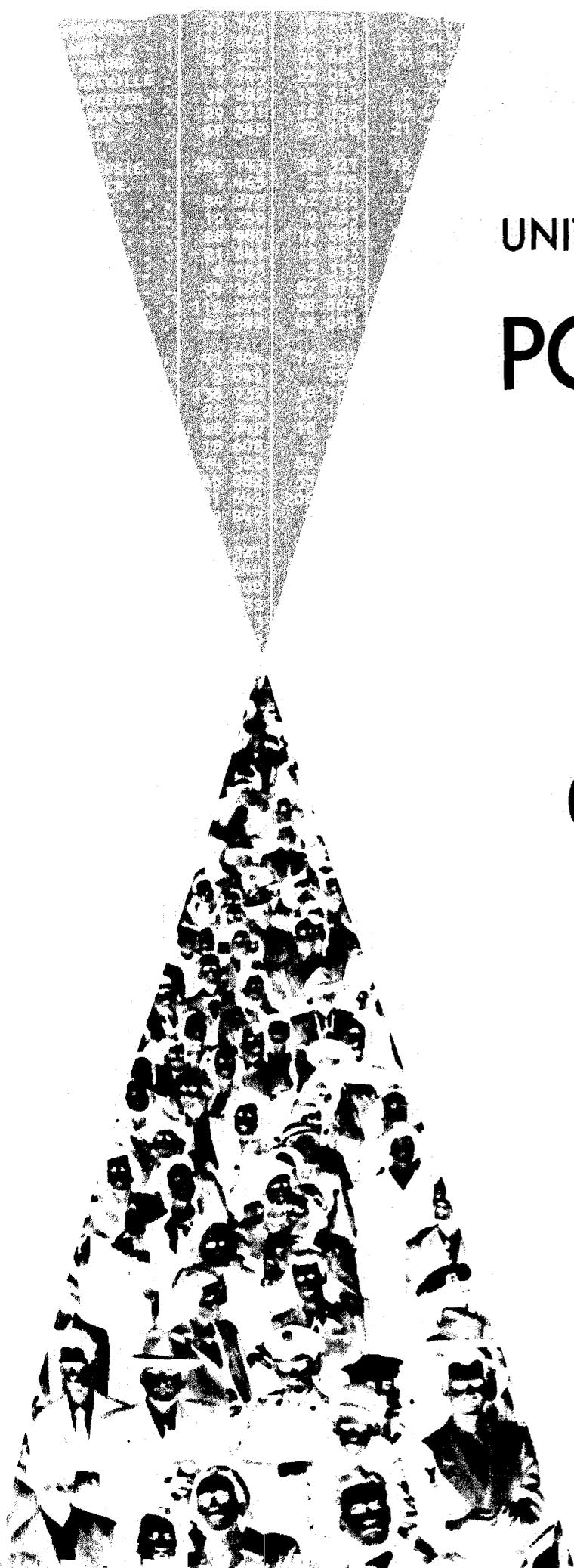


UNITED STATES CENSUS OF  
**POPULATION**  
**1960**

*Occupation by  
Earnings and  
Education*

U.S. DEPARTMENT OF COMMERCE  
BUREAU OF THE CENSUS



# U.S. CENSUS OF POPULATION: 1960

Final Report PC(2)-7B

## SUBJECT REPORTS

# Occupation by Earnings and Education

*Statistics for Men 18 to 64 Years Old,  
by Color, in Selected Occupations*

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



U.S. DEPARTMENT OF COMMERCE

Luther H. Hodges, Secretary

BUREAU OF THE CENSUS

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## PREFACE

This report presents statistics from the 1960 Census of Population on the relationship between earnings, years of school completed, age, and color for men 18 to 64 years old in selected occupations. 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 statistics in this report represent a special summarization of data prepared in the tabulation of certain other reports in this series. The summarization was made primarily for use in the forthcoming 1960 Census Monograph on income distribution sponsored by the Social Science Research Council in cooperation with the Bureau of the Census.

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)-7B. 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.

