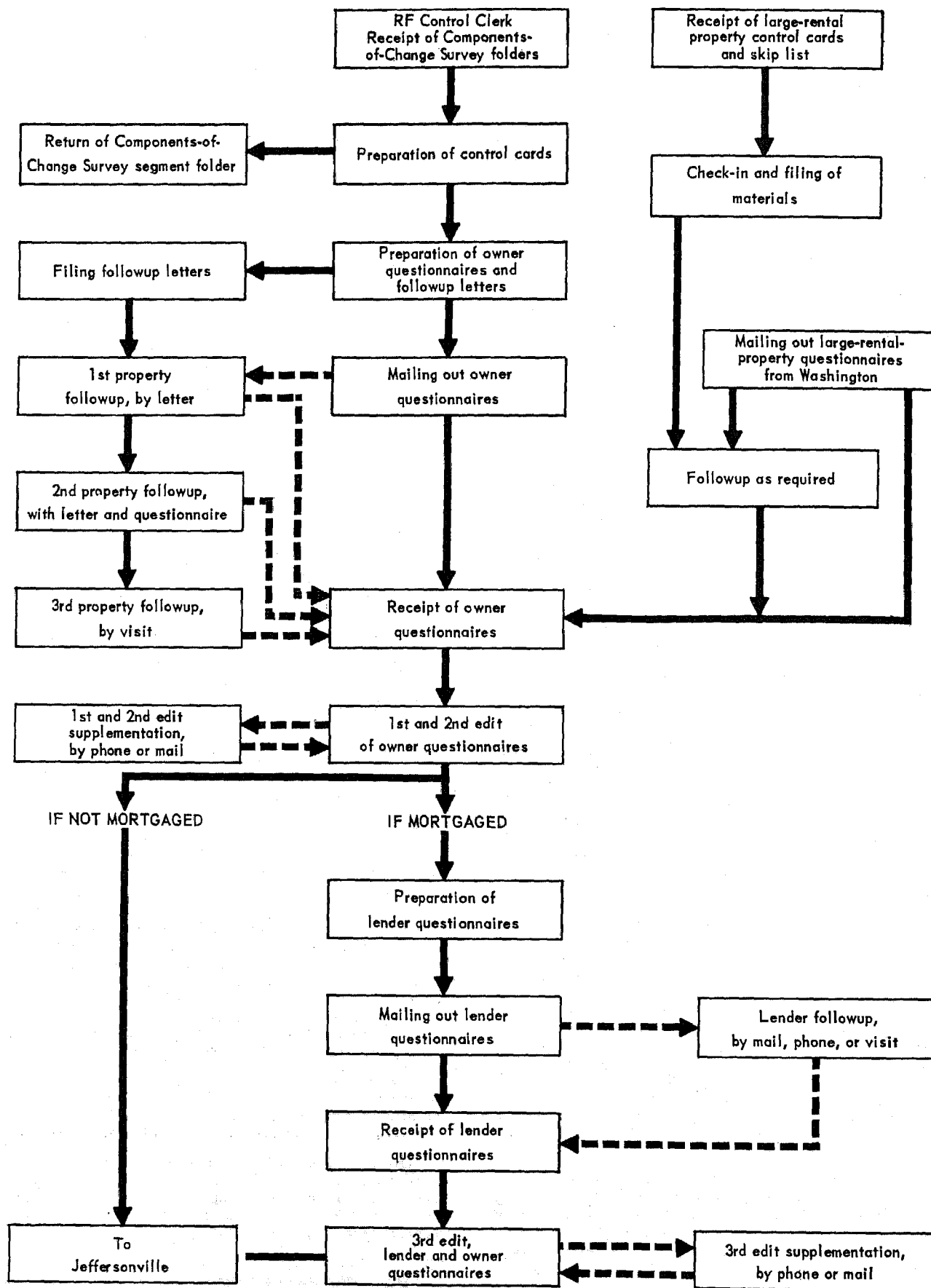


Chart 2.-Flow Chart of Residential Finance (RF) Work in SCARF Field Offices.

owner's address, property address, and control number. An enumerator was expected to complete approximately eight followup interviews per day.

For lenders, the followup procedure varied. Non-respondent lenders who were private individuals received the same followup treatment as owners--two letters and a visit by an enumerator if necessary. The procedure for nonrespondent institutional lenders--banks, insurance companies, mortgage companies, etc.--depended upon the number of questionnaires they were required to fill. Institutional lenders with several questionnaires pending received phone calls asking for their cooperation in returning the questionnaires promptly and explaining the importance and legal authority for the Residential Finance Survey. Occasionally, visits were made to lenders in an effort to aid them in completing the questionnaires.

For a relatively small number of lenders and owners of large rental properties who failed to respond after the regular followup procedure, it was necessary to use an additional strongly worded letter indicating that their cases would be referred to Washington headquarters for further action if the completed questionnaires were not returned within a stipulated period of time.

Completed questionnaires were sent from the field offices to the Bureau's Census Operations Office, in Jeffersonville, Ind.

Control Cards

There was a control card for each property and for each mortgage lender in the survey. The property control cards were used to record the completion of the various steps of the data collection and editing. The name and address of the owner or agent, the address of the property, and the identification number of the property in the Components of Change Survey were entered on the control card, and, in the case of homeowner control cards, some of the data which had been collected by the Components of Change Survey enumerator on the owner and dwelling-unit characteristics. These data on characteristics were for use to facilitate matching the Residential Finance Survey case with its corresponding H-8 Characteristics Schedule if there was an error in the transcription of the identification control number.

The lender control card provided for listing all the control numbers for questionnaires sent to that lender. Dates of mailing and followup were recorded.

Progress Reports

A weekly progress report form was used by the SCARF field offices for the Washington office. Information was provided on progress of the enumeration, requirements for personal followup, and the status of the editing. The weekly progress report made it possible to spot bottlenecks and to plan for the later operations.

Timing of the Data Collection

Preparation of the Residential Finance Survey control cards and questionnaires in the field offices started early in November 1959, immediately after training of the residential-finance chief clerks. The first mailing of the property questionnaires--the H-10 Homeowner Questionnaires and H-11 Rental Property Questionnaires--was December 28, 1959. The last of the property questionnaires were mailed on March 11, 1960. Followup of nonrespondent owners of these properties ceased on or about March 25, 1960. Mailing of the H-12 Lender Questionnaires and followup of lenders were continued

through the first days of April by a greatly reduced field office staff.

Personal followup required in connection with non-response cases in the "SMSA restoration" (described below) and the cases remaining from the "national sample" and from the sample of large rental properties occurred in June and July. Enumerators were trained by field office supervisors between June 14 and 21. The enumeration for all but a few cases was completed in July. These were cleared up by the end of October 1960.

