

# U.S. CENSUS OF POPULATION: 1960

Final Report PC(2)-2C

## SUBJECT REPORTS

# *Mobility for Metropolitan Areas*

*Population Movement Within SMSA's  
and Migration To and From SMSA's*

*Prepared under the supervision of  
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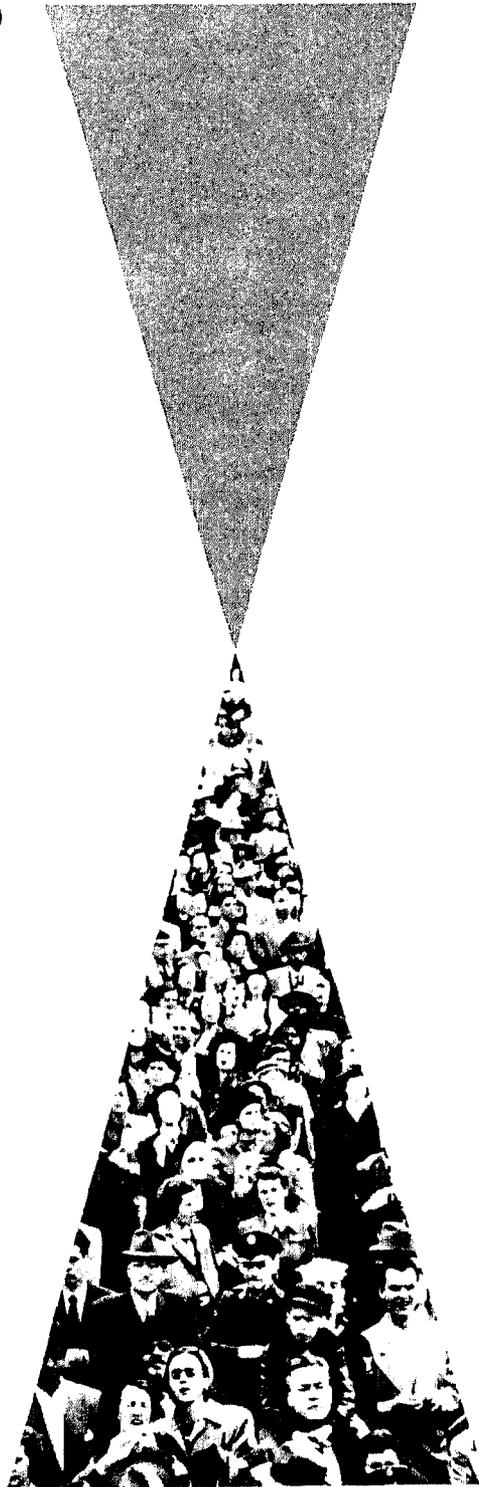


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## PREFACE

This report presents statistics from the 1960 Census of Population on the movement of the population between 1955 and 1960 among standard metropolitan statistical areas of 250,000 or more and their component parts. 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)-2C. 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, George E. Turner, 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.

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# 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 53C: 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 53D: 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 shown 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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# Mobility for Metropolitan Areas

## GENERAL

This report presents statistics on residence in 1955 for persons 5 years old and over who were living in 1960 or in 1955 in the 101 standard metropolitan statistical areas with a population of 250,000 or more. The focus is on changes in residence within and between standard metropolitan statistical areas and on the influx of people from nonmetropolitan areas. Some statistics on out-movers from the metropolitan areas are also included, however. The several mobility categories are cross-classified by various demographic, social, and economic characteristics. The statistics for this report are derived 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 the 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. These reports also present statistics on mobility status and region of origin by age, color, and sex, 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 by 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)-2B, Mobility for States and State Economic Areas; and PC(2)-2D, Lifetime and Recent Migration. The report, PC(3)-1D, Standard Metropolitan Statistical Areas, includes some data on mobility. 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 a one-year interval, 1949-1950, rather than a five-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 counties. Data on mobility status were 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-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 five-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,<sup>1</sup> 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 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 published mostly in the 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 both reports. Similar estimates of net migration can also be computed by age, color, and sex; and such estimates have been published by a number of agencies.

<sup>1</sup> A quasi-county was defined as a city of 100,000 or more or the balance of the county.

