

UNITED STATES CENSUS OF
POPULATION
1960

*Mobility for
States and State
Economic Areas*

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS



U.S. CENSUS OF POPULATION: 1960

Final Report PC(2)-2B

SUBJECT REPORTS

Mobility for States and State Economic Areas

*Characteristics of the Population by
Mobility Status and Migration Streams*

Prepared under the supervision of
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PREFACE

This report presents statistics from the 1960 Census of Population on the extent to which the population 5 years old and over living in the United States changed their residence between 1955 and 1960. Legal provision for this census, which was conducted as of April 1, 1960, was made in the Act of Congress of August 31, 1954 (amended August 1957), which codified Title 13 United States Code.

The major portion of the information compiled from the 1960 Census of Population appears in Volume I, Characteristics of the Population, which contains data for the United States, States and counties and their urban and rural parts, cities, minor civil divisions, etc. The present report is part of Volume II, Subject Reports, and is designated as PC(2)-2B. A summary description of all the final reports of the 1960 Population Census appears on page IV.

ACKNOWLEDGMENTS

A large number of persons participated in the various activities of the 1960 Census of Population. Primary responsibilities were exercised by many of the persons listed on the preceding page. Within the Population, Demographic Operations, Field, Geography, and Statistical Methods Divisions, most of the staff members worked on the program. Important contributions were also made by the staffs of the Administrative Service Division, Everett H. Burke, Chief; Budget and Management Division, Charles H. Alexander, Chief; Data Processing Systems Division, Robert F. Drury, Chief; Jeffersonville Census Operations Office, Robert D. Krook, Chief; Personnel Division, James P. Taff, Chief; and Statistical Research Division, William N. Hurwitz, Chief.

Henry D. Sheldon, Chief, Harald A. Pedersen, and Melvin Zelnik, assisted by Robert C. Jackson, of the Demographic Statistics Branch, Population Division, had the major responsibility for planning this report and developing its content. John C. Beresford provided liaison with the operations staff, Elizabeth A. Larmon assisted in the preparation of the introductory text, and Mildred M. Russell and Leah S. Anderson performed the technical editorial work. The procedures for compiling the data were devised by Patience Lauriat, Catherine M. Neafsey, Margaret P. Brooks, William D. Buell, and Anthony B. Woodell of the Demographic Operations Division. The sampling materials were prepared by Robert Hanson, Stanley M. Edelstein, and Anthony G. Turner of the Statistical Methods Division.

The census program was designed in consultation with a number of advisory committees and many individuals in order to maximize the usefulness of the data. Among the groups organized for this purpose were the Technical Advisory Committee for the 1960 Population Census, the Council of Population and Housing Census Users, and the Federal Agency Population and Housing Census Council (sponsored by the U.S. Bureau of the Budget). The persons who served with these groups represented a wide range of interest in the census program; their affiliations included universities, private industry, research organizations, labor groups, Federal agencies, State and local governments, and professional associations.

September 1963.

FINAL REPORTS OF THE 1960 CENSUS OF POPULATION

The final reports of the 1960 Population Census are arranged in three volumes and a joint Population-Housing series of census tract reports. The 1960 Population Census publication program also includes preliminary, advance, and supplementary reports, certain evaluation, procedural, and administrative reports, and graphic summaries. After publication, copies of all reports are available for examination or purchase at any U.S. Department of Commerce Field Office.

Certain types of unpublished statistics are available for the cost of preparing a copy of the data. Also, under certain conditions, special tabulations of the 1960 Census data can be prepared on a reimbursable basis. In addition, there are available for purchase magnetic tapes and punchcards containing 1960 Census information on the characteristics of a one-in-a-thousand and a one-in-ten-thousand sample of the population of the United States. Confidentiality of the information, as required by law, has been maintained by the omission of certain identification items. Further information about any of these materials can be obtained by writing to the Chief, Population Division, Bureau of the Census, Washington, D.C., 20233.

Volume I. Characteristics of the Population. This volume consists of separate reports for the United States, each of the 50 States, the District of Columbia, Puerto Rico, Guam, Virgin Islands, American Samoa, and Canal Zone. For each of these 57 areas, the data were first issued in four separate paper-bound "chapters," designated as PC(1)-A, B, C, and D. (For Guam, Virgin Islands, American Samoa, and Canal Zone, the material normally contained in chapters B, C, and D are included in chapter B.) For library and general reference use, the paper-bound reports have been assembled and reissued in buckram-bound books identified as Parts A and 1 to 57 of Volume I.

Series PC(1)-1A to 57A: Chapter A. Number of Inhabitants. These reports contain final population counts for States and counties and their urban and rural parts, and for standard metropolitan statistical areas, urbanized areas, all incorporated places, unincorporated places of 1,000 inhabitants or more, and minor civil divisions.

Series PC(1)-1B to 57B: Chapter B. General Population Characteristics. These reports present statistics on sex, age, marital status, color or race, and relationship to head of household for States and counties and their urban and rural parts, and for standard metropolitan statistical areas, urbanized areas, places of 1,000 inhabitants or more, and minor civil divisions.

Series PC(1)-1C to 57C: Chapter C. General Social and Economic Characteristics. These reports cover the subjects of nativity and parentage, State of birth, country of origin of the foreign stock, mother tongue, place of residence in 1955, year moved into present house, school enrollment by level and type, years of school completed, families and their composition, fertility, veteran status, employment status, weeks worked in 1959, year last worked, occupation group, industry group, class of worker, place of work, means of transportation to work, and income of persons and families. Each subject is shown for some or all of the following areas: States and counties and their urban, rural-nonfarm, and rural-farm parts, standard metropolitan statistical areas, urbanized areas, and urban places.

Series PC(1)-1D to 57D: Chapter D. Detailed Characteristics. These reports present most of the subjects covered in chapter C, above, cross-classified by age, color, and other characteristics. There is also included additional information on families, as well as data on single years of age, detailed occupation, and detailed industry. Each subject is shown for some or all of the following areas: States and their urban, rural-nonfarm, and rural-farm parts; and large counties, cities, and standard metropolitan statistical areas.

Volume I, Part A: Number of Inhabitants. This is a compendium of the 57 chapter A reports, i.e., PC(1)-1A to 57A.

Volume I, Parts 1 to 57: Characteristics of the Population. The 57 parts relate respectively to the United States, each of the 50 States, District of Columbia, Puerto Rico, Guam, Virgin Islands, American Samoa, and Canal Zone. Each part contains the data previously published in the four chapters A, B, C, and D, and is in the form of a separate, buckram-bound book. Parts 54, 55, 56, and 57--for Guam, Virgin Islands, American Samoa, and Canal Zone, respectively--are bound in a single book.

Volume II (Series PC(2) reports). Subject Reports. Each report in this volume concentrates on a particular subject. Detailed information and cross-relationships are generally provided on a national and regional level; in a few reports data for States or standard metropolitan statistical areas are also shown. Among the characteristics covered are ethnic origin and race, fertility, families, migration, education, employment, unemployment, occupation, industry, and income. There is also a report on the geographic distribution and characteristics of inmates of institutions.

Volume III (Series PC(3) reports). Selected Area Reports. Three of the reports in this volume present selected characteristics of the population (1) for State economic areas, (2) for standard metropolitan statistical areas, and (3) according to the size of place where the individual resided. A fourth report provides data on the social and economic characteristics of Americans overseas.

Series PHC(1). Census Tract Reports. These reports present information on both population and housing subjects. There is one report for each of 180 tracted areas in the United States and Puerto Rico. The population subjects include age, race, marital status, country of origin of the foreign stock, relationship to head of household, school enrollment, years of school completed, place of residence in 1955, employment status, occupation group, industry group, place of work, means of transportation to work, and income of families, as well as certain characteristics of the nonwhite population in selected tracts. The housing subjects include tenure, color of head of household, vacancy status, condition and plumbing facilities, number of rooms, number of bathrooms, number of housing units in structure, year structure built, basement, heating equipment, number of persons in unit, persons per room, year household head moved into unit, automobiles available, value of property, and gross and contract rent, as well as certain characteristics of housing units with nonwhite household head for selected tracts. In addition, for selected tracts these reports contain data on certain population and housing subjects for persons of Puerto Rican birth or parentage and for white persons with Spanish surname. (This series is the same as the tract reports listed in the publication program for the 1960 Census of Housing.)