Thus, the data-collection phase of the Residential Finance Survey extended from November 1959 to November 1960. Data for nearly all "national sample" properties and large rental properties in all areas but Chicago and New York were collected and ready for central office processing by April 1 and those for nearly all "SMSA restoration" cases were ready for processing by early July 1960.

SMSA Cutback and Restoration

In November 1959, when early cost and progress reports from the field indicated that the funds allocated for the complete SCARF program would not be sufficient, a decision was made to cut back the residential finance sample to the "national sample"; i.e., to those area segments needed to show data for the United States as a whole, the four major geographic regions, and inside SMSA's and outside SMSA's.

However, as a result of numerous requests by users for residential finance data on homeowner properties in the individual SMSA's and of a reexamination of processing costs, it was decided in February 1960 to restore sufficient area segments to the survey to provide these data. By this time some of the SCARF offices had been closed and the timing was such that the field-collection phase could not have been completed before the start of the decennial census. Consequently, the SMSA part of the Residential Finance Survey was conducted from the central processing office in Jeffersonville.

In late April 1960, the Census Operations Office in Jeffersonville mailed 25,000 H-10 Homeowner Questionnaires to owner-occupants of 1-to-4-dwelling-unit properties in the 17 SMSA's. The Lender Questionnaires for mortgages reported on these properties were mailed in June and July of that year.

The procedures followed in Jeffersonville in connection with this supplemental program were identical to those used in the field offices except that the telephone was not used for supplementing incomplete schedules. When owners failed to respond to the followup letters mailed from Jeffersonville, the cases were referred to the Regional Census Offices for personal visits by enumerators.

Approximately 2,400 nonresponse cases and 1,000 incomplete cases were sent to the field. A few cases from the "national sample" which had been missed originally or had turned up as a result of a Components of Change Survey final closeout were also enumerated at this time.

All owner and lender questionnaires in the field offices for enumeration were completed by October 28, 1960. This ended the field enumeration phase of the area sample cases.

Data Collection for Large Rental Properties

The Rental Property Questionnaires for large rental properties were addressed and mailed from Washington

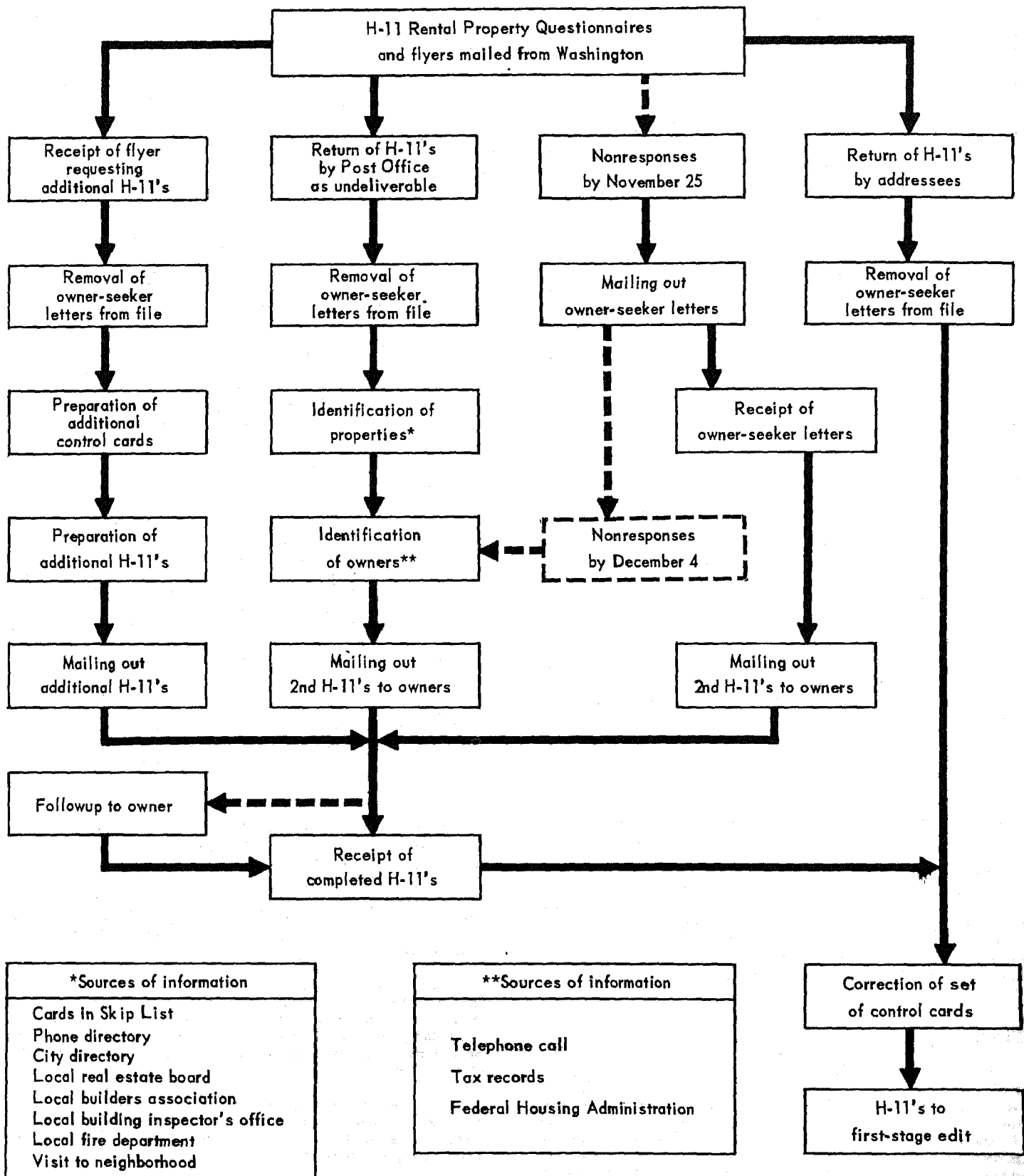


Chart 3.—Flow Chart of Large Rental Property (LRP) Data-Collection Procedure.

on November 16, 1959, together with a statement which explained which properties were not within the scope of the survey (public housing, hotels and motels primarily for transients, and trailer camps and courts), gave instructions regarding duplicate questionnaires, and provided a form to be used by the property owner for requesting additional questionnaires if needed. (The fact that no provision was made for entering the control number on this form created some problems when forms were returned by respondents to request additional schedules or to report that the properties were not in the scope of the survey.) In this mailing, the questionnaires were addressed to managers of the rental properties, since the original sources of the list of large rental properties did not provide owners' names for the properties. A questionnaire for each large rental property was to be returned to the local SCARF office by the owner or agent or by the post office.

The SCARF field offices were supplied with sets of control cards and "owner-seeker" letters for the large rental properties in their territories. Incoming large-rental-property questionnaires were handled in the same manner as the area-sample questionnaires.

