Revising the Standard Occupational Classification System

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Concerns about the quality of the U.S. workforce, skills training issues, and changes in occupational structures due to new technology, competitive economic pressures, and shifts to forms of “high performance” work organizations, have focused attention on the quality of occupational information and statistics. Current occupational data and their underlying classification structures were criticized as being fragmented, incompatible, outdated, and lacking information on skills. Many users and producers of occupational data believed that it was time to revise the U.S. Standard Occupational Classification (SOC) system to a unified classification structure.

In 1994, the Office of Management and Budget established a Standard Occupational Classification Revision Policy Committee (SOC Committee) to develop a unified classification structure that would meet the needs of the 21st century. The Committee was chaired by the Bureau of Labor Statistics and the Bureau of Census, with representatives from the Bureau of Labor Statistics, the Bureau of Census, the Employment and Training Administration (Department of Labor), the Office of Personnel Management, the Defense Manpower Data Center, and ex officio the National Science Foundation, the National Occupational Information Coordinating Committee, and the Office of Management and Budget.

This report is based on an article which appeared in the May 1999 *Monthly Labor Review* written by Chester Levine, manager of occupational outlook studies in the Division of Occupational Outlook, Bureau of Labor Statistics and Chair of the Construction, Extraction, Agricultural, and Transportation Occupations Work Group of the SOC Committee; Laurie Salmon, an economist in the Division of Occupational and Administrative Statistics, Bureau of Labor Statistics and a member of the SOC Committee Secretariat; and Daniel H. Weinberg, Chief of the Division of Housing and Household Economic Statistics, Bureau of the Census and Chair of the SOC Committee.

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Although occupational data has been collected in the United States since the 1850 Census of Population, the modern Standard Occupational Classification (SOC) system was not introduced until 1977. The SOC is intended to include all occupations for which work is performed for pay or profit. As with any new taxonomy, there were flaws and omissions in the original SOC, and the system was revised in 1980, in time to be used for tabulations from the 1980 decennial census.

Despite plans for frequent review, it was not until the mid-1990s that the validity and usefulness of the 1980 SOC for current needs was examined. To determine how accurately the 1980 SOC reflected the world of work 15 years later, the Office of Management and Budget (OMB) chartered the Standard Occupational Classification Revision Policy Committee (SOC Committee).

This article provides a description of the SOC revision process. For background, it begins with a brief summary of the Standard Industrial Classification (SIC) revision process and the work of the Economic Classification Policy Committee (ECP Committee), much of which was emulated by the SOC Committee. The article then details why the SOC was revised and describes its key characteristics.

The SIC revision process

The ECP Committee was established by OMB in 1992 to re-examine the SIC system. At the time, the SIC had been in use for more than 50 years. So pervasive was the system throughout U.S. industry that virtually every business establishment in the Nation knew its SIC code. Yet, many SIC-based statistics were out of step with the changes that have occurred in the U.S. economy in recent decades.

The SIC system had been introduced in the 1930s to help classify the growing number of new manufacturing industries that had developed since the early 1900s. By 1992, however, it was clear that a new classification system was needed to accommodate newly developed industries in such areas as information services, health care services, and high-tech manufacturing. Further, the initiation of the North American Free Trade Agreement in 1994 increased the need for comparable statistics from the United States, Canada, and Mexico.

The resultant system, the North American Industry Classification System (NAICS), is a complete restructuring of the SIC, organized to conform to the principle of grouping establishments by their production processes alone—that is, NAICS is a supply-based or production-oriented classification system. By contrast, the former system used a combination of supply and demand characteristics to classify industries. Another advantage of NAICS is that each participating country can individualize the new system to meet its own needs, as long as data can be aggregated to standard NAICS industries.1

The SOC Committee identified four key steps in the ECP Committee process that the members thought would be useful to emulate in the SOC revision process: 1) identification of issues (including commissioned issue papers), 2) designation of an organizing principle, 3) work by subgroups, and 4) adjudication of differences of opinion.

Occupational classification history

Occupational classification is not a new topic of government interest. The published tabulations from the 1850 Census of Population constitute the first de facto classification. There were 322 occupations listed, including such interesting jobs as daguerrotypists (photographers) and salaeratus (baking soda) makers. (See appendix A for a complete list of the occupations used in the 1850 Census.) In early classification systems, too much emphasis was placed on the industry in which one worked. While it is true that the work setting can influence the job, it is the hallmark of more recent classification systems that characteristics of the work performed comes first.

More frequent data collection began in 1942 with the monthly labor force survey. The U.S. Employment Service needed occupational statistics for its work and developed a Convertibility List of Occupations with Conversion Tables to serve as a bridge between its statistics and information from the 1940 Census of Population. Continued revisions to the census classification scheme and publication of the third edition of the Department of Labor’s Dictionary of Occupational Titles in 1965 encouraged the government to begin a thorough reexamination of occupational taxonomy.

Without a standard, initially comparable systems will tend to drift apart, reducing the ability of an analyst to compare similar data collected for different purposes. Occupational data from household surveys, for example, which provide demographic information, could not easily be compared with occupational data from industry-supplied, or establishment-based surveys. Similarly, detailed job descriptions from the Dictionary of Occupational Titles could not easily be linked.
to survey data. The need to devise such a standard in order to link these different systems resulted in the 1977 SOC (revised and reissued in 1980).

Despite agreements to maintain and update the original SOC system, for various reasons—the need to maintain each program’s historical continuity, a lack of Federal funding, and the absence of a clear directive to enforce comparability—the original system was not revised after 1980. Consequently, many agencies set up data collection systems with occupational classification schemes that differed from the SOC. Observing this problem, BLS hosted an International Occupational Classification Conference to establish a context for a new SOC revision process. Many new ideas and approaches were presented that influenced the SOC Committee. Similarly, the Employment and Training Administration’s Advisory Panel for the Dictionary of Occupational Titles had just completed a review of the dictionary and had recommended substantial changes.

Persuaded that a reconciliation was in order, OMB subsequently invited all Federal agencies with an occupation classification system to join together to revise the SOC. The SOC Committee included representatives from BLS, the Bureau of the Census, the Employment and Training Administration, the Defense Manpower Data Center, and the Office of Personnel Management. In addition, ex-officio members included the National Science Foundation, the National Occupational Information Coordinating Committee, and OMB. Other Federal agencies, such as the Department of Education, the Department of Health and Human Services, and the Equal Employment Opportunity Commission, participated in several meetings of the SOC Committee as well, or as part of the Federal Consultation Group.

The SOC revision process

OMB chartered the SOC Committee in October 1994. Shortly afterward, the SOC Committee published a notice in the Federal Register calling for comments specifically on the following: 1) the uses of occupational data, 2) the purpose and scope of occupational classification, 3) the principles underlying the 1980 SOC, 4) conceptual options for the new SOC, and 5) the SOC revision process.

The SOC Committee’s main concern was identifying an organizing principle for the revised SOC, which required careful consideration of the conceptual options. Four options were identified in the notice for public comment. The first, and the basic concept behind the 1980 SOC, was the type of work performed. The second option was to model the new SOC after the International Standard Classification of Occupations in recognition of the increasing internationalization of employment. The third option was to devise a “skills-based system,” following the recommendations of the Advisory Panel for the Dictionary of Occupational Titles. The fourth option identified, an “economic-based system,” echoed the choice of the ECP Committee in their revision of the SIC system.

After the public comment period, the SOC Committee established the following criteria to guide the revision process:

- The new classification system covers all occupations in which work is performed for pay or profit, including work performed in family-operated enterprises by family members who are not directly compensated. It excludes occupations unique to volunteers.
- The new system reflects the current occupational structure of the United States and has sufficient flexibility to assimilate new occupations.
- Occupations are classified on the basis of work performed, and required skills, education, training, or credentials.
- Each occupation is assigned to only one group at the lowest level of the classification.
- Supervisors of professional and technical workers usually have a background similar to the workers they supervise and are therefore classified with the workers they supervise. Likewise, team leaders, lead workers, and supervisors of production workers who spend at least 20 percent of their time performing work similar to the workers they supervise, are classified with the workers they supervise.
- Supervisors of production workers who spend less than 20 percent of their time performing the same work as the workers they supervise are classified separately.
- First-line supervisors/managers are generally found in smaller establishments where they perform both supervisory and management functions, such as accounting, marketing, and personnel work.
- Apprentices and trainees should be classified with the occupations for which they are being trained, while helpers and aides should be classified separately.
- Some data-reporting agencies may collect and report data at a more aggregated level, such as broad occupation, minor group, or major group, when enough detail is not available to classify workers into a detailed occupation.
- If an occupation is not included as a distinct detailed occupation listed in the structure, it should be classified in the appropriate residual occupation. Residual occupations are all other occupations in a major, minor, or broad group that are not classified separately.
- When workers may be classified in more than one occupation, they should be classified in the occupation that requires the highest level of skill. If there is no measurable difference in skill requirements, the worker is included in the occupation in which he or she spends the most time.

The SOC Committee opted for practical approaches to classification rather than for (perhaps more appealing) theoretical approaches. The key classification principle chosen for the new SOC was to continue the previous focus on work performed (with “skills-based considerations”). In the SOC Committee’s judgment, the ability to identify and measure skills consistently had not advanced far enough. The International Standard Classification of Occupations was not used because it was not flexible enough for U.S. needs. Finally,
the SOC Committee believed that an economic-based approach would not provide sufficient practical guidance to employers or employees. The SOC Committee also solicited public participation in the next part of the process, building the revised SOC. To develop the new system of occupations, the Committee formed six work groups—five of which were based on skills groupings of Occupation Employment Statistics (OES) occupations and one of which dealt with military occupations. The OES was used as a starting point partly because doing so would enable some historical comparability and partly because BLS was leading much of the work group efforts and thus using BLS survey data would speed the revision process. The following six work groups were formed: 1) management, administrative, and clerical; 2) natural science, law, health, education, and arts; 3) sales and service; 4) construction, extraction, agricultural, and transportation; 5) mechanical and production; and 6) military.

The work groups invited experts from many areas to testify and also requested written recommendations using the SOC revision guidelines. Their procedure was to develop a proposed structure plus a title, a definition, and a list of associated job titles. Each proposed occupation was reviewed by the SOC Committee.

Once most of the occupations were defined and accepted, another work group was formed to discuss and recommend a hierarchy, a key characteristic of the 1998 SOC. Developing the hierarchy ultimately proved one of the more challenging aspects of the process. Perhaps more than any other part of the SOC revision, the hierarchy changed most from its preliminary stage to its final structure, as the Committee struggled to make the SOC more transparent to its users. (Appendix B lists the final 1998 SOC detailed occupations.)

In July 1997, the SOC Committee published the proposed new structure. After considering more than 200 comments, a revised structure was submitted to OMB and issued in August 1998. Subsequently, additional comments were requested by OMB and minor further changes were made.

**Purpose: a standardized system**

The 1998 SOC was developed in response to a concern that the existing SOC did not meet the need for a universal occupational classification system to which all Federal Government agencies and—it was hoped—other collectors of occupational information would adhere. The following selected government agencies have collected and used occupational data based on unique occupational classification systems that suit their needs.