## AVAILABILITY OF UNPUBLISHED DATA

The statistics appearing in this report represent the full detail printed out by the computer system. Comparable detail was tabulated separately from the tape for the balance of the State by urban and rural residence and by color and sex, but was stored in the

magnetic tape and not printed out. 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 in each of the State parts.

## RESIDENCE IN 1955 FOR STANDARD METROPOLITAN STATISTICAL AREAS

This report deals with the movements of people to, from, and within SMSA's of 250,000 or more. Residents of these SMSA's are classified as to whether their location was in the central city or in the ring of the same SMSA in 1960, and movers are classified in terms of metropolitan or nonmetropolitan residence in 1955. Table 1 summarizes the movements of people among SMSA's and the arrival of new residents from nonmetropolitan areas, giving a rough characterization of distance spanned in terms of "same State" or "different State." Table 2 distinguishes origin in terms of individual SMSA's of 250,000 or more, whereas table 3 gives origin in terms of individual States of 1955 residence. Table 4 gives the demographic, social, and economic characteristics of in-movers to the central city and outlying ring of the SMSA, according to types of origin. Tables 5 and 6 give similar information for out-movers from these SMSA's. Finally, table 7 shows the number of movers in the detailed streams within the SMSA's of 500,000 or more.

## Definitions

The data on residence in 1955 were derived from answers to the following questions on the FOSDIC form.

<b>P13a. In what city (or town) did he live on April 1, 1955?</b>	
Born April 1955 or later	<input type="radio"/> Skip to next person
This house....	<input type="radio"/> Skip to P14
Not in a city..	<input type="radio"/> Skip to P13c
This city.....	<input type="radio"/>
Different city→	Specify.....
<b>P13b. If city or town—Did he live inside the city limits?</b> (Yes <input type="radio"/> No <input type="radio"/> )	
<b>P13c. In what county (and State) did he live?</b>	
This county	<input type="radio"/>
Different county→	Specify } County.....
	State.....
	(or foreign country, 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 on April 1, 1955. 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. For the purposes of several tables in this report, these persons were subdivided into four principal groups according to their 1955 residence, viz., (1) central city of the same SMSA, (2) ring of the same SMSA, (3) other SMSA, and (4) nonmetropolitan area. In some tables the latter two categories were further subdivided into "same State" and "different State." For persons who are living in a different State from the 1955 State of residence, the data in table 2 indicate whether the interstate move occurred between contiguous or noncontiguous States. States have been classified as contiguous if their boundaries touch at any point.<sup>2</sup> 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

sufficiently complete and consistent information concerning residence on April 1, 1955, was not collected are included in the group "moved, place of 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.

#### Uses and Limitations of the Data

The census statistics on mobility provide information on the number of movers, migrants, etc., and on in-movement and out-movement for a given area. These statistics, however, do not take into account all the different moves that were made in the five-year period.

<sup>2</sup> 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., N. 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

For example, some persons in the same house at the two dates had moved during the five-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 five-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 information, however, provides some indication of the relative distance involved in the moves. On the average, a person who moves within a metropolitan area moves a shorter distance than one who moves to another area in the same State, who in turn moves a shorter distance than a mover to a contiguous State, and so on.

Comparison of the characteristics of migrants and other movers with the characteristics of the nonmovers gives some indication 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 five-year period, as chosen for use in the 1960 Census, should give a more representative picture of recent mobility than does the one-year period that has been used in other censuses and surveys. Nonetheless, the last five years of the 1950-1960 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 SMSA's of 250,000 inhabitants or more in 1960.

#### Quality of the Data

During the tabulation of statistics on residence in 1955, it was discovered that some enumerators working in counties containing central cities of SMSA's, but outside the cities themselves, had failed to identify correctly these central cities as places of previous residence. For the convenience of the enumerator and the coder, the FOSDIC document contained a circle for "This city" for indicating that the place of 1955 residence was the respondent's city or town of 1960 residence. Some enumerators understood this category to refer to a nearby large city and filled the circle when they should have written in the name of that city in PL3a of form PH60-3. Since the city that actually contained the place of residence was frequently a central city of an SMSA, the statistics were impaired.