The principal tasks for the field offices to do to secure the return of completed Rental Property Questionnaires mailed from Washington for the large rental properties were to--

1. Obtain better addresses when the questionnaires mailed by Washington were returned undelivered to the SCARF office because of insufficient address
2. Obtain the address of property owners or agents, whenever required, through the use of the owner-seeker letter or from the other sources described in the operations manual
3. Mail additional questionnaires when requested by owners. Additional control cards were prepared for these questionnaires
4. Obtain responses from owners or agents to whom questionnaires had been delivered, by the use of prescribed followup procedures
5. Correct and complete the set of control cards by entering addresses and by recording information on duplications and "out-of-scope" properties

The basic steps in the operations for large rental properties are illustrated in chart 3.

The owner-seeker letter was addressed to managers and requested the name and address of the property owner. It was designed as a followup letter for cases where nothing was received in response to the original mailing of the H-11 questionnaires. If the questionnaire sent out originally was returned by the respondent, or was returned by the Post Office as undeliverable because of insufficient address, or if the respondent requested additional questionnaires, the owner-seeker letter that had been prepared for use in case of nonresponse was pulled from the file and destroyed.

To obtain better addresses for managers or owners or agents, when required, the following sources were utilized: Telephone directories, city directories, local real estate boards, local associations of home builders or building contractors, local building inspectors' offices, planning commissions, local tax records, utility company records, local fire departments of fire inspectors' offices, and in New York City, the abstracts of apartment buildings.

Whenever the property address could not be located through reference to any of these sources, personal visits were made to the general location indicated by the available address, to try to locate the property.

When the property was found, the name and address of the owner or agent to whom rents were paid, as well as the exact property address, were obtained from the manager, janitor, or tenants.

Quality Checks

The following steps were taken in the data-collection phase of the survey to improve the quality of the data:

1. The residential-finance chief clerk reviewed the work of the editors and clerks in the period immediately following their training, to determine if they understood the procedures to be used.
2. The editors reviewed the questionnaires returned by the respondents for completeness, and where possible, contacted the respondent to resolve inconsistent entries and obtain missing information.
3. During the field operation, Washington staff members visited the various field offices to observe the operations and to provide guidance on technical problems. They observed and reported on whether or not the residential-finance staff members understood and carried out their assignments properly and whether there were sufficient Residential Finance Survey personnel to meet the deadlines. A large proportion of the problems reviewed by the Washington staff involved identification of large rental properties and their owners and other difficulties in obtaining responses. The editing done in the field offices uncovered other problems referred to the Washington staff. Such cases usually involved a marked difference between the expected and actual number of dwelling units in the property or unusual ownership or mortgage arrangements.

PROCESSING THE DATA

General

The conversion of information from respondents into finished tables involved a series of clerical processing steps and mechanical operations which extended from the time the first questionnaires arrived in the central processing office in Jeffersonville, Ind., until the fall of 1962.

The processing of data for homeowner properties and rental and vacant properties (i.e., rental properties having less than 50 units) were conducted simultaneously until it was decided to give priority to the publication of data on homeowner properties. At that time, clerical editing and coding for all the area-sample properties and some of the large rental properties had been completed. Virtually all processing of data for the rental and vacant properties was then halted until all the steps needed to complete the tables on homeowner properties had been finished.

With the exception of the items "amount of loan," "origin of loan," and "year mortgage made or assumed," all data on mortgages and lenders came from the H-12 Lender Questionnaires. The information for the following items was obtained from the H-8 Characteristics Schedules which had been filled by the Components of Change Survey interviewers: Age of head of household, household composition, number of occupants, color of head of household, condition of dwelling unit, and number of rooms. All of the other items were obtained from the owner questionnaires--H-10 Homeowner Questionnaires and H-11 Rental Property Questionnaires.

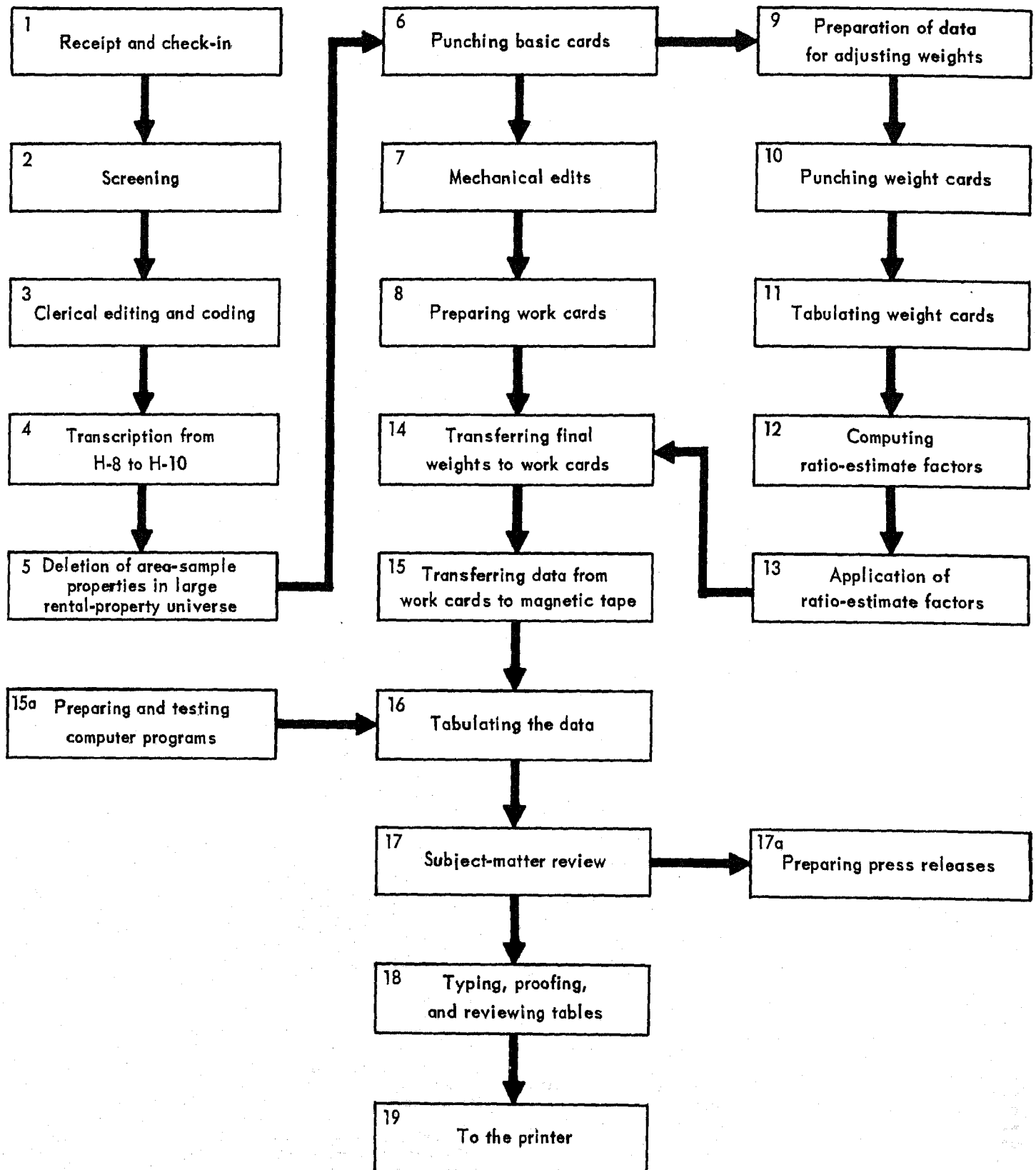


Chart 4.—Flow Chart of Data Processing for Residential Finance Survey.