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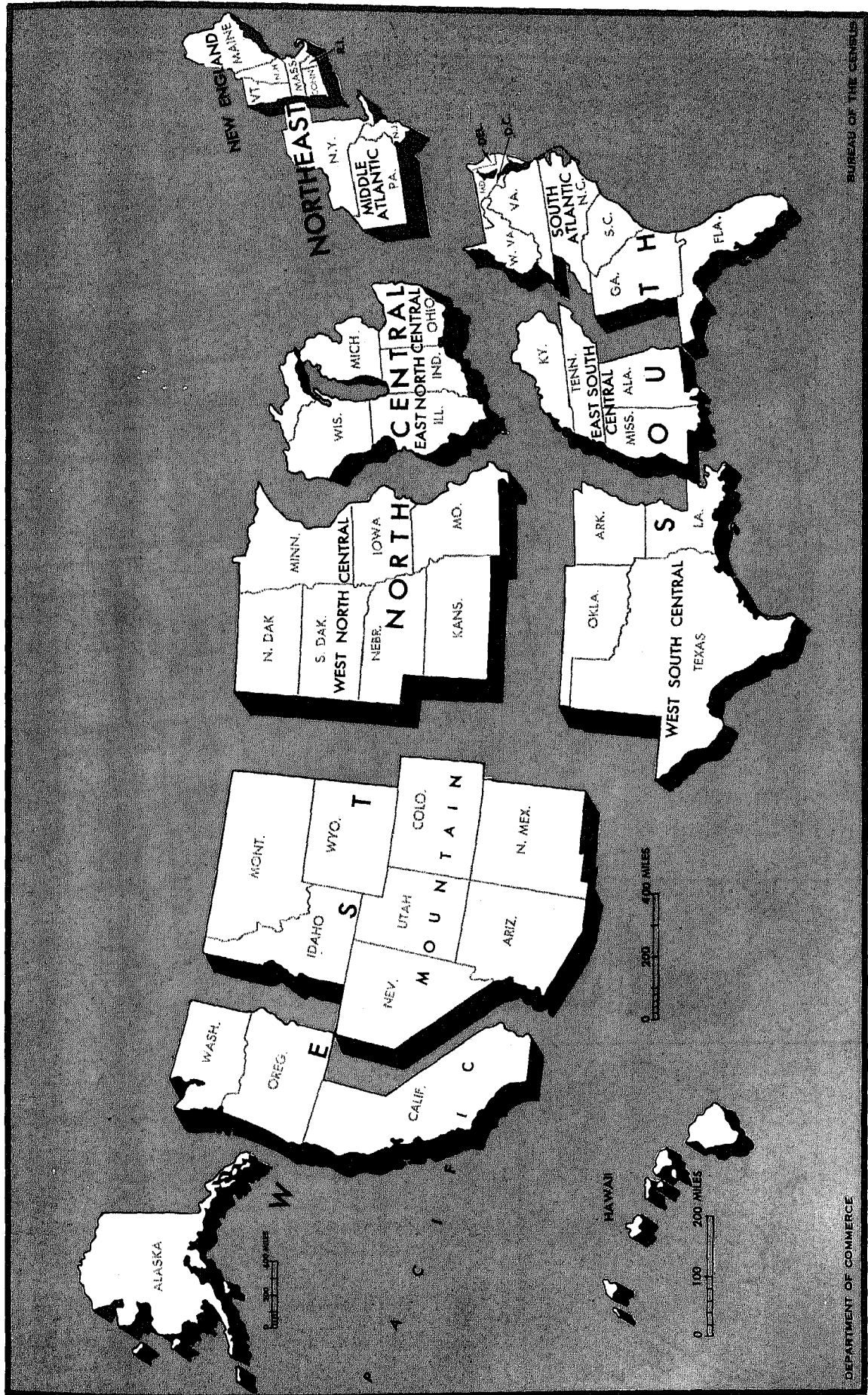
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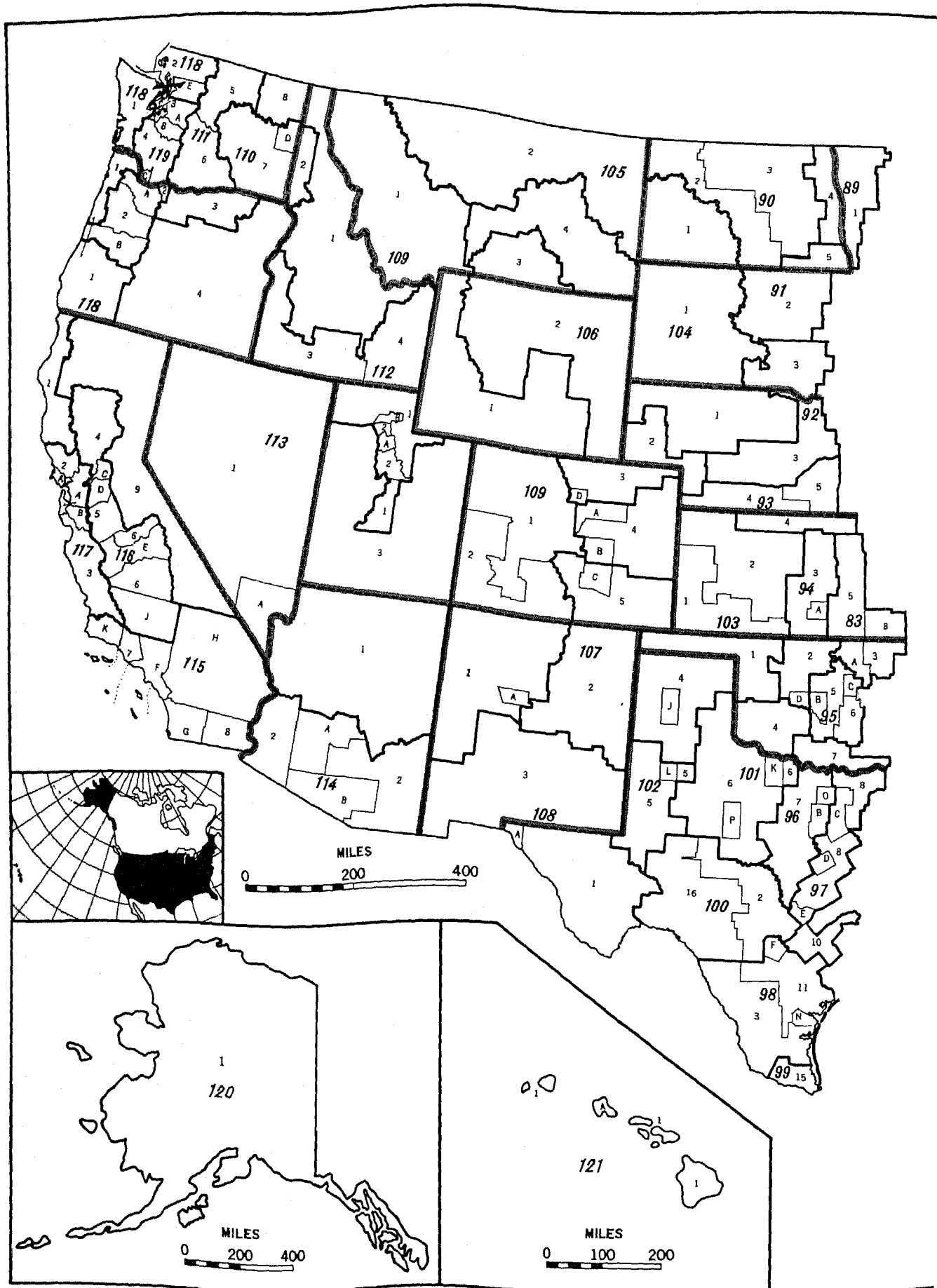
REGIONS AND GEOGRAPHIC DIVISIONS OF THE UNITED STATES



BUREAU OF THE CENSUS

DEPARTMENT OF COMMERCE

ECONOMIC SUBREGIONS AND STATE ECONOMIC AREAS: 1960





LEGEND

- ECONOMIC SUBREGION BOUNDARY
- - - STATE BOUNDARY WHERE NOT PART OF ECONOMIC SUBREGION BOUNDARY
- STATE ECONOMIC AREA BOUNDARY. ALL ECONOMIC SUBREGION BOUNDARIES AND STATE BOUNDARIES ARE ALSO STATE ECONOMIC AREA BOUNDARIES
- 57 ECONOMIC SUBREGIONS- LARGE NUMBERS
- 8 A-N STATE ECONOMIC AREAS-SMALL NUMBERS AND LETTERS

Mobility for States and State Economic Areas

GENERAL

This report presents statistics on population mobility in the period 1955 to 1960 for persons 5 years old and over, for States and State economic areas. The data include information on the demographic, social, and economic characteristics of the population classified by mobility status. Tables 1 to 11 present statistics on mobility status by social and economic characteristics, with a cross-classification by age, for the United States. The remaining tables (12 to 38) present data for regions, divisions, States, and State economic areas. Except for tables 3 to 11, which are based on the 5-percent sample, the statistics for this report are drawn from the 25-percent sample of the 1960 Census.

