

## Dataset Number SD-1002-2017-0

# Economic Burden of Occupational Fatal Injuries in the United States Based on the Census of Fatal Occupational Injuries, 2003-2010

## More Detailed Description of the Data Collection and Analysis Methods

### Fatal Occupational Injury Counts

Since 1992, the Bureau of Labor Statistics' CFOI program has been collecting information on the magnitude and characteristics of workplace fatal injuries in the United States. Now considered the "gold standard," CFOI produces comprehensive, accurate, and timely counts of fatal work injuries. CFOI is a Federal-State cooperative program that has been implemented in all 50 States and the District of Columbia since 1992. Approximately 30 data elements are collected, coded, and tabulated, including information about the worker, the fatal incident, and the machinery or equipment involved. To compile counts that are as complete as possible, the census uses multiple sources to identify, verify, and profile fatal worker injuries. Information about each workplace fatality--occupation and other worker characteristics, equipment involved, and circumstances of the event--is obtained by combining the source records, such as death certificates, workers' compensation reports, and Federal and State agency administrative reports. To ensure that fatalities are work-related, cases are substantiated with two or more independent source documents, or a source document and a follow-up questionnaire.

CFOI includes data for all fatal work injuries, whether the decedent was working in a job covered by the Occupational Safety and Health Administration (OSHA) or other Federal or State agencies or was outside the scope of regulatory coverage. For a fatality to be included in the census, the decedent must have been employed (that is working for pay, compensation, or profit) at the time of the event, engaged in a legal work activity, or present at the site of the incident as a requirement of his or her job. Fatalities to volunteer and unpaid family workers who perform the same duties and functions as paid workers are also included in the counts. Fatalities occurring among several other groups of workers are generally not covered by any Federal or State agencies, but are included in CFOI counts. These groups include self-employed and unpaid family workers, which accounted for about 18 percent of the fatalities; laborers on small farms, accounting for about 1 percent of the fatalities; and State and local government employees in States without OSHA-approved safety programs, which accounted for about 4 percent. (Approximately one-half of the States have approved OSHA safety programs, which cover State and local government employees).

Data presented in CFOI include only those deaths that resulted from occupational injuries. For this program, an injury is defined as any wound or damage to the body resulting from acute exposure to energy, such as heat, electricity, or impact from a crash or fall, or from the absence of such essentials as heat or oxygen, caused by a specific event or incident within a single workday or shift. Included are open wounds, intracranial and internal injuries, heatstroke, hypothermia, asphyxiation, acute poisonings resulting from short-term exposures limited to the worker's shift, suicides and homicides, and work injuries listed as underlying or contributory causes of death.

Data for the program are compiled from various Federal, State, and local administrative sources including death certificates, workers' compensation reports and claims, reports to various regulatory agencies, medical examiner reports, and police reports as well as news and other non-governmental reports. Diverse sources are used because studies have shown that no single source captures all job-related fatalities. CFOI draws information on fatal work injuries from as many as 25 different source documents - including death certificates, State workers' compensation reports, news media accounts, and State motor vehicle incident reports. Information is also provided from such diverse sources as State farm bureaus, local police departments, emergency medical services,

and the National Association of Chiefs of Police. In addition, other Federal agencies having jurisdiction over or compiling data about fatalities affecting specific groups of workers provide data to BLS. These agencies include the Occupational Safety and Health Administration, the Employment Standards Administration, the Mine Safety and Health Administration, the Department of Defense, the U.S. Coast Guard, the Department of Justice, and the National Transportation Safety Board. This research was conducted with restricted access to the BLS CFOI data. The views expressed here do not necessarily reflect the views of the BLS.

### Economic Burden of Fatal Occupational Injuries

Costs of fatal occupational injuries were estimated using a model developed by the Division of Safety Research within the National Institute for Occupational Safety and Health; more extensive information on the methods and derivation of the model is provided in Biddle (2004). Estimated costs by year of death; state of injury; sex, race, age, and occupation of the worker; event or exposure, source of injury, and industry groups in which the worker was employed are presented in Tables 1-51.