Herman P. Miller, of the Office of the Director, had the major responsibility for planning this report and developing its content, assisted by Arno I. Winard and Mary F. Henson of the Consumer Income and Expenditures Statistics Branch, Population Division. 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 basic tabulations were devised by Patience Lauriat, Catherine M. Neafsey, and Alfonso F. Episcopo of the Demographic Operations Division. The process for producing the detailed tables in this report was developed by Evadean Lint and Jacquin Kahn of the Data Processing Systems 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 programs; 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 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, 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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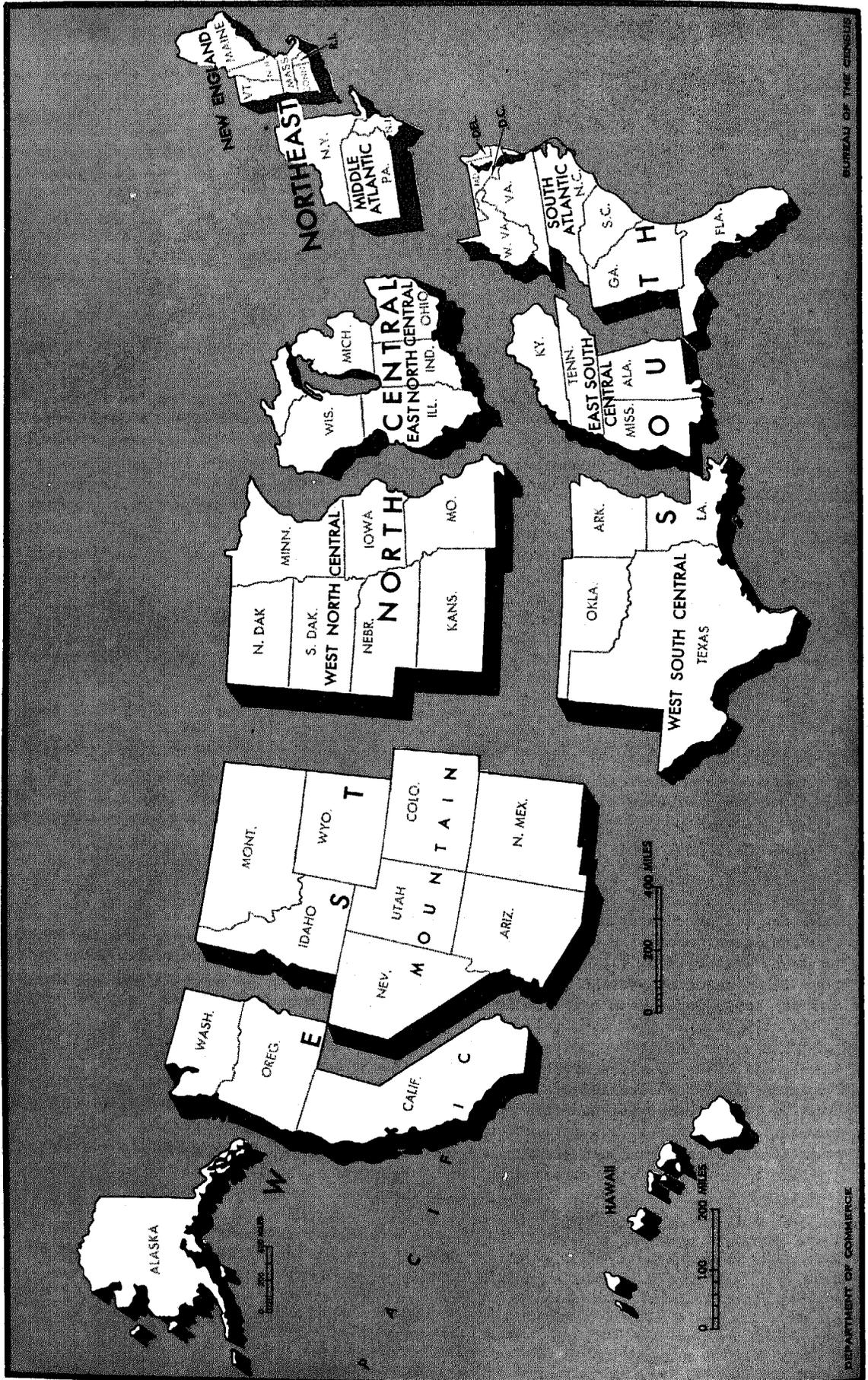
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REGIONS AND GEOGRAPHIC DIVISIONS OF THE UNITED STATES



