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U.S. CENSUS OF POPULATION: 1960

Final Report PC(2)-8B

SUBJECT REPORTS

Income of the Elderly Population

*Personal and Family Statistics
for Persons 65 Years Old and Over*

*Prepared under the supervision of
HOWARD G. BRUNSMAN, Chief
Population Division*



U.S. DEPARTMENT OF COMMERCE

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BUREAU OF THE CENSUS

Richard M. Scammon, Director (From May 4, 1961)

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PREFACE

This report presents statistics from the 1960 Census of Population on income for persons 65 years old and over by family status and sex. Data are also presented on income for families in which the head or the wife is 65 years old and over, cross-classified by the combined income of the head and his wife, the income of the head, and the income of relatives (other than wife) 65 years old and over. 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 U.S. 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)-8B. 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, Demographic Statistics Branch, and Arno I. Winard, assisted by Mary F. Henson, of the Consumer Income and Expenditures 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.

June 1963.

FINAL REPORTS OF THE 1960 CENSUS OF POPULATION

The final reports of the 1960 Population Census are arranged in four volumes and a joint Population-Housing series of census tract reports. For Volumes II, III, and IV, which remain to be published as of this date, the scheduled content is subject to change. 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. For reports not yet issued, more detailed descriptions of content than those given below can be obtained from the Chief, Population Division, Bureau of the Census, Washington 25, D.C.

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.

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. The four chapters for each area are now being assembled for issuance in a buckram-bound "part." The 57 chapters "A" have been assembled and issued in a buckram-bound edition, designated as Part A. (For Guam, Virgin Islands, American Samoa, and Canal Zone, the material normally contained chapters B, C, and D are included in chapter B.)

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, Parts 1 to 57: Characteristics of the Population. This will consist of 57 parts--one for the United States, each of the 50 States, District of Columbia, Puerto Rico, Guam, Virgin Islands, American Samoa, and Canal Zone. Each part will consist of the data previously published in the four chapters A, B, C, and D, and will be 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--will be bound in a single book.

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

Volume III (Series PC(3) reports). Selected Area Reports. This volume will contain three reports presenting, respectively, selected characteristics of the population (1) for State economic areas, and (2) according to the size of place where the individual resided, and (3) social and economic characteristics of Americans overseas.

Volume IV. Summary and Analytical Report. This report will present an analytical review of the results of the 1960 Census of Population for each major field.

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 included in the publication program for the 1960 Census of Housing.)

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Income of the Elderly Population

GENERAL

This report, based on the 1960 Census of Population, contains 25-percent sample data on the income of persons 65 years old and over and on the income of families in which the head or wife was 65 and over. Data are presented for the United States, each of the 50 States and the District of Columbia, and standard metropolitan statistical areas of 250,000 or more. All statistics in this report are based on a 25-percent sample of the population. Information on age, sex, and family status was collected on a complete-count basis; but the data on these items shown in this report are based on persons in the 25-percent sample.

RELATED MATERIALS

1960 Census reports.--Other statistics on income of families by age of head (including heads 65 years old and over), on unrelated individuals by age, relatives of head by age, and all persons by age (including the age groups 65 to 74 years and 75 years and over), by sex, may be found in chapter D of Parts 1 through 51 of Volume I, Characteristics of the Population, for the United States, each of the States and their urban, rural-nonfarm, and rural-farm parts, and counties and standard metropolitan statistical areas of 250,000 or more.

Additional cross-classifications of income statistics for the United States by a number of characteristics, including age, are planned for the two scheduled PC(2) reports entitled Families and Sources and Structure of Family Income. Cross-tabulations of housing and household characteristics of units occupied by persons 60 years old and over, for the United States, each of the 50 States and the District of Columbia, and selected standard metropolitan statistical areas are published in Volume VII of the 1960 Census of Housing reports, Housing of Senior Citizens.

1950 Census reports.--Data on the income of persons 65 years old and over, and of relatives of head 65 and over by sex, for the United States, each of the

States, and standard metropolitan statistical areas have been published in Volume II of the 1950 Census of Population. Data on the income of families with head 65 years old and over and of unrelated individuals 65 and over, for the United States, appear in the 1950 Census report, Volume IV, Special Reports, Part 2, chapter A, General Characteristics of Families. Data on the income of persons 65 years old and over by family status and sex, for the United States, appear in the 1950 Census report, Volume IV, Special Reports, Part 2, chapter D, Marital Status.