RELATED MATERIALS

1960 Census reports.--The Volume I State reports contain statistics on mobility status and year moved into present house for States, by urban-rural residence, standard metropolitan statistical areas (SMSA's), urbanized areas, urban places of 10,000 or more, and counties, and statistics on mobility status and region of origin by age, sex, and color, for States and for cities of 250,000 or more. The Volume I United States Summary report gives totals for the Nation and its regions and geographic divisions and shows region of residence in 1955 by region of residence in 1960 and the net gain or loss for each region through interregional migration.

Statistics on place of residence in 1955 are presented in Census Tracts, Series PHC(1). Movers living in each census tract are classified by 1955 residence as follows: (1) Central city of this SMSA, (2) other part of this SMSA, and (3) outside this SMSA. The last category is further subdivided into "North and West" and "South." Other 1960 Census reports on mobility are PC(2)-2A, State of Birth; PC(2)-2C, Mobility for Metropolitan Areas; and PC(2)-2D, Lifetime and Recent Migration. Additional statistics on the mobility of the population are included in a few other PC(2) and PC(3) reports.

1950 Census reports.--Mobility data for 1950 are based on the 1-year interval rather than the 5-year interval. The 1950 reports for States, Volume II, Characteristics of the Population, included statistics on residence in 1949 for the State, for standard metropolitan areas, urbanized areas, urban places with 10,000 inhabitants or more in 1950, and for counties. Data on mobility status were also presented for census tracts in Volume III of the 1950 reports. Volume IV

of the 1950 Census included four special reports on mobility, namely: Part 4A, State of Birth; Part 4B, Population Mobility--States and State Economic Areas; Part 4C, Population Mobility--Farm and Nonfarm Movers; and Part 4D, Population Mobility--Characteristics of Migrants. Additional data on mobility were presented in Volume IV, Special Reports, with other subjects.

1940 Census reports.--The 1940 Census, in which for the first time data were obtained on the mobility of the population during a fixed period of time, used a 5-year interval (1935 to 1940) and hence from this standpoint is comparable to the 1960 Census. Although the population schedule called for a report on all changes of usual residence, in the main tabulations, persons moving from one house to another within the same county, or quasi-county,¹ were not distinguished from those in the same house at both dates. All these persons, as well as children under 5 years old, were described as "nonmigrants" in the 1940 reports. Data were presented for the United States, regions, geographic divisions, States, urban and rural residence, and for individual cities of 100,000 inhabitants or more. Statistics were published in four special reports entitled Color and Sex of Migrants, Age of Migrants, Economic Characteristics of Migrants, and Social Characteristics of Migrants. Additional statistics on migration were contained in some of the special reports on other subjects.

Current Population Survey.--Sample data on mobility during the preceding year have been collected annually since 1948 in the Current Population Survey and have been published mostly in Current Population Reports, Series P-20. Earlier surveys at irregular intervals covered other periods back to 1940.

Estimates of net migration.--Estimates of net migration including net immigration from abroad by States and counties have been computed for the decade 1950 to 1960. The State estimates are published in Current Population Reports, Series P-25, No. 247, and the county estimates in Series P-23, No. 7. The methods of computing net migration and net civilian migration by the so-called "residual method" are explained in these reports. Similar estimates of net migration can also be computed by age, sex, and color; and such estimates have been published by a number of agencies.

¹ A quasi-county was defined as a city of 100,000 or more or the balance of its county.

AVAILABILITY OF UNPUBLISHED DATA

The statistics appearing in this report represent the full detail printed out by the computer system. Additional statistics could be extracted to show 1960 residence detail not appearing in the published tables. A tabulation of migration streams showing total migrants to each State economic area (SEA) from all

other SEA's is also available. Requests for unpublished data may be made by writing to the Chief, Population Division, Bureau of the Census, Washington, D.C., 20233, and giving a specific description of the figures desired. Inquiries concerning unpublished data should be transmitted to the Bureau as soon as possible because the tape files are not retained indefinitely.

DEFINITIONS AND EXPLANATIONS

Some of the definitions used in 1960 differ from those used in 1950. These changes were made after consultation with users of census data in order to improve the statistics, even though it was recognized that comparability would be affected. The definitions and explanations should be interpreted in the context of the 1960 Censuses, in which data were collected by a combination of self-enumeration, direct interview, and observation by the enumerator.

The definitions below are consistent with the instructions given to the enumerator. As in all surveys, there were some failures to execute the instructions exactly. Through the forms distributed to households, the respondents were given explanations of some of the questions more uniformly than would have been given in direct interviews. Nevertheless, it was not feasible to give the full instructions to the respondents, and some erroneous replies have undoubtedly gone undetected.

More complete discussions of the definitions of population items are given in 1960 Census of Population, Volume I, Characteristics of the Population, Part 1, United States Summary, and each of the State parts, and in 1960 Census of Housing, Volume I, States and Small Areas.

RESIDENCE IN 1955

This report deals essentially with two major sets of statistics on population mobility from April 1955 to April 1960. The first consists of national statistics on mobility status by demographic, social, and economic characteristics, including statistics on household or family heads by the characteristics of their housing. Because of the high degree of association between mobility status and age, cross-classifications by other characteristics are in most cases given by age. For similar reasons, there are also frequent cross-classifications with sex and color. The second major set of data is for geographic areas (regions, geographic divisions, States, and State economic areas). For these areas the tables include: (1) The distribution of the population by mobility status, as described below; (2) in-migrants, out-migrants, and net migration; (3) streams of migration between areas, i.e., the number of persons living in a given area in 1955 but in another specified area in 1960. Considerably less information is given on the characteristics of movers for these geographic areas than is shown for the United States as a whole; but, nonetheless, these statistics are frequently shown by color and somewhat less often by age or sex.

Separate tables are presented for college students away from their parental home, institutional inmates, and members of the Armed Forces (tables 18, 19, and 20, respectively). There is, however, no way of identifying from the data collected those persons whose 1955 residence was in a college, an institution, or in an Armed Forces installation, from which they moved during the period.

Definitions

The data on residence in 1955 were derived from the answers to the following questions on the Household Questionnaire:

P13. Did he live in this house on April 1, 1955?
(Answer 1, 2, or 3)

1. Born April 1955 or later.....

OR

2. Yes, this house.....

OR

3. No, different house.....

Where did he live on April 1, 1955?

a. City or town.....

b. If city or town—Did he live inside the city limits?..... { Yes...
No...

c. County.....

AND
State, foreign
country, U.S.
possession, etc.....

Residence on April 1, 1955, is the usual place of residence five years prior to enumeration. Residence in 1955 was used in conjunction with residence in 1960 to determine the mobility status of the population. The category "same house as in 1960" includes all persons 5 years old and over who were reported as living in the same house on the date of enumeration in 1960 and five years prior to enumeration. Included in the group are persons who had never moved during the five years, as well as those who had moved but by 1960 had returned to their 1955 residence. The category "different house in the United States" includes persons who, on April 1, 1955, lived in the United States in a different house from the one they occupied on April 1,

1960. These persons were subdivided into three groups according to their 1955 residence; viz., "different house, same county," "different county, same State," and "different State." The last category was further subdivided into contiguous and noncontiguous States. States have been classified as contiguous if their boundaries touch at any point.² For some distributions the different county category was subdivided into region, division, and State of 1955 residence. The category "abroad" includes those with residence in a foreign country or an outlying area of the United States in 1955. (In the coding of this item, persons who lived in Alaska or Hawaii in 1955 but in other States in 1960 were classified as living in a different State in 1955.)