**Bureau of Labor Statistics.** The Occupational Employment Statistics (OES) program collects employment data annually on nearly 800 occupations by industry based on establishment surveys of wage and salary workers, who account for about 9 out of 10 workers in the Nation. The OES survey classifies workers according to occupational definitions, a characteristic used for classification in 1998 SOC.

**Bureau of the Census.** Both the decennial Census of Population and the monthly Current Population Survey (CPS) tabulate data for about 500 occupations for each of the three classes of workers—wage and salary workers, the self-employed, and unpaid family workers. In addition to employment, these programs collect data on a number of demographic characteristics—age, sex, race, and Hispanic origin—as well as a wide range of other characteristics, such as educational attainment, number of hours worked, number of job openings, and employment status. Both the decennial Census of Population and the CPS classify workers according to the job titles given by the survey respondents. Classifying workers according to associated job titles is another characteristic of the 1998 SOC.

**Employment and Training Administration.** The Dictionary of Occupational Titles identified and defined more than 12,000 jobs. This classification system has been replaced by the Occupational Information Network (O*NET), which adheres to the SOC.

**Other agencies.** The Department of Education collects data on teachers, the Bureau of Health Professions gathers information on health occupations, and the National Science Foundation surveys focus on scientists and engineers. The Office of Personnel Management publishes data on occupations in the Federal Government, and the Department of Defense maintains data on military personnel.

The existence of different occupational data collection systems in the Federal Government presents a major problem—data collected by one program often is not suitable for other uses. Comparisons across programs are limited to the effectiveness and accuracy of crosswalks between different occupational classification systems. For example, data on educational attainment collected through the CPS can only be used with data on employment from the OES program for occupations that are considered comparable from both surveys. Universal adherence to the 1998 SOC will aid analysis of educational, demographic, economic, and other factors that affect employment, wages, and other worker characteristics.

**Key characteristics**

**Structured for comparability.** The SOC is composed of four hierarchical levels to enable data collectors to choose a level of detail corresponding to their interests and abilities to collect data on different occupations. The Bureau of Labor Statistics, through its establishment survey that classifies workers according to occupational definitions, is generally able to collect data on more detailed occupations than is the Bureau of the Census, whose household surveys rely almost exclusively on job titles given by respondents to classify workers. The Bureau of Labor Statistics collects data on both heavy and light truck drivers, for example, while the Bureau of the Census cannot differentiate between the two.
The following list shows the 23 major occupational groups of the revised SOC:

Management occupations
Business and financial operations occupations
Computer and mathematical occupations
Architecture and engineering occupations
Life, physical, and social science occupations
Community and social services occupations
Legal occupations
Education, training, and library occupations
Arts, design, entertainment, sports, and media occupations
Healthcare practitioners and technical occupations
Healthcare support occupations
Protective service occupations
Food preparation and serving related occupations
Building and grounds cleaning and maintenance occupations
Personal care and service occupations
Sales and related occupations
Office and administrative support occupations
Farming, fishing, and forestry occupations
Installation, maintenance, and repair occupations
Production occupations
Transportation and material moving occupations
Military specific occupations

These major groups include 98 minor groups, 452 broad occupations, and 822 detailed occupations. (See appendix B.) Occupations with similar skills or work activities are grouped at each of the four levels of hierarchy to facilitate comparisons. For example, the major group, life, physical, and social science occupations, is divided into four minor groups—life scientists, physical scientists, social scientists and related workers, and life, physical, and social science technicians. Life scientists contain broad occupations, such as agriculture and food scientists, as well as biological scientists. The broad occupation, biological scientists, includes detailed occupations such as biochemists and biophysicists as well as microbiologists. The following example shows the hierarchical structure of the 1998 SOC:

**19–0000 Life, physical, and social science occupations (major group)**

19–000 Life scientists (minor group)
  19–1020 Biological scientists (broad occupation)
  19–1021 Biochemists and biophysicists (detailed occupation)
  19–1022 Microbiologists (detailed occupation)
  19–1023 Zoologists and wildlife biologists (detailed occupation)
  19–1029 Biological scientists, all other (detailed occupation)

Broad occupations often include several detailed occupations that are difficult to distinguish without further information. For example, people may report their occupation as bi-ologist or psychologist without identifying a concentration. Broad occupations, such as psychologists, include more detailed occupations, such as industrial-organizational psychologists, for those requiring further detail. For cases in which there is little confusion about the content of a detailed occupation, the broad occupation is the same as the detailed occupation. For example, because it is relatively easy to identify lawyers, the broad occupation, lawyers, is the same as the detailed occupation.

Reflects structure of current workforce. In addition to ensuring comparability among various surveys, the 1998 SOC was designed to mirror the current occupational structure in the Nation, and, in effect, serve as a bridge to occupational classification in the 21st century. The new system should lead to the collection of meaningful data about the workforce and benefit various users of occupational data. These users might include education and training planners; jobseekers, students, and others seeking career guidance; various government programs, including occupational safety and health, welfare-to-work, and equal employment opportunity; and private companies wishing to relocate or set salary scales.

Reflecting advances in factory and office automation and information technology, the shift to a services-oriented economy, and increasing concern for the environment, the new classification structure has more professional, technical, and service occupations and fewer production and administrative support occupations than earlier classification systems. Although the designation “professional” does not exist in the 1998 SOC, the new classification system reflects expanded coverage of occupations classified as professional and technical in earlier classification systems. These occupations have been dispersed among a number of major occupational groups, such as computer and mathematical occupations, community and social services occupations, healthcare practitioners and technical occupations, and legal occupations.

Designers, systems analysts, drafters, counselors, dentists, physicians, artists, and social scientists are among the occupations that are covered in greater detail in the new SOC. For example, the SOC breaks out a number of designer specialties—commercial and industrial, fashion, floral, graphic, interior, and set and exhibit designers. Similarly, the new classification breaks out additional social science specialties—market and survey researchers, sociologists, anthropologists and archeologists, geographers, historians, and political scientists. Examples of new occupations include environmental engineers; environmental engineering technicians; environmental scientists and specialists, including health; environmental science and protection technicians, including health; computer software engineers; multimedia artists and animators; and forensic science technicians; among others.

In the services group, gaming occupations, such as gaming and sportsbook writers and runners, have been added as a result of growth among these occupations in several States. Other relatively new service occupations include skin care
specialists, concierges, massage therapists, and fitness trainers and aerobics instructors.

Production occupations, on the other hand, have undergone significant consolidation. For example, various printing machine operators have been combined into one occupation in the 1998 SOC. Because many factories now employ one person to perform the tasks of setting up and operating machines, both tasks have been combined into one occupation. In addition, many factories now employ teams in which each team member is able to perform all or most of the team assembly activities; these people are included in the occupation, team assemblers. The SOC also includes relatively new production occupations such as semiconductor processors and fiberglass laminators and fabricators.

Office and administrative support occupations—for example, office machine operators—also have been consolidated. Relatively new office and administrative support occupations include customer service representatives and executive secretaries and administrative assistants.

**Greater flexibility.** To accommodate the needs of different data collection agencies, the SOC enables data collection at more detailed or less detailed levels, while still allowing data comparability at certain levels of the hierarchy. Each occupation in the SOC is assigned a 6-digit code. (The first two digits represent the major group, the third digit represents the minor group, the fourth and fifth digits represent the broad occupation, and the sixth digit represents the detailed occupation.) Data collection agencies wanting more detail to measure additional worker characteristics can split a defined occupation into more detailed occupations by adding a decimal point and more digits to the SOC code. For example, secondary school teachers (25-3031) is a detailed occupation. Agencies collecting more detailed information on teachers by subject matter might use 25-3031.1 for secondary school science teachers or 25-3031.12 for secondary school biology teachers. Additional levels of detail also may be used to distinguish workers who have different training, demographic characteristics, or years of experience. For users wanting less detail, the SOC Committee suggests combining the 23 major groups into 11 or even 6 groups if needed for tabulation purposes. 

**Comprehensive coverage.** The Standard Occupational Classification covers all workers in the United States. In some cases, the worker will not exactly fit into a defined occupation and will be classified in a residual occupation at the most detailed level possible. These residual categories are placed throughout the structure as needed. Like other detailed occupations, residual occupations may be individually defined so that separate data can be collected. For example, the broad occupation, biological scientists, lists three types of biological scientists explicitly, but this list is not exhaustive. In order to include all workers in the appropriate classification, residual occupations are added for the workers not defined separately. Geneticists, for example, are included in the residual category, all other biological scientists.

**Associated job titles.** To facilitate consistent classification by data collection agencies across surveys, the 1998 SOC associates some 30,000 job titles with detailed occupations. For example, associated titles will ensure that a podiatric surgeon consistently will be classified as a podiatrist rather than as a surgeon. Because many of these job titles are industry-specific, the industries also are listed for many titles.

**Occupational definitions.** A universal occupational classification cannot rely on job title alone. To further facilitate consistent classification, each detailed occupation has a definition that uniquely defines the workers that are included. Definitions begin with tasks that all workers in the occupation are expected to perform. The qualifier “may” precedes duties that only some workers perform. Where a definition includes duties also performed by workers in another occupation, cross-references to the occupation are provided. A sample of occupational definitions follows:

(15–1081) Network systems and data communications analysts: Analyze, design, test, and evaluate network systems, such as local area networks (LAN), wide area networks (WAN), Internet, intranet, and other data communications systems. Perform network modeling, analysis, and planning. Research and recommend network and data communications hardware and software. Include telecommunications specialists who deal with the interfacing of computer and communications equipment. May supervise computer programmers.

**Illustrative examples:** Internet developer; Systems integrator; Webmaster

**Military occupations.** The new SOC also covers military jobs. Workers in military occupations that are similar to nonmilitary occupations, such as physicians, cooks, or secretaries, are classified with nonmilitary workers. Those in occupations specific to the military, such as infantry, are in a separate group. However, data on all military personnel—whether specific to the military or not—usually will be separate from data on the civilian labor force collected by the Bureau of Labor Statistics, the Bureau of the Census, and other government agencies.

**Historical comparability.** Comparability with older classification systems is important for analyzing long-term trends in employment and other characteristics of workers. While such comparability was not the primary consideration in development of the 1998 SOC, researchers will retain the ability to make most historical comparisons.

**Flexibility for change.** The SOC Committee has proposed that a permanent review committee be established to keep the SOC up to date, and OMB currently is considering the proposal. This committee would consider proposals for new occupations, redefine occupations as job duties change, and amend the list of associated job titles accordingly. For example, some associated job titles in the 1998 SOC might become detailed occupations in future versions of the SOC. The next major revision is expected to begin in 2005, in preparation for the 2010 Census of Population.
Implementation of the 1998 SOC

The final 1998 SOC will be published formally by the Office of Management and Budget. All Federal Government agencies that collect occupational data are expected to adopt the 1998 SOC over the next few years. The following implementation schedule will be used by the Bureau of Labor Statistics and the Bureau of the Census—the agencies with the most comprehensive occupational data collection systems.

**Bureau of Labor Statistics.** The annual Occupational Employment Statistics survey will first reflect the 1998 SOC in 1999; national, State, and metropolitan statistical area data are expected to be available in early 2001.

The Bureau’s Office of Employment Projections develops new national employment projections every 2 years, reflected in its “industry-occupation matrix.” This matrix presents estimates of current and projected employment—covering a 10-year period—by detailed industry and occupation. The occupational staffing pattern, or detailed occupational makeup, of each industry in the matrix reflects Occupational Employment Statistics survey data. The 1998 SOC will first be reflected in the industry-occupation matrix covering the 2002–12 period, which is expected to be released in late 2003.