Current Population Reports.--Each year since 1945, the Current Population Survey conducted by the Bureau of the Census has provided national estimates of the income of families with head 65 years old and over, unrelated individuals 65 and over, and of persons 65 and over, by sex (Current Population Reports, Series P-60). The income statistics provided by the Current Population Survey are, in general, designed to be comparable with the decennial census statistics. The actual comparability of the statistics is discussed in the section below on "Income in 1959."

AVAILABILITY OF UNPUBLISHED DATA

The data presented here for States and standard metropolitan statistical areas of 250,000 or more were also tabulated for the central cities of the areas, as well as for the urban-rural parts of the remainder outside the central city. They were also tabulated for the nonmetropolitan balance of States by urban-rural residence. These data, which are on magnetic computer tape, can be made available on a reimbursable basis. Inquiries concerning unpublished data should be transmitted to the Bureau as soon as possible because tape files are not maintained indefinitely. Requests for unpublished data, giving a specific description of the figures desired, may be made in writing to the Chief, Population Division, Bureau of the Census, Washington 25, D.C.

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.

INCOME IN 1959

Definitions

The data on income were derived from answers to the following questions on the Household Questionnaire:

<p>P32. How much did this person earn in 1959 in wages, salary, commissions, or tips from all jobs?</p> <p>Before deductions for taxes, bonds, dues, or other items. (Enter amount or check "None." If exact figure not known, give best estimate.)</p> <p>\$.....00 OR None.. <input type="checkbox"/></p> <p>(Dollars only)</p>
<p>P33. How much did he earn in 1959 in profits or fees from working in his own business, professional practice, partnership, or farm?</p> <p>Net income after business expenses. (Enter amount or check "None." If exact figure not known, give best estimate. If business or farm lost money, write "Loss" after amount.)</p> <p>\$.....00 OR None.. <input type="checkbox"/></p> <p>(Dollars only)</p>
<p>P34. Last year (1959), did this person receive any income from:</p> <p>Social security Pensions Veteran's payments Rent (minus expenses) Interest or dividends Unemployment insurance Welfare payments Any other source not already entered</p> <p>Yes.. <input type="checkbox"/> No.. <input type="checkbox"/></p> <p>What is the amount he received from these sources in 1959? (If exact figure not known, give best estimate)</p> <p>\$.....00</p> <p>(Dollars only)</p>

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 the amounts reported in P-32 (wage or salary income), P-33 (self-employment income), and P-34 (other income). The figures represent the amount of income received before deductions for personal income taxes, Social Security, bond purchases, union dues, etc.

Receipts from the following sources were not included as income: 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," such as free living quarters or food produced and consumed in the home; withdrawals of bank deposits; money borrowed; tax refunds; gifts and lump-sum inheritances or insurance benefits.

Wage or salary income.--This is defined as the total money earnings received for work performed as an employee. It includes wages, salary, pay from Armed Forces, commissions, tips, piece-rate payments, and cash bonuses earned.

Self-employment income.--This 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. Gross receipts include the value of all goods sold and services rendered. Expenses include the costs of goods purchased, rent, heat, light, power, depreciation charges, wages and salaries paid, business taxes, etc.

Income other than earnings.--This includes money income received from sources other than wages or salary and self-employment, such as net income (or loss) from rents or receipts from roomers or boarders; royalties; interest, dividends, and periodic income from estates and trust funds; Social Security benefits; pensions; veterans' payments, military allotments for dependents, unemployment insurance, and public assistance or other governmental payments; and periodic contributions for support from persons who are not members of the household, alimony, and periodic receipts from insurance policies or annuities.

This report presents information on income for persons 65 years old and over classified by sex and family status. Data are also presented on income for families in which the head or the wife is 65 years old and over, cross-classified by the combined income of the head and his wife, the income of the head, and the income of relatives (other than wife) 65 years old and over. In the statistics on family income, the combined incomes of all members of each family are treated as a single amount; whereas in the statistics on the income of unrelated individuals and in those on the income of persons 65 years old and over the classification is by the amount of their own income. Although the time period covered by the income statistics is the calendar year 1959, the characteristics of persons and the composition of families refer to the time of enumeration. Thus, the income of the family does not include amounts received by persons who were members of the family during all or part of the calendar year 1959 if these persons no longer resided with the family at the time of the interview. On the other hand, family income includes amounts reported by related persons who did not reside with the family during 1959 but who were members of the family at 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.

Limitations of the Data

The schedule entries for income are frequently based not on records but on memory, and this factor probably produces underestimates, because the tendency is to forget minor or irregular sources of income. Other errors of reporting are due to misrepresentation or to misunderstanding of the income questions. A possible source of understatement in the income figures was the failure, on occasion, to obtain from the respondent any report on "other money income." For these cases, the assumption was made in the editing process that no income other than earnings was received by a person who reported the receipt of either wage or salary income or self-employment income. When no income information for a person 14 years old and

over was reported, the editing procedure for assigning entries for nonresponse was used. The general nature of this procedure is described below in the section on "Collection and processing of data."