Persons 5 years old and over who had indicated they had moved into their present residence after April 1, 1955, but for whom, or for members of their families, sufficiently complete and consistent information concerning residence on April 1, 1955, was not collected, are included in the group "moved, place of

² The following is a list of the contiguous States for each State:

Alabama.....	Fla., Ga., Miss., Tenn.
Alaska.....	None
Arizona.....	Calif., Colo., Nev., N. Mex., Utah
Arkansas.....	La., Miss., Mo., Okla., Tenn., Texas
California.....	Ariz., Nev., Oreg.
Colorado.....	Ariz., Kans., Nebr., N. Mex., Okla., Utah, Wyo.
Connecticut....	Mass., N.Y., R.I.
Delaware.....	Md., N.J., Pa.
Dist. of Col....	Md., Va.
Florida.....	Ala., Ga.
Georgia.....	Ala., Fla., N.C., S.C., Tenn.
Hawaii.....	None
Idaho.....	Mont., Nev., Oreg., Utah, Wash., Wyo.
Illinois.....	Ind., Iowa, Ky., Mo., Wis.
Indiana.....	Ill., Ky., Mich., Ohio
Iowa.....	Ill., Minn., Mo., Nebr., S. Dak., Wis.
Kansas.....	Colo., Mo., Nebr., Okla.
Kentucky.....	Ill., Ind., Mo., Ohio, Tenn., Va., W. Va.
Louisiana.....	Ark., Miss., Texas
Maine.....	N.H.
Maryland.....	Del., D.C., Pa., Va., W. Va.
Massachusetts...	Conn., N.H., N.Y., R.I., Vt.
Michigan.....	Ind., Ohio, Wis.
Minnesota.....	Iowa, N. Dak., S. Dak., Wis.
Mississippi....	Ala., Ark., La., Tenn.
Missouri.....	Ark., Ill., Iowa, Kans., Ky., Nebr., Okla., Tenn.
Montana.....	Idaho, N. Dak., S. Dak., Wyo.
Nebraska.....	Colo., Iowa, Kans., Mo., S. Dak., Wyo.
Nevada.....	Ariz., Calif., Idaho, Oreg., Utah
New Hampshire...	Maine, Mass., Vt.
New Jersey.....	Del., N.Y., Pa.
New Mexico.....	Ariz., Colo., Okla., Texas, Utah
New York.....	Conn., Mass., N.J., Pa., Vt.
North Carolina..	Ga., S.C., Tenn., Va.
North Dakota....	Minn., Mont., S. Dak.
Ohio.....	Ind., Ky., Mich., Pa., W. Va.
Oklahoma.....	Ark., Colo., Kans., Mo., N. Mex., Texas
Oregon.....	Calif., Idaho, Nev., Wash.
Pennsylvania....	Del., Md., N.J., N.Y., Ohio, W. Va.
Rhode Island....	Conn., Mass.
South Carolina..	Ga., N.C.
South Dakota....	Iowa, Minn., Mont., Nebr., N. Dak., Wyo.
Tennessee.....	Ala., Ark., Ga., Ky., Miss., Mo., N.C., Va.
Texas.....	Ark., La., N. Mex., Okla.
Utah.....	Ariz., Colo., Idaho, Nev., M. Mex., Wyo.
Vermont.....	Mass., N.H., N.Y.
Virginia.....	D.C., Ky., Md., N.C., Tenn., W. Va.
Washington.....	Idaho, Oreg.
West Virginia...	Ky., Md., Ohio, Pa., Va.
Wisconsin.....	Ill., Iowa, Mich., Minn.
Wyoming.....	Colo., Idaho, Mont., Nebr., S. Dak., Utah

residence in 1955 not reported." (Missing information was supplied if data were available for other members of the family.) Also included in the category "moved, place of residence in 1955 not reported" are persons who gave no indication as to their movement since April 1, 1955, but who, on the basis of the final edited entry for year moved (for which all nonresponses were replaced by assigned entries), were classified as having moved into their present house since April 1, 1955.

In-migrants and out-migrants.--The terms "in-migrants" and "out-migrants" have been used with reference to migrants into or out of particular areas. In-migrants to an area are migrants who moved into that area from elsewhere in the United States between 1955 and 1960 and were still living there in 1960. Out-migrants from an area are migrants who were living in the area in 1955 and moved out to some other area in the United States where they were in 1960. In-migrants and out-migrants for any area exclude migrants within that area. In-migrants and out-migrants, for example, for a particular State do not include migrants between its counties. Thus the sum of the in-migrants to all counties in any State will be greater than the number of in-migrants to that State.

Net migration.--The term "net migration" like the terms "in-migration" and "out-migration" is used with reference to migration to or from a particular area. Net migration refers to the net gain or loss to an area through the balance of in-migration and out-migration. In the tables, net in-migration is distinguishable by a plus (+) sign and net out-migration by a minus (-) sign preceding the figure. The algebraic sum of net migration for all States and the District of Columbia is equal to zero, since a loss in one State must be compensated for by a gain in other States.

Uses and Limitations of the Data

The census statistics on mobility provide information on the number of movers, migrants, and on in-movement and out-movement for a given area. The census statistics, however, do not take into account all the different moves that were made in the 5-year period. For example, some persons in the same house at the two dates had moved during the 5-year period, but by the time of enumeration had returned to their 1955 residence. Other persons made two or more moves. Some movers during the 5-year period had died and others had gone abroad. Regardless of the number of moves made, a person is counted only once as a mover in the census data. Persons who moved were not asked the number of miles they had moved. The census data, however, provide some indication of the relative distance involved in the moves. On the average, a person who moves within a county moves a shorter distance than one who moves to another county in the same SEA. He in turn moves a shorter distance than a mover to another SEA, State, geographic division, or region.

Comparison of the characteristics of migrants and other movers with the characteristics of the nonmovers gives some indications of the selectivity of migration and other types of mobility. It must be borne in mind,

however, that the characteristics relate to the period after the move and some do not necessarily relate to the period before the move.

A 5-year period, as chosen for use in the 1960 Census, should give a more representative picture of recent mobility than does the 1-year period that has been used in other censuses and surveys. Nonetheless, the last five years of the 1950-60 decade may have had a somewhat different mobility history from the first five years. Hence, figures on net movements computed from the statistics of this report may indicate a different net direction or suggest a different annual rate as compared with estimates for the same areas made by the "residual" method for the entire decade, even when allowance is made for variations in coverage. The data presented in this report will permit analysis of the net exchange between regions, divisions, States, and SEA's.

Quality of the Data

Information on the quality of data on mobility status for 1960 is available from findings from the Content Evaluation Study (CES) of the 1960 Census, a postcensal study in which an intensive reinterview approach was used for a sample of census respondents. In the CES, measures of response error were developed with respect to selected items of information by comparing and reconciling the responses obtained in the reinterview with the corresponding census entries.

Analysis of the CES data on mobility status indicates that, in general, the tendency is for the census to overestimate the more stable elements in the society and to underestimate the more mobile. The census showed fewer people living in a different State or abroad five years earlier than actually were living in a different State or abroad, and conversely, more people living in the same State, same county, and same house five years earlier than the resurvey revealed to be the case. One measure of the extent of the discrepancy is the distribution of interstate migrants in the resurvey by their classification in the census enumeration. Of those classified as interstate migrants in the CES, 85.6 percent were classified the same in the census, and the remainder were classified as having lived in the same State five years earlier (13.5 percent) or abroad (0.9 percent).

The total number of interstate migrants enumerated by the census is 92.0 percent of the number estimated in the resurvey. Hence, the census also enumerated some persons as interstate migrants, who on the basis of the resurvey actually were not interstate migrants. Both sets of comparisons indicate that the census count is an underestimate of interstate migrants.

The results of the 1960 Content Evaluation Study are not entirely comparable with those of the 1950 Post-Enumeration Survey. In considering comparative results, it should be noted that reported differences in quality may, in part, arise from improvement in procedures in the 1960 evaluation study, changes in accuracy between the 1960 and the 1950 Censuses, or both. For a more comprehensive report of the results of the evaluation studies, the reader is referred to 1960 Census reports in the Evaluation and Research Program

Series and to Bureau of the Census Technical Paper No. 4, The Post-Enumeration Survey: 1950.

Some minor inconsistencies are present in the 1960 Census statistics on mobility, as revealed in an analysis of data in tables 4 and 5, where mobility status is cross-classified by year moved into the present house. Some of the inconsistencies are only apparent, but others are real. For nonmovers ("same house" in 1955), those who reported dates after April 1, 1955, could well have responded correctly, since the question applied to the date of the last move and the persons may have left their housing units and returned, both during the 5-year period. On the other hand, the relatively few movers ("different house" in 1955) who are shown as having moved on or before April 1, 1955, represent erroneous classifications. No attempt was made to eliminate these inconsistencies by editing.