The Office of Employment Projections also produces the Occupational Outlook Handbook, which is among the most widely used career guidance resources in the Nation, and related publications based on the Bureau’s biennial employment projections. Occupational definitions and data completely based on the 1998 SOC will be incorporated for the first time in the 2004–05 edition of the Handbook, which is expected to be published in early 2004.

**Bureau of the Census.** Data collected by the 2000 Census of Population will be coded to the 1998 SOC and published in 2002. Data from the Current Population Survey will be based on the new classification for the first time in 2003.

**Where to find more information**

The final 1998 SOC ultimately will be published in a two-volume manual. Volume I will contain the hierarchical structure, a complete list of occupational titles and their definitions, a description of the SOC revision process, and a section on frequently asked questions. Volume II will contain a list of some 30,000 job titles that are commonly used by individuals and establishments when reporting employment by occupation. The second volume also will include an alphabetical index of all associated titles and industries and will reference them to the occupation in which they are found. Volumes I and II of the 1998 SOC also will be available at the following Internet address:

http://stats.bls.gov/soc/soc_home.htm

O*NET, the Occupational Information Network, adheres to the 1998 SOC. Information on this occupational classification system appears in “Replace with a Database: O*NET Replaces the Dictionary of Occupational Titles,” Occupational Outlook Quarterly (Bureau of Labor Statistics, Spring 1999). O*NET also may be accessed at the following Internet address:

http://www.doleta.gov/programs/onet

The 1998 SOC will be incorporated into the Occupational Outlook Handbook and the Bureau of Labor Statistics industry-occupation matrix. Both the Handbook and matrix can be accessed at the following Internet address:

http://stats.bls.gov/emphome.htm

To facilitate historical comparisons, the Bureau of Labor Statistics will develop a crosswalk showing the relationship between occupations in the 1998 SOC and the 1997 Occupational Employment Statistics survey.

The Bureau of the Census also is developing a crosswalk showing the relationship between the occupations in the 1998 SOC and those of the 1990 and 2000 censuses. The crosswalk will be available at the following (Bureau of the Census) Internet address:

http://www.census.gov/hhes/www/occupation.html


5 The Bureau of the Census tested the feasibility of data collection to implement a skills-based approach on its 1995 National Content Survey test of questions for the 2000 Census of Population. The SOC Committee also commissioned work by the Joint Program in Survey Methodology on the collectibility of skills information. BLS also developed a prototype job family matrix (modeled on the Canadian system) that classified occupations by skill level. See “Prototype Skills-based Job Family Matrix,” unpublished report (Bureau of Labor Statistics, April 1994).

6 An additional drawback of ISCO-88 was its inclusion of “female” occupations; the SOC Committee decided not to make any gender-based distinctions in the SOC.


9 In comparison, the 1980 SOC included 22 divisions (comparable to major groups in the 1998 SOC), 60 major groups (comparable to minor groups in the 1998 SOC), 223 minor groups (comparable to broad occupations in the 1998 SOC), and 664 unit groups (comparable to detailed occupations in the 1998 SOC).

## Appendix A: Occupational classification used in the 1850 Census of Population

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<th>Actors</th>
<th>Civil engineers</th>
<th>Hair workers</th>
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<td>Agents</td>
<td>Clerks</td>
<td>Hardware manufacturers</td>
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<td>Agricultural implement makers</td>
<td>Clergymen</td>
<td>Hat and cap manufacturers</td>
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<tr>
<td>Apothecaries and druggists</td>
<td>Clock makers</td>
<td>Hemp dressers</td>
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<tr>
<td>Apprentices</td>
<td>Clothiers</td>
<td>Herdsmen, graziers, and rancheros</td>
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<tr>
<td>Architects</td>
<td>Cloth manufacturers</td>
<td>Horse dealers</td>
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<td>Armorers</td>
<td>Coachmakers</td>
<td>Hosiers</td>
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<tr>
<td>Artificial flower makers</td>
<td>Collectors</td>
<td>Hunter, trappers, and rangers</td>
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<td>Artists</td>
<td>Colliers</td>
<td>Ice dealers</td>
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<td>Astronomical, mathematical, and nautical instrument makers</td>
<td>Comb makers</td>
<td>India-rubber manufacturers</td>
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<td>Auctioneers</td>
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<td>Authors</td>
<td>Confectioners</td>
<td>Innkeepers</td>
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<td>Bakers</td>
<td>Contractors</td>
<td>Iron founders</td>
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<td>Bankers</td>
<td>Coopers</td>
<td>Ironmongers</td>
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<td>Bank and insurance officers</td>
<td>Coppersmiths</td>
<td>Iron workers</td>
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<td>Barbers</td>
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<td>Jewellers</td>
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<td>Joiners</td>
</tr>
<tr>
<td>Bell and brass founders</td>
<td>Cutlers</td>
<td>Labors</td>
</tr>
<tr>
<td>Bell hangers and locksmiths</td>
<td>Daguereotypists</td>
<td>Lace manufacturers</td>
</tr>
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<td>Bellows makers</td>
<td>Dairymen and milkmen</td>
<td>Lamp makers</td>
</tr>
<tr>
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<td>Dealers</td>
<td>Lapidaries</td>
</tr>
<tr>
<td>Black and white smiths</td>
<td>Dentists</td>
<td>Last makers</td>
</tr>
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<td>Block and pump makers</td>
<td>Draughtsmen</td>
<td>Lathe makers</td>
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<td>Drivers</td>
<td>Lath makers</td>
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<td>Drovers</td>
<td>Lawyers</td>
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<td>Dyers and bleachers</td>
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<td>Editors</td>
<td>Lightning-rod makers</td>
</tr>
<tr>
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<td>Engineers</td>
<td>Lime burners</td>
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<td>Engravers</td>
<td>Linseed oil manufacturers</td>
</tr>
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<td>Enamellers</td>
<td>Livery-stable keepers</td>
</tr>
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<td>Factory hands</td>
<td>Looking glass makers</td>
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<td>Farriers</td>
<td>Machinists</td>
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<td>Brewers and distillers</td>
<td>Feather dressers</td>
<td>Manufacturers not otherwise specified</td>
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<td>Brick makers</td>
<td>File cutters</td>
<td>Map makers</td>
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<td>Marketmen</td>
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<td>Firework makers</td>
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<td>Fishermen</td>
<td>Mast makers</td>
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<td>Flax dressers</td>
<td>Match makers</td>
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<td>Butchers</td>
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<td>Millers</td>
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<td>Millwrights</td>
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<td>Gas fitters</td>
<td>Miners</td>
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<td>Gas makers</td>
<td>Mineral water manufacturers</td>
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<td>Gatekeepers</td>
<td>Model makers</td>
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<td>Glass manufacturers</td>
<td>Morocco dressers</td>
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<td>Glass stairers</td>
<td>Moulders</td>
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<td>Carvers and gilders</td>
<td>Gloves</td>
<td>Mould makers</td>
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<td>Cattle dealers</td>
<td>Glue makers</td>
<td>Muleteers</td>
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<td>Caulkers</td>
<td>Gold beaters</td>
<td>Musicians</td>
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<td>Gold pen makers</td>
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<td>Grate makers</td>
<td>Mustard makers</td>
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<td>Nail manufacturers</td>
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<td>Grocers</td>
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<td>Gunsmiths</td>
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Needle makers
Newsmen
Nursery men
Occultists
Oil-cloth manufacturers
Oil makers
Opticians
Organ builders
Ostlers
Overseers
Oystermen

Packers
Painters and glaziers
Paper dealers
Paperhangers and upholsterers
Paper manufacturers
Paper rulers
Paper stainers
Patent-leather manufacturers
Patent-medicine makers
Pattern makers
Pavers
Pawnbrokers
Pedlers
Pen makers
Pencil makers
Perfumers
Philosophical instrument makers
Physicians
Pianoforte and musical instrument makers
Pilots
Pin manufacturers
Pipe makers
Plane makers
Planters
Plaster-figure makers
Platers
Plumbers
Pocket-book manufacturers
Porcelain manufacturers
Porters and carriers
Pot and pearl ash manufacturers
Polishers and finishers
Potters
Powder manufacturers
Printers
Produce and provision dealers
Professors
Publishers

Quarrymen
Rag collectors
Railroad men
Razor makers
Razor-strop makers
Refectory keepers
Refiners
Reporters
Riggers
Roofers and slaters
Rope and cord makers
Saddle and harness makers
Safe makers
Sail makers
Salaeratus makers
Salt makers
Sash and blind makers
Saw makers
Sawyers
Scale makers
Scourers
Screw makers
Sculptors
Servants
Sextons
Shingle makers
Ship carpenters
Shoe binders
Shoe-peg makers
Shot manufacturers
Showmen
Silk manufacturers
Soldiers
Spinners
Spoon manufacturers
Spring makers
Starch manufacturers
Stave makers
Steel manufacturers
Stencillers
Sterotypists
Stevedores
Stone and marble cutters
Storekeepers
Stove makers
Straw workers
Students
Sugar manufacturers
Surgeons
Surgical instrument makers

Surveyors
Suspender makers
Tailors
Tanners and curriers
Teachers
Teamsters
Telegraph operators
Tinsmith

Tobacconists and cigar makers
Tool makers
Toy men
Traders
Trimmers
Trunk makers
Turners
Turpentine makers
Type cutters
Type founders

Umbrella manufacturers
Undertakers
United States and State officers

Varnish makers
Veterinarians
Vinegar makers

Wagon makers
Warpers
Watchmen
Watchmakers
Weavers
Whalebone workers
Wheelwrights
Whip makers
Whitewashers
White lead manufacturers
Whiting manufacturers
Wine makers
Wine and liquor dealers
Window-shade makers
Wire makers
Wire workers
Wood corders
Wood cutters
Wood dealers
Wooden ware manufacturers
Wool combers and carders
Wool dealers
Woolen manufacturers
Appendix B: Final 1998 SOC occupational structure

