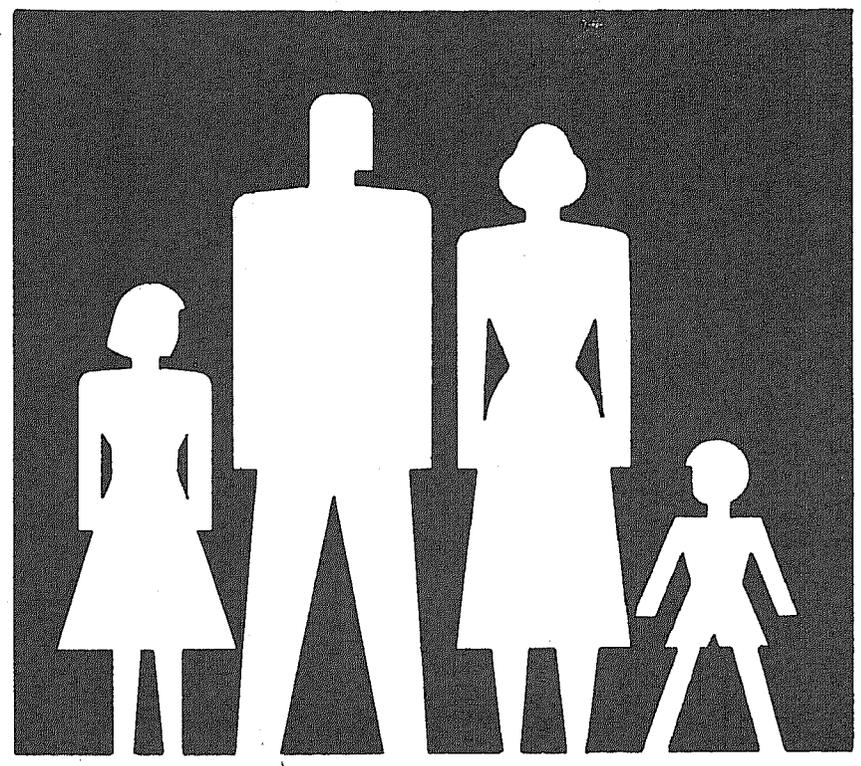


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# 1950 UNITED STATES CENSUS OF POPULATION

U. S. DEPARTMENT OF COMMERCE • BUREAU OF THE CENSUS



## OCCUPATION BY INDUSTRY

# UNITED STATES CENSUS of POPULATION: 1950

U. S. DEPARTMENT OF COMMERCE  
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BUREAU OF THE CENSUS  
ROBERT W. BURGESS, *Director*  
(From Feb. 5, 1953)

ROY V. PEEL, *Director*  
(To Feb. 4, 1953)



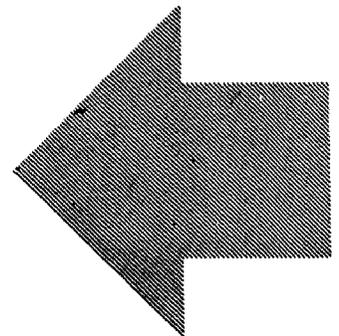
## SPECIAL REPORTS

### OCCUPATION BY INDUSTRY

*Prepared under the supervision of  
Howard G. Brunsman, Chief  
Population and Housing Division*

1950 POPULATION CENSUS REPORT P-E NO. IC  
PREPRINT OF VOLUME IV, PART I, CHAPTER C  
UNITED STATES GOVERNMENT PRINTING OFFICE 1954

**Detailed statistics on  
OCCUPATION BY INDUSTRY  
FOR THE UNITED STATES**





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## PREFACE

This report presents detailed statistics on the cross-classification of occupation by industry for employed persons. These data show the occupational structure of each industry, and, conversely, the industrial distribution of the workers in each occupation.

The data are based on tabulations of a 3 1/3-percent sample of the returns obtained in the Seventeenth Decennial Census of the population of the United States, conducted as of April 1, 1950. Provision for the Seventeenth Decennial Census was made in the act providing for the Fifteenth and subsequent decennial censuses, approved June 18, 1929. The major portion of the information compiled from the Census of Population of 1950 appears in Volume I, Number of Inhabitants, and in Volume II, Characteristics of the Population. These two volumes contain statistics for regions, divisions, States, and parts of States, as well as for the country as a whole.

This is one of a series of reports (Series P-E bulletins) which comprise Volume IV, Special Reports, and which supplement the information contained in Volumes I and II. The present bulletin is a preprint of Chapter C of Part 1, Economic Characteristics, of Volume IV.

The materials presented here were prepared under the supervision of Howard G. Brunsmann, Chief, Population and Housing Division, and Dr. Henry S. Shryock, Jr., Assistant Chief for Population Statistics, with the assistance of Edwin D. Goldfield, Program Coordinator. They were prepared by David L. Kaplan, Chief, Occupation and Industry Statistics Section, assisted by Elsie K. Goodman and Gladys M. Dodd. The compilation of the statistics was under the direction of Robert B. Voight, Assistant Chief for Operations, assisted by Morton A. Meyer, Edward I. Lober, and Mary E. Ivins. Sampling procedures were under the direction of Joseph Steinberg, Chief, Statistical Sampling Section, assisted by Joseph Waksberg and Albert Mindlin. The technical editorial work and planning were under the supervision of Mildred M. Russell, assisted by Dorothy M. Belzer. The collection of the information on which these statistics were based was under the supervision of Lowell T. Galt, then Chief, Field Division, and the tabulations were under the supervision of C. F. Van Aken, Chief, Machine Tabulation Division.