Comparability

Similar questions on mobility were asked in the 1950 and 1940 Censuses. However, the questions in the 1950 Census, as well as in annual supplements to the Current Population Survey, applied to residence one year earlier rather than five years earlier. In the 1950 reports, migrants reporting the State but not the county of residence in 1949 appear in the known categories of migration status and State of origin, whereas in this report such persons were all assigned to the category "moved, place of residence in 1955 not reported." This partial nonresponse group comprised 411,590 migrants in 1950; the corresponding figure for 1960 is not known.

Although the questions in the 1940 Census covered a 5-year period, comparability with that census is reduced somewhat because of different definitions and categories of tabulation. In 1940, the population was classified in terms of four categories: Migrants, nonmigrants, immigrants, and migration status not reported. The first group, "migrants," included those persons who in 1935 lived in a county (or quasi-county) different from the one in which they were living in 1940. The second group, "nonmigrants," comprised those persons living in the same house in 1935 as in 1940 as well as persons living in a different house in the same county or quasi-county. The group classified as "immigrant" in 1940 is comparable to the group classified in 1960 as "abroad." The 1940 classification, "migration status not reported," included persons for whom information supplied was not sufficient for the assignment of a more specific category.

MEDIAN

The median is presented in connection with the data on age and income. It is the value which divides the distribution into two equal parts, one-half the cases falling below this value and one-half the cases exceeding this value.

A plus (+) or minus (-) sign after the median indicates that the median is above or below that number. For example, a median of \$10,000+ for income indicates that the median fell in the interval "\$10,000 or more."

USUAL PLACE OF RESIDENCE

In accordance with Census practice dating back to 1790, each person enumerated in the 1960 Census was counted as an inhabitant of his usual place of residence or usual place of abode, that is, the place where he lives and sleeps most of the time. This place is not necessarily the same as his legal residence, voting residence, or domicile, although, in the vast majority of cases, the use of these different bases of classification would produce identical results.

The questions on place of residence in 1955 were supposed to refer to usual residence also. The respondent was not, however, furnished all the rules that the enumerator was instructed to use in determining the respondent's usual residence in 1960. Hence, in some cases, another type of residence may have been reported.

URBAN-RURAL RESIDENCE

In general, the urban population comprises all persons living in urbanized areas and in places of 2,500 inhabitants or more outside urbanized areas. More specifically, according to the definition adopted for use in the 1960 Census, the urban population comprises all persons living in (a) places of 2,500 inhabitants or more incorporated as cities, boroughs, villages, and towns (except towns in New England, New York, and Wisconsin); (b) the densely settled urban fringe, whether incorporated or unincorporated, of urbanized areas; (c) towns in New England and townships in New Jersey and Pennsylvania which contain no incorporated municipalities as subdivisions and have either 25,000 inhabitants or more or a population of 2,500 to 25,000 and a density of 1,500 persons or more per square mile; (d) counties in States other than the New England States, New Jersey, and Pennsylvania that have no incorporated municipalities within their boundaries and have a density of 1,500 persons or more per square mile; and (e) unincorporated places of 2,500 inhabitants or more. The population not classified as urban constitutes the rural population.

FARM-NONFARM RESIDENCE

The rural population is subdivided into the rural-farm population, which comprises all rural residents living on farms, and the rural-nonfarm population, which comprises the remaining rural population. In the 1960 Census, the farm population consists of persons living in rural territory on places of 10 or more acres from which sales of farm products amounted to \$50 or more in 1959 or on places of less than 10 acres from which sales of farm products amounted to \$250 or more in 1959. All persons living in group quarters are classified as nonfarm except the relatively few living in workers' quarters (including quarters for migratory agricultural workers) that are located on a farm or ranch.

STANDARD METROPOLITAN STATISTICAL AREAS

Except in New England, an SMSA is a county or group of contiguous counties which contains at least one city of 50,000 inhabitants or more, or "twin

cities" with a combined population of at least 50,000. In addition to the county, or counties, containing such a city or cities, contiguous counties are included in an SMSA if, according to certain criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England, SMSA's consist of towns and cities, rather than counties.

STATE ECONOMIC AREAS

State economic areas are relatively homogeneous subdivisions of States. They consist of single counties or groups of counties which have similar economic and social characteristics. The boundaries of these areas have been drawn in such a way that each State is subdivided into relatively few parts, with each part having certain significant characteristics which distinguishes it from adjoining areas. The SEA's, as delineated, are shown on the map of the United States on pages VIII and IX. The counties comprising each SEA are listed in the appendix.

The State economic areas were originally delineated for the 1950 Census. The 1960 set of State economic areas represents a limited revision of the 1950 areas. This revision takes into account changes in the definitions of standard metropolitan statistical areas, but no attempt was made to reexamine the original principles or to apply them to more recent data relating to homogeneity. In addition, State economic areas were delineated for Alaska and Hawaii for the first time. As a result of the revision, the number of areas was increased from 501 to 509. (In the publications of the 1950 Census of Population, combinations of areas reduced the number of areas to 453.)

The combination of counties into State economic areas has been made for the entire country, and in this process the larger standard metropolitan statistical areas (those in 1960 with a central city of 50,000 or more and a total population of 100,000 or more) have been recognized as metropolitan State economic areas. When a standard metropolitan statistical area is located in two or more States or economic subregions, each State part and each part in an economic subregion becomes a separate metropolitan State economic area. In New England this correspondence of standard metropolitan State economic areas and standard metropolitan statistical areas does not exist because State economic areas are composed of whole counties, whereas standard metropolitan statistical areas are built up from towns. Here, a county with more than half its population in one or more standard metropolitan statistical areas is classified as a metropolitan State economic area if the county or a combination of counties containing the standard metropolitan statistical area or areas has 100,000 inhabitants or more.

AGE

The age classification is based on the age of the person in completed years as of April 1, 1960, as determined from the reply to a question on month and year of birth.

COLOR

The term "color" refers to the division of population into two groups, white and nonwhite. The color group designated as "nonwhite" includes Negroes, American Indians, Japanese, Chinese, Filipinos, Koreans, Hawaiians, Asian Indians, Malayans, Eskimos, Aleuts, etc. Persons of Mexican birth or ancestry who are not definitely of Indian or other nonwhite race are classified as white.

YEAR MOVED INTO PRESENT HOUSE

The data on year moved into present house refer to the most recent move the person made. Thus, a person who had moved back into the same house (or apartment) in which he had previously lived was asked to give the date at which he began the present occupancy. If a person had moved from one apartment to another in the same building, he was expected to give the year when he moved into the present apartment. The category "always lived here" consists of persons who reported that their residence on April 1, 1960, was the same as their residence at birth and who had never had any other place of residence.

SCHOOL ENROLLMENT

School enrollment is shown for persons 14 to 24 years old. Persons were included as enrolled in school if they were reported as attending or enrolled in a "regular" school or college at any time between February 1, 1960, and the time of enumeration. Regular schooling is that which may advance a person toward an elementary school certificate or high school diploma, or a college, university, or professional degree. Schooling that was not obtained in a regular school and schooling from a tutor or through correspondence courses were counted only if the credits obtained were regarded as transferable to a school in the regular school system. Schooling which is generally regarded as not regular includes that which is given in nursery schools, in specialized vocational, trade, or business schools; in on-the-job training; and through correspondence courses.

Elementary school, as defined here, includes grades 1 to 8, and high school includes grades 9 to 12. College includes junior or community colleges, regular 4-year colleges, and graduate or professional schools. In general, a "public" school is defined as any school which is controlled and supported primarily by a local, State, or Federal agency. All other schools are "private" schools.

YEARS OF SCHOOL COMPLETED

The data on years of school completed were derived from the answers to the two questions: (a) "What is the highest grade (or year) of regular school he has ever attended?" and (b) "Did he finish this grade (or year)?" Enumerators were instructed to obtain the approximate equivalent grade in the American school system for persons whose highest grade of attendance was in a foreign school system, whose highest level of attendance was in an ungraded school, whose

highest level of schooling was measured by "readers," or whose training by a tutor was regarded as qualifying under the "regular" school definition. Persons were to answer "No" to the second question if they were attending school, had completed only part of a grade before they dropped out, or failed to pass the last grade attended.

The number in each category of highest grade of school completed represents the combination of (a) persons who reported that they had attended the indicated grade and finished it, and (b) those who had attended the next higher grade but had not finished it.