11–0000 Management Occupations
  11–1000 Top Executives
    11–1010 Chief Executives
      11–1011 Chief Executives
    11–1020 General and Operations Managers
      11–1021 General and Operations Managers
    11–1030 Legislators
      11–1031 Legislators
  11–2000 Advertising, Marketing, Promotions, Public Relations, and Sales Managers
    11–2010 Advertising and Promotions Managers
      11–2011 Advertising and Promotions Managers
    11–2020 Marketing and Sales Managers
      11–2021 Marketing Managers
      11–2022 Sales Managers
    11–2030 Public Relations Managers
      11–2031 Public Relations Managers
  11–3000 Operations Specialties Managers
    11–3010 Administrative Services Managers
      11–3011 Administrative Services Managers
    11–3020 Computer and Information Systems Managers
      11–3021 Computer and Information Systems Managers
    11–3030 Financial Managers
      11–3031 Financial Managers
    11–3040 Human Resources Managers
      11–3041 Compensation and Benefits Managers
      11–3042 Training and Development Managers
      11–3049 Human Resources Managers, All Other
    11–3050 Industrial Production Managers
    11–3060 Purchasing Managers
      11–3061 Purchasing Managers
    11–3070 Transportation, Storage, and Distribution Managers
      11–3071 Transportation, Storage, and Distribution Managers
  11–9000 Other Management Occupations
    11–9010 Agricultural Managers
      11–9011 Farm, Ranch, and Other Agricultural Managers
        11–9012 Farmers and Ranchers
    11–9020 Construction Managers
      11–9021 Construction Managers
    11–9030 Education Administrators
      11–9031 Education Administrators, Preschool and Child Care Center/Program
      11–9032 Education Administrators, Elementary and Secondary School
      11–9033 Education Administrators, Postsecondary
      11–9039 Education Administrators, All Other
    11–9040 Engineering Managers
      11–9041 Engineering Managers
    11–9050 Food Service Managers
      11–9051 Food Service Managers
    11–9060 Funeral Directors
      11–9061 Funeral Directors
    11–9070 Gaming Managers
      11–9071 Gaming Managers
    11–9080 Lodging Managers
      11–9081 Lodging Managers
    11–9100 Medical and Health Services Managers
      11–9110 Medical and Health Services Managers
        11–9111 Medical and Health Services Managers
    11–9120 Natural Sciences Managers
      11–9121 Natural Sciences Managers
    11–9130 Postmasters and Mail Superintendents
      11–9131 Postmasters and Mail Superintendents
    11–9140 Property, Real Estate, and Community Association Managers
      11–9141 Property, Real Estate, and Community Association Managers
    11–9150 Social and Community Service Managers
      11–9151 Social and Community Service Managers
    11–9190 Miscellaneous Managers
      11–9199 Managers, All Other

13–0000 Business and Financial Operations Occupations
13–1000 Business Operations Specialists
  13–1010 Agents and Business Managers of Artists, Performers, and Athletes
    13–1011 Agents and Business Managers of Artists, Performers, and Athletes
  13–1020 Buyers and Purchasing Agents
    13–1021 Purchasing Agents and Buyers, Farm Products
    13–1022 Wholesale and Retail Buyers, Except Farm Products
    13–1023 Purchasing Agents, Except Wholesale, Retail, and Farm Products
  13–1030 Claims Adjusters, Appraisers, Examiners, and Investigators
    13–1031 Claims Adjusters, Appraisers, Examiners, and Investigators
    13–1032 Insurance Appraisers, Auto Damage
  13–1040 Compliance Officers, Except Agriculture, Construction, Health and Safety, and Transportation
    13–1041 Compliance Officers, Except Agriculture, Construction, Health and Safety, and Transportation
  13–1050 Cost Estimators
    13–1051 Cost Estimators
  13–1060 Emergency Management Specialists
    13–1061 Emergency Management Specialists
  13–1070 Human Resources, Training, and Labor Relations Specialists
    13–1071 Employment, Recruitment, and Placement Specialists
    13–1072 Compensation, Benefits, and Job Analysis Specialists
    13–1073 Training and Development Specialists
    13–1079 Human Resources, Training, and Labor Relations Specialists, All Other
  13–1080 Logisticians
    13–1081 Logisticians
  13–1110 Management Analysts
  13–1111 Management Analysts
  13–1120 Meeting and Convention Planners
    13–1121 Meeting and Convention Planners
13–1190  Miscellaneous Business Operations Specialists
13–1199  Business Operations Specialists, All Other

13–2000  Financial Specialists
13–2010  Accountants and Auditors
13–2011  Accountants and Auditors
13–2020  Appraisers and Assessors of Real Estate
13–2021  Appraisers and Assessors of Real Estate
13–2030  Budget Analysts
13–2031  Budget Analysts
13–2040  Credit Analysts
13–2041  Credit Analysts
13–2050  Financial Analysts and Advisors
13–2051  Financial Analysts
13–2052  Personal Financial Advisors
13–2053  Insurance Underwriters
13–2060  Financial Examiners
13–2061  Financial Examiners
13–2070  Loan Counselors and Officers
13–2071  Loan Counselors
13–2072  Loan Officers
13–2080  Tax Examiners, Collectors, Preparers, and Revenue Agents
13–2081  Tax Examiners, Collectors, and Revenue Agents
13–2082  Tax Preparers
13–2090  Miscellaneous Financial Specialists
13–2099  Financial Specialists, All Other

15–0000  Computer and Mathematical Occupations

15–1000  Computer Specialists
15–1010  Computer and Information Scientists, Research
15–1011  Computer and Information Scientists, Research
15–1020  Computer Programmers
15–1021  Computer Programmers
15–1030  Computer Software Engineers
15–1031  Computer Software Engineers, Applications
15–1032  Computer Software Engineers, Systems Software
15–1040  Computer Support Specialists
15–1041  Computer Support Specialists
15–1050  Computer Systems Analysts
15–1051  Computer Systems Analysts
15–1060  Database Administrators
15–1061  Database Administrators
15–1070  Network and Computer Systems Administrators
15–1071  Network and Computer Systems Administrators
15–1080  Network Systems and Data Communications Analysts
15–1081  Network Systems and Data Communications Analysts
15–1090  Miscellaneous Computer Specialists
15–1099  Computer Specialists, All Other

15–2000  Mathematical Scientists
15–2010  Actuaries
15–2011  Actuaries
15–2020  Mathematicians
15–2021  Mathematicians
15–2030  Operations Research Analysts
15–2031  Operations Research Analysts
15–2040  Statisticians
15–2041  Statisticians
15–2090  Miscellaneous Mathematical Scientists
15–2099  Mathematical Scientists, All Other

15–3000  Mathematical Technicians
15–3010  Mathematical Technicians
15–3011  Mathematical Technicians

17–0000  Architecture and Engineering Occupations

17–1000  Architects, Surveyors, and Cartographers
17–1010  Architects, Except Naval
17–1011  Architects, Except Landscape and Naval
17–1012  Landscape Architects
17–1020  Surveyors, Cartographers, and Photogrammetrists
17–1021  Cartographers and Photogrammetrists
17–1022  Surveyors

17–2000  Engineers
17–2010  Aerospace Engineers
17–2011  Aerospace Engineers
17–2020  Agricultural Engineers
17–2021  Agricultural Engineers
17–2030  Biomedical Engineers
17–2031  Biomedical Engineers
17–2040  Chemical Engineers
17–2041  Chemical Engineers
17–2050  Civil Engineers
17–2051  Civil Engineers
17–2060  Computer Hardware Engineers
17–2061  Computer Hardware Engineers
17–2070  Electrical and Electronics Engineers
17–2071  Electrical Engineers
17–2072  Electronics Engineers, Except Computer
17–2080  Environmental Engineers
17–2081  Environmental Engineers
17–2110  Industrial Engineers, Including Health and Safety
17–2111  Health and Safety Engineers, Except Mining Safety Engineers and Inspectors
17–2112  Industrial Engineers
17–2120  Marine Engineers and Naval Architects
17–2121  Marine Engineers and Naval Architects
17–2130  Materials Engineers
17–2131  Materials Engineers
17–2140  Mechanical Engineers
17–2141  Mechanical Engineers
17–2150  Mining and Geological Engineers, Including Mining Safety Engineers
17–2151  Mining and Geological Engineers, Including Mining Safety Engineers
17–2160  Nuclear Engineers
17–2161  Nuclear Engineers
17–2170  Petroleum Engineers
17–2171  Petroleum Engineers
17–2190  Miscellaneous Engineers
17–2199  Engineers, All Other

17–3000  Drafters, Engineering, and Mapping Technicians
17–3010  Drafters
17–3011  Architectural and Civil Drafters
17–3012  Electrical and Electronics Drafters
17–3013  Mechanical Drafters
17–3019  Drafters, All Other
17–3020  Engineering Technicians, Except Drafters
17–3021  Aerospace Engineering and Operations Technicians
17–3022 Civil Engineering Technicians
17–3023 Electrical and Electronic Engineering Technicians
17–3024 Electro-Mechanical Technicians
17–3025 Environmental Engineering Technicians
17–3026 Industrial Engineering Technicians
17–3027 Mechanical Engineering Technicians
17–3029 Engineering Technicians, Except Drafters, All Other
17–3030 Surveying and Mapping Technicians
17–3031 Surveying and Mapping Technicians
19–0000 Life, Physical, and Social Science Occupations
19–1000 Life Scientists
19–1010 Agricultural and Food Scientists
19–1011 Animal Scientists
19–1012 Food Scientists and Technologists
19–1013 Soil and Plant Scientists
19–1020 Biological Scientists
19–1021 Biochemists and Biophysicists
19–1022 Microbiologists
19–1023 Zoologists and Wildlife Biologists
19–1029 Biological Scientists, All Other
19–1030 Conservation Scientists and Foresters
19–1031 Conservation Scientists
19–1032 Foresters
19–1040 Medical Scientists
19–1041 Epidemiologists
19–1042 Medical Scientists, Except Epidemiologists
19–1090 Miscellaneous Life Scientists
19–1099 Life Scientists, All Other
19–2000 Physical Scientists
19–2010 Astronomers and Physicists
19–2011 Astronomers
19–2012 Physicists
19–2020 Atmospheric and Space Scientists
19–2021 Atmospheric and Space Scientists
19–2030 Chemists and Materials Scientists
19–2031 Chemists
19–2032 Materials Scientists
19–2040 Environmental Scientists and Geoscientists
19–2041 Environmental Scientists and Specialists, Including Health
19–2042 Geoscientists, Except Hydrologists and Geographers
19–2043 Hydrologists
19–2090 Miscellaneous Physical Scientists
19–2099 Physical Scientists, All Other
19–3000 Social Scientists and Related Workers
19–3010 Economists
19–3011 Economists
19–3020 Market and Survey Researchers
19–3021 Market Research Analysts
19–3022 Survey Researchers
19–3030 Psychologists
19–3031 Clinical, Counseling, and School Psychologists
19–3032 Industrial-Organizational Psychologists
19–3039 Psychologists, All Other
19–3040 Sociologists
19–3041 Sociologists
19–3050 Urban and Regional Planners
19–3051 Urban and Regional Planners
19–3090 Miscellaneous Social Scientists and Related Workers
19–3091 Anthropologists and Archeologists
19–3092 Geographers
19–3093 Historians
19–3094 Political Scientists
19–3099 Social Scientists and Related Workers, All Other
19–4000 Life, Physical, and Social Science Technicians
19–4010 Agricultural and Food Science Technicians
19–4020 Biological Technicians
19–4030 Chemical Technicians
19–4040 Geological and Petroleum Technicians
19–4050 Nuclear Technicians
19–4060 Social Science Research Assistants
19–4090 Miscellaneous Life, Physical, and Social Science Technicians
19–4091 Environmental Science and Protection Technicians, Including Health
19–4092 Forensic Science Technicians
19–4093 Forest and Conservation Technicians
19–4099 Life, Physical, and Social Science Technicians, All Other
21–0000 Community and Social Services Occupations
21–1000 Counselors, Social Workers, and Other Community and Social Service Specialists
21–1010 Counselors
21–1010 Substance Abuse and Behavioral Disorder Counselors
21–1012 Educational, Vocational, and School Counselors
21–1013 Marriage and Family Therapists
21–1014 Mental Health Counselors
21–1015 Rehabilitation Counselors
21–1019 Counselors, All Other
21–1020 Social Workers
21–1020 Child, Family, and School Social Workers
21–1022 Medical and Public Health Social Workers
21–1023 Mental Health and Substance Abuse Social Workers
21–1090 Miscellaneous Social Workers, All Other
21–1099 Community and Social Service Specialists, All Other
21–2000 Religious Workers
21–2010 Clergy
21–2011 Clergy
21–2020 Directors, Religious Activities and Education
21–2021 Directors, Religious Activities and Education  
21–2090 Miscellaneous Religious Workers  
21–2099 Religious Workers, All Other