May 1954.

## U. S. CENSUS OF POPULATION: 1950

### Volume

- I Number of Inhabitants (comprising Series P-A bulletins)
- II Characteristics of the Population (comprising Series P-A, P-B, and P-C bulletins)
- III Census Tract Statistics (comprising Series P-D bulletins)
- IV Special Reports: Employment Characteristics, Occupational and Industrial Characteristics, Characteristics of Families, Marital Status, Institutional Population, Nativity and Parentage, Non-white Population by Race, Persons of Spanish Surname, Puerto Ricans in Continental United States, State of Birth, Mobility of the Population, Characteristics by Size of Place, Education, Fertility.

## U. S. CENSUS OF HOUSING: 1950

### Volume

- I General Characteristics (comprising Series H-A bulletins)
- II Nonfarm Housing Characteristics (comprising Series H-B bulletins)
- III Farm Housing Characteristics
- IV Residential Financing
- V Block Statistics (comprising Series H-E bulletins)  
Housing statistics for census tracts are included in the Population Series P-D bulletins.

# Occupation by Industry

(Page numbers listed here omit the chapter prefix number which appears as part of the page number for each page. The prefix for this chapter is 1C)

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# Occupation by Industry

## GENERAL

This report presents detailed national statistics cross-classifying occupation by industry for employed men and women. The statistics are based on a 3 1/3-percent sample of the returns of the Seventeenth Decennial Census of Population.

### RELATED MATERIALS

Volume II, Characteristics of the Population.--The present report supplements the reports for individual States and for the United States and its several regions and divisions, originally published in the Series P-B bulletins, "General Characteristics," and the Series P-C bulletins, "Detailed Characteristics." Those bulletins form the major component of the bound Volume II, Characteristics of the Population. Part 1 of Volume II comprises the data originally published in the United States Summary bulletins; the remainder of the volume is divided into a part for each State, containing the data originally published in the State bulletins.

In Volume II, the cross-classification of occupation by industry is shown in terms of major occupation group and intermediate industry, for the country as a whole, each State, and each standard metropolitan area of 250,000 or more. In this report, the cross-classification is shown in terms of full detail for both subjects, but only for the country as a whole.

Special reports.--Several of the other Series P-E special reports include statistics on occupation and industry.

Most closely related of the special reports is P-E No. 1B, "Occupational and Industrial Characteristics."<sup>1</sup> In this report, persons in the experienced civilian labor force and, for some tables, employed workers are classified into 446 detailed occupation categories and are further classified by personal and economic characteristics, such as sex, urban-rural residence, age, race, nativity and citizenship, marital status, geographic mobility, years of school completed, hours worked during the census week, class of worker, and weeks worked and income received in 1949. Much of the same information is presented for employed persons classified into 146 detailed industry categories. In addition, data on age, race, hours worked, and weeks worked are shown for persons in the four class-of-worker categories, i.e., private wage and salary workers, government workers, self-employed workers, and unpaid family workers. Certain of the tables in this report present separate data for nonwhite persons and for wage and salary workers.

The following special reports present statistics on major occupation group of employed persons in relation to the main subject of the report:

P-E No. 3A, "Nativity and Parentage."<sup>1</sup>--Data for the white population, according to nativity, parentage, and country of origin.

P-E No. 3B, "Nonwhite Population by Race."<sup>1</sup>--Data for the nonwhite population, separately for Negroes, Indians, Japanese, Chinese, and Filipinos.

P-E No. 3C, "Persons of Spanish Surname."<sup>1</sup>--Data for white persons of Spanish surname in five Southwestern States, classified by nativity and parentage.

<sup>1</sup> At the time of writing (May 1954), this report was in the early stages of preparation and the dates of completion and publication could not be fixed.

P-E No. 3D, "Puerto Ricans in Continental United States."<sup>1</sup>--Data for persons born in Puerto Rico and for those born in continental United States of Puerto Rican parentage.

P-E No. 5A, "Characteristics by Size of Place."<sup>1</sup>--Data relating selected social and economic characteristics of the people of the United States to the size of the community in which they live.

P-E No. 5B, "Education."<sup>1</sup>--Data relating selected social and economic characteristics of the people of the United States to the number of years of school they had completed.

Another special report which may be of interest, although it does not include occupation or industry data, is P-E No. 1A, "Employment and Personal Characteristics." This report presents detailed national statistics on the employment status of the population in relation to various personal characteristics.

1940 Census reports.--Data on occupation by industry similar to those shown here were presented in 1940 in table 19 of the report The Labor Force (Sample Statistics)--Occupational Characteristics. An important difference between the 1950 and 1940 tables concerns the respective occupational classifications. The present table is based on the detailed occupational classification, whereas the earlier table is based on the intermediate classification. In both tables, however, the detailed industrial classifications are shown. (For a discussion of 1940-1950 comparisons, see section on "Comparability.")

Current Population Reports.--The Bureau of the Census conducts every month the Current Population Survey. This survey, which covers a sample of 25,000 households throughout the country, provides national estimates once each quarter on major occupation group of employed persons (Current Population Reports, Series P-57). In addition, Current Population Survey data on major occupation group (and, occasionally, major industry group) in cross-classification with such characteristics as marital status, geographic mobility, and income are published annually in the Series P-20, P-50, and P-60, Current Population Reports. The intercensal statistics provided by the Current Population Survey are, in general, designed to be comparable with the decennial census statistics. There are, however, certain elements of difference, as explained in the section on "Comparability."