VETERAN STATUS

A veteran is defined as a person who has served in the Armed Forces of the United States. All other persons are classified as nonveterans. Because relatively few females have served in the Armed Forces of this country, questions on veteran status were asked only of males. Furthermore, the statistics on veteran status presented here are for civilian males only and do not cover persons who were in the Armed Forces at the time of the census.

MARITAL STATUS

This classification refers to the marital status of the person at the time of enumeration. Persons classified as "married" comprise, therefore, both those who have been married only once and those who remarried after having been widowed or divorced. Persons reported as separated (either legally separated or otherwise absent from the spouse because of marital discord) are classified as a subcategory of married persons. The enumerators were instructed to report persons in common-law marriages as married and persons whose only marriage had been annulled as single. Persons "ever married" are those in the categories married (including separated), widowed, and divorced.

The number of married men may be different from the number of married women for an area because of the absence of husbands or wives from the country, because the husband and wife have different places of residence, because of the methods used to inflate the sample data, or for other reasons.

A married person with "spouse present" is a man or woman whose spouse was enumerated as a member of the same household even though he or she may have been temporarily absent on business or vacation, visiting, in a hospital, etc., at the time of enumeration. Persons classified as "married, spouse absent" include both those who are separated because of marital discord and those whose spouse is absent for other reasons, such as service in the Armed Forces or employment at a considerable distance from home.

HOUSEHOLD, GROUP QUARTERS, AND RELATIONSHIP TO HEAD OF HOUSEHOLD

A household consists of all the persons who occupy a housing unit. A house, an apartment or other group of rooms, or a single room, is regarded as a housing unit when it is occupied or intended for oc-

occupancy as separate living quarters; that is, when the occupants do not live and eat with any other persons in the structure and there is either (1) direct access from the outside or through a common hall or (2) a kitchen or cooking equipment for the exclusive use of the occupants.

All persons who are not members of households are regarded as living in group quarters. Group quarters are living arrangements for institutional inmates or for other groups containing five or more persons unrelated to the person in charge. Most of the persons in group quarters live in rooming houses, college dormitories, military barracks, or institutions. Inmates of institutions are persons for whom care or custody is provided in such places as homes for delinquent or dependent children; homes and schools for the mentally or physically handicapped; places providing specialized medical care for persons with mental disorders, tuberculosis, or other chronic disease; nursing and domiciliary homes for the aged and dependent; and prisons and jails.

For persons in households, several categories of relationship to head of household are recognized in this report:

1. The head of the household is the member reported as the head by the household respondent. However, if a married woman living with her husband is reported as the head, her husband is classified as the head for the purpose of census tabulations.

2. The wife of a head of a household is a woman married to and living with a household head. This category includes women in common-law marriages as well as women in formal marriages.

3. A child of the head is a son, daughter, stepchild, or adopted child of the head of the household. "Child of head" is a more inclusive category than "own child of head" (defined below).

4. An other relative of the head is a person related to the head of the household by blood, marriage, or adoption, but not included specifically in another category.

5. A nonrelative of the head is any member of the household who is not related to the household head. This category includes lodgers (roomers and partners, relatives of such persons, and foster children) and resident employees (maids, hired farm hands, etc.).

FAMILY

A family consists of two or more persons in the same household who are related to each other by blood, marriage, or adoption; all persons living in one household who are related to each other are regarded as one family. In a primary family, the head of the family is the head of a household. Other families are secondary families. A "husband-wife" family is a family in which the head and his wife are enumerated as members of the same household.

EMPLOYMENT STATUS

The data on employment status relate to the calendar week prior to the date on which the respondents filled their Household Questionnaires or were inter-

viewed by enumerators. This week is not the same for all respondents because not all persons were enumerated during the same week.

Employed persons comprise all civilians 14 years old and over who were either (a) "at work"--those who did any work for pay or profit, or worked without pay for 15 hours or more on a family farm or in a family business; or (b) were "with a job but not at work"--those who did not work and were not looking for work but had a job or business from which they were temporarily absent because of bad weather, industrial dispute, vacation, illness, or other personal reasons.

Persons are classified as unemployed if they were 14 years old and over and not "at work" but looking for work. A person is considered as looking for work not only if he actually tried to find work but also if he had made such efforts recently (i.e., within the past 60 days) and was awaiting the results of these efforts. Persons waiting to be called back to a job from which they had been laid off or furloughed are also counted as unemployed.

The "civilian labor force" includes all persons classified as employed or unemployed, as described above. The "labor force" also includes members of the Armed Forces (persons on active duty with the United States Army, Air Force, Navy, Marine Corps, or Coast Guard).

Persons "not in the labor force" comprise all those 14 years old and over who are not classified as members of the labor force, including persons doing only incidental unpaid family work (less than 15 hours during the week).

OCCUPATION

The data on occupation in this report are for employed persons and refer to the job held during the week for which employment status was reported. For persons employed at two or more jobs, the data refer to the job at which the person worked the greatest number of hours. The occupation statistics presented here are based on the detailed systems developed for the 1960 Census; see 1960 Census of Population, Classified Index of Occupations and Industries, U.S. Government Printing Office, Washington, D.C., 1960.

INCOME IN 1959

Information on income for the calendar year 1959 was requested from all persons 14 years old and over in the sample. "Total income" is the sum of amounts reported separately for wage or salary income, self-employment income, and other income. Wage or salary income is defined as the total money earnings received for work performed as an employee. It represents the amount received before deductions for personal income taxes, Social Security, bond purchases, union dues, etc. Self-employment income is defined as net money income (gross receipts minus operating expenses) from a business, farm, or professional enterprise in which the person was engaged on his own account. Other income includes money income received from such sources as net rents, interest, dividends, Social Security benefits, pensions, veterans' payments, unemployment

insurance, and public assistance or other governmental payments, and periodic receipts from insurance policies or annuities. Not included as income are money received from the sale of property (unless the recipient was engaged in the business of selling such property), the value of income "in kind," withdrawals of bank deposits, money borrowed, tax refunds, and gifts and lump-sum inheritances or insurance payments.

In the statistics on family income, the combined incomes of all members of each family are treated as a single amount. Although the time period covered by the income statistics is the calendar year 1959, the composition of families refers to the time of enumeration. For most of the families, however, the income reported was received by persons who were members of the family throughout 1959.

HOUSING CHARACTERISTICS

Occupied housing unit.--A housing unit is "occupied" if it is the usual place of residence of the person or group of persons living in it at the time of enumeration. Included are units occupied by persons who are only temporarily absent, such as persons on vacation. Units occupied by persons with no usual place of residence are also considered occupied.

Tenure.--A housing unit is "owned" if the owner or co-owner lives in the unit, even if it is mortgaged or not fully paid for. The head himself need not be the owner. All other occupied units are classified as "rented" whether or not cash rent is paid. Examples of units for which no cash rent is paid include units occupied in exchange for services rendered, units owned by relatives and occupied without payment of rent, and units occupied by sharecroppers.

Value.--Value is the respondent's estimate of how much the property would sell for on the current market (April 1960). Value data are restricted to owner-occupied units having only one housing unit in the property and no business. Units in multiunit structures and trailers were excluded from the tabulations, and in rural territory, units on farms and all units on places of 10 acres or more (whether farm or nonfarm) also were excluded.

Gross rent.--Gross rent is based on the information reported for contract rent and the cost of utilities and fuel. Contract rent is the monthly rent

agreed upon regardless of any furnishings, utilities, or services that may be included. The computed rent termed "gross rent" is the contract rent plus the average monthly cost of utilities (water, electricity, gas) and fuels such as wood, coal, and oil if these items are paid for by the renter. Thus, gross rent eliminates differentials which result from varying practices with respect to the inclusion of utilities and fuel as part of the rental payment. Rent data exclude rents for units in rural-farm territory.

Year structure built.--"Year built" refers to the date the original construction of the structure was completed, not to any later remodeling, addition, or conversion.

Condition.--The enumerator determined the condition of the housing unit by observation, on the basis of specified criteria. Nevertheless, the application of these criteria involved some judgment on the part of the individual enumerator. The training program for enumerators was designed to minimize differences in judgment.

Sound housing is defined as that which has no defects, or only slight defects which are normally corrected during the course of regular maintenance.

Deteriorating housing needs more repair than would be provided in the course of regular maintenance. Such housing has one or more defects of an intermediate nature that must be corrected if the unit is to continue to provide safe and adequate shelter.