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<td>Judges, Magistrates, and Other Judicial Workers</td>
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<td>23–1021</td>
<td>Administrative Law Judges, Adjudicators, and Hearing Officers</td>
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<td>23–1022</td>
<td>Arbitrators, Mediators, and Conciliators</td>
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<td>23–1023</td>
<td>Judges, Magistrate Judges, and Magistrates</td>
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<td>Miscellaneous Legal Support Workers</td>
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<td>Law Clerks</td>
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<tr>
<td>23–2093</td>
<td>Title Examiners, Abstractors, and Searchers</td>
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<tr>
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<td>Computer Science Teachers, Postsecondary</td>
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<td>Engineering and Architecture Teachers, Postsecondary</td>
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<td>Life Sciences Teachers, Postsecondary</td>
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<td>25–1041</td>
<td>Agricultural Sciences Teachers, Postsecondary</td>
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<td>25–1042</td>
<td>Biological Science Teachers, Postsecondary</td>
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<td>Forestry and Conservation Science Teachers, Postsecondary</td>
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<td>Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary</td>
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### Teachers and Instructors
- 25–3011 Adult Literacy, Remedial Education, and GED Teachers and Instructors
- 25–3020 Self-Enrichment Education Teachers
- 25–3021 Self-Enrichment Education Teachers
- 25–3090 Miscellaneous Teachers and Instructors
- 25–3099 Teachers and Instructors, All Other

### Librarians, Curators, and Archivists
- 25–4000 Librarians, Curators, and Archivists
  - 25–4010 Archivists, Curators, and Museum Technicians
  - 25–4011 Archivists
  - 25–4012 Curators
  - 25–4013 Museum Technicians and Conservators
- 25–4020 Librarians
- 25–4030 Library Technicians
- 25–4031 Library Technicians

### Other Education, Training, and Library Occupations
- 25–9000 Other Education, Training, and Library Occupations
  - 25–9010 Audio-Visual Collections Specialists
  - 25–9020 Farm and Home Management Advisors
  - 25–9030 Instructional Coordinators
  - 25–9040 Teacher Assistants
  - 25–9090 Miscellaneous Education, Training, and Library Workers
    - 25–9099 Education, Training, and Library Workers, All Other

### Arts, Design, Entertainment, Sports, and Media Occupations
- 27–0000 Arts, Design, Entertainment, Sports, and Media Occupations
- 27–1000 Art and Design Workers
  - 27–1010 Artists and Related Workers
    - 27–1011 Art Directors
    - 27–1012 Craft Artists
    - 27–1013 Fine Artists, Including Painters, Sculptors, and Illustrators
    - 27–1014 Multi-Media Artists and Animators
    - 27–1019 Artists and Related Workers, All Other
- 27–1020 Designers
  - 27–1021 Commercial and Industrial Designers
  - 27–1022 Fashion Designers
  - 27–1023 Floral Designers
  - 27–1024 Graphic Designers
  - 27–1025 Interior Designers
  - 27–1026 Merchandise Displayers and Window Trimmers
  - 27–1027 Set and Exhibit Designers
  - 27–1029 Designers, All Other

### Entertainers and Performers, Sports and Related Workers
- 27–2000 Entertainers and Performers, Sports and Related Workers
  - 27–2010 Actors, Producers, and Directors
  - 27–2011 Actors
  - 27–2012 Producers and Directors
  - 27–2020 Athletes, Coaches, Umpires, and Related Workers
  - 27–2021 Athletes and Sports Competitors
  - 27–2022 Coaches and Scouts
  - 27–2023 Umpires, Referees, and Other Sports Officials
  - 27–2030 Dancers and Choreographers
  - 27–2031 Dancers
  - 27–2032 Choreographers
  - 27–2040 Musicians, Singers, and Related Workers
  - 27–2041 Music Directors and Composers
  - 27–2042 Musicians and Singers
  - 27–2090 Miscellaneous Entertainers and Performers, Sports and Related Workers
  - 27–2099 Entertainers and Performers, Sports and Related Workers, All Other

### Media and Communication Workers
- 27–3000 Media and Communication Workers
  - 27–3010 Announcers
  - 27–3011 Radio and Television Announcers
  - 27–3012 Public Address System and Other Announcers
  - 27–3020 News Analysts, Reporters and Correspondents
  - 27–3021 Broadcast News Analysts
  - 27–3022 Reporters and Correspondents
  - 27–3030 Public Relations Specialists
  - 27–3031 Public Relations Specialists
  - 27–3040 Writers and Editors
  - 27–3041 Editors
  - 27–3042 Technical Writers
  - 27–3043 Writers and Authors
  - 27–3090 Miscellaneous Media and Communication Workers
  - 27–3099 Media and Communication Workers, All Other

### Media and Communication Equipment Workers
- 27–4000 Media and Communication Equipment Workers
  - 27–4010 Broadcast and Sound Engineering Technicians and Radio Operators
  - 27–4011 Audio and Video Equipment Technicians
  - 27–4012 Broadcast Technicians
  - 27–4013 Radio Operators
  - 27–4014 Sound Engineering Technicians
  - 27–4020 Photographers
  - 27–4021 Photographers
  - 27–4030 Television, Video, and Motion Picture Camera Operators and Editors
  - 27–4031 Camera Operators, Television, Video, and Motion Picture
  - 27–4032 Film and Video Editors
  - 27–4090 Miscellaneous Media and Communication Equipment Workers
  - 27–4099 Media and Communication Equipment Workers, All Other