The tables showing family income include in the lowest income group (under \$1,000) those that were classified as having no 1959 income, as defined in the census. Many of the families with no income were living on income "in kind," savings, or gifts, or were newly formed families, or were families in which the sole breadwinner had recently died or had left the household. However, many of the families who reported no income probably had some money income which was not recorded in the census.

The income data in this report cover money income only. The fact that some families receive an important part of their income in the form of housing, goods, or services, rather than in money, should be taken into consideration. In comparing income data for 1959 with earlier years, it should be noted that an increase or decrease in money income does not necessarily represent a comparable change in real income, because adjustments for changes in prices have not been made in this report.

Comparability

1950 Census.--In 1950, information on income similar to that requested in 1960 was obtained from a 20-percent sample of persons 14 years old and over. If the sample person was the head of a family, the income questions were repeated for the other family members as a group in order to obtain the income of the whole family. In 1960, however, separate income data were requested for each person 14 years old and over in the sample.

In tabulating family income for the 1950 Census, when only the head's income was reported, the assumption was made that there was no other income in the family. In the 1960 Census, all nonrespondents on income (whether heads of families or other persons) were assigned the reported income of persons with similar demographic characteristics.

Current Population Survey.--A comparison of the income distributions of families with head 65 years old and over for the United States from the 1960 Census and from the March 1960 CPS is shown in table A. The CPS distribution excludes families for which complete income information was not reported, whereas the census distribution includes nonrespondents, with their income estimated on the basis of known demographic, social, and economic characteristics.

Table A.--PERCENT DISTRIBUTION OF FAMILIES WITH HEAD 65 YEARS OLD AND OVER, BY FAMILY INCOME IN 1959, ACCORDING TO 1960 CENSUS AND TO MARCH 1960 CURRENT POPULATION SURVEY

Family income	Census	CPS	Percentage point difference
Total.....	100.0	100.0	...
Under \$3,000.....	48.4	52.9	4.5
\$3,000 to \$4,999.....	20.2	19.6	-0.6
\$5,000 to \$6,999.....	12.7	12.8	0.1
\$7,000 to \$9,999.....	9.5	8.2	-1.3
\$10,000 and over.....	9.2	6.4	-2.8

The differences at the extremes of the distributions as shown above are larger than would be expected from the standpoint of sampling variability. A number of studies are now being made which may help in explaining these differences, including, for example, a study of matched questionnaires for persons who were enumerated in both the March 1960 CPS and the 1960 Census.

Federal income tax data.--For several reasons, the income data shown in this report are not directly comparable with those which may be obtained from statistical summaries of income tax returns. Income, as defined for tax purposes, differs somewhat from the concept used by the Bureau of the Census. For example, certain types of receipts such as veterans' payments, Social Security benefits, and relief payments, which constitute the main income source for some families, are excluded from income tax coverage. Moreover, the coverage of income tax statistics is less inclusive because persons receiving less than \$600 (less than \$1,200, if 65 years old or over) are not required to file returns. Furthermore, some income tax returns are filed as separate returns and others as joint returns; and, consequently, the income reporting unit is not consistently either a family or a person.

STANDARD METROPOLITAN STATISTICAL AREA

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 as 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.

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.

HOUSEHOLD AND GROUP QUARTERS

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. Inmates were not included in the tabulations for this report.

FAMILY, FAMILY STATUS, 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. 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.

The head of the family is the member reported as the head by the 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.

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

A parent of the family head includes father-in-law and mother-in-law as well as the father and mother of the head. Persons who are parents of the head of a secondary family were counted as other relatives rather than parents in the tabulations for this report; such persons, however, are negligible in number.

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.

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. An unrelated individual who is not a household head is a secondary individual.

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 25, D.C.

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. (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.

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 B and C. These tables² 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 two out of three 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 text books.

¹ 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_i is the count of persons in the complete count for the area in the same one of the 44 groups.

² 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.

Table B shows 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.

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
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 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
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

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.

Illustration: In table 6 the income class under \$1,000 in Alabama shows 4,727 husband-wife families containing other relatives and having a head or wife 65 years old or over. Table B shows that for an estimate of 4,727 the approximate standard error is 107, which means that the chances are approximately 2 out of 3 that the results of a complete census would differ by more than 107 from this estimated 4,727. It also follows that there is only about 1 chance in 100 that a complete census result would differ by as much as 268, that is, by about 2½ times the number estimated from table B.