The Processing Plan

The plan for processing data for the area-sample properties comprised the following parts:

- a. Preparing the questionnaires for editing (steps 1 and 2 in chart 4, "Flow Chart of Data Processing for Residential Finance Survey")
- b. Clerical editing and coding of the data (step 3 in the chart)
- c. Transcribing data on the owner and his property from the H-8 Characteristics Schedules to the H-10 Homeowner Questionnaires (step 4)
- d. Deleting area-sample properties found also in the large-rental-property universe list (step 5)
- e. Punching the data from the Homeowner Questionnaires, Rental Property Questionnaires, and mortgage transcription sheet into basic punchcards (step 6)
- f. Mechanical editing of the basic punchcards (step 7)
- g. Mechanical processing of basic card data to obtain the recodes, ratios, and other computations required for tabulation (step 8)
- h. Preparing a weight card (steps 9 and 10)
- i. Calculating the final weights and punching them into the work cards (steps 11-14)
- j. Transferring the data from the punchcards to computer tape (step 15)
- k. Tabulating the data (step 16)
- l. Preparing the computer printouts for typing for publication (steps 17-19)

Receipt and Check-In

As questionnaires were received from the field offices, they were checked against the control records. As part of the check-in, it was necessary to determine if the property was mortgaged and, if it was, that the required Lender Questionnaires were attached.

Screening

A screening operation was devised to (1) remove all out-of-scope cases, (2) separate large-rental-property cases from the others because they required some additional processing, and (3) set aside some cases having serious problems which had to be resolved before they could go through the regular processing.

Property questionnaires were reviewed to see that the correct questionnaire had been used (i.e., homeowner properties on H-10 forms, rental and vacant properties on H-11 forms). Properties reported on the wrong forms were transferred to the correct ones.

The presence of more than one property control card and questionnaire for a property was evidence that a property was in the sample more than once. (Since the basic sampling unit was the dwelling unit, a property with more than one dwelling unit had more than one chance of being in the sample.) The number of property control cards for each property, i.e., the number of times the property came into the sample, was entered in a code box on the H-10 or H-11 questionnaire(s). This figure was later used as part of the adjustment of the weight.

The amounts of the mortgage payment as reported by the owner and by the lender were compared. If they differed, the case was set aside for investigation, since this was an indication that the two respondents might not have reported for the same mortgage.

Finally, cases which were thought likely to represent sampling problems were set aside during the screening operation.

Clerical Editing and Coding

The primary purpose of the clerical edit was to identify problems, which were then resolved by subject-matter specialists on the basis of all the available information on the questionnaires for the property. For example, an owner might have reported that he assumed the mortgage from the former owner, but failed to report either the amount of the loan or the date of assumption. In this case, the date the property was acquired was used as the date of mortgage assumption; the amount of the mortgage at the time of assumption was obtained by computing the unpaid balance as of that date, using information from the Lender Questionnaire relating to term, interest rate, and the original date the mortgage was made.

The data on both the properties and mortgages were examined for reasonableness, consistency among the items, and completeness.

Coding was done, as necessary, along with the editing. Some items were precoded; others--such as amounts--were punched as entered.

The coding and editing were divided into two parts, for (1) the owner questionnaires (H-10 or H-11), for all properties, and (2) the lender questionnaires (H-12), for mortgaged properties. The number of pages of the lender questionnaire and the fact that there might be more than one per property made punching directly from the questionnaires impractical. All mortgage data, from both the owner and the lender questionnaires, were transcribed (or coded, for items requiring coding) to a "mortgage transcription sheet." This transcription sheet contained separate columns for a first mortgage, a second mortgage, and a third mortgage.

Transferring Data from Components of Change H-8 to Residential Finance H-10 Schedules

The decision to use the same basic sample for both the Residential Finance Survey and the Components of Change Survey meant that certain items of information collected for the Components of Change Survey on the H-8 Characteristics Schedule for the owner, his family, and the dwelling unit could be used for the Residential Finance Survey, thus reducing costs and putting less of a burden on the respondent. The necessary data from the Components of Change Survey H-8 Characteristics Schedules were transcribed to the Residential Finance Survey H-10 Homeowner Questionnaires following a matching procedure.

Match of Large Rental Properties and Area-Sample Properties

The decision to supplement the area sample with a sample of large rental properties made it necessary to check each area-sample rental and vacant property against the universe of large rental properties to eliminate those area-sample properties which had already had the opportunity of being selected in the sample of large rental properties. Every area-sample property with five or more units was matched against the universe of large rental properties, because owners' responses indicated that some properties with less than 50 units were in the list of large rental properties.

Card Punching

The data on characteristics of each property and its owner were put on one basic data punchcard, and the mortgage data for mortgaged properties were put on another basic data punchcard.

If a property had two or more mortgages, a separate basic data punchcard was prepared for each mortgage.

Mechanical Editing

After the information on the schedules had been edited, coded, and punched to a basic card, each card was edited mechanically for blanks, impossible codes, unreasonable amounts, and inconsistent entries. The mechanical edit of the punchcards repeated many of the clerical checks for consistency among the items and included some additional checks for consistency and reasonableness. Rejected cards were first checked for punching errors by reference to the original schedule or the mortgage transcription sheet. If the rejected card did not have punching errors, the coding on the schedule was checked by reference to the same instructions as used in the clerical edit. Rejects which were not the result of punching or coding errors were resolved by subject-matter specialists.

Imputation of Responses for Blanks

Nonresponses to items were handled in three ways during the processing operations. First, part of the intensive clerical editing of each questionnaire received in the central processing office was designed to eliminate nonresponses for as many items as possible on the basis of other information reported for the property or mortgage. For example, "year built" was allocated on the basis of the year the property was acquired and whether the property was acquired new or had been previously occupied. Mortgage items were also handled in this manner; for example, payments for principal and interest were derived on the basis of reported interest rate, term, and amount of mortgage.

Nonresponses to items for which data were transcribed from the H-8 Characteristics Schedule were handled by allocation partly on the basis of other items on the schedule but primarily on the basis of information reported for the preceding unit in the same land segment.

Finally, when related information was not available for imputing the missing item, an amount was arbitrarily assigned for certain property items such as "purchase price." The assigned amounts were then edited for consistency with other amount items.