# Occupation by Earnings and Education

## GENERAL

This report presents national and regional statistics on the earnings of males 18 to 64 years old cross-classified by educational attainment, age, and color in selected occupations. The statistics are based on a 5-percent sample of the population enumerated in the Eighteenth Decennial Census of Population, taken as of April 1, 1960. The number of males in each category is shown in thousands.

### RELATED MATERIALS

1960 Census reports.---Statistics on earnings of persons 14 years old and over, by selected occupation groups and sex, may be found in chapter C of Parts 1 through 51 of Volume I, Characteristics of the Population, for the United States, each of the States, the District of Columbia, counties, standard metropolitan statistical areas, urbanized areas, and urban places of 10,000 or more. Chapter D of Volume I contains data on the earnings of persons by intermediate occupation, color, and sex, for the United States, each of the States, the District of Columbia, and standard metropolitan statistical areas of 250,000 or more.

Additional statistics on occupation, earnings, and educational attainment appear in a number of other Volume II reports that are scheduled for subsequent publication. Most closely related are the reports entitled Occupational Characteristics and Educational Attainment.

1950 Census reports.---Data on the total income of persons 14 years old and over, by intermediate occupation group and sex, appear in Volume II of the 1950 Census of Population, for the United States, each of the States, the District of Columbia, and standard

metropolitan areas of 250,000 or more. Data on the total income of persons 14 years old and over by years of school completed, age, and color, for the United States, by regions, were published in the 1950 Census report, Volume IV, Special Reports, Part 5, chapter B, Education.

Current Population Reports.---Each year since 1945, the Current Population Survey (CPS) conducted by the Bureau of the Census has provided estimates of the total income of persons 14 years old and over by major occupation group and sex, for the United States (Current Population Reports, Series P-60). Since 1958, statistics on the earnings of persons by occupation group have also been published in the P-60 reports. The income statistics provided by the CPS are, in general, designed to be comparable with the decennial census statistics. The actual comparability of the earnings statistics is discussed in the section below on "Earnings in 1959."

### AVAILABILITY OF UNPUBLISHED DATA

The data presented here for the United States, the South, and the North and West combined are also available for each region separately; that is, for the Northeast, the North Central Region, and the West, as well as the South. These data are contained on magnetic tape and can be tabulated and printed at cost. 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. Inquiries concerning unpublished data should be transmitted to the Bureau as soon as possible because tape files are not maintained 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.

### EXPERIENCED CIVILIAN LABOR FORCE

The experienced civilian labor force consists of employed persons and experienced unemployed persons, as defined below.

Employed.--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.

Experienced unemployed.--This category comprises all persons 14 years old and over with previous work experience who are not "at work" but looking for work. A person is considered as looking for work not only if he actually tries 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 were also counted as experienced unemployed.

#### OCCUPATION

The occupation information collected in the 1960 Census was derived from answers to the question, "What kind of work was he doing?" Information on occupation was collected for persons who have worked at some time since 1950. For an employed person, the information referred to the job he held during the reference week. If he was employed at two or more jobs, the job at which he worked the greatest number of hours during the reference week was reported. For an experienced unemployed person, the information referred to the last job that he had held since 1950.

Classification system.--The occupational classification system developed for the 1960 Census of Population consists of 494 items, 297 of which are specific occupation categories and the remainder are subgroupings (mainly on the basis of industry) of 13 of the occupation categories. The composition of the 297 specific categories is shown in the publication, U.S. Bureau of the Census, 1960 Census of Population, Classified Index of Occupations and Industries, U.S. Government Printing Office, Washington, D.C., 1960. Occupation data are presented in this report for major occupation groups and for selected occupations. A listing of the occupations for which data are shown is given below:

#### PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS

Accountants and auditors  
Artists and art teachers  
Clergymen  
College presidents and deans  
College professors and instructors  
Dentists  
Designers and draftsmen  
Editors and reporters

Engineers, technical: Includes chemical, industrial, metallurgical and metallurgists, and mining, not shown separately.