### Healthcare Practitioners and Technical Occupations
- 29–0000 Healthcare Practitioners and Technical Occupations
- 29–1000 Health Diagnosing and Treating Practitioners
  - 29–1010 Chiropractors
  - 29–1011 Chiropractors
  - 29–1020 Dentists
  - 29–1021 Dentists, General
  - 29–1022 Oral and Maxillofacial Surgeons
  - 29–1023 Orthodontists
  - 29–1024 Prosthodontists
  - 29–1029 Dentists, All Other Specialists
  - 29–1030 Dietitians and Nutritionists
  - 29–1031 Dietitians and Nutritionists
  - 29–1040 Optometrists
  - 29–1041 Optometrists
29–1050 Pharmacists
29–1051 Pharmacists
29–1060 Physicians and Surgeons
29–1061 Anesthesiologists
29–1062 Family and General Practitioners
29–1063 Internists, General
29–1064 Obstetricians and Gynecologists
29–1065 Pediatricians, General
29–1066 Psychiatrists
29–1067 Surgeons
29–1069 Physicians and Surgeons, All Other
29–1070 Physician Assistants
29–1071 Physician Assistants
29–1080 Podiatrists
29–1081 Podiatrists
29–1110 Registered Nurses
29–1111 Registered Nurses
29–1120 Therapists
29–1121 Audiologists
29–1122 Occupational Therapists
29–1123 Physical Therapists
29–1124 Radiation Therapists
29–1125 Recreational Therapists
29–1126 Respiratory Therapists
29–1127 Speech-Language Pathologists
29–1129 Therapists, All Other
29–1130 Veterinarians
29–1131 Veterinarians
29–1190 Miscellaneous Health Diagnosing and Treating Practitioners
29–1199 Health Diagnosing and Treating Practitioners, All Other
29–2000 Health Technologists and Technicians
29–2010 Clinical Laboratory Technologists and Technicians
29–2011 Medical and Clinical Laboratory Technologists
29–2012 Medical and Clinical Laboratory Technicians
29–2020 Dental Hygienists
29–2021 Dental Hygienists
29–2030 Diagnostic Related Technologists and Technicians
29–2031 Cardiovascular Technologists and Technicians
29–2032 Diagnostic Medical Sonographers
29–2033 Nuclear Medicine Technologists
29–2034 Radiologic Technologists and Technicians
29–2040 Emergency Medical Technicians and Paramedics
29–2041 Emergency Medical Technicians and Paramedics
29–2050 Health Diagnosing and Treating Practitioner Support Technicians
29–2051 Dietetic Technicians
29–2052 Pharmacy Technicians
29–2053 Psychiatric Technicians
29–2054 Respiratory Therapy Technicians
29–2055 Surgical Technologists
29–2056 Veterinary Technologists and Technicians
29–2060 Licensed Practical and Licensed Vocational Nurses
29–2061 Licensed Practical and Licensed Vocational Nurses
29–2070 Medical Records and Health Information Technicians
29–2071 Medical Records and Health Information Technicians
29–2080 Opticians, Dispensing
29–2081 Opticians, Dispensing
29–2090 Miscellaneous Health Technologists and Technicians
29–2091 Orthotists and Prosthetists
29–2099 Health Technologists and Technicians, All Other
29–9000 Other Healthcare Practitioners and Technical Occupations
29–9010 Occupational Health and Safety Specialists and Technicians
29–9011 Occupational Health and Safety Specialists
29–9012 Occupational Health and Safety Technicians
29–9090 Miscellaneous Health Practitioners and Technical Workers
29–9091 Athletic Trainers
29–9099 Healthcare Practitioners and Technical Workers, All Other
31–0000 Healthcare Support Occupations
31–1000 Nursing, Psychiatric, and Home Health Aides
31–1010 Nursing, Psychiatric, and Home Health Aides
31–1011 Home Health Aides
31–1012 Nursing Aides, Orderlies, and Attendants
31–1013 Psychiatric Aides
31–2000 Occupational and Physical Therapist Assistants and Aides
31–2010 Occupational Therapist Assistants and Aides
31–2011 Occupational Therapist Assistants
31–2012 Occupational Therapist Aides
31–2020 Physical Therapist Assistants and Aides
31–2021 Physical Therapist Assistants
31–2022 Physical Therapist Aides
31–9000 Other Healthcare Support Occupations
31–9010 Massage Therapists
31–9011 Massage Therapists
31–9090 Miscellaneous Healthcare Support Occupations
31–9091 Dental Assistants
31–9092 Medical Assistants
31–9093 Medical Equipment Preparers
31–9094 Medical Transcriptionists
31–9095 Pharmacy Aides
31–9096 Veterinary Assistants and Laboratory Animal Caretakers
31–9099 Healthcare Support Workers, All Other
33–0000 Protective Service Occupations
33–1000 Supervisors, Protective Service Workers
33–1010 First-Line Supervisors/Managers, Law Enforcement Workers
33–1011 First-Line Supervisors/Managers of Correctional Officers
33–1012 First-Line Supervisors/Managers of Police and Detectives
33–1020 First-Line Supervisors/Managers, Fire Fighting and Prevention Workers
33–1021 First-Line Supervisors/Managers of Fire Fighting and Prevention Workers
33–1090 Miscellaneous Supervisors, Protective Service
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<td>39–1010 First-Line Supervisors-Managers of Gaming Workers</td>
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<td>39–1012 Slot Key Persons</td>
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<td>39–1020 First-Line Supervisors-Managers of Personal Service Workers</td>
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<td>39–1021 First-Line Supervisors-Managers of Personal Service Workers</td>
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<td><strong>39–2000 Animal Care and Service Workers</strong></td>
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<td>39–2010 Animal Trainers</td>
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<td>39–2011 Animal Trainers</td>
<td>41–1000 Supervisors, Sales Workers</td>
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<td>39–2020 Nonfarm Animal Caretakers</td>
<td>41–1010 First-Line Supervisors/Managers, Sales Workers</td>
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<td>41–1011 First-Line Supervisors/Managers of Retail Sales Workers</td>
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<td>39–3000 Entertainment Attendants and Related Workers</td>
<td>41–1012 First-Line Supervisors/Managers of Non-Retail Sales Workers</td>
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<td>39–3010 Gaming Services Workers</td>
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<td>39–3011 Gaming Dealers</td>
<td>41–2010 Cashiers</td>
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<td>39–3012 Gaming and Sports Book Writers and Runners</td>
<td>41–2011 Cashiers</td>
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<td>39–3019 Gaming Service Workers, All Other</td>
<td>41–2012 Gaming Change Persons and Booth Cashiers</td>
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<td>39–3020 Motion Picture Projectionists</td>
<td>41–2020 Counter and Rental Clerks and Parts Salespersons</td>
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<td>41–2021 Counter and Rental Clerks</td>
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<td>39–3030 Ushers, Lobby Attendants, and Ticket Takers</td>
<td>41–2022 Parts Salespersons</td>
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<td>39–3031 Ushers, Lobby Attendants, and Ticket Takers</td>
<td>41–2030 Retail Salespersons</td>
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<tr>
<td>39–3090 Miscellaneous Entertainment Attendants and Related Workers</td>
<td>41–2031 Retail Salespersons</td>
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<tr>
<td>39–3091 Amusement and Recreation Attendants</td>
<td>41–3000 Sales Representatives, Services</td>
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<tr>
<td>39–3092 Costume Attendants</td>
<td>41–3010 Advertising Sales Agents</td>
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<td>39–3093 Locker Room, Coatroom, and Dressing Room Attendants</td>
<td>41–3011 Advertising Sales Agents</td>
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<td>39–3099 Entertainment Attendants and Related Workers, All Other</td>
<td>41–3020 Insurance Sales Agents</td>
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<td>39–4000 Funeral Service Workers</td>
<td>41–3021 Insurance Sales Agents</td>
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<td>39–4010 Embalmers</td>
<td>41–3030 Securities, Commodities, and Financial Services Sales Agents</td>
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<td>39–4011 Embalmers</td>
<td>41–3031 Securities, Commodities, and Financial Services Sales Agents</td>
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<td>39–4020 Funeral Attendants</td>
<td>41–3040 Travel Agents</td>
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<td>39–4021 Funeral Attendants</td>
<td>41–3041 Travel Agents</td>
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<td>39–5000 Personal Appearance Workers</td>
<td>41–3090 Miscellaneous Sales Representatives, Services</td>
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<td>39–5010 Barbers and Cosmetologists</td>
<td>41–3099 Sales Representatives, Services, All Other</td>
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<td>39–5011 Barbers</td>
<td>41–4000 Sales Representatives, Wholesale and Manufacturing</td>
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<td>39–5012 Hairdressers, Hairstylists, and Cosmetologists</td>
<td>41–4010 Sales Representatives, Wholesale and Manufacturing</td>
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<td>39–5090 Miscellaneous Personal Appearance Workers</td>
<td>41–4011 Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products</td>
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<td>39–5092 Manicurists and Pedicurists</td>
<td>41–9000 Other Sales and Related Workers</td>
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<td>39–5093 Shampooers</td>
<td>41–9010 Models, Demonstrators, and Product Promoters</td>
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<td>39–5094 Skin Care Specialists</td>
<td>41–9011 Demonstrators and Product Promoters</td>
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<td>39–6000 Transportation, Tourism, and Lodging Attendants</td>
<td>41–9012 Models</td>
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<td>39–6010 Baggage Porters, Bellhops, and Concierges</td>
<td>41–9020 Real Estate Brokers and Sales Agents</td>
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<td>39–6011 Baggage Porters and Bellhops</td>
<td>41–9021 Real Estate Brokers</td>
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<td>39–6012 Concierges</td>
<td>41–9022 Real Estate Sales Agents</td>
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<td>39–6020 Tour and Travel Guides</td>
<td>41–9030 Sales Engineers</td>
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<td>39–6021 Tour Guides and Escorts</td>
<td>41–9031 Sales Engineers</td>
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<td>39–6022 Travel Guides</td>
<td>41–9040 Telemarketers</td>
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<td>39–6030 Transportation Attendants</td>
<td>41–9041 Telemarketers</td>
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<td>39–6031 Flight Attendants</td>
<td>41–9090 Miscellaneous Sales and Related Workers</td>
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<td>39–6032 Transportation Attendants, Except Flight Attendants and Baggage Porters</td>
<td>41–9091 Door-To-Door Sales Workers, News and Street Vendors, and Related Workers</td>
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<td>41–0000 Sales and Related Occupations</td>
<td>41–9099 Sales and Related Workers, All Other</td>
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<td>43–0000 Office and Administrative Support Occupations</td>
<td>43–1000 Supervisors, Office and Administrative Support Workers</td>
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<td>43–1010 First-Line Supervisors/Managers of Office and Administrative Support Workers</td>
<td>43–1011 First-Line Supervisors/Managers of Office and Administrative Support Workers</td>
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<tr>
<td>43–2000 Communications Equipment Operators</td>
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43–2010 Switchboard Operators, Including Answering Service
43–2011 Switchboard Operators, Including Answering Service
43–2020 Telephone Operators
43–2021 Telephone Operators
43–2090 Miscellaneous Communications Equipment Operators
43–2099 Communications Equipment Operators, All Other

43–3000 Financial Clerks
43–3010 Bill and Account Collectors
43–3011 Bill and Account Collectors
43–3020 Billing and Posting Clerks and Machine Operators
43–3021 Billing and Posting Clerks and Machine Operators
43–3030 Bookkeeping, Accounting, and Auditing Clerks
43–3031 Bookkeeping, Accounting, and Auditing Clerks
43–3040 Gaming Cage Workers
43–3041 Gaming Cage Workers
43–3050 Payroll and Timekeeping Clerks
43–3051 Payroll and Timekeeping Clerks
43–3060 Procurement Clerks
43–3061 Procurement Clerks
43–3070 Tellers
43–3071 Tellers

43–4000 Information and Record Clerks
43–4010 Brokerage Clerks
43–4011 Brokerage Clerks
43–4020 Correspondence Clerks
43–4021 Correspondence Clerks
43–4030 Court, Municipal, and License Clerks
43–4031 Court, Municipal, and License Clerks
43–4040 Credit Authorizers, Checkers, and Clerks
43–4041 Credit Authorizers, Checkers, and Clerks
43–4050 Customer Service Representatives
43–4051 Customer Service Representatives
43–4060 Eligibility Interviewers, Government Programs
43–4061 Eligibility Interviewers, Government Programs
43–4070 File Clerks
43–4071 File Clerks
43–4080 Hotel, Motel, and Resort Desk Clerks
43–4081 Hotel, Motel, and Resort Desk Clerks
43–4110 Interviewers, Except Eligibility and Loan
43–4111 Interviewers, Except Eligibility and Loan
43–4120 Library Assistants, Clerical
43–4121 Library Assistants, Clerical
43–4130 Loan Interviewers and Clerks
43–4131 Loan Interviewers and Clerks
43–4140 New Accounts Clerks
43–4141 New Accounts Clerks
43–4150 Order Clerks
43–4151 Order Clerks
43–4160 Human Resources Assistants, Except Payroll and Timekeeping
43–4161 Human Resources Assistants, Except Payroll and Timekeeping
43–4170 Receptionists and Information Clerks
43–4171 Receptionists and Information Clerks
43–4180 Reservation and Transportation Ticket Agents
43–4181 Reservation and Transportation Ticket Agents and Travel Clerks
43–4190 Miscellaneous Information and Record Clerks
43–4199 Information and Record Clerks, All Other

43–5000 Material Recording, Scheduling, Dispatching, and Distributing Workers
43–5010 Cargo and Freight Agents
43–5011 Cargo and Freight Agents
43–5020 Couriers and Messengers
43–5021 Couriers and Messengers
43–5030 Dispatchers
43–5031 Police, Fire, and Ambulance Dispatchers
43–5032 Dispatchers, Except Police, Fire, and Ambulance
43–5040 Meter Readers, Utilities
43–5041 Meter Readers, Utilities
43–5050 Postal Service Workers
43–5051 Postal Service Clerks
43–5052 Postal Service Mail Carriers
43–5053 Postal Service Mail Sorters, Processors, and Processing Machine Operators
43–5060 Production, Planning, and Expediting Clerks
43–5061 Production, Planning, and Expediting Clerks
43–5070 Shipping, Receiving, and Traffic Clerks
43–5071 Shipping, Receiving, and Traffic Clerks
43–5080 Stock Clerks and Order Fillers
43–5081 Stock Clerks and Order Fillers
43–5110 Weighers, Measurers, Checkers, and Samplers, Recordkeeping
43–5111 Weighers, Measurers, Checkers, and Samplers, Recordkeeping

43–6000 Secretaries and Administrative Assistants
43–6010 Secretaries and Administrative Assistants
43–6011 Executive Secretaries and Administrative Assistants
43–6012 Legal Secretaries
43–6013 Medical Secretaries
43–6014 Secretaries, Except Legal, Medical, and Executive

43–9000 Other Office and Administrative Support Workers
43–9010 Computer Operators
43–9011 Computer Operators
43–9020 Data Entry and Information Processing Workers
43–9021 Data Entry Keyers
43–9022 Word Processors and Typists
43–9030 Desktop Publishers
43–9031 Desktop Publishers
43–9040 Insurance Claims and Policy Processing Clerks
43–9041 Insurance Claims and Policy Processing Clerks
43–9050 Mail Clerks and Mail Machine Operators, Except Postal Service
43–9051 Mail Clerks and Mail Machine Operators, Except Postal Service
43–9060 Office Clerks, General
43–9061 Office Clerks, General
43–9070 Office Machine Operators, Except Computer
43–9071 Office Machine Operators, Except Computer
43–9080 Proofreaders and Copy Markers
43–9081 Proofreaders and Copy Markers
43–9110 Statistical Assistants
43–9111 Statistical Assistants
### 43–9190 Miscellaneous Office and Administrative Support Workers

43–9199 Office and Administrative Support Workers, All Other

### 45–0000 Farming, Fishing, and Forestry Occupations

#### 45–1000 Supervisors, Farming, Fishing, and Forestry Workers

45–1010 First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers
45–1011 First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers

#### 45–2000 Agricultural Workers

45–2010 Agricultural Inspectors
45–2011 Agricultural Inspectors
45–2020 Animal Breeders
45–2021 Animal Breeders
45–2030 Farm Labor Contractors
45–2031 Farm Labor Contractors
45–2040 Graders and Sorters, Agricultural Products
45–2041 Graders and Sorters, Agricultural Products
45–2090 Miscellaneous Agricultural Workers
45–2091 Agricultural Equipment Operators
45–2092 Agricultural Equipment Operators
45–2099 Agricultural Workers, All Other