### ACCURACY AND INTERNAL CONSISTENCY OF DATA

Data on occupation and industry shown in Volume II of the 1950 Population Census are, with some few exceptions, based on complete counts of the population. (The exceptions consist of data based on a 20-percent sample, and do not bear directly on the statistics presented here.) As previously indicated, the figures shown in this report are based on a 3 1/3-percent sample of the census returns. Accordingly, because of sampling variability and certain small biases, differences may be expected between corresponding figures obtained from the complete count and the 3 1/3-percent sample. The section on "Sample design and variability" describes the nature of the biases and provides estimates of the differences to be expected because of sampling variability. Information on other aspects of the accuracy of the data presented in this report is given in the section on "Quality of data."

Differences between figures for corresponding items in different reports or in tables within the same report may also result from errors in the tabulation processes. These errors include machine failure, loss of punch cards, and other types. (The net effect is a tendency toward slightly smaller counts of the same item in successive tabulations.) Experience has shown that in mass operations two tabulations of a set of punch cards are not likely to yield precisely identical results. Therefore, tolerance limits allowing for insignificant variations were

established in advance for each tabulation in the 1950 Population Census. If the differences between the results of two tabulations fell within these limits, nothing was done to bring them into exact agreement with each other. This procedure was adopted in order to provide a greater volume of data within the limits of time and resources available. In earlier censuses, however, the results of different tabulations were usually adjusted to bring them into exact agreement.

## DEFINITIONS AND EXPLANATIONS

The definitions of the pertinent concepts used in the 1950 Census of Population are given below. For a complete discussion, including additional explanatory information, see 1950 Census of Population, Volume II, Part 1, in which are also reproduced the 1950 Population Census schedule and the major part of the instructions to enumerators.

### EMPLOYMENT STATUS

Census week.--The data shown here pertain to the calendar week preceding the enumerator's visit. This week, defined as the "census week," was not the same for all respondents, because not all persons were enumerated during the same week. The majority of the population was enumerated during the first half of April.

Employed.--The data presented in this report refer to employed persons. This group comprises all civilians 14 years old and over who, during the census week, 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) "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 vacation, illness, industrial dispute, bad weather, or layoff with definite instructions to return to work within 30 days of layoff. Also included as "with a job" are persons who had new jobs to which they were scheduled to report within 30 days.

### OCCUPATION AND INDUSTRY

In the 1950 Census of Population, the occupation and industry information collected for employed persons related to the job held during the census week. If the person was employed at two or more jobs, the job at which he worked the greatest number of hours during the census week was reported.

The classification systems used for the occupation and industry data in the 1950 Census of Population are described below. These systems were developed in consultation with many individuals, private organizations, and government agencies, and, in particular, with the Joint Committee on Occupational Classification (sponsored by the American Statistical Association and the United States Bureau of the Budget).

#### Occupation

The occupation information presented here was derived from answers to the question, "What kind of work was he doing?"

Classification system.--The occupational classification system developed for the 1950 Census of Population is organized into 12 major groups. The system consists of 469 items, 270 of which are specific occupation categories; the remainder are subgroupings (mainly on the basis of industry) of 13 of the occupation categories. For table 2 of this report, the industry subgroupings were eliminated because the table presents a distribution by industry for each occupation. Certain other combinations were also made and the detailed list used in table 2 consists of 248 items. The composition of each of the detailed categories is shown in the publication, U. S. Bureau of the Census, 1950 Census of Population, Classified Index of Occupations and Industries, Washington, D. C., 1950.

In the separation of "Managers, officials, and proprietors (n.e.c.)" by class of worker into salaried and self-employed components, the small number of unpaid family workers in this occupation is included in the self-employed component. Mine laborers, noted as an exclusion from the major group "Laborers, except farm and mine," are included in the major group "Operatives and kindred workers."

Relation to DOT classification.--The occupational classification of the Population Census is generally comparable with the system used in the Dictionary of Occupational Titles (DOT).<sup>2</sup> The two systems, however, are designed to meet different needs and to be used under different circumstances. The DOT system is designed primarily for employment service needs, such as placement and counseling, and is ordinarily used to classify very detailed information obtained in an interview with the worker himself. The census system on the other hand is designed for statistical purposes and is ordinarily used in the classification of limited occupational descriptions obtained in an interview with a member of the worker's family. As a result, the DOT system is much more detailed than the census system; and it also calls for many types of distinctions which cannot be made from census information.

#### Industry

The industry information presented here was derived from answers to the question, "What kind of business or industry was he working in?"

Classification system.--The industrial classification system developed for the 1950 Census of Population consists of 143 categories organized into 13 major groups. For table 2 of this report, a few of the categories were combined, and the detailed industry list used here consists of 146 categories. The composition of each of the detailed categories is shown in the publication, U. S. Bureau of the Census, 1950 Census of Population, Classified Index of Occupations and Industries, Washington, D. C., 1950.

Relation to Standard Industrial Classification.--List A shows, for each Population Census category, the code designation of the similar category or categories in the Standard Industrial Classification (SIC). This relationship is presented here for general information purposes only and does not imply complete comparability. The SIC, which was developed under the sponsorship of the United States Bureau of the Budget, is designed primarily for the classification of reports on industry obtained from establishments. These reports are, by their nature and degree of detail, considerably different from reports on industry obtained from household enumerations such as the Population Census. As a result, many distinctions called for in the SIC cannot be observed in the Population Census. Furthermore, the needs which the Population Census data are designed to meet frequently differ from the needs which the establishment data meet. Perhaps the most basic difference between the two systems is in the allocation of government workers. The SIC classifies all government agencies in a single major group whereas the Population Census industrial classification system allocates them among the various groups according to type of activity, as explained in the next paragraph.