After a limited study of the relevant materials, including some of the Household Questionnaires (which gave the respondent's own written reply), it was decided that a simple mechanical edit would tend to improve the statistics. This mechanical edit applies to entries for persons living in unincorporated parts of counties containing the central city of an SMSA (or other city with a population of 50,000 or more). For these persons, a code of "This city" was tabulated

as the largest city in the county. This edit was not used in New England, New Jersey, or the urban townships of Pennsylvania since it was considered likely that the category "This city" was used to refer to the town or township rather than to the large city. For the same reason, in all States, entries for persons living in incorporated places were not edited. Finally, codes of "This city" for persons living in unincorporated areas outside counties containing central cities of SMSA's (or other city of 50,000 or more) were tabulated as "balance of county" since it was not clear what city, if any, was intended.

Prior to the mechanical edit, there was an under-reporting of movement from a central city to its outlying ring. Overall, it appears that the published statistics are substantially better than would have been the case had the corrective edit been omitted. The edit may have overcorrected the error in some SMSA's and undercorrected in others. There was considerable variation in the error rate from one SMSA to another. Hence, caution still needs to be exercised in using the statistics.

In addition to the evidence just discussed, there is some indication from the 1940 Census and from a pretest for the 1950 Census that the number of movers from large cities tends to be overstated at the expense of adjacent areas. This overstatement probably results from a tendency of migrants from the suburbs or other part of the outlying ring to give the central city as their former residence. It is thought that this tendency is particularly characteristic of long-distance migrants. For example, migrants from the unincorporated urban fringe, or even from a small satellite city, to a distant area may often give the central city as their previous residence, since the name of their actual former place of residence would not usually be familiar in their new locality and might require further explanation. Accordingly, despite the great interest in the total number of movers from large cities, it was decided to limit the 1960 tabulations on that subject to movers within the metropolitan area. Even for these relatively short-distance moves, however, some bias may have persisted. If so, it would not affect the figures on in-movers but would affect figures that could be computed on net movement.

Another problem that has some effect on the statistics on mobility in SMSA's is the annexation of territory by the central city. The Enumerator's Reference Manual contained the following instruction: "If the area of residence on April 1, 1955, was annexed to the city after that time, mark 'No' for question on city limits." To the extent that this instruction was followed, movers from a recent annexation would be classified thus:

1. If to the "old city" area--as a mover from ring to city;
2. If to the 1960 ring--as a mover within the ring;
3. If within the annexation--as a mover from ring to city.

It is not known how well the above instruction was followed. Moreover, it was not given to the respondents who filled the Household Questionnaires.

The importance of annexations during the 1950-1960 decade can be gauged from table 9 in the Volume I report for each State. Those annexations occurring between April 1, 1955, and March 31, 1960, are of the most direct relevance. When a large annexation appears to constitute a potential problem, it is suggested that the user of the present report, study table P-1 in the appropriate Final Report, PHC(1), Census Tracts, to see whether movers living in annexed tracts were reported in unusually high proportions as originating in "other part of this SMSA."

In table 4, mobility status is cross-classified by year moved into present house. Some of the inconsistencies are only apparent but others are real. For nonmovers ("same house" in 1955) reports of dates after April 1, 1955, could well be correct since the question applied to the date of the last move and the person may have both left the housing unit and returned during the five-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 five-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 category, "migration status not reported," included persons for whom information supplied was not sufficient for the assignment of a more specific category.

#### 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.

STANDARD METROPOLITAN STATISTICAL AREAS

It has long been recognized that for many types of analysis it is necessary to consider as a unit the entire population in and around a city, the activities of which form an integrated economic and social system. Prior to the 1950 Census, areas of this type had been defined in somewhat different ways for different purposes and by various agencies. Leading examples were the metropolitan districts of the Census of Population, the industrial areas of the Census of Manufactures, and the labor market areas of the Bureau of Employment Security. To permit all Federal statistical agencies to utilize the same areas for the publication of general-purpose statistics, the Bureau of the Budget has established "standard metropolitan statistical areas" (SMSA's). (In the 1950 Census, these areas were referred to as "standard metropolitan areas.") Every city of 50,000 inhabitants or more according to the 1960 Census of Population is included in an SMSA.

The definitions and titles of SMSA's are established by the Bureau of the Budget with the advice of the Federal Committee on Standard Metropolitan Statistical Areas. This committee is composed of representatives of the major statistical agencies of the Federal Government. The criteria used by the Bureau of the Budget in establishing the SMSA's are presented below. (See the Bureau of the Budget publication Standard Metropolitan Statistical Areas, U.S. Government Printing Office, Washington, D.C., 1961.)