Preparation of Work Card

Following the completion of the mechanical edits, the information on the owner card and the mortgage card or cards (if any) for each property was transferred in a highly compressed form to one punchcard (the work card), using punchcard equipment. With a few exceptions, only the items to be included in the final publications were on the work cards. All data relating to characteristics of junior mortgages, therefore, were excluded.

In order to reduce the electronic computer programming task, the data on the work cards were in a form ready to tabulate. Wherever necessary, an item was recoded to reduce it to one or two columns, and, to save card space, two basic items were recoded into one column on the work card whenever feasible.

Transferring Weights to Work Cards

The data-processing steps involved in assigning a weight to each case before the data on the work cards could be transferred to tape for tabulating in the electronic computer were the following:

1. A listing of H-10 homeowner property cards and H-11 rental and vacant property work cards was compared with a listing of H-8 Characteristics Schedules from the Components of Change Survey which contained the weight for each dwelling unit after the first-stage estimation procedure. A new card--a weight card--was punched, containing this weight, certain identification items, and location of the property.
2. This first-stage weight, which was for the dwelling unit, was adjusted if the property contained more than one dwelling unit, to reflect the property's additional chances of being in the sample.
3. The weight was then adjusted by the factor produced by the ratio-estimation process which compared the raw-weighted counts with related figures from the 1960 Census of Housing.

The final weight, and also the location of property information which came from the H-8 listing, were transferred to the work card, which was now ready for the computer.

Tabulating the Data

The tabulation program was divided into two parts-- (1) homeowner properties, and (2) rental and vacant properties--and was reduced to five major tables. (See Chapter 9, The Publication Program.) Some additional tabulations which had been scheduled for publication were to be prepared if funds and time permitted.

The tabulations for the homeowner properties were prepared for each of the 17 selected metropolitan areas, the 4 major geographic regions of the United States, inside all SMSA's, and the United States. The tabulations for rental and vacant properties were limited to U.S. totals.

The data on the punchcards (i.e., work cards) were transferred to magnetic tapes, tabulated on the electronic computer, and the results printed on the high-speed printer. The printouts were then ready for the final work to prepare the statistical tables.

Preparation of Tables

To save programming resources (in short supply at the time), the residential-finance, homeowner tables were programmed for the electronic computers without identification of the columns or stubs, without subtotal and total columns, and without the medians for these columns. In lieu of posting the data, the printouts were pasted to preprinted forms containing the stubs and column headings. For homeowner property tabulations, clerks then computed the necessary subtotals, line totals, columnar totals, and medians. For rental and vacant property tabulations, the computer program yielded all the required totals.

The tables were then reviewed by subject specialists, and any necessary corrections made. The tables were typed, then a machine check of all columns was made to detect any errors. When any errors found had been corrected, the tables were sent to the printer along with previously prepared text.

Quality Control

To hold clerical, processing, and punching errors to a minimum, 100-percent independent verification was used for all manual operations in the data processing. Quality-control records were maintained and clerks who demonstrated unacceptable quality of performance received additional training or were assigned to other tasks.

PUBLICATION PROGRAM

The publication program was based on the following decisions made in the light of the priority of needs expressed by the users:

1. The publication was to consist of two parts-- one for homeowner properties and the other for rental and vacant properties. The part on homeowner properties was to be published first.

2. Separate sets of tables on homeowner properties were to be presented for each of the 17 selected metropolitan-areas, the 4 major geographic regions, the United States as a whole, and all the metropolitan-area part of the United States as a whole. In addition, two tables for the United States as a whole were to be prepared to present data on homes with nonwhite heads of households.

3. The tables on rental and vacant properties were to present only data for the United States as a whole.

4. The issuance of data on homeowner properties was to be expedited by using press releases and accompanying summary tables to be prepared for each area as soon as the posted work tables became available. No separate formal publications were to be issued for the separate areas. (The use of press releases was adopted to eliminate the work and expense and delay in release of data which would have resulted from the preparation of a separate publication for each area.) The homeowner property part of the residential finance volume, therefore, was to include the tables for all areas.

5. For both parts of the publication--the one on homeowner properties and the one on rental and vacant properties--the tables were to show (a) the mortgage status of residential properties, (b) whether the first mortgages were insured by Federal Housing Administration or guaranteed by Veterans Administration or were conventional mortgages, in terms of number of properties and amounts of first mortgage and total mortgage debt, and (c) the extent of participation of the various types of mortgage investors--i.e., banks, insurance companies, individuals, etc.--in residential financing. The tables were to present data on the characteristics of the mortgages, properties, and owners in terms of these classifications. In the tables for homeowner properties, the detailed characteristics were to be shown only for the one-unit properties since these constituted the overwhelming majority of the homeowner properties.

The first press release for homeowner properties was issued in December 1961 for the Washington, D.C.-

Md.-Va. SMSA. It contained data on the number of homeowner properties, their mortgage status, the aggregate amounts of outstanding first and total mortgage debt, the number with junior mortgages, and additional information on the characteristics of first mortgages classified by Government insurance status. The release was also used to inform the public about the availability of photocopies of the complete tables from which the press release tables were extracted. Similar releases were prepared for each of the remaining 16 SMSA's and for the United States as a whole, the latter in July 1962.

Volume V of the Census of Housing, Residential Finance, Part 1, Homeowner Properties, was published in February 1963. The tables presented in this report are the following:

Table 1 shows the number of 1-to-4-unit homeowner properties and the number mortgaged and unmortgaged. For 1-unit homeowner properties, data are shown on characteristics of the properties and owners.

Table 2 shows the number of mortgaged 1-to-4-unit and 1-unit homeowner properties by insurance status of first mortgage, i.e., whether insured by Federal Housing Administration, guaranteed by Veterans Administration, or conventional.

Table 3 shows the total and average amount of first mortgage debt outstanding on mortgaged 1-to-4-unit and 1-unit homeowner properties by government insurance status of the first mortgage. For mortgaged 1-unit homeowner properties, the amount of first mortgage outstanding debt is distributed by selected first mortgage characteristics.

Table 4 shows the total and average amount of total mortgage debt outstanding on all mortgages on 1-to-4-unit homeowner properties by insurance status of the first mortgage. Total outstanding debt is distributed by selected mortgage, owner, and property characteristics for mortgaged 1-unit homeowner properties.

Table 5 shows the total number of 1-to-4-unit and 1-unit mortgaged homeowner properties by type of holder of the first mortgage. The data on mortgaged 1-unit homeowner properties are distributed by mortgage, property, and owner characteristics.

Tables 6, 7, and 8, presented only for the United States as a whole, repeat table 5 for properties with mortgages insured by Federal Housing Administration, for those with mortgages guaranteed by Veterans Administration, and for those with conventional mortgages, respectively.