<sup>2</sup> See U. S. Department of Labor, Bureau of Employment Security, Dictionary of Occupational Titles, Second Edition, Vols. I and II, Washington, D. C., 1949.

## List A.--RELATIONSHIP BETWEEN THE 1950 POPULATION CENSUS INDUSTRIAL CLASSIFICATION AND THE STANDARD INDUSTRIAL CLASSIFICATION

(This list is presented for general information purposes only and does not imply complete comparability; see text for explanation. List shows the Population Census title, followed by code designations from the Standard Industrial Classification. For interpretation of SIC codes, see Executive Office of the President, Bureau of the Budget, Standard Industrial Classification Manual, Vol. I, Manufacturing Industries, Part I (November 1945 edition); and Vol. II, Nonmanufacturing Industries (May 1949 edition); Washington, D. C.)

Agriculture (01, 07 exc. 0713)	Telephone (wire and radio) (481)
Forestry (08)	Telegraph (wire and radio) (48 exc. 481)
Fisheries (09)	Electric light and power, and electric-gas utilities (491, 493)
	Gas and steam supply systems (492, 496)
	Water supply (494)
	Sanitary services (495)
	Other and not specified utilities <sup>2</sup> (497)
Metal mining (10)	Motor vehicles and equipment (501, 511)
Coal mining (11, 12)	Drugs, chemicals, and allied products (502, 5112)
Crude petroleum and natural gas extraction (13)	Dry goods and apparel (503, 5113, 5132)
Nonmetallic mining and quarrying, except fuel (14)	Food and related products (504, 505, 5114, 5133, 5134, 514)
	Electrical goods, hardware, and plumbing equipment (506, 507, 5116)
	Machinery, equipment, and supplies (508, 5118, 5126)
	Petroleum products (512)
	Farm products--raw materials (5096, 5135)
	Miscellaneous wholesale trade (5091-5095, 5097-5099 <sup>4</sup> , 5115, 5117, 5119, 5137-5139 <sup>4</sup> )
	Not specified wholesale trade <sup>3</sup>
Construction (15-17)	
	Food stores, except dairy products (54 exc. 545)
	Dairy products stores and milk retailing (545)
	General merchandise stores (53 exc. 533)
	Five and ten cent stores (533)
	Apparel and accessories stores, except shoe stores (56 exc. 566)
	Shoe stores (566)
	Furniture and housefurnishings (571)
	Household appliance and radio stores (572)
	Motor vehicles and accessories retailing (55 exc. 554)
	Gasoline service stations (554)
Logging (241)	Drug stores (591)
Sawmills, planing mills, and mill work (242, 243)	Eating and drinking places (58)
Miscellaneous wood products (244, 249)	Hardware and farm implement stores (525)
Furniture and fixtures (25)	Lumber and building material retailing (52 exc. 525)
Glass and glass products (321-323)	Liquor stores (592)
Cement, and concrete, gypsum, and plaster products (324, 327)	Retail florists (5992)
Structural clay products (325)	Jewelry stores (597)
Pottery and related products (326)	Fuel and ice retailing (598)
Miscellaneous nonmetallic mineral and stone products (328, 329)	Miscellaneous retail stores (593-596, 599 exc. 5992)
	Not specified retail trade <sup>3</sup>
Blast furnaces, steel works, and rolling mills (331)	
Other primary iron and steel industries (332, 339 <sup>1</sup> )	Banking and credit agencies (60, 61)
Primary nonferrous industries (333-336, 3392, 3399 <sup>1</sup> )	Security and commodity brokerage, and investment companies (62, 67)
Fabricated steel products (19 exc. 194, 341-343, 344 exc. 3444, 346 <sup>2</sup> , 348 <sup>2</sup> , 3491-3495)	Insurance (63, 64)
Fabricated nonferrous metal products (3444, 3463 <sup>2</sup> , 347, 3489 <sup>2</sup> , 3496, 3497, 3499)	Real estate (incl. real estate-insurance-law offices) (65, 66)
Not specified metal industries <sup>3</sup>	
Agricultural machinery and tractors (352)	Advertising (731)
Office and store machines and devices (357)	Accounting, auditing, and bookkeeping services (737)
Miscellaneous machinery (351, 353-356, 358, 359)	Miscellaneous business services (732-736, 739)
Electrical machinery, equipment, and supplies (36)	Automobile repair services and garages (75)
	Miscellaneous repair services (76)
Motor vehicles and motor vehicle equipment (371)	
Aircraft and parts (372)	Private households (88)
Ship and boat building and repairing (373)	Hotels and lodging places (70)
Railroad and miscellaneous transportation equipment (374, 375, 379)	Laundry, cleaning, and dyeing services (721, 722, 727 <sup>5</sup> )
Professional equipment and supplies (194, 381-385)	Dressmaking shops (727 <sup>5</sup> )
Photographic equipment and supplies (386)	Shoe repair shops (725)
Watches, clocks, and clockwork-operated devices (387)	Miscellaneous personal services (723, 724, 726, 729)
Miscellaneous manufacturing industries (39)	
	Radio broadcasting and television (77)
	Theaters and motion pictures (78, 792)
	Bowling alleys, and billiard and pool parlors (793)
	Miscellaneous entertainment and recreation services (791, 794-796, 799)
Meat products (201)	
Dairy products (202)	Medical and other health services, except hospitals (80 exc. 806)
Canning and preserving fruits, vegetables, and sea foods (203)	Hospitals (806)
Grain-mill products (0713, 204)	Legal services (81)
Bakery products (205)	Educational services, government } (82, 84)
Confectionery and related products (207)	Educational services, private
Beverage industries (208)	Welfare and religious services (866, 867)
Miscellaneous food preparations and kindred products (206, 209)	Nonprofit membership organizations (861-865, 869)
Not specified food industries <sup>3</sup>	Engineering and architectural services (891)
Tobacco manufactures (21)	Miscellaneous professional and related services (89 exc. 891)
Knitting mills (225)	
Dyeing and finishing textiles, except knit goods (226)	Postal service
Carpets, rugs, and other floor coverings (227)	Federal public administration } (906)
Yarn, thread, and fabric mills (221-224)	State public administration
Miscellaneous textile mill products (228, 229)	Local public administration
Apparel and accessories (23 exc. 239)	
Miscellaneous fabricated textile products (239)	Industry not reported (99)
Pulp, paper, and paperboard mills (261)	
Paperboard containers and boxes (267)	
Miscellaneous paper and pulp products (264-266, 269)	
Printing, publishing, and allied industries (27)	
Synthetic fibers (2825)	
Drugs and medicines (283)	
Paints, varnishes, and related products (285)	
Miscellaneous chemicals and allied products (281, 282 exc. 2825, 284, 286-289)	
Petroleum refining (291)	
Miscellaneous petroleum and coal products (29 exc. 291)	
Rubber products (30)	
Leather, tanned, curried, and finished (311)	
Footwear, except rubber (313, 314)	
Leather products, except footwear (312, 315-317, 319)	
Not specified manufacturing industries <sup>3</sup>	
Railroads and railway express service (40)	
Street railways and bus lines (41, 43 exc. 433)	
Trucking service (421, 428)	
Warehousing and storage (422-425, 429)	
Taxicab service (433)	
Water transportation (44)	
Air transportation (45)	
Petroleum and gasoline pipe lines (46)	
Services incidental to transportation (47)	