The definition of an individual SMSA involves two considerations: First, a city or cities of specified population to constitute the central city and to identify the county in which it is located as the central county; and, second, economic and social relationships with contiguous counties which are metropolitan in character, so that the periphery of the specific metropolitan area may be determined.<sup>3</sup> SMSA's may cross State lines.

Population criteria.--The criteria for population relate to a city or cities of specified size according to the 1960 Census of Population.

1. Each SMSA must include at least:
  - a. One city with 50,000 inhabitants or more, or
  - b. Two cities having contiguous boundaries and constituting, for general economic and social purposes, a single community with a combined population of at least 50,000, the smaller of which must have a population of at least 15,000.
2. If each of two or more adjacent counties has a city of 50,000 inhabitants or more (or twin cities

under 1b) and the cities are within 20 miles of each other (city limits to city limits), they will be included in the same area unless there is definite evidence that the two cities are not economically and socially integrated.

Criteria of metropolitan character.--The criteria of metropolitan character relate primarily to the attributes of the contiguous county as a place of work or as a home for a concentration of nonagricultural workers.

3. At least 75 percent of the labor force of the county must be in the nonagricultural labor force.<sup>4</sup>

4. In addition to criterion 3, the county must meet at least one of the following conditions:

a. It must have 50 percent or more of its population living in contiguous minor civil divisions<sup>5</sup> with a density of at least 150 persons per square mile, in an unbroken chain of minor civil divisions with such density radiating from a central city in the area.

b. The number of nonagricultural workers employed in the county must equal at least 10 percent of the number of nonagricultural workers employed in the county containing the largest city in the area, or the county must be the place of employment of 10,000 nonagricultural workers.

c. The nonagricultural labor force living in the county must equal at least 10 percent of the number of the nonagricultural labor force living in the county containing the largest city in the area, or the county must be the place of residence of a nonagricultural labor force of 10,000.

5. In New England, the city and town are administratively more important than the county, and data are compiled locally for such minor civil divisions. Here, towns and cities are the units used in defining SMSA's. In New England, because smaller units are used and more restricted areas result, a population density criterion of at least 100 persons per square mile is used as the measure of metropolitan character.

Criteria of integration.--The criteria of integration relate primarily to the extent of economic and social communication between the outlying counties and central county.

6. A county is regarded as integrated with the county or counties containing the central cities of the area if either of the following criteria is met:

a. 15 percent of the workers living in the county work in the county or counties containing central cities of the area, or

<sup>3</sup> Central cities are those appearing in the SMSA title. A "contiguous" county either adjoins the county or counties containing the largest city in the area, or adjoins an intermediate county integrated with the central county. There is no limit to the number of tiers of outlying metropolitan counties so long as all other criteria are met.

<sup>4</sup> Nonagricultural labor force is defined as those employed in nonagricultural occupations, those experienced unemployed whose last occupation was a nonagricultural occupation, members of the Armed Forces, and new workers.

<sup>5</sup> A contiguous minor civil division either adjoins a central city in an SMSA or adjoins an intermediate minor civil division of qualifying population density. There is no limit to the number of tiers of contiguous minor civil divisions so long as the minimum density requirement is met in each tier.

b. 25 percent of those working in the county live in the county or counties containing central cities of the area.

Only where data for criteria 6a and 6b are not conclusive are other related types of information used as necessary. This information includes such items as the average number of telephone calls per subscriber per month from the county to the county containing central cities of the area; percent of the population in the county located in the central city telephone exchange area; newspaper circulation reports prepared by the Audit Bureau of Circulation; analysis of charge accounts in retail stores of central cities to determine the extent of their use by residents of the contiguous county; delivery service practices of retail stores in central cities; official traffic counts; the extent of public transportation facilities in operation between central cities and communities in the contiguous county; and the extent to which local planning groups and other civic organizations operate jointly.

Criteria for titles.--The criteria for titles relate primarily to the size and number of central cities.

7. The complete title of an SMSA identifies the central city or cities and the State or States in which the SMSA is located:

a. The name of the SMSA includes that of the largest city.

b. The addition of up to two city names may be made in the area title, on the basis and in the order of the following criteria:

(1) The additional city has at least 250,000 inhabitants.