Part 2, Renter and Vacant Properties, is expected to present data, similar to those in part 1, on the financing and characteristics of rental and vacant properties in the United States.

Special runs of the magnetic tape or the punchcards may be made for users on a cost-of-preparation basis by arrangement with the chief of the Housing Division of the Bureau.

Chapter 4. Sample Design, Estimation, and Sampling Variability

SAMPLE DESIGN

The sample design used for SCARF was a stratified multi-stage cluster sample, essentially that used in the 1956 National Housing Inventory, with some modifications to meet the requirements of the 1959 program. Primary Sampling Units (PSU's) were formed from counties or groups of counties, using every county in the United States. One or more counties made up each PSU. For metropolitan areas, the entire 1950 metropolitan area comprised a PSU. Various characteristics of the PSU's were examined, such as rate of growth between 1940 and 1950, major industries, whether or not an SMSA, size of PSU, etc., and the PSU's were classified into 333 groups or strata, with the PSU's in each stratum having similar characteristics. One PSU was selected from each stratum with probability proportionate in size, i.e., 1950 population of the PSU. The resulting first-stage sample comprised 333 sample areas containing 541 counties and independent cities with coverage in each of the 50 States and the District of Columbia.

The next stages of sampling were within each of the 333 sample areas. One of the subuniverses involved the use of 1950 census data and resources. The 1950 census enumeration districts in each of the 333 PSU's were divided into clusters of dwelling units or land-area segments and a sample of these segments was selected. Many of these segments were used in both the 1956 National Housing Inventory and the 1959 SCARF. Segments comprising lists of 1950 census addresses were selected from the 1950 materials for estimating losses of dwelling units in entire structures between 1950 and 1956 in the areas covered in the 1956 National Housing Inventory, and between 1950 and 1959 in areas not included in the 1956 National Housing Inventory.

Prior to the start of the 1956 National Housing Inventory, a survey of new construction had been conducted to compile listings of clusters of new construction containing 25 or more dwelling units built after the 1950 census in the 48 States, and the District of Columbia, then comprising the United States. The specific geographic boundaries of the clusters described on these lists had been delineated on maps by the regular Regional Office interviewers. These clusters then constituted a universe of new construction for the period of 1950 to 1956. A sample of these clusters in each of the 330 PSU's used in 1956 to represent the United States as it was then constituted had been selected with probability proportionate to the size (number of new-construction dwelling units in the cluster). Area segments had been delineated in these new-construction clusters and a sample of these segments selected for the 1956 National Housing Inventory. Most of these segments were used again in 1959.

Prior to the SCARF enumeration, an additional new-construction universe was established in a manner similar to that used for the 1956 National Housing Inventory. This universe covered new construction since 1956 for those counties included in the 1956 survey. For those counties not in the 1956 survey, the new-construction universe included all clusters of 25 or more new

units built since the 1950 Census of Housing. This universe of new construction was sampled in a manner similar to that used for the 1950-56 new-construction universe.

Since the new-construction universes were established without regard to what was in the clusters prior to the new construction, areas included in the new-construction universe could fall in the sample from both the new-construction sample and the sample from the 1950 census records. Therefore, all portions of segments selected from the 1950 materials which were found to be included in the 1950-56 new-construction universe were dropped from the sample for the purposes of the enumeration and their contribution to the estimate was zero. All area segments which had been in the 1956 survey, whether selected from the 1950 materials or the 1950-56 new-construction universe, were compared with the 1956-59 new-construction universe. The segments which were wholly or partially contained in the 1956-59 new-construction universe were handled in various special ways for the different tabulations for the SCARF publications.

The SCARF sample of area segments contained an average of 10 dwelling units each, supplemented by approximately three list-sample addresses in the same ED as the area segment. The area segments in clusters of new construction contained an average of five dwelling units each. Each area segment and list-sample address was enumerated in 1959 for the counts of the components of change in the housing inventory since 1950 and 1956. Estimates of the components of change were based on all units within the segment.

For data on characteristics of the housing inventory in 1959, a subsample of the dwelling units in each area segment was drawn. For those area segments which had been included in the 1956 National Housing Inventory, the 1956 subsample was used again in 1959. An average of three dwelling units in each of the area segments was included in the subsample except that an average of two dwelling units was selected in each of the new-construction segments.

The Residential Finance Survey was based on the characteristics subsample, supplemented by a list sample of large rental properties; in the ratio-estimation procedure for residential finance, data from the full SCARF sample were used.

1950-59 Components of Change

To produce estimates of components of change for the 1950-59 period, two similar sample designs were used. One design was used for areas which had been in the 1956 National Housing Inventory. In these areas, the segments which were used in the National Housing Inventory and which were not overlapped by the 1956-59 universe of new construction were used in their entirety to provide estimates for each component. The segments which were overlapped by the 1956-59 universe of new construction which had been enumerated in 1956 were

used to measure losses in the 1957-59 period. The sample from the 1956-59 new-construction universe was used to measure units in all components in existence in 1959 (i.e., all except losses) in this universe. In addition, the 1950-56 losses obtained from the sample of addresses from the 1950 census records which comprised the sample for measuring losses of units in cases where the whole structure was lost in the 1950-56 period were brought up to date and were used for estimating these 1950-56 losses for the 1950-59 period.

For areas not in the 1956 National Housing Inventory, such as the eight additional metropolitan areas (which were included only in the national sample in 1956) and Hawaii and Alaska, the basic sample comprised segments selected from the 1950 Census of Housing records and from the universe of new construction for the period 1950-59. Segments, or parts of segments, selected from the 1950 materials which were found to be included also in the universe of new construction were not used for the 1950-59 comparisons in these areas which had not been in the 1956 National Housing Inventory. The list of 1950 addresses was used to measure whole-structure losses for the entire 1950-59 period. All other estimates came from the segments selected from the 1950 census materials and segments selected from the new-construction universe.

The "national sample" comprised the bulk of the segments in the 9 metropolitan areas included in the 1956 National Housing Inventory, a few randomly selected segments in the 8 additional SMSA's, and all sample segments outside these 17 metropolitan area samples.

1956-59 Components of Change

The sample for the 1956-59 comparison of components of change consisted of most of the area-sample segments which had been enumerated in 1956, i.e., those selected from 1950 materials and those from the 1950-56 new-construction universe. The 1956-59 new-construction universe was used in measuring additions since 1956. Losses since 1956 were measured using the 1956 area sample; the sample cases were identical with those used in the 1956 National Housing Inventory.

Characteristics of Dwelling Units and Occupants

The detailed data on 1959 characteristics of dwelling units and their occupants were collected for a subsample of units within the segments used for the Components of Change Survey. This process reduced the costs of interviewing and processing and took advantage of the fact that neighboring dwelling units tend to have similar characteristics. The subsample was selected by the interviewers, following a systematic sampling scheme, at the time they were initially listing the segments either for the 1956 National Housing Inventory or for the 1959 SCARF. The 1950 characteristics for the units were obtained from the 1950 census records. The 1956 characteristics, of course, were available only for those units which had been in the characteristics subsample for the 1956 National Housing Inventory, and were obtained from the National Housing Inventory records.