<sup>1</sup> Components of SIC categories 3392 and 3399 are allocated between "Other primary iron and steel industries" and "Primary nonferrous industries" on a ferrous-nonferrous basis.

<sup>2</sup> Components of SIC categories 3463 and 3489 are allocated between "Fabricated steel products" and "Fabricated nonferrous metal products" on a ferrous-nonferrous basis.

<sup>3</sup> In the Population Census system, "not specified" categories were set up within certain groups to take care of schedule returns which were not sufficiently precise for allocation to a specific category within the group.

<sup>4</sup> Components of SIC categories 5099 and 5139 are allocated by type of merchandise to the appropriate Population Census wholesale trade category, wherever possible.

<sup>5</sup> Dressmaking shops are shown separately from the rest of SIC category 7271, which is included in "Laundering, cleaning, and dyeing services."

<sup>6</sup> See text for explanation of basic difference between SIC and Population Census in classification of government workers.

Definition of "Public administration."--The major group "Public administration" includes only those activities which are uniquely governmental functions, such as legislative and judicial activities and most of the activities in the executive agencies. Government agencies engaged in educational and medical services and in activities commonly carried on also by private enterprises, such as transportation and manufacturing, are classified in the appropriate industrial category. For example, persons employed by a hospital are classified in the "Hospitals" category regardless of whether they are paid from private or public funds. The total number of government workers appears in the 1950 Population Census Volume II; of particular significance in this connection is the cross-classification of industry by class of worker shown in Chapter C of Volume II.

Relation to certain occupation groups.--In the Population Census classification systems, the industry category "Agriculture" is somewhat more inclusive than the total of the two major occupation groups, "Farmers and farm managers" and "Farm laborers and foremen." The industry category includes, in addition to all persons in these two major occupation groups, (a) other persons employed on farms, such as truck drivers, mechanics, and bookkeepers, and (b) persons engaged in agricultural activities other than strictly farm operation, such as crop dusting or spraying, cotton ginning, and landscape gardening. Similarly, the industry category "Private households" is somewhat more inclusive than the major occupation group "Private household workers." In addition to the housekeepers, laundresses, and miscellaneous types of domestic workers covered by the major occupation group, the industry category includes persons in occupations such as chauffeur and secretary, if they work for private households.

#### COMPARABILITY

1940 Census.--The identification of employed persons was accomplished in the 1950 Census through a somewhat different set of questions from those used in 1940. The changes were made, in part, in order to obtain a more nearly complete count of employed persons. The effect of the changes in question wording, however, appears relatively minor. For most of the occupation and industry categories, therefore, comparability between 1940 and 1950 is not affected by these changes. There is evidence, however, that for the categories which include relatively large proportions of female unpaid family workers (that is, "Farm laborers, unpaid family workers" and "Agriculture") the 1940 Population Census statistics may be understated by a significant amount relative to 1950.

In connection with 1940-1950 comparisons of employed persons, it should be noted that the original 1940 figures on the employed include members of the Armed Forces, whereas the 1950 figures are limited to civilians. In the 1940 occupational classification, the Armed Forces were mainly included in the category "Soldiers, sailors, marines, and coast guards," under the major group "Protective service workers." In the 1940 industrial classification, the Armed Forces were mainly included in the category "National defense," under the major group "Government."

The occupational and industrial classification systems used in 1940 are basically the same as those of 1950. There are a number of differences, however, in the title and content for certain items, and in the degree of detail shown for the various major groups. The process of adjusting the 1940 detailed occupation and industry data for comparability with the 1950 figures is not explained in this report because of the great deal of material involved in this process. Further information can be obtained by writing to the Bureau of the Census.