(2) The additional city has a population of one-third or more of that of the largest city and a minimum population of 25,000 except that both city names are used in those instances where cities qualify under criterion 1b. (A city which qualified as a secondary central city in 1950 but which does not qualify in 1960 has been temporarily retained as a central city.)

c. In addition to city name, the area titles contain the name of the State or States in which the area is located. That part of an SMSA that is outside the central city or cities is referred to in this report as the ring.

#### 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, Malaysians, 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.

#### 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.

The questions on educational attainment applied only to progress in "regular" schools. 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.

#### 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 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; 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, step-child, or adopted child of the head of the household.

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 AND UNRELATED INDIVIDUAL

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.

An unrelated individual is (1) a member of a household who is living entirely alone or with one or more persons all of whom are not related to him, or (2) a person living in group quarters who is not an inmate of an institution. A head of a household living alone or with nonrelatives only is a primary individual.

#### 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.

## 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 information 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 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 which was assigned the key letter "A" 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 the sampling procedure did not automatically insure an exact 25-percent sample of persons or housing units in each locality, the sample design was unbiased if carried through according to instructions; and, generally, for large areas the deviation from 25 percent was found to be quite small. Biases may have arisen, however, when the enumerator failed to follow his listing and sampling instructions exactly.

### RATIO ESTIMATION

The statistics based on the sample of the 1960 Census returns are estimates that have been developed through the use of a ratio estimation procedure. This procedure was carried out for each of 44 groups of

persons in each of the smallest areas for which sample data are published.<sup>6</sup> (For a more complete discussion of the ratio estimation procedure, see 1960 Census of Population, Volume I, Characteristics of the Population, Part 1, United States Summary.)

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 25-percent sample by a uniform factor of four. The reduction in sampling error is trivial for some items and substantial for others. A by-product of this estimation procedure, in general, is that estimates for this sample are consistent with the complete count with respect to the total population and for the subdivisions used as groups in the estimation procedure.

<sup>6</sup> 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  $Y_1$  is the count of persons in the complete count for the area in the same one of the 44 groups.

SAMPLING VARIABILITY

The figures from the 25-percent sample tabulations are subject to sampling variability, which can be estimated roughly from the standard errors shown in tables A and B. Somewhat more precise estimates of sampling error may be obtained by using the factors shown in table C in conjunction with table B for percentages and table A for absolute numbers. These tables<sup>7</sup> 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 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 2½ 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 A.--ROUGH APPROXIMATION TO STANDARD ERROR OF ESTIMATED NUMBER  
(Range of 2 chances out of 3)

Estimated number	Standard error	Estimated number	Standard error
50.....	15	5,000.....	110
100.....	20	10,000.....	160
250.....	30	15,000.....	190
500.....	40	25,000.....	250
1,000.....	50	50,000.....	350
2,500.....	80		

Table B.--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
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

Table A shows rough standard errors of estimated numbers up to 50,000. The relative sampling errors of larger estimated numbers are somewhat smaller than

<sup>7</sup> These estimates of sampling variability are based on partial information on variances calculated from a sample of the 1960 Census results. Further estimates are being calculated and will be made available at a later date.

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 B shows rough standard errors of data in the form of percentages. Linear interpolation in tables A and B 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 1960 Census of Population, Volume I, Characteristics of the Population, Part 1, United States Summary.

Table C provides a factor by which the standard errors shown in table A or 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 C the factor applying to the characteristic. Where data are shown as cross-classifications of two characteristics, locate each characteristic in table C. The factor to be used for any cross-classification will usually lie between the values of the factors. When a given characteristic is cross-classified in extensive detail (e.g., by single years of age), the factor to be used is the smaller one shown in table C. Where a characteristic is cross-classified in broad groups (or used in broad groups), the factor to be used in table C should be closer to the larger one. Multiply the standard error given for the size of the estimate as shown in table A by this factor from table C. 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 B by the factor from table C.

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

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

Illustration: Table 1 shows that there are 32,054 total persons 5 years old and over living in the Akron, Ohio, SMSA who lived in a different SMSA in 1955. Table A shows that the standard error for an estimate of 32,054 is about 278. Table C shows that for characteristics on place of residence in 1960 by place of residence in 1955 the standard error from table A should be multiplied by a factor of 1.2. The factor of 1.2 times 278, or 334, means that the chances are approximately 2 out of 3 that the results of a complete census would not differ by more than 334 from