The cost-of-illness method, which combines direct and indirect costs, was employed to derive the societal cost of fatal occupational injuries. It calculates incidence-based costs, the lifetime cost of all fatal occupational injuries occurring in a given year regardless of what year the costs are accrued, rather than prevalence-based costs; information on the basic methodology is available at RTI (2006). Base information for each decedent was obtained through CFOI. Decedents who were identified as members of the U.S. military as well as decedents less than 16 years of age were not included in the cost calculations. Worker and case characteristics used in the cost calculations included: age, sex, occupation, and race of the worker; employer industry; and year of death. Although not necessary for the calculations, event or exposure, source of injury, and State of injury were obtained from CFOI to present societal costs for these groups. The direct and indirect costs of each occupational fatal injury reported by CFOI were calculated independently. Costs for all individual fatal occupational injuries were then summed for each characteristic or group of characteristics of interest.

The only direct cost was a single nominal value for medical costs in 1998 dollars of \$11,276, which was obtained from the Detailed Claim Information (DCI) database from National Council on Compensation Insurance (Detailed Claim Information, 1992-1995). This database provides estimates of the costs of injuries and fatalities to workers based on a nationally representative sample. The administrative data collected from State worker's compensation experiences contain information on injuries with lost workdays. Because each State varies in the requirements for worker's compensation payment, the number of days lost prior to inclusion in this database ranges from two to seven days. However, this limitation does not affect the reporting on information for work-related fatalities. For this study, the mean of medical costs for fatalities over a 4-year period from the DCI was used. The dollar value was adjusted to 2003 dollars using the CPI-Medical Care Index shown in Appendix V (U.S. Department of Labor [BLS], 2009a).

The indirect lifetime cost of an individual occupational fatal injury was derived by calculating the present value of lost household production and future earnings of that worker summed from the year of death until that decedent would have reached age 67, accounting for the probability of survival were it not for the premature death—the human capital approach. These calculations build on a similar model developed by Dorothy Rice in 1965 (Rice, 1965). However, because this model calculates the cost of individual known fatalities, several modifications were made to the Rice model. First, because the decedents were known to be employed at the time of death, the calculation for participation rate in the labor force was eliminated. The assumption was made that if the

individuals would have survived, they would have remained in the workforce until the age of retirement. Second, the iterations were ceased when the decedent would have reached 67 rather than the age used in the Rice model, which was age 99. The age used in this model was selected based on the retirement age of a substantial proportion of the current workforce. However, if the victim was older than 67 at the time of death, a single year of indirect costs were included.

The indirect lifetime cost calculations are expressed as follows:

$$PVF = \sum_{n=y}^{67} P_{y,q,s}(n) [Y_{s,j}(n) + Y_s^h(n)] * (1+g)^{n-y} / (1+r)^{n-y}$$

where:

|                |  |
|----------------|--|
| PVF            | = present discounted value of loss per person due to an individual occupational fatality   |
| $P_{y,q,s}(n)$ | = probability that a person of age y, race q, and sex s will survive to age n  |
| y              | = age of the individual at death   |
| q              | = race of the individual   |
| s              | = sex of the individual  |
| n              | = age if the individual had survived   |
| $Y_{s,j}(n)$   | = median annual compensation of an employed person of sex s, specific occupation j, and age n (includes median annual earnings, benefits, and wage growth adjustments) |
| j              | = specific occupation of individual at death   |
| $Y_s^h(n)$     | = mean annual imputed value of household production (h) of a person of sex s and age n   |
| h              | = imputed value of household production  |
| g              | = earnings growth rate attributable to overall productivity  |
| r              | = real discount rate (3%)  |

Indirect losses were adjusted by the probability that the individual would have survived were it not for the premature death that resulted from an occupational event or exposure,  $P_{y,q,s}(n)$ . The probability estimates used in this study were developed by the National Center for Health Statistics, Division of Vital Statistics (NCHS 1997). This agency used data from the 1990 Census of Populations (BoC 1992) as well as data on deaths occurring in the United States to U.S. residents for 3 years, 1989-91 (U.S. Department of Health and Human Services, 1996). These current life tables were based on a complete count of resident deaths in the United States during those years. Separate probabilities were calculated for each sex within the white population, the population other than white, and the black population. The initial survival table presented the number of persons in the sample surviving to exact age  $x$ . The percent of persons who, having attained age  $x$ , will survive to age  $x + t$  was calculated by dividing  $x+t$  by  $x$  and multiplying by 100. The probability of survival by sex and race used in these cost estimate calculations can be found in Appendix VI.