Aeronautical  
Civil  
Electrical  
Mechanical  
Sales

Lawyers and judges  
Musicians and music teachers

#### PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS--Con.

Natural scientists: Includes miscellaneous natural scientists, not shown separately.

Agricultural scientists  
Biological scientists  
Chemists  
Geologists and geophysicists  
Mathematicians  
Physicists

Physicians and surgeons

Social scientists: Includes miscellaneous social scientists, not shown separately.

Economists  
Psychologists  
Statisticians and actuaries

Teachers: Includes teachers (n.e.c.), not shown separately.

Elementary schools  
Secondary schools

Technicians: Includes technicians (n.e.c.), not shown separately.

Medical and dental  
Electrical and electronic  
Other engineering and physical sciences

All other professional, technical, and kindred workers: Includes actors; airplane pilots and navigators; architects; athletes; authors; chiropractors; dancers and dancing teachers; dietitians and nutritionists; entertainers; farm and home management advisors; foresters and conservationists; funeral directors and embalmers; librarians; nurses (professional and students); optometrists; osteopaths; personnel and labor relations workers; pharmacists; photographers; public relations men and publicity writers; radio operators; recreation and group workers; religious workers; social and welfare workers, except group; sports instructors and officials; surveyors; therapists and healers; and veterinarians.

#### FARMERS AND FARM MANAGERS

Includes owner operators, tenant farmers, and share croppers.

#### MANAGERS, OFFICIALS, AND PROPRIETORS, EXCEPT FARM

Buyers and department heads, store  
Inspectors, public administration  
Officials and administrators (n.e.c.), public administration

Other specified managers, officials, and proprietors, except farm: Includes buyers and shippers (farm products); railroad conductors; credit men; store floormen and floor managers; building managers and superintendents; ship officers, pilots, pursers, and engineers; lodge, society, and union officials; postmasters; and purchasing agents and buyers.  
Managers, officials, and proprietors (n.e.c.)

#### CLERICAL AND KINDRED WORKERS

Bank tellers  
Bookkeepers  
Mail carriers  
Office machine operators  
Postal clerks  
Shipping and receiving clerks

All other clerical and kindred workers: Includes agents; library attendants and assistants; physician's and dentist's office attendants; baggagemen; cashiers; collectors; dispatchers and starters of vehicles; express messengers and railway mail clerks; file clerks; insurance adjusters, examiners, and investigators; messengers and office boys; payroll and timekeeping clerks; receptionists; secretaries; stenographers; stock clerks and storekeepers; telegraph messengers; telegraph operators; telephone operators; ticket, station, and express agents; and typists.

#### SALES WORKERS

Insurance agents, brokers, and underwriters  
Real estate agents and brokers  
Other specified sales workers: Includes advertising agents and salesmen; auctioneers; demonstrators; hucksters and peddlers; newsboys; and stock and bond salesmen.  
Salesmen and sales clerks (n.e.c.)

#### CRAFTSMEN, FOREMEN, AND KINDRED WORKERS

Brickmasons, stonemasons, and tile setters  
Carpenters  
Cement and concrete finishers

**CRAFTSMEN, FOREMEN, AND KINDRED WORKERS--Con.**

Compositors and typesetters  
Electricians  
Foremen (n.e.c.)  
Linemen and servicemen, telegraph, telephone, and power  
Locomotive engineers  
Machinists

Mechanics and repairmen: Includes repairers of air conditioning, heating, and refrigeration equipment; office machines; and railroad and railroad car shops; not shown separately.

Airplane  
Automobile  
Radio and television

Painters, construction and maintenance

Plasterers  
Plumbers and pipe fitters  
Toolmakers, and die makers and setters

Other construction craftsmen: Includes excavating, grading, and road machinery operators; paperhangers; roofers and slaters; and structural metal workers.