#### 45–3000 Fishing and Hunting Workers

45–3010 Fishers and Related Fishing Workers
45–3011 Fishers and Related Fishing Workers
45–3020 Hunters and Trappers
45–3021 Hunters and Trappers

#### 45–4000 Forest, Conservation, and Logging Workers

45–4010 Forest and Conservation Workers
45–4011 Forest and Conservation Workers
45–4020 Logging Workers
45–4021 Loggers
45–4022 Logging Equipment Operators
45–4023 Log Graders and Scalers
45–4029 Logging Workers, All Other

#### 45–9000 Other Farming, Fishing, and Forestry Workers

45–9090 Miscellaneous Farming, Fishing, and Forestry Workers
45–9099 Farming, Fishing, and Forestry Workers, All Other

### 47–0000 Construction and Extraction Occupations

#### 47–1000 Supervisors, Construction and Extraction Workers

47–1010 First-Line Supervisors/Managers of Construction Trades and Extraction Workers
47–1011 First-Line Supervisors/Managers of Construction Trades and Extraction Workers

#### 47–2000 Construction Trades Workers

47–2010 Boilermakers
47–2011 Boilermakers
47–2020 Brickmasons, Blockmasons, and Stonemasons
47–2021 Brickmasons and Blockmasons
47–2022 Stonemasons
47–2030 Carpenters
47–2031 Carpenters
47–2040 Carpet, Floor, and Tile Installers and Finishers

#### 47–3000 Helpers, Construction Trades

47–3010 Helpers, Construction Trades
47–3011 Helpers—Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters
47–3012 Helpers—Carpenters
47–3013 Helpers—Electricians
47–3014 Helpers—Painters, Paperhangers, Plasterers, and Stucco Masons
47–3015 Helpers—Pipelayers, Plumbers, Pipefitters, and Steamfitters
47–3016 Helpers—Roofers
47–3019 Helpers, Construction Trades, All Other

#### 47–4000 Other Construction and Related Workers

47–4010 Construction and Building Inspectors
47–4011 Construction and Building Inspectors
47–4020 Elevator Installers and Repairers
47–4021 Elevator Installers and Repairers
47–4030 Fence Erectors
47–4031 Fence Erectors
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<tr>
<td>47–4040</td>
<td>Hazardous Materials Removal Workers</td>
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<td>Hazardous Materials Removal Workers</td>
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<td>47–4050</td>
<td>Highway Maintenance Workers</td>
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<td>Highway Maintenance Workers</td>
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<td>47–4060</td>
<td>Rail-Track Laying and Maintenance Equipment Operators</td>
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<td>Rail-Track Laying and Maintenance Equipment Operators</td>
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<td>47–4070</td>
<td>Septic Tank Servicers and Sewer Pipe Cleaners</td>
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<td>47–4071</td>
<td>Septic Tank Servicers and Sewer Pipe Cleaners</td>
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<td>Miscellaneous Construction and Related Workers</td>
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<td>Segmental Pavers</td>
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<td>Construction and Related Workers, All Other</td>
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<td>47–5000</td>
<td>Extraction Workers</td>
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<td>47–5010</td>
<td>Derrick, Rotary Drill, and Service Unit Operators, Oil, Gas, and Mining</td>
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<td>47–5011</td>
<td>Derrick Operators, Oil and Gas</td>
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<td>47–5012</td>
<td>Rotary Drill Operators, Oil and Gas</td>
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<td>47–5013</td>
<td>Service Unit Operators, Oil, Gas, and Mining</td>
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<td>47–5020</td>
<td>Earth Drillers, Except Oil and Gas</td>
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<td>47–5021</td>
<td>Earth Drillers, Except Oil and Gas</td>
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<td>47–5030</td>
<td>Explosives Workers, Ordnance Handling Experts, and Blasters</td>
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<tr>
<td>47–5031</td>
<td>Explosives Workers, Ordnance Handling Experts, and Blasters</td>
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<td>Mining Machine Operators</td>
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<td>Continuous Mining Machine Operators</td>
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<td>47–5042</td>
<td>Mine Cutting and Channeling Machine Operators</td>
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<td>47–5049</td>
<td>Mining Machine Operators, All Other</td>
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<td>47–5050</td>
<td>Rock Splitters, Quarry</td>
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<td>47–5051</td>
<td>Rock Splitters, Quarry</td>
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<td>47–5060</td>
<td>Roof Bolters, Mining</td>
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<td>47–5061</td>
<td>Roof Bolters, Mining</td>
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<td>47–5070</td>
<td>Roustabouts, Oil and Gas</td>
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<td>47–5080</td>
<td>Helpers—Extraction Workers</td>
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<td>Miscellaneous Extraction Workers</td>
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<td>47–5099</td>
<td>Extraction Workers, All Other</td>
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49–0000 Installation, Maintenance, and Repair Occupations

49–1000 Supervisors of Installation, Maintenance, and Repair Workers

49–1010 First-Line Supervisors/Managers of Mechanics, Installers, and Repairers

49–1011 First-Line Supervisors/Managers of Mechanics, Installers, and Repairers

49–2000 Electrical and Electronic Equipment Mechanics, Installers, and Repairers

49–2010 Computer, Automated Teller, and Office Machine Repairers

49–2011 Computer, Automated Teller, and Office Machine Repairers

49–2020 Radio and Telecommunications Equipment Installers and Repairers

49–2021 Radio Mechanics

49–2022 Telecommunications Equipment Installers and Repairers, Except Line Installers

49–2090 Miscellaneous Electrical and Electronic Equipment Mechanics, Installers, and Repairers

49–2091 Avionics Technicians

49–2092 Electric Motor, Power Tool, and Related Repairers

49–2093 Electrical and Electronics Installers and Repairers, Transportation Equipment

49–2094 Electrical and Electronics Repairers, Commercial and Industrial Equipment

49–2095 Electrical and Electronics Repairers, Powerhouse, Substation, and Relay

49–2096 Electronic Equipment Installers and Repairers, Motor Vehicles

49–2097 Electronic Home Entertainment Equipment Installers and Repairers

49–2098 Security and Fire Alarm Systems Installers

49–3000 Vehicle and Mobile Equipment Mechanics, Installers, and Repairers

49–3010 Aircraft Mechanics and Service Technicians

49–3011 Aircraft Mechanics and Service Technicians

49–3020 Automotive Technicians and Repairers

49–3021 Automotive Body and Related Repairers

49–3022 Automotive Glass Installers and Repairers

49–3023 Automotive Service Technicians and Mechanics

49–3030 Bus and Truck Mechanics and Diesel Engine Specialists

49–3031 Bus and Truck Mechanics and Diesel Engine Specialists

49–3040 Heavy Vehicle and Mobile Equipment Service Technicians and Mechanics

49–3041 Farm Equipment Mechanics

49–3042 Mobile Heavy Equipment Mechanics, Except Engines

49–3043 Rail Car Repairers

49–3050 Small Engine Mechanics

49–3051 Motorboat Mechanics

49–3052 Motorcycle Mechanics

49–3053 Outdoor Power Equipment and Other Small Engine Mechanics

49–3090 Miscellaneous Vehicle and Mobile Equipment Mechanics, Installers, and Repairers

49–3091 Bicycle Repairers

49–3092 Recreational Vehicle Service Technicians

49–3093 Tire Repairers and Changers

49–9000 Other Installation, Maintenance, and Repair Occupations

49–9010 Control and Valve Installers and Repairers

49–9011 Mechanical Door Repairers

49–9012 Control and Valve Installers and Repairers, Except Mechanical Door

49–9020 Heating, Air Conditioning, and Refrigeration Mechanics and Installers

49–9021 Heating, Air Conditioning, and Refrigeration Mechanics and Installers

49–9030 Home Appliance Repairers

49–9031 Home Appliance Repairers

49–9040 Industrial Machinery Installation, Repair, and Maintenance Workers

49–9041 Industrial Machinery Mechanics

49–9042 Maintenance and Repair Workers, General

49–9043 Maintenance Workers, Machinery

49–9044 Millwrights

49–9045 Refractory Materials Repairers, Except Brickmasons
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<td>Electrical Power-Line Installers and Repairers</td>
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<td>Telecommunications Line Installers and Repairers</td>
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<td>Precision Instrument and Equipment Installers and Repairers</td>
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<td>Medical Equipment Repairers</td>
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<td>Musical Instrument Repairers and Tuners</td>
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<td>Watch Repairers</td>
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<td>49–9069</td>
<td>Precision Instrument and Equipment Repairers, All Other</td>
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<td>Miscellaneous Installation, Maintenance, and Repair Workers</td>
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<td>49–9091</td>
<td>Coin, Vending, and Amusement Machine Servicers and Repairers</td>
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<td>Commercial Divers</td>
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<td>Fabric Menders, Except Garment</td>
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<td>Locksmiths and Safe Repairers</td>
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<td>Signal and Track Switch Repairers</td>
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<td>Helpers—Installation, Maintenance, and Repair Workers</td>
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<td>Installation, Maintenance, and Repair Workers, All Other</td>
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**51–0000 Production Occupations**

### 51–1000 Supervisors, Production Workers
- 51–1010 First-Line Supervisors/Managers of Production and Operating Workers
- 51–1011 First-Line Supervisors/Managers of Production and Operating Workers

### 51–2000 Assemblers and Fabricators
- 51–2010 Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
- 51–2011 Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
- 51–2020 Electrical, Electronics, and Electromechanical Assemblers
- 51–2021 Coil Winders, Tapers, and Finishers
- 51–2022 Electrical and Electronic Equipment Assemblers
- 51–2023 Electromechanical Equipment Assemblers
- 51–2030 Engine and Other Machine Assemblers
- 51–2031 Engine and Other Machine Assemblers
- 51–2040 Structural Metal Fabricators and Fitters
- 51–2041 Structural Metal Fabricators and Fitters
- 51–2090 Miscellaneous Assemblers and Fabricators
- 51–2091 Fiberglass Laminators and Fabricators
- 51–2092 Team Assemblers
- 51–2093 Timing Device Assemblers, Adjusters, and Calibrators
- 51–2099 Assemblers and Fabricators, All Other

### 51–3000 Food Processing Workers
- 51–3010 Bakers
- 51–3011 Bakers
- 51–3020 Butchers and Other Meat, Poultry, and Fish Processing Workers
- 51–3021 Butchers and Meat Cutters
- 51–3022 Meat, Poultry, and Fish Cutters and Trimmers
- 51–3023 Slaughterers and Meat Packers
- 51–3090 Miscellaneous Food Processing Workers
- 51–3091 Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders
- 51–3092 Food Batchmakers
- 51–3093 Food Cooking Machine Operators and Tenders