The second major component in the indirect cost calculation is compensation or  $Y_{s,j}(n)$ . There are four elements of this component used in this model: base earnings, employee benefits, economy-wide productivity growth, and life-cycle wage growth.

CFOI provides information on the occupation of the decedent, but not the wage or salary at the time of death. Therefore, the base earnings for this model are an estimate of the earnings of the decedent established by the decedent's occupation and sex at the time of death. Also, because of the lack of detailed employment information, the model assumes that the decedent had worked full-time in that occupation and would not have changed occupations nor left the job between the time of death and retirement age.

The base earnings were assigned to each fatality based on the decedent's occupation and State of employment at the time of death derived from the BLS Occupational Employment Statistics (OES) Program (U.S. Department of Labor [BLS] 2009b). This semi-annual mail survey collects data on wage and salary workers in nonfarm establishments to produce wage estimates. Occupational wages are estimated for approximately 800 occupations. Wages from this survey were selected because they were estimated using the Standard Occupational Classification (SOC) classification scheme (OMB 2000), which is the same system used by CFOI to code occupation (see Appendix II). Under the recommendation of BLS staff and without a valid statistical reason to select mean earnings, median earnings were selected for this model.

For this model, base earnings were defined as median annual straight-time, gross pay enumerated by the 5-digit occupation code, taken from the 2000 SOC classification scheme, by State. Where data were not available for a specific detailed occupation, earnings from the next hierarchical level were substituted. These data were adjusted for inflation using the Implicit Price Deflators for Gross Domestic Product, which can be found in Appendix IX (U.S. Department of Commerce [BEA], 2009).

Individual ages for each fatality were available through the CFOI data, but median earnings for individual ages in the OES program were not available. The Current Population Survey (CPS) published median earnings for a particular age group was assigned to the median age of that age group. Twenty "ages" were created for each age group, representing 6-month age intervals. To derive an earnings value for each of the 20 "ages," the difference between sequential age groups was calculated as:

$$\text{Earnings}_{S_{x+1}} - \text{Earnings}_x$$

where: Earnings = CPS published age group earnings

This difference was evenly distributed within the age group and then the proportion of the median age earnings for each age was determined. The process was repeated for both males and females and for each year of earnings data. Finally, the base earnings assigned to each fatality was derived by adjusting the median earnings for the occupation of the decedent by the proportion associated with the age, sex, and year of death for that decedent. The adjustments to earnings by age and sex are found in Appendix VII.

To more closely represent the market value of an employee's compensation, the value of employee benefits was added to the base earnings. Employer benefits costs were taken from the Bureau of Labor Statistics, National Compensation Survey (NCS) Employment Cost Trends for the years 2003-2010 (U.S. Department of Labor [BLS], 2009c). The NCS collects data from state and local government and private sector establishments with one or more workers in the District of Columbia and the 50 States. Agricultural workers, workers in private households, the self-employed and those setting their own pay; volunteers, family members receiving token wages, and other unpaid workers; workers receiving compensation for a long-term disability compensation; and those not working in the U.S. were excluded from the survey. Probability samples were selected in three stages—geographic areas, establishments within sampled areas, and occupations within sampled establishments—to insure adequate representation of estimates. The table below provides the employer benefits costs as a percent of total employee compensation between 2003 and 2010 for this study.

| Year | Percent |
|------|---------|
| 2003 | 19.13   |
| 2004 | 19.93   |
| 2005 | 20.43   |
| 2006 | 20.48   |
| 2007 | 20.60   |
| 2008 | 20.68   |
| 2009 | 20.80   |
| 2010 | 21.05   |

These benefits include the employer's share of legally required payments, retirement and savings plan payments; life insurance and death benefits payments; medical and medically related benefit payments; and miscellaneous benefit payments such as employee education expenditures, child care, and discounts on goods and service purchased from company by employee. To avoid double counting, categories of paid rest periods, lunch periods, wash-up time, travel time, clothes changing time, get-ready time, etc., and payments for time not worked such as paid vacations, holidays, sick leave, or State or National Guard duty, are excluded. The benefit dollar amounts were adjusted for inflation using the GDP deflator, which can be found in Appendix IX.