1930 and earlier censuses.--Prior to 1940, the census data on the economically active population referred to "gainful workers." Gainful workers were persons reported as having a gainful occupation, that is, an occupation in which they earned money or a money equivalent, or in which they assisted in the production of marketable goods, regardless of whether they were working or seeking work at the time of the census. A person was not

considered to have had a gainful occupation if his activity was of limited extent. The figures on employed persons in 1950 are based on activity during the census week only. The effects of this variation in approach on the several occupation and industry categories are almost impossible to measure. It seems clear, however, that for virtually all occupations and industries the gainful worker concept yields larger figures than the "employed" concept. (In part, the difference is due to the omission of unemployed workers who are not included in this report but for whom data on occupation and industry separately are available in 1950 Population Census Volume II.)

The occupational and industrial classification systems used in the 1930 Census and earlier censuses were markedly different from the 1950 systems. The relationships between the present and earlier systems are being analyzed, and the results of the study will be made available by the Bureau of the Census. For information on occupation and industry data from 1930 and earlier censuses, see the publication, U. S. Bureau of the Census, Sixteenth Census Reports, Population, Comparative Occupation Statistics for the United States, 1870 to 1940, Washington, D. C., 1943.

Current Population Survey.--A number of operating problems tend to introduce incomparabilities between the data from the Current Population Survey and the 1950 Population Census; see section on "Quality of data." Also, the occupational and industrial classifications of the 1950 Census were not introduced in the Current Population Survey until October 1950.

Other data.--Differences in concept and definition cause incomparabilities between census data and data from other sources. Because the 1950 Census employment data were obtained by household interviews, they differ from statistics based on reports from individual business establishments, farm enterprises, and certain government programs. In the data shown here, persons employed at more than one job are counted only once as employed and are classified according to the job at which they worked the greatest number of hours during the census week. In statistics based on reports from business and farm establishments, on the other hand, persons who work for more than one establishment may be counted more than once. Moreover, other data, unlike those presented here, generally exclude private household workers, unpaid family workers, and self-employed persons, and may include workers less than 14 years of age. An additional difference arises from the fact that persons with a job but not at work are included with the employed in the statistics shown here, whereas only part of this group is likely to be included in employment figures based on establishment payroll reports.

In addition, comparability between the statistics presented here and statistics from other sources is also frequently affected by the use of different classification systems. See sections on "Relation to DOT classification" and "Relation to Standard Industrial Classification."

In regard to comparisons between occupation figures from the Population Census and those based on data from government licensing agencies, professional associations, trade unions, etc., comparability may not be as direct as would first appear. Among the sources of difference may be the inclusion in the organizational listing of retired persons or persons devoting all or most of their time to another occupation, the inclusion of the same person in two or more different listings, and the fact that relatively few organizations attain complete coverage or membership in an occupation field.

#### QUALITY OF DATA

Count of employed persons.--Many of the figures shown here are probably subject to some understatement because of the omission of some marginal workers from the count of employed persons. These omissions arise from the difficulty of applying certain of the employment status concepts, and, perhaps more important, the fact that complete information is not always obtained for certain groups. For example, housewives, students, and semiretired

persons, who work on only a part-time or intermittent basis, may fail to report that they are employed unless carefully questioned. In many cases, enumerators may assume that such persons could not be employed and will omit the necessary questions. As a result, the statistics will understate the size of the employed population.

A measure of this understatement is provided by a comparison with the data from the Current Population Survey. The estimated size of the employed population in the United States based on the Current Population Survey is about 4 percent above the corresponding complete-count figure from the 1950 Census. Examination of the census returns for a sample of households that were also included in the Current Population Survey for April 1950 indicates that although differences of all kinds were found, on balance, the Current Population Survey enumerators, who were much more experienced than were the temporary census enumerators, reported more completely the employment of teen-agers and women 25 years old and over. This difference is reflected in a more accurate reporting of persons employed in industries, such as agriculture, trade, and personal services, where part-time or occasional work is widely prevalent. These are the groups for whom variability in response is relatively great in labor force surveys. On the other hand, the differences were at a minimum for men and for young women--the major components of the "full-time" working population.

Classification of occupation and industry returns.--Another factor to be considered in the interpretation of these data is that enumerators sometimes returned occupation and industry designations which were not sufficiently specific for precise allocation. One cause may have been the enumerator's lack of knowledge of how to describe a particular job on the census schedule. Another possible cause was inadequate information about the worker's job on the part of the housewife or other person from whom the enumerator obtained the report. Indefinite occupation and industry returns can frequently be assigned, however, to the appropriate category through the use of supplementary information. For example, in the case of occupation, the industry return on the census schedule is often of great assistance. In the case of indefinite industry returns, helpful information can frequently be obtained from outside sources regarding the types of industrial activity in the given area. The basic document used in the allocation of the schedule returns of occupation and industry to the appropriate categories of the classification systems is the publication, U. S. Bureau of the Census, 1950 Census of Population, Alphabetical Index of Occupations and Industries, Washington, D. C., 1950.

The application of detailed occupational and industrial classifications to approximately 60 million workers is obviously subject to some error. Although the number of misclassifications probably does not have any serious effect on the usefulness of most of the data, there are a few cases where relatively small numbers of erroneous returns may produce what might be regarded as a serious misstatement of the facts. Some of the more obvious misclassifications have been adjusted, but it was not possible to perform a complete review of the data for all discrepancies.

Post-Enumeration Survey.--Information on certain aspects of the quality of the occupation and industry data is available from the Post-Enumeration Survey. This survey consisted, in part, of a sample of about 22,000 households which were reinterviewed to determine the accuracy of the reports obtained in the original enumeration. Although the information thus obtained is subject to a number of qualifications (as explained in 1950 Population Census Volume II, Part 1), the analysis does provide useful indications of the quality of the census data.