Other metal craftsmen: Includes blacksmiths; boilermakers; forgemen and hammermen; heat treaters, annealers, and temperers; job setters; millwrights; molders; pattern and model makers (except paper); rollers and roll hands; and tinsmiths, coppersmiths, and sheet metal workers.

Other printing craftsmen: Includes bookbinders; electrotypers and stereotypers; engravers; photoengravers; lithographers; and pressmen and plate printers.

All other craftsmen, foremen, and kindred workers: Includes bakers; cabinetmakers; cranemen, derrickmen, and hoistmen; decorators and window dressers; furriers; glaziers; inspectors; jewelers, watchmakers, goldsmiths, and silversmiths; locomotive firemen; loom fixers; millers; motion picture projectionists; opticians, and lens grinders and polishers; piano and organ tuners and repairmen; shoemakers and repairers (except in factories); stationary engineers; stone cutters and stone carvers; tailors; upholsterers; and former members of the Armed Forces.

**OPERATIVES AND KINDRED WORKERS**

Bus drivers  
Mine operatives and laborers (n.e.c.)  
Truck and tractor drivers

Other specified operatives and kindred workers: Includes apprentices; asbestos and insulation workers; assemblers; auto service and parking attendants; blasters and powdermen; boatmen, canalmen, and lock keepers; railroad brakemen; surveying chainmen, rodmen, and axmen; checkers, examiners, and inspectors in manufacturing; bus and street railway conductors; deliverymen and routemen; dressmakers and seamstresses (except in factories); dyers; metal filers, grinders, and polishers; fruit, nut, and vegetable graders and packers (except in factories); furnacemen, smeltermen, and pourers; graders and sorters in manufacturing; metal heaters; textile knitters, loopers, and toppers; laundry and dry cleaning operatives; meat cutters (except slaughter and packing houses); milliners; motormen; oilers and greasers (except auto); packers and wrappers; painters (except construction and maintenance); photographic process workers; power station operators; sailors and deck hands; sawyers; sewers and stitchers in manufacturing; textile spinners; stationary firemen; railroad switchmen; taxicab drivers and chauffeurs; textile weavers; and welders and flame cutters.

Operatives and kindred workers (n.e.c.)

**SERVICE WORKERS, INCLUDING PRIVATE HOUSEHOLD**

Barbers  
Protective service workers: Includes guards, watchmen, and doorkeepers; marshals and constables; sheriffs and bailiffs; and bridge tenders; not shown separately.  
Firemen, fire protection  
Policemen and detectives

All other service workers, including private household: Includes baby sitters; housekeepers; laundresses in private households; attendants; bartenders; boarding and lodging house keepers; bootblacks; chambermaids and maids; charwomen and cleaners; cooks; counter and fountain workers; elevator operators; hairdressers and cosmetologists; stewards; janitors and sextons; kitchen workers; midwives; porters; practical nurses; ushers; and waiters.

**FARM LABORERS AND FOREMEN**

Farm laborers, wage workers  
All other farm laborers and foremen: Includes farm foremen; unpaid family farm laborers; and self-employed farm service laborers.

**LABORERS, EXCEPT FARM AND MINE**

Includes carpenters' helpers; fishermen and cystemen; garage laborers; car washers and greasers; gardeners; longshoremen and stevedores; lumbermen, raftmen, and wood choppers; teamsters; truck drivers' helpers; and warehousemen.

**OCCUPATION NOT REPORTED**

Note.--The abbreviation "n.e.c." used in the tables means "not elsewhere classified."

Relationship to DOT Classification.--The occupational classification used in the 1960 Census is generally comparable with the system used in the Dictionary of Occupational Titles (DOT).<sup>1</sup> The two systems, however, are designed to meet different needs and to be used under different circumstances. The DOT system is much more detailed than that of the Bureau of the Census, and it also calls for many types of distinctions which cannot be made from census information.

**EARNINGS IN 1959**

The data on earnings were obtained by summing the amounts reported separately from answers to the following questions: (1) "How much did this person earn in 1959 in wages, salary, commissions, or tips from all jobs?" and (2) "How much did he earn in 1959 in profits or fees from working in his own business, professional practice, partnership, or farm?"