Dilapidated housing does not provide safe and adequate shelter and in its present condition endangers the health, safety, or well-being of the occupants. Such housing has one or more critical defects, or has a combination of intermediate defects in sufficient number or extent to require considerable repair or rebuilding, or is of inadequate original construction. Critical defects result from continued neglect or lack of repair, or indicate serious damage to the structure.

Rooms.--The number of rooms is the count of whole rooms used for living purposes, such as living rooms, dining rooms, bedrooms, kitchens, finished attic or basement rooms, recreation rooms, lodgers' rooms, and rooms used for offices by a person living in the unit. Not counted as rooms are bathrooms; halls, foyers, or vestibules; closets; alcoves; pantries; strip or pullman kitchens; laundry or furnace rooms; unfinished attics, basements, and other space used for storage.

COLLECTION AND PROCESSING OF DATA

COLLECTION OF DATA

Several enumeration forms were used to collect the information for the 1960 Census of Population. A few days before the census date, the Post Office Department delivered an Advance Census Report (ACR) to households on postal delivery routes. This form contained questions which were to be answered for every person and every housing unit. Household members were requested to fill the ACR and have it ready for the enumerator. The census enumerator recorded this in-

formation on a form specially designed for electronic data processing by FOSDIC (Film Optical Sensing Device for Input to Computer). The information was either transcribed from the ACR to the complete-count FOSDIC schedule or entered on this schedule during direct interview.

In the densely populated areas, the enumerator left a Household Questionnaire to be completed by each household (or person) in the sample and mailed to the local census office. The population and housing information was transcribed from the Household

Questionnaire to a sample FOSDIC schedule. When the Household Questionnaire was not returned or was returned without having been completed, the enumerator collected the missing information by personal visit or by telephone and entered it directly on the sample FOSDIC schedule. In the remaining areas, when the enumerator picked up the ACR, he obtained all the information by direct interview and recorded it directly on the sample FOSDIC schedule.

Soon after the enumerator started work, his schedules were examined in a formal field review. This operation was designed to assure at an early stage of the work that the enumerator was performing his duties properly and had corrected any errors he had made.

More detailed descriptions of the 1960 Census procedures in the collection and processing of the data are given in reports entitled United States Censuses of Population and Housing, 1960: Principal Data Collection Forms and Procedures, 1961; and Processing the Data, 1962, U.S. Government Printing Office, Washington, D.C., 20402.

MANUAL EDITING AND CODING

After the FOSDIC forms had been checked for completeness in the field, they were sent to a central processing office for manual editing and coding and for microfilming. Except where some special problems arose, there was no manual coding of the FOSDIC forms for complete-count data. On the sample forms, the manual operation was limited to those items where coding required the reading of written entries and therefore could not be done effectively by machine. The coding clerks converted the written entries to codes by marking the appropriate circles on the FOSDIC schedules and at the same time were able to correct obviously wrong entries and sometimes supply missing information.

ELECTRONIC PROCESSING

After the enumerators and coders recorded the information by marking the appropriate circles, the schedules were microfilmed. The information on the microfilm was then read by FOSDIC, which converted the markings to signals on magnetic tape. The tape, in turn, was processed in an electronic computer, which was used extensively to edit and tabulate the data and to produce the publication tables.

EDITING

For a majority of items, nonresponses and inconsistencies were eliminated by using the computer to assign entries and correct inconsistencies. In general, few assignments or corrections were required, although the amount varied by subject and by enumerator.

The assignment of an acceptable entry by machine was based on related information reported for the person or on information reported for a similar person in the immediate neighborhood. For example, in the

assignment of age in the complete-count tabulations, the computer stored reported ages of persons by sex, color or race, household relationship, and marital status; each stored age was retained in the computer only until a succeeding person having the same characteristics and having age reported was processed through the computer; this stored age was assigned to the next person whose age was unknown and who otherwise had the same characteristics. This procedure insured that the distribution of ages assigned by the computer for persons of a given set of characteristics would correspond closely to the reported age distribution of such persons as obtained in the current census.

The extent of the allocations for nonresponse or for inconsistency is shown for the United States and for States, places of 10,000 inhabitants or more, and other areas in appendix tables in chapters B, C, and D of 1960 Census of Population, Volume I, Characteristics of the Population.

Specific tolerances were established for the number of computer allocations acceptable for a given area. If the number was beyond tolerance, the data were rejected and the original schedules were re-examined to determine the source of the error. Correction and reprocessing were undertaken as necessary and feasible.

ACCURACY OF THE DATA

Human and mechanical errors occur in any mass statistical operation such as a decennial census. Such errors include failure to obtain required information from respondents, obtaining inconsistent information, recording information in the wrong place or incorrectly, or otherwise producing inconsistencies between entries on interrelated items on the field documents. Sampling biases occur because some of the enumerators fail to follow the sampling instructions. Clerical coding and editing errors occur, as well as errors in the electronic processing operation.

Careful efforts are made in every census to keep the errors in each step at an acceptably low level. Review of the enumerator's work, verification of manual coding and editing, checking of tabulated figures, and ratio estimation of sample data to control totals from the complete count reduce the effects of the errors in the census data.

Very minor differences between tables in this report or between corresponding data in this report and chapters C and D of Volume I, Characteristics of the Population, result from imperfections in the electronic equipment. No attempt has been made to reconcile these minor discrepancies.

Some innovations in the 1960 Censuses reduced errors in processing and others produced a more consistent quality of editing. The elimination of the card-punching operation removed one important source of error. The extensive use of electronic equipment insured a more uniform and more flexible edit than could have been accomplished manually or by less intricate mechanical equipment. It is believed that the use of electronic equipment in the 1960 Censuses has improved the quality of the editing compared

with that of earlier censuses but, at the same time, it has introduced an element of difference in the statistics.

A group of reports designated Evaluation and Research Program Series will deal with the methods,

results, and interpretation of a group of evaluation and research studies of the 1960 Censuses of Population and Housing. A report entitled The Post-Enumeration Survey: 1950, Technical Paper No. 4, presents evaluative material on the 1950 Census.

SAMPLE DESIGN AND SAMPLING VARIABILITY

SAMPLE DESIGN

For persons in housing units at the time of the 1960 Census, the sampling unit was the housing unit and all its occupants; for persons in group quarters, it was the person. On the first visit to an address, the enumerator assigned a sample key letter (A, B, C, or D) to each housing unit sequentially in the order in which he first visited the units, whether or not he completed an interview. Each enumerator was given a random key letter to start his assignment, and the order of canvassing was indicated in advance, although these instructions allowed some latitude in the order of visiting addresses. Each housing unit to which the key letter "A" was assigned was designated as a sample unit, and all persons enumerated in the unit were included in the sample. In every group quarters, the sample consisted of every fourth person in the order listed. Although most of the 1960 statistics in this report are based on the full 25-percent sample, some are based on a subsample of one-fifth of the original 25-percent sample schedules. The subsample was selected on the computer, using a stratified systematic sample design. The strata were made up as follows: For persons in regular housing units there were 36 strata, i.e., 9 household size groups by 2 tenure groups, by 2 color groups; for persons in group quarters, there were 2 strata, i.e., the 2 color groups.

Although the sampling procedure did not automatically insure an exact 25-percent or 5-percent sample of

persons, the sample design was unbiased if carried through according to instructions. Generally, for large areas, the deviation from the estimated sample size was found to be quite small. Biases may have arisen, however, when the enumerator failed to follow his listing and sampling instructions exactly.

Table A compares the distribution by mobility status of the population 5 years old and over based on the 5-percent sample with corresponding statistics based on the 25-percent sample. Differences between the distributions reflect primarily sampling error with the exception of the categories "same county" and "different county, same State." In preparing the record for the 5-percent sample, all movers from one borough to another within New York City were classified as movers within the "same county," whereas the 25-percent record classified persons who moved across borough lines as movers between counties within the "same State." From the 5-percent sample records, statistics for the categories "same county" and "different county, same State" cannot be obtained for New York City on a basis directly comparable with statistics for the 25-percent sample records. Hence, the 5-percent sample shows approximately 450,000 more movers within the same county, and the number of migrants between counties in the same State is approximately 450,000 less than the number shown in the 25-percent sample. This difference in treatment should have little influence on the percent distribution of characteristics of movers and migrants for the United States as a whole.