### 51–4000 Metal Workers and Plastic Workers
- 51–4010 Computer Control Programmers and Operators
- 51–4011 Computer-Controlled Machine Tool Operators, Metal and Plastic
- 51–4012 Numerical Tool and Process Control Programmers
- 51–4020 Forming Machine Setters, Operators, and Tenders, Metal and Plastic
- 51–4021 Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic
- 51–4022 Forging Machine Setters, Operators, and Tenders, Metal and Plastic
- 51–4023 Rolling Machine Setters, Operators, and Tenders, Metal and Plastic
- 51–4030 Machine Tool Cutting Setters, Operators, and Tenders, Metal and Plastic
- 51–4032 Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic
- 51–4034 Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic
- 51–4040 Machinists
- 51–4041 Machinists
- 51–4050 Metal Furnace and Kiln Operators and Tenders
- 51–4051 Metal-Refining Furnace Operators and Tenders
- 51–4052 Pourers and Casters, Metal
- 51–4060 Model Makers and Patternmakers, Metal and Plastic
- 51–4061 Model Makers, Metal and Plastic
- 51–4062 Patternmakers, Metal and Plastic
- 51–4070 Molders and Molding Machine Setters, Operators, and Tenders, Metal and Plastic
- 51–4071 Foundry Mold and Coremakers
- 51–4080 Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic
- 51–4081 Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic
- 51–4110 Tool and Die Makers
- 51–4111 Tool and Die Makers
- 51–4120 Welding, Soldering, and Brazing Workers
- 51–4121 Welders, Cutters, Solderers, and Brazers
- 51–4122 Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders
- 51–4190 Miscellaneous Metalworkers and Plastic Workers
- 51–4192 Lay-Out Workers, Metal and Plastic
51–5000 Printing Workers
51–5010 Bookbinders and Bindery Workers
51–5011 Bindery Workers
51–5012 Bookbinders
51–5020 Printers
51–5021 Job Printers
51–5022 Prepress Technicians and Workers
51–5023 Printing Machine Operators

51–6000 Textile, Apparel, and Furnishings Workers
51–6010 Laundry and Dry-Cleaning Workers
51–6011 Laundry and Dry-Cleaning Workers
51–6020 Pressers, Textile, Garment, and Related Materials
51–6021 Pressers, Textile, Garment, and Related Materials
51–6030 Sewing Machine Operators
51–6031 Sewing Machine Operators
51–6040 Shoe and Leather Workers
51–6041 Shoe and Leather Workers and Repairers
51–6042 Shoe Machine Operators and Tenders
51–6050 Tailors, Dressmakers, and Sewers
51–6051 Sewers, Hand
51–6052 Tailors, Dressmakers, and Custom Sewers
51–6060 Textile Machine Setters, Operators, and Tenders
51–6061 Textile Bleaching and Dyeing Machine Operators and Tenders
51–6062 Textile Cutting Machine Setters, Operators, and Tenders
51–6063 Textile Knitting and Weaving Machine Setters, Operators, and Tenders
51–6064 Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders
51–6090 Miscellaneous Textile, Apparel, and Furnishings Worker
51–6092 Fabric and Apparel Patternmakers
51–6093 Upholsterers
51–6099 Textile, Apparel, and Furnishings Workers, All Other

51–7000 Woodworkers
51–7010 Cabinetmakers and Bench Carpenters
51–7011 Cabinetmakers and Bench Carpenters
51–7020 Furniture Finishers
51–7021 Furniture Finishers
51–7030 Model Makers and Patternmakers, Wood
51–7031 Model Makers, Wood
51–7032 Patternmakers, Wood
51–7040 Woodworking Machine Setters, Operators, and Tenders
51–7041 Sawing Machine Setters, Operators, and Tenders, Wood
51–7042 Woodworking Machine Setters, Operators, and Tenders, Except Sawing
51–7090 Miscellaneous Woodworkers
51–7099 Woodworkers, All Other

51–8000 Plant and System Operators
51–8010 Power Plant Operators, Distributors, and Dispatchers
51–8011 Nuclear Power Reactor Operators
51–8012 Power Distributors and Dispatchers
51–8013 Power Plant Operators
51–8020 Stationary Engineers and Boiler Operators
51–8021 Stationary Engineers and Boiler Operators
51–8030 Water and Liquid Waste Treatment Plant and System Operators
51–8031 Water and Liquid Waste Treatment Plant and System Operators
51–8090 Miscellaneous Plant and System Operators
51–8091 Chemical Plant and System Operators
51–8092 Gas Plant Operators
51–8093 Petroleum Pump System Operators, Refinery Operators, and Gaugers
51–8099 Plant and System Operators, All Other

51–9000 Other Production Occupations
51–9010 Chemical Processing Machine Setters, Operators, and Tenders
51–9011 Chemical Equipment Operators and Tenders
51–9020 Crushing, Grinding, Polishing, Mixing, and Blending Workers
51–9021 Crushing, Grinding, Polishing Machine Setters, Operators, and Tenders
51–9022 Grinding and Polishing Workers, Hand
51–9023 Mixing and Blending Machine Setters, Operators, and Tenders
51–9030 Cutting Workers
51–9031 Cutters and Trimmers, Hand
51–9032 Cutting and Slicing Machine Setters, Operators, and Tenders
51–9040 Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders
51–9050 Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders
51–9051 Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders
51–9060 Inspectors, Testers, Sorters, Samplers, and Weighers
51–9061 Inspectors, Testers, Sorters, Samplers, and Weighers
51–9070 Jewelers and Precious Stone and Metal Workers
51–9071 Jewelers and Precious Stone and Metal Workers
51–9080 Medical, Dental, and Ophthalmic Laboratory Technicians
51–9081 Dental Laboratory Technicians
51–9082 Medical Appliance Technicians
51–9083 Ophthalmic Laboratory Technicians
51–9110 Packaging and Filling Machine Operators and Tenders
51–9111 Packaging and Filling Machine Operators and Tenders
51–9120 Painting Workers
51–9121 Coating, Painting, and Spraying Machine Setters, Operators, and Tenders
51–9122 Painters, Transportation Equipment
51–9123 Painting, Coating, and Decorating Workers
51–9130 Photographic Process Workers and Processing
Machine Operators
\[51–9131\] Photographic Process Workers
\[51–9132\] Photographic Processing Machine Operators
\[51–9140\] Semiconductor Processors
\[51–9141\] Semiconductor Processors
\[51–9190\] Miscellaneous Production Workers
\[51–9191\] Cementing and Gluing Machine Operators and Tenders
\[51–9192\] Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders
\[51–9193\] Cooling and Freezing Equipment Operators and Tenders
\[51–9194\] Etchers and Engravers
\[51–9195\] Molders, Shapers, and Casters, Except Metal and Plastic
\[51–9197\] Tire Builders
\[51–9198\] Helpers—Production Workers
\[51–9199\] Production Workers, All Other

\[53–0000\] Transportation and Material Moving Occupations

\[53–1000\] Supervisors, Transportation and Material Moving Workers
\[53–1010\] Aircraft Cargo Handling Supervisors
\[53–1011\] Aircraft Cargo Handling Supervisors
\[53–1020\] First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand
\[53–1030\] First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators
\[53–1031\] First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators

\[53–2000\] Air Transportation Workers
\[53–2010\] Aircraft Pilots and Flight Engineers
\[53–2011\] Aircraft Pilots, Copilots, and Flight Engineers
\[53–2020\] Air Traffic Controllers and Airfield Operations Specialists
\[53–2021\] Air Traffic Controllers
\[53–2022\] Airfield Operations Specialists

\[53–3000\] Motor Vehicle Operators
\[53–3010\] Ambulance Drivers and Attendants, Except Emergency Medical Technicians
\[53–3011\] Ambulance Drivers and Attendants, Except Emergency Medical Technicians
\[53–3020\] Bus Drivers
\[53–3021\] Bus Drivers, Transit and Intercity
\[53–3022\] Bus Drivers, School
\[53–3030\] Driver/Sales Workers and Truck Drivers
\[53–3031\] Driver/Sales Workers
\[53–3032\] Truck Drivers, Heavy and Tractor-Trailer
\[53–3033\] Truck Drivers, Light or Delivery Services
\[53–3040\] Taxi Drivers and Chauffeurs
\[53–3041\] Taxi Drivers and Chauffeurs
\[53–3090\] Miscellaneous Motor Vehicle Operators
\[53–3099\] Motor Vehicle Operators, All Other

\[53–4000\] Rail Transportation Workers
\[53–4010\] Locomotive Engineers and Operators
\[53–4011\] Locomotive Engineers
\[53–4012\] Locomotive Firers
\[53–4013\] Rail Yard Engineers, Dinkey Operators, and Hostlers
\[53–4020\] Railroad Brake, Signal, and Switch Operators
\[53–4021\] Railroad Brake, Signal, and Switch Operators
\[53–4030\] Railroad Conductors and Yardmasters
\[53–4031\] Railroad Conductors and Yardmasters
\[53–4040\] Subway and Streetcar Operators
\[53–4041\] Subway and Streetcar Operators
\[53–4090\] Miscellaneous Rail Transportation Workers
\[53–4099\] Rail Transportation Workers, All Other

\[53–5000\] Water Transportation Workers
\[53–5010\] Sailors and Marine Oilers
\[53–5011\] Sailors and Marine Oilers
\[53–5020\] Ship and Boat Captains and Operators
\[53–5021\] Captains, Mates, and Pilots of Water Vessels
\[53–5022\] Motorboat Operators
\[53–5030\] Ship Engineers
\[53–5031\] Ship Engineers

\[53–6000\] Other Transportation Workers
\[53–6010\] Bridge and Lock Tenders
\[53–6011\] Bridge and Lock Tenders
\[53–6020\] Parking Lot Attendants
\[53–6021\] Parking Lot Attendants
\[53–6030\] Service Station Attendants
\[53–6031\] Service Station Attendants
\[53–6040\] Traffic Technicians
\[53–6041\] Traffic Technicians
\[53–6050\] Transportation Inspectors
\[53–6051\] Transportation Inspectors
\[53–6090\] Miscellaneous Transportation Workers
\[53–6099\] Transportation Workers, All Other

\[53–7000\] Material Moving Workers
\[53–7010\] Conveyor Operators and Tenders
\[53–7011\] Conveyor Operators and Tenders
\[53–7020\] Crane and Tower Operators
\[53–7021\] Crane and Tower Operators
\[53–7030\] Dredge, Excavating, and Loading Machine Operators
\[53–7031\] Dredge Operators
\[53–7032\] Excavating and Loading Machine and Dragline Operators
\[53–7033\] Loading Machine Operators, Underground Mining
\[53–7040\] Hoist and Winch Operators
\[53–7041\] Hoist and Winch Operators
\[53–7050\] Industrial Truck and Tractor Operators
\[53–7051\] Industrial Truck and Tractor Operators
\[53–7060\] Laborers and Material Movers, Hand
\[53–7061\] Cleaners of Vehicles and Equipment
\[53–7062\] Laborers and Freight, Stock, and Material Movers, Hand
\[53–7063\] Machine Feeders and Offbearers
\[53–7064\] Packers and Packagers, Hand
\[53–7070\] Pumping Station Operators
\[53–7071\] Gas Compressor and Gas Pumping Station Operators
\[53–7072\] Pump Operators, Except Wellhead Pumpers
\[53–7073\] Wellhead Pumpers
\[53–7080\] Refuse and Recyclable Material Collectors
\[53–7081\] Refuse and Recyclable Material Collectors
\[53–7110\] Shuttle Car Operators
\[53–7111\] Shuttle Car Operators
\[53–7120\] Tank Car, Truck, and Ship Loaders
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<td>53–7199</td>
<td>Material Moving Workers, All Other</td>
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<td>Military Specific Occupations</td>
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<td>Military Officer Special and Tactical Operations Leaders/Managers</td>
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<td>Military Officer Special and Tactical Operations Leaders/Managers, All Other</td>
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