Information on earnings for the calendar year 1959 was requested from persons 14 years old and over who worked at any time in 1959. The figures represent the amount of income received before deductions for personal income taxes, Social Security, bond purchases, union dues, etc. Information on money income received from other sources, such as net income (or loss) from rents or receipts from roomers or boarders, royalties, interest, dividends, etc., was also collected in the 1960 Census but not included in the statistics shown in this report.

Receipts from the following sources were not considered 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 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)

<sup>1</sup> See U.S. Department of Labor, Bureau of Employment Security, Dictionary of Occupational Titles, Second Edition, Vols. I and II, 1949, Government Printing Office, Washington 25, D.C.

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.

#### Median and Mean Earnings

The median earnings is the amount which divides the distribution into two equal groups, one having earnings above the median, and the other having earnings below the median.

The mean earnings is the amount obtained by dividing the aggregate earnings of a group by the number of earnings recipients in that group. In the derivation of aggregate amounts, the number of males in each earnings interval was multiplied by an estimated mean earnings. For earnings intervals below \$7,000, the midpoint of each class interval was used; \$8,200 was used for the interval \$7,000 to \$9,999; \$12,000 for the interval \$10,000 to \$14,999; and \$19,000 for the interval \$15,000 to \$24,999. For the \$25,000 and over interval, the interpolation was from a Pareto Curve fitted to the data for the upper income range.

Although the number of males shown in each class interval was rounded to the nearest thousand, the median and mean earnings shown in the tables have been computed from the unrounded distributions.

#### Limitations of the Data

The schedule entries for earnings 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 misunderstanding of the income questions or to misrepresentation.

A possible source of understatement in the earnings figures was the failure, on occasion, to obtain from the respondent a report on both wage or salary income and self-employment income. For these cases of nonresponse, the assumption was made in the editing process that no income from self-employment was received by a person who reported the receipt of wage or salary income but failed to report on the receipt of self-employment income. Conversely, it was assumed that no wage or salary income was received by a person who reported the receipt of self-employment income but failed to report on the receipt of wage or salary income. Where no earnings information was reported for a person 14 years old and over who worked in 1959, a more elaborate editing procedure was used. The general nature of this procedure is described below in the section on "Collection and processing of data."

The earnings data in this report cover money earnings only. The fact that many farm workers receive part of their income in the form of rent-free housing and of goods produced and consumed on the farm rather than in money should be taken into consideration in comparing the figures for farm and nonfarm occupations.

#### Comparability

1950 Census.--In 1950, information on wage or salary and self-employment income similar to that

requested in 1960 was obtained from a 20-percent sample of persons 14 years old and over, but no tabulations relating to total earnings were made.

Current Population Survey.--The earnings statistics shown in this report are not directly comparable with those shown from the March 1960 CPS. In the first place, the earnings figures shown here are for persons who were in the experienced civilian labor force in April 1960 whereas the earnings figures shown from the March 1960 CPS are for all persons who did any civilian work during 1959, regardless of their labor force status in March 1960. Secondly, for an employed person, the occupation data from the 1960 Census refer to the job held during the reference week and, for an experienced unemployed person, the information refers to the last job held. The data on occupation by earnings from the March 1960 CPS, on the other hand, refer to the civilian job held longest during the year 1959.

Income tax data.--For several reasons, the earnings 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. Moreover, the coverage of income tax statistics is less inclusive because of the exemptions of persons receiving less than \$600. 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.

Old-Age, Survivors, and Disability Insurance earnings record data.--For several reasons the earnings data shown here are not directly comparable with those which may be obtained from the OASDI earnings records. The coverage of the OASDI earnings record data for 1959 is less inclusive than that of the 1960 Census data because of the exclusion of the earnings of self-employed physicians, many civilian government employees, some employees of nonprofit organizations, workers covered by the Railroad Retirement Act, and persons who are not covered by the program because of insufficient earnings, including some self-employed persons, some farm workers, and domestic servants. Furthermore, earnings received from any one employer in excess of \$4,800 in 1959 are not covered by the earnings record data. Finally, as the Bureau of the Census data are obtained by household interviews, they will differ from the OASDI earnings record data, which are based upon employers' reports and the Federal income tax returns of self-employed persons.