Residential Finance

The Residential Finance Survey was designed to produce data on (1) homeowner properties for the United States by regions and for each of the 17 metropolitan areas, and (2) rental and vacant properties for the United States only. In general, the residential-finance national sample consisted of those segments used in the 1950-59 components-of-change program except that a

subsample of the segments in the 17 metropolitan areas was used. Segments included in the residential-finance national sample were used in the program for homeowner properties as well as the program for rental and vacant properties. All segments not in the residential-finance national sample were in the program for homeowner properties only. In all segments, the characteristics subsample was used for the residential finance enumeration.

The sampling unit for the Residential Finance Survey was the property rather than the individual dwelling unit. The sample of properties from the area sample was the properties containing the dwelling units in the 1950-59 Components of Change Survey characteristics subsample. All dwelling units which were renter-occupied, vacant, or in owner-occupied properties with five or more units in the property were designated for inclusion in the program for rental and vacant properties; all other units were included in the homeowner property program.

The sample of rental and vacant properties included, in addition to those in the area sample described above, a sample of properties selected from a universe of large rental properties. This universe of large rental properties was created for this survey and is described in more detail in Chapter 3, Residential Finance Survey. Properties in the area sample were compared with those in the universe of large rental properties and those properties which appeared in both were eliminated from the area sample.

Size of Sample

The number of area-sample segments in the various groups of the SCARF sample are given in the table on the following page.

The sample of large rental properties comprised about 8,700 properties sampled with certainty, 1,800 sampled at the rate of 1 in 2, and 1,700 sampled at the rate of 1 in 4.

ESTIMATION PROCEDURE

Since SCARF was a sample survey, it was necessary to inflate the sample figures to produce estimates of the totals. The estimation procedure involved, as a first step, inflating the sample results by the reciprocals of the probabilities of selection. The next step was the use of a ratio estimate where possible.

When there is sufficiently high correlation between the characteristic being estimated and another characteristic for which both sample and 100-percent data are available, the variability due to sampling will be decreased by the use of a ratio estimate. The ratio estimation takes the form of multiplying the known total by the ratio of the sample estimate of a characteristic to the sample estimate of the known total. For processing ease, however, an equivalent form of the estimation formula was used. The procedure was to create a ratio-estimate factor consisting of the ratio of the known total to the sample estimate of this total. This factor was then used to adjust the weights of individual records which were subsequently added to produce the estimates.

In those instances where no ratio estimate was to be used, the weights for the records involved were adjusted by a ratio-estimate factor equal to unity. Thus, all records received a weight adjustment in the ratio-estimation process.

Since the basic sample was drawn from the 1950 census materials, it was a logical conclusion that the SCARF estimates of the number of 1950 dwelling units in the various areas were highly correlated with the

AREA SAMPLE SEGMENTS IN SCARF

Stratum	Total (a)	Total in 9 SMSA's ¹ (b)	Total in 8 new SMSA's ² (c)	Balance of U.S. (d)	Used in preparing national estimates	
					Components of Change (e) ³	Residential Finance (f) ⁴
Total.....	26,100	12,600	6,000	7,500	20,500	11,000
Basic area-sample segments.....	20,000	9,000	5,000	6,000	15,300	8,500
1950-59 New-construction area segments.....	6,100	3,600	1,000	1,500	5,200	2,500
1957-59 New-construction area segments included in 1950-59 figures.....	(2,200)	(1,350)	(350)	(500)	(1,700)	(800)

¹ The number of sample segments for any one of these SMSA's can be obtained by dividing the figures in this column by 9.

² The number of sample segments for any one of these SMSA's can be obtained by dividing the figures in this column by 8.

³ Includes most of the segments in column (b) plus the "national sample" portion of (c) plus all of (d).

⁴ Includes the residential-finance "national sample" portion of columns (b) and (c) plus all of (d).

number of dwelling units counted in the 1950 Census of Housing, thus ratio estimates to the 1950 census totals were used.

The ratio estimates were created at different levels for the various tabulations. The ratio-estimate areas were collapsed when the data warranted. In general, these areas were consistent within the definitions of boundaries used for a particular program. For the various metropolitan area tabulations, ratio estimates were prepared for (1) inside the central city of the area, and (2) the balance of the area. For the various national tabulations, different ratio-estimation areas were used and are described under their appropriate sections below.

Estimation of Counts of Components of Change

1950-59 Components of Change.--For the 1950-59 Components of Change, the components arising out of units in existence in 1950--same units, conversions, mergers, demolitions, and other losses--were estimated by using a ratio to the 1950 census counts. For the estimate of new construction, a ratio estimate involving growth between 1950 and 1960 as measured from both the two censuses and the sample was used whenever there was an indication that the correlation between new construction and growth was sufficient to reduce sampling variability. When the correlation was not sufficiently high, the basic segment weight was used, i.e., the reciprocal of the probability used in the selection of the sample. For units added through other sources, the basic segment weight was used. The ratio-estimate areas for national estimates of the 1950-59 components were essentially: (1) the "national sample" portion of each of the nine SMSA's separately by inside and outside the central cities, and (2) the balance of the PSU's (including Alaska and Hawaii) separately for each region by (a) inside central cities of SMSA's, (b) balance of SMSA's, and (c) the remainder of the region. The SMSA definitions used were as of June 1959, with 1950 city limits of central cities used for the inside-outside central city classification.

1956-59 Components of Change.--A ratio estimate using the 1950 census counts was applied to the estimates of the 1959 and 1956 units which had existed in

1950. Units in the 1956-59 components which did not exist in 1950 were estimated by inflating the sample figures by the reciprocal of the probability of the sample selection. In addition, estimates of the new-construction component and "other additions" component involved estimating the component from the 1956 National Housing Inventory segments which were not overlapped by the 1956-59 universe of new construction and adding to this estimate for the area covered by the 1956-59 new-construction universe. The estimates of 1956-59 new construction and of "other additions" for the area covered by the 1956-59 new-construction universe were obtained by first estimating the component for the entire 1950-59 period from the segments selected to represent the 1956-59 new-construction universe, and then subtracting the estimate of this same component for the 1950-56 period (for those units which were still in existence in 1959); this estimate for the 1950-56 period was obtained from the segments selected from the 1950 census materials and those selected from the 1950-56 new-construction universe which were found to be included also in the 1956-59 new-construction universe.

The ratio estimate areas for national estimates of 1956-59 components of change were (1) each of nine metropolitan areas which had been in the 1956 National Housing Inventory, by central city or cities and the balance of the SMSA, and (2) each of the four major geographic regions of the United States, by central cities of 1950 SMSA's, balance of 1950 SMSA's, and outside 1950 SMSA's.