The Post-Enumeration Survey material on occupation and industry is as yet tabulated only for major groups. One important factor which affects the quality of the data on occupation and industry--the reporting of employment status--was not investigated, mainly because the time interval between the census and Post-Enumeration Survey enumerations appeared too great to yield adequate information on an item so subject to change as employment status.

In general, the percent distributions by major occupation group and major industry group were only slightly affected by errors of coverage, errors in reporting a job description, and errors in reporting age. With few exceptions, the percentage of employed persons in each such category was affected by less than one percentage point. The stability in the percentage was found both when corrections were made for all three types of errors combined and when corrections were made for each type separately. This stability also existed with regard to the distributions for both sexes combined and for males and females separately.

The accuracy of the count of persons in each major group was also measured by the Post-Enumeration Survey. The absolute number of employed persons in most of the major occupation and major industry groups was in error by less than 4 percent as a result of the three types of errors measured.

## SAMPLE DESIGN AND VARIABILITY

### SAMPLE DESIGN

The data for 1950 in this report are based on information tabulated for a representative sample of approximately 3 1/3 percent of the population. A separate line was provided on the population schedules for each person enumerated, with every fifth line designated as a sample line. Within each enumeration district, the schedules were divided approximately equally among five versions. On each version the sample constituted a different set of lines so that each line on the schedule was in the sample on one of the five versions.<sup>3</sup> The 1950 statistics in this report are based on tabulations of a systematic selection of one-sixth of the persons on these sample lines, or about 3 1/3 percent of the population.

Estimates for 1950 of the number of persons with specified characteristics have in all cases been obtained by multiplying

the number of persons in the sample with these characteristics by 30.

Although the sampling plan used did not automatically insure an exact 3 1/3-percent sample of persons, it was unbiased and for the United States the deviation from 3 1/3 percent was expected to be quite small for major classes of the population. Small biases, however, arose when the enumerator failed to follow his instructions exactly. These were usually in the direction of a slight underrepresentation of adult males, particularly heads of households in the sample. Errors of processing as noted in the section on "Accuracy and internal consistency of data" also affected the sample size.

Table A compares the distribution by major occupation group of employed persons, as presented in this report, with corresponding statistics based on the complete count presented in Volume II of the 1950 Census of Population. Table B presents a similar comparison for major industry group. Differences among the columns in each of these tables reflect, among other things, enumerators' errors in selecting the sample and errors in processing. The net effect of these factors is relatively small and should have little influence on the interpretation of the data.

<sup>3</sup> In 19 counties of Michigan and Ohio, the sample consisted basically of every fifth household and all persons in these households were considered in the sample. Such a household sample was used as an experiment to determine the feasibility of this type of sample in future censuses of population.

SPECIAL REPORTS

Table A.--COMPARISON OF COMPLETE COUNT AND 3 1/3-PERCENT SAMPLE DATA ON MAJOR OCCUPATION GROUP OF EMPLOYED PERSONS, BY SEX, FOR THE UNITED STATES: 1950

Major occupation group and sex	Complete count <sup>1</sup>	3 1/3-percent sample	Percent distribution		Ratio of complete count to 3 1/3-percent sample	Major occupation group and sex	Complete count <sup>1</sup>	3 1/3-percent sample	Percent distribution		Ratio of complete count to 3 1/3-percent sample
			Complete count	3 1/3-percent sample					Complete count	3 1/3-percent sample	
Male, employed.....	40,510,176	40,054,390	100.0	100.0	1.011	Female, employed.....	15,715,164	15,749,460	100.0	100.0	0.998
Professional, technical, and kindred workers.....	2,970,256	2,910,690	7.3	7.3	1.020	Professional, technical, and kindred workers.....	1,938,985	1,946,910	12.3	12.4	0.996
Farmers and farm managers.....	4,189,882	4,165,110	10.3	10.4	1.006	Farmers and farm managers.....	116,371	119,100	0.7	0.8	0.977
Managers, officials, and proprietors, except farm.....	4,340,687	4,233,930	10.7	10.6	1.025	Managers, officials, and proprietors, except farm.....	676,778	676,170	4.3	4.3	1.001
Clerical and kindred workers.....	2,602,610	2,593,030	6.4	6.5	1.004	Clerical and kindred workers.....	4,291,764	4,272,930	27.3	27.1	1.004
Sales workers.....	2,596,786	2,569,950	6.4	6.4	1.010	Sales workers.....	1,329,724	1,323,660	8.5	8.4	1.005
Craftsmen, foremen, and kindred workers..	7,537,016	7,464,090	18.6	18.6	1.010	Craftsmen, foremen, and kindred workers..	235,544	236,640	1.5	1.5	0.995
Operatives and kindred workers.....	8,127,433	8,058,420	20.1	20.1	1.009	Operatives and kindred workers.....	3,018,787	3,024,210	19.2	19.2	0.998
Private household workers.....	73,156	72,750	0.2	0.2	1.006	Private household workers.....	1,334,310	1,359,210	8.5	8.6	0.982
Service workers, except private household	2,373,410	2,352,840	5.9	5.9	1.009	Service workers, except private household	1,914,293	1,918,440	12.2	12.2	0.998
Farm laborers and foremen.....	1,950,458	1,953,690	4.8	4.9	0.998	Farm laborers and foremen.....	449,336	462,810	2.9	2.9	0.971
Laborers, except farm and mine.....	3,290,253	3,249,360	8.1	8.1	1.013	Laborers, except farm and mine.....	126,979	122,970	0.8	0.8	1.033
Occupation not reported.....	458,229	430,530	1.1	1.1	1.064	Occupation not reported.....	282,293	286,410	1.8	1.8	0.986

<sup>1</sup> 1950 Census of Population, Volume II, Part 1, table 124.