#### 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.

#### YEARS OF SCHOOL COMPLETED

The data on years of school completed were derived from the answers to the two questions: (1) "What is the highest grade (or year) of regular school he has ever attended?" and (2) "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.

## 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 in other Volume II reports based on the 5-percent sample may 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 to which the key letter "A" was assigned was designated as a sample unit, and all persons enumerated in the unit were included in the sample. In every group quarters, the sample consisted of every fourth person in the order

listed. The 1960 statistics in this report are based on a subsample of one-fifth of the original 25-percent sample schedules. The subsample was selected on the computer, using a stratified systematic sample design. The strata were made up as follows: For persons in regular housing units there were 36 strata, i.e., 9 household size groups by 2 tenure groups by 2 color groups; for persons in group quarters, there were 2 strata, i.e., the 2 color groups.

Although the sampling procedure did not automatically insure an exact 5-percent sample of persons, the sample design was unbiased if carried through according to instructions. Generally, for large areas, the deviation from the estimated sample size was found to be quite small. Biases may have arisen, however, when the enumerator failed to follow his listing and sampling instructions exactly.

RATIO ESTIMATION

The statistics based on the 5-percent 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 the following 44 groups of persons in each of the sample weighting areas:<sup>2</sup>

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

The sample weighting areas were defined as those areas within a State consisting of central cities of urbanized areas, the remaining portion of urbanized areas not in central cities, urban places not in urbanized areas, or rural areas.<sup>3</sup>

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

<sup>2</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  $Y$  is the count of persons in the complete count for the area in the same one of the 44 groups.

<sup>3</sup> For the definitions of urbanized area and urban place, 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 5-percent sample by a uniform factor of 20. The reduction in sampling error will be trivial for some items and substantial for others. A by-product of this estimation procedure, in general, is that estimates for this sample are generally consistent with the complete count with respect to the total population and for the subdivisions used as groups in the estimation procedure. A more complete discussion of the technical aspects of these ratio estimates will be presented in another report.

SAMPLING VARIABILITY

The figures from the 5-percent sample tabulations are subject to sampling variability, which can be estimated roughly from the standard errors shown in tables A and B. These tables<sup>4</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

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
1,000.....	120	15,000.....	480
2,500.....	200	25,000.....	620
5,000.....	280	50,000.....	880
10,000.....	390		

Table B.--ROUGH APPROXIMATION TO STANDARD ERROR OF ESTIMATED PERCENTAGE

(Range of 2 chances out of 3)

Estimated percentage	Base of percentage				
	1,000	2,500	10,000	25,000	100,000
2 or 98.....	2.3	1.3	0.8	0.3	0.3
5 or 95.....	4.0	2.3	1.0	0.5	0.3
10 or 90.....	5.0	3.0	1.5	0.8	0.5
25 or 75.....	6.8	3.8	1.8	1.0	0.5
50.....	7.8	4.0	2.0	1.3	0.8

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

the population is less than the standard error. The chances are about 19 out of 20 that the difference is less than twice the standard error and about 99 out of 100 that it is less than  $2\frac{1}{2}$  times the standard error. The amount by which the estimated standard error must be multiplied to obtain other odds deemed more appropriate can be found in most statistical textbooks.

Table A shows rough standard errors of estimated numbers up to 50,000. The relative sampling errors of larger estimated numbers are somewhat smaller than for 50,000. For estimated numbers above 50,000, however, the nonsampling errors, e.g., response errors and processing errors, may have an increasingly important effect on the total error. Table 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.

Illustration: Table 3 for the South shows that there are 17,000 craftsmen, foremen, and kindred workers, age 35 to 44 years, who completed 4 years of high school and who are in the income class \$3,000 to \$3,999. Table A shows that for an estimate of 17,000 the approximate standard error is 508, which means that the chances are approximately 2 out of 3 that the results of a complete census would not differ by more than 508 from this estimated 17,000. It also follows that there is only 1 chance in 100 that a complete census result would differ by as much as 1,270, that is, by about  $2\frac{1}{2}$  times the number estimated from table A.