Estimation of Characteristics Subsample

Since the detailed data on characteristics of dwelling units and their occupants in the various components were collected for a subsample of dwelling units, it was desired to have the totals of the estimated components from the subsample agree with the totals of these components as estimated from the full sample. This involved a two-stage ratio estimate of the subsample data. The first stage was identical with that used for the components of change estimates. The second stage comprised the ratio of the estimated components from the subsample to the estimated components from the full sample.

1. For the 1950-59 comparison, the 1950 and 1959 characteristics of the "same" component and the 1959 characteristics of the other components (obtained from the H-8 Characteristics Schedule) were based on the subsample. After the subsample weights had been processed, tallies of the 1959 components (same, conversions, mergers, new construction, and other additions) were made from the H-8 characteristics subsample. Each characteristic of each of the 1959 components from the characteristics subsample was estimated using the ratio of the full sample to the subsample and the resulting factors were applied in the computer on a component-by-component basis. The 1950 characteristics of the other components (on the H-116a transcription form) were obtained from the full sample and hence required no second-stage ratio estimate.

2. For the 1956-59 comparison, the characteristics of both the 1956 and 1959 components were based on a subsample. Hence, the estimates of the 1959 components (and the 1956 characteristics of the "same" component) from the H-8 subsample and the estimates of the other 1956 components from the H-116 subsample were obtained using the ratio of the full sample to the subsample. With respect to the characteristics of new construction and other additions, a modified procedure was used within the new-construction universe. Estimates of the characteristics of units in new construction from the new-construction universe were based on those units classified as new construction in the segments not in the National Housing Inventory and for which "year built" was reported as 1957 to 1959. Similarly, the estimates of characteristics of other additions in the new-construction universe were based on units reported as other additions in the segments not in the National Housing Inventory with the year of change 1957 to 1959. These estimates combined with the corresponding estimates obtained outside the new-construction universe were then processed through the ratio-estimation procedure with the result that for each component the estimate of the total based on the subsample was consistent with the estimate of the total based on the full sample.

Estimation for Residential Finance Survey Data

Homeowner properties.--A two-stage ratio estimate was used for the Residential Finance Survey data on homeowner properties. The first stage was the ratio-estimation procedure used for the 1950-59 components of change. The second stage was obtained from the ratio of 1960 census counts of owner-occupied housing units to owner-occupied dwelling units as estimated from the sample as a result of the first-stage estimation.

The first- and second-stage ratio-estimation areas were each of the 17 SMSA's by inside 1950 central city limits and outside central cities, and, for the national estimates, each of the four major geographic regions of the United States by (1) inside 1950 city limits of central cities of SMSA's as defined in June of 1959, (2) balance of these SMSA's, and (3) the remainder of the region.

Rental and vacant properties.--The estimation procedure used for data on the residential financing of rental and vacant properties involved the use of a two-stage ratio estimate for the area-sample portion of the program and a one-stage ratio estimate for the large-rental property stratum. For the area sample, the first-stage ratio-estimation procedure, like that for the homeowner properties, was the same as that used for the 1950-59 components of change. The second-stage ratio estimate for the area sample and the only stage used for the large-rental-property sample was the ratio of the 1960 census counts of rental and vacant housing

units to the estimated number of rental and vacant dwelling units from the SCARF sample.

The first- and second-stage ratio-estimation areas were the same as those for the national sample of homeowner properties, i.e., each region by (1) inside 1950 city limits of central cities of SMSA's defined in June 1959, (2) the balance of these SMSA's, and (3) the remainder of the region.

SAMPLING VARIABILITY

Since the estimates are based on a sample, the figures may differ somewhat from those that would have been obtained if a complete census had been taken using the same questionnaires, instructions, and enumerators. The standard error is primarily a measure of this sampling variability. It was necessary to produce special tabulations in order to derive estimated standard errors of the SCARF estimates. The costs of these tabulations were so large that it was not feasible to calculate the standard errors for each of the specific items to be published, therefore a set of characteristics was chosen to represent the different variance-behavior patterns. These selected characteristics varied in magnitude and in the way in which they were affected by the different stages of sampling. As a result, the tabulations of standard errors appearing in the published reports provide an indication of the order of magnitude of the standard errors rather than the precise standard error of each specific item.

For estimating the standard error of estimates for the 17 metropolitan areas, the special tabulations required separate segment totals for each characteristic in the standard error calculations. For the national estimates, the sample design required tabulations at different levels in order to produce the estimates of the standard errors. The PSU's could be classified into two broad classes for purposes of estimating the standard errors. Those PSU's which were the only PSU's in their respective strata constituted one of these classes. For this class of PSU's, the segments were put into eight equal random groups and the differences between the group totals and the average for all the groups were used to obtain the standard errors.

The method of estimating the contribution to the standard error for the other PSU's involved combining strata and using the difference between the totals for the individual strata forming a combined stratum and the weighted average for the combined stratum to obtain the standard error for this class of PSU's. This method is a relatively inexpensive means of producing estimates of standard errors but tends to overestimate the actual standard error.

The results from these various tabulations were combined using a regression estimate which tended to reduce the sampling variability of the estimated standard errors and tended to control the effect of having selected only a small number of characteristics to be included in the tabulations used to produce the standard errors.

MASTER SEGMENT RECORD AND LARGE RENTAL PROPERTY MASTER CONTROL RECORD

The complexity of SCARF--e.g., the overlapping geographic areas in the different samples, and the various documents on which the different kinds of data were collected--suggested the desirability of recording on one document all the necessary weights, codes, and control items for each work unit. Since the basic sampling and data-collection element for most of the survey was the segment, a Master Segment Record

containing this information for each segment was established. For large rental properties, a Large Rental Property Master Control Record was established, with the property as the unit. To prepare the master records, the various weights, codes, and control items for each segment were put into the computer with instructions for combining the information and editing for impossible and inconsistent entries. Similar operations were performed on punchcard equipment to create the master record for large rental properties.

The master record for each segment or large property contained several types of sampling information needed to process the data:

1. Information from the 1956 National Housing Inventory Master Segment Record, with modifications in weights and identification codes as necessary because of differences in the boundary definitions used for SCARF

2. Weights for SCARF segments which had not been in the National Housing Inventory and for National

Housing Inventory segments which were modified by SCARF subsampling

3. Weights for the characteristics subsample of each segment. (In the case of list-sample segments for which there was no characteristics subsample, the weight of course was zero.)

4. As many other weights for each of the individual schedules in the segment as required for the different areas and tabulations for which it was to be used

5. Sample control codes to indicate whether the segment was to be used, for example, just for an SMSA, or for an SMSA and also for the Components of Change Survey national sample, or for both of these and also the Residential Finance Survey national sample, or for one or both of the national samples only, etc.

Geographic codes were also given in the Master Segment Record and the Large Rental Property Master Control Record, for data-processing control and for purposes of estimation.

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