Table B.--COMPARISON OF COMPLETE COUNT AND 3 1/3-PERCENT SAMPLE DATA ON MAJOR INDUSTRY GROUP OF EMPLOYED PERSONS, BY SEX, FOR THE UNITED STATES: 1950

Major industry group and sex	Complete count <sup>1</sup>	3 1/3-percent sample	Percent distribution		Ratio of complete count to 3 1/3-percent sample	Major industry group and sex	Complete count <sup>1</sup>	3 1/3-percent sample	Percent distribution		Ratio of complete count to 3 1/3-percent sample
			Complete count	3 1/3-percent sample					Complete count	3 1/3-percent sample	
Male, employed.....	40,510,176	40,054,390	100.0	100.0	1.011	Female, employed.....	15,715,164	15,749,460	100.0	100.0	0.998
Agriculture, forestry, and fisheries....	6,406,534	6,402,300	15.8	16.0	1.001	Agriculture, forestry, and fisheries....	589,625	614,250	3.8	3.9	0.960
Mining.....	906,286	903,480	2.2	2.3	1.003	Mining.....	23,178	24,780	0.1	0.2	0.935
Construction.....	3,342,334	3,298,260	8.3	8.2	1.013	Construction.....	98,356	99,780	0.6	0.6	0.986
Manufacturing.....	10,929,699	10,816,860	27.0	27.0	1.010	Manufacturing.....	3,641,052	3,636,540	23.2	23.1	1.001
Transportation, communication, and other public utilities.....	3,687,620	3,668,940	9.1	9.2	1.005	Transportation, communication, and other public utilities.....	681,323	677,580	4.3	4.3	1.006
Wholesale and retail trade.....	6,999,085	6,867,090	17.3	17.1	1.019	Wholesale and retail trade.....	3,550,919	3,521,580	22.6	22.4	1.008
Finance, insurance, and real estate.....	1,134,821	1,109,160	2.8	2.8	1.023	Finance, insurance, and real estate.....	780,299	773,550	5.0	4.9	1.009
Business and repair services.....	1,229,988	1,211,100	3.0	3.0	1.016	Business and repair services.....	182,836	185,490	1.2	1.2	0.986
Personal services.....	1,158,846	1,153,380	2.9	2.9	1.005	Personal services.....	2,328,872	2,362,920	14.8	15.0	0.986
Entertainment and recreation services....	411,690	412,320	1.0	1.0	0.998	Entertainment and recreation services....	141,059	145,140	0.9	0.9	0.972
Professional and related services.....	1,954,592	1,916,880	4.8	4.8	1.020	Professional and related services.....	2,716,581	2,731,770	17.3	17.3	0.994
Public administration.....	1,836,753	1,837,480	4.5	4.6	1.000	Public administration.....	652,088	653,190	4.1	4.1	0.998
Industry not reported.....	511,928	457,140	1.3	1.1	1.120	Industry not reported.....	328,976	322,890	2.1	2.1	1.019

<sup>1</sup> 1950 Census of Population, Volume II, Part 1, table 130.

SAMPLING VARIABILITY

Since the data in this report are based on samples of the population, they are subject to sampling variability. The sampling variability of the 1950 data can be estimated from the standard errors shown in tables C and D. These tables do not reflect the biases mentioned above. Table C presents the approximate standard errors of 1950 sample estimates of selected sizes. Table D shows the approximate standard errors of 1950 percentages when computed by using data from this report for both numerator and denominator. Linear interpolation can be used for estimates not shown in these tables.

The standard error is a measure of sampling variability. The chances are about 2 out of 3 that the difference due to sampling variability between an estimate and the figure that would have been obtained from a complete count of the population is less than the standard error. The amount by which the standard error must be multiplied to obtain other odds deemed more appropriate can be found in most statistical textbooks. For example, the chances are about 19 out of 20 that the difference is less than twice the standard error, and 99 out of 100 that it is less than 2 1/2 times the standard error.

Illustration: Table 2 shows that there were an estimated 11,970 male technical engineers in mining industries in the United States in April 1950 (37.9 percent of the 31,560 total number of males in mining industries and 2.3 percent of the 511,230 total male technical engineers). From linear interpolation between values in table C, it is found that the standard error of an

estimate of 11,970 is about 600. Consequently, the chances are about 2 out of 3 that the figure that would have been obtained from a complete count of the number of male technical engineers in mining industries differs by less than 600 from the sample estimate. It also follows that there is only about 1 chance in 100 that a complete census would differ by as much as 1,500, that is, by 2 1/2 times the standard error. It may be estimated from table D, also by linear interpolation, that the standard error of the 37.9 percent on a base of 31,560 is about 1.5 percent and that the standard error of the 2.3 percent on the base of 511,230 is about 0.1 percent.

The standard errors shown in tables C and D are not directly applicable to differences between two estimates. The standard error of a difference is approximately the square root of the sum of the squares of the standard error of each estimate considered separately. This formula will represent the actual standard error quite accurately for the difference between separate and uncorrelated characteristics. (It can also be used to approximate the standard error of the difference between estimates shown here and corresponding figures shown in the 1940 Census special report on occupational characteristics.) In other cases, however, if there is a high positive correlation between the two characteristics, the formula will overestimate the true standard error.

The smaller figures and small differences between figures should be used with particular care because they are subject to larger relative error arising from sampling variability and processing and enumeration errors.