Table A.—COMPARISON OF THE 25-PERCENT AND 5-PERCENT SAMPLE DATA ON MOBILITY OF THE POPULATION 5 YEARS OLD AND OVER IN 1960, FOR THE UNITED STATES: 1960

Mobility status	25-percent sample	5-percent sample	Percent distribution		Ratio of 25-percent sample number to 5-percent sample number
			25-percent sample	5-percent sample	
Total, 5 years old and over.....	159,003,811	158,991,057	100.0	100.0	1.000
Same house.....	79,331,018	79,383,929	49.9	49.9	.999
Different house in the United States.....	75,185,801	75,132,406	47.3	47.3	1.001
Same county.....	47,387,169	47,812,950	29.8	30.1	.991
Different county.....	27,798,632	27,319,456	17.5	17.2	1.018
Same State.....	13,657,145	13,177,139	8.6	8.3	1.036
Different State.....	14,141,487	14,142,317	8.9	8.9	.999
Abroad.....	2,002,822	1,997,813	1.3	1.3	1.003
Place of prior residence not reported.....	2,484,170	2,476,909	1.6	1.6	1.003

RATIO ESTIMATION

The statistics based on the 25-percent and 5-percent samples of the 1960 Census returns are estimates that have been developed through the use of a ratio estimation procedure. (For a discussion of the

ratio estimation procedure used in the full 25-percent sample, see the Volume I report for the United States.) For the 5-percent sample, this procedure was carried out for each of the following 44 groups of persons in each of the sample weighting areas:³

Group	Sex, color, and age	Relationship and tenure
Male white:		
1	Under 5	
2	5 to 13	
3	14 to 24	Head of owner household
4	14 to 24	Head of renter household
5	14 to 24	Not head of household
6-8	25 to 44	Same groups as age group 14 to 24
9-11	45 and over	Same groups as age group 14 to 24
Male nonwhite:		
12-22	Same groups as male white	
Female white:		
23-33	Same groups as male white	
Female nonwhite:		
34-44	Same groups as male white	

The sample weighting areas were defined as those areas within a State consisting of central cities of urbanized areas, the remaining portion of urbanized areas not in central cities, urban places not in urbanized areas, or rural areas.

For each of the 44 groups, the ratio of the complete count to the sample count of the population in the group was determined. Each specific sample person in the group was assigned an integral weight so that the sum of the weights would equal the complete count for the group. For example, if the ratio for a group was 20.1, one-tenth of the persons (selected at random) within the group were assigned a weight of 21, and the remaining nine-tenths a weight of 20. The use of such a combination of integral weights rather than a single fractional weight was adopted to avoid the complications involved in rounding in the final tables. In order to increase the reliability, where there were fewer than 275 persons in the complete count in a group, or where the resulting weight was over 80, groups were combined in a specific order to satisfy both of these two conditions.

These ratio estimates reduce the component of sampling error arising from the variation in the size of household and achieve some of the gains of stratification in the selection of the sample, with the strata being the groups for which separate ratio estimates are computed. The net effect is a reduction in the sampling error and bias of most statistics below what would be obtained by weighting the results of the 5-percent sample by a uniform factor of 20. The reduction in sampling error will be trivial for some items and substantial for others. A by-product of

³ Estimates of characteristics from the sample for a given area are produced using the formula:

$$x' = \sum_{i=1}^{44} \frac{x_i}{Y_i} Y_i$$

where x' is the estimate of the characteristic for the area obtained through the use of the ratio estimation procedure, x_i is the count of sample persons with the characteristic for the area in one (i) of the 44 groups, Y_i is the count of all sample persons for the area in the same one of the 44 groups, and Y is the count of persons in the complete count for the area in the same one of the 44 groups.

this estimation procedure, in general, is that estimates for this sample are generally consistent with the complete count with respect to the total population and for the subdivisions used as groups in the estimation procedure. A more complete discussion of the technical aspects of these ratio estimates will be presented in another report.

SAMPLING VARIABILITY

The figures from the sample tabulations are subject to sampling variability, which can be estimated roughly from the standard errors shown in tables B and C below. Somewhat more precise estimates of sampling error may be obtained by using the factors shown in table D in conjunction with table C for percentages and table B for absolute numbers.

These tables⁴ do not reflect the effect of response variance, processing variance, or bias arising in the collection, processing, and estimation steps. Estimates of the magnitude of some of these factors in

Table B.--ROUGH APPROXIMATION TO STANDARD ERROR OF ESTIMATED NUMBER
(Range of 2 chances out of 3)

Estimated number	Standard error		Estimated number	Standard error	
	25-percent sample	5-percent sample		25-percent sample	5-percent sample
50.....	15	30	5,000.....	110	280
100.....	20	40	10,000.....	160	390
250.....	30	60	15,000.....	190	480
500.....	40	90	25,000.....	250	620
1,000.....	50	120	50,000.....	350	880
2,500.....	80	200			

Table C.--ROUGH APPROXIMATION TO STANDARD ERROR OF ESTIMATED PERCENTAGE
(Range of 2 chances out of 3)

Estimated percentage	Base of percentage					
	500	1,000	2,500	10,000	25,000	100,000
25-PERCENT SAMPLE						
2 or 98.....	1.3	0.9	0.5	0.3	0.1	0.1
5 or 95.....	2.0	1.4	0.9	0.4	0.2	0.1
10 or 90.....	2.8	2.0	1.2	0.6	0.3	0.2
25 or 75.....	3.8	2.7	1.5	0.7	0.4	0.2
50.....	4.4	3.1	1.6	0.8	0.5	0.3
5-PERCENT SAMPLE						
2 or 98.....	3.3	2.3	1.3	0.8	0.3	0.3
5 or 95.....	5.0	4.0	2.3	1.0	0.5	0.3
10 or 90.....	7.0	5.0	3.0	1.5	0.8	0.5
25 or 75.....	10.0	6.8	3.8	1.8	1.0	0.5
50.....	11.0	7.8	4.0	2.0	1.3	0.8

⁴ The estimates of sampling variability are based on calculations from a preliminary sample of the 1960 Census results. Further estimates are being calculated and will be available at a later date.

the total error are being evaluated and will be published at a later date. The chances are about 2 out of 3 that the difference due to sampling variability between an estimate and the figure that would have been obtained from a complete count of the population is less than the standard error. The chances are about 19 out of 20 that the difference is less than twice the standard error and about 99 out of 100 that it is less than $2\frac{1}{2}$ times the standard error. The amount by which the estimated standard error must be multiplied to obtain other odds deemed more appropriate can be found in most statistical textbooks.

Table B shows rough standard errors of estimated numbers up to 50,000. The relative sampling errors of larger estimated numbers are somewhat smaller than for 50,000. For estimated numbers above 50,000, however, the nonsampling errors, e.g., response errors and processing errors, may have an increasingly important effect on the total error. Table C shows rough standard errors of data in the form of percentages. Linear interpolation in tables B and C will provide approximate results that are satisfactory for most purposes.

For a discussion of the sampling variability of medians and means and of the method for obtaining standard errors of differences between two estimates, see the Volume I report for the United States.

Table D provides a factor by which the standard errors shown in table B should be multiplied to adjust for the combined effect of the sample design and the estimation procedure. To estimate a somewhat more precise standard error for a given characteristic, locate in table D the factor applying to the characteristic. Multiply the standard error given for the size of the estimate as shown in table B by this factor from table D. The result of this multiplication is

the approximate standard error. Similarly, to obtain a somewhat more precise estimate of the standard error of a percentage, multiply the standard error as shown in table C by the factor from table D.

Table D.--FACTOR TO BE APPLIED TO STANDARD ERRORS

Characteristic	Factor
Mobility status.....	1.6
By age, sex, and color.....	1.6
By farm, nonfarm.....	1.8
By year moved into present house.....	1.6
By place of residence, 1955.....	1.6
By all other characteristics.....	1.2
Year moved into present house.....	1.6
Place of residence, 1960.....	0.8
By place of residence, 1955.....	1.2

Illustration: Table 1 shows that there are 40,101 rural-farm residents 5 years old or over who were living abroad in 1955. Table 1 is based on the 25-percent sample and table B shows that the standard error for an estimate of 40,101, based on the 25-percent sample, is about 310. Table D shows that for characteristics on mobility status by farm-nonfarm residence, the standard error from table B should be multiplied by a factor of 1.8. The factor of 1.8 times 310, or 558, means that the chances are approximately 2 out of 3 that the results of a complete census would not differ by more than 558 from this estimated 40,101. It also follows that there is only about 1 chance in 100 that a complete census result would differ by as much as 1,395, that is, by about $2\frac{1}{2}$ times the number estimated from tables B and D.