The economy-wide productivity growth element used the Employment Cost Index (ECI) to estimate how much earnings would rise in concert with the growth of the U.S. economy as a whole (U.S. Department of Labor [BLS], 2009d). The ECI measures the change in the cost of labor and includes both changes in wages and salaries as well as employee benefits costs.

This index is based on establishment surveys of compensation costs that cover all occupations within the private and public sector industries, excluding farms, households, self-employed, and the Federal government. After the sample is drawn, weighted probability sampling methods are used, with weighting in proportion to establishment size, to select occupations in each of the sampled establishments. That is, a fixed number of occupations are selected in each establishment using a process that gives occupations with greater employment a greater chance of selection.

The ECI uses the current-cost approach, in which annual costs are calculated based on the current price of benefits and current plan provisions. The annual cost is divided by the annual hours worked to derive the cost per hour worked for each benefit. Values for earnings and benefits are calculated separately by BLS and for this model. Because the model forecasts the decedent's wages for up to 50 years into the future, it uses a long-term productivity growth rate, the average of the percent changes in the ECI from 1980 to 2010. The wage growth rate was reduced by one-half in the first year as deaths were assumed to be uniformly distributed by month. This is an inflation-free change in wages and represents an annual proxy for a change in productivity. The value of benefits was also adjusted using the same methodology.

To account for the final component of wage growth, estimates of the life-cycle growth, or the salary growth due to experience of the individual worker, were employed. The growth rate was calculated using wages from the historical income tables of the Current Population Survey (CPS) for the years 1980 through 1998 (U.S. Department of Labor [BLS], 2009e). Wage by age is the single necessary component for deriving career growth estimates and was available in mean, not median, values. The CPS presented mean wages in constant dollars by sex, race, and age group for each year. The rate of change for mean wages was determined for each sex and race within a specific age group. Wages for the initial age group ( $x$ ) were subtracted from the wages of the next age group ( $x+1$ ) and divided by the initial age-group wage:  $[(x+1)-x]/x$ . This process was repeated for male and female decedents within each race category. For this study, it was assumed that the salary growth rate was constant within age groups—equal increments for each year of age within that age group. Specific career growth adjustment factors by age, sex and race are presented in Appendix X.

The home production losses  $[Y_s^h(n)]$  that are associated with a decedent of sex  $s$  and age  $n$  were derived from time-diary data captured in The National Human Activity Pattern Survey (NHAPS) study commissioned by the Environment Protection Administration (EPA) (Triplett's work as cited in Expectancy Data, 2000). This two-stage Mitofsky-Waksberg random digit telephone dial sample design was used in the survey that covered the period from September 17, 1992 to October 1, 1994. Quarterly samples, stratified by the four major census regions (Northeast, Midwest, South, and West) and day of week (weekend versus weekday), were drawn with a total sample of 14,908 households, yielding 9,386 interviews. The University of Maryland's Research Center conducted the survey interviews and requested the following for each activity the respondent performed during a 24-hour period: Start and end time of the activity, actual description of the activity, location where activity occurred, and

whether smoking occurred during the activity. The activities were initially coded into 11 broad categories and then into 91 micro-categories and 82 locations.

These data were regrouped into five super-categories: Household production, providing care, hygiene and personal care, leisure, and employment and education (Expectancy Data, 2000). Further refinement classified these categories into economic allocation of work and leisure. Finally household production time was defined as activities that could produce benefit for all members of the household—housework; food cooking and cleanup; outdoor chores, plants, and animals; home and auto maintenance; and obtaining goods and services. Providing care includes childcare; child guidance; playing with children; transporting children; and, providing care to others. This sub-category was defined as the time spent providing services that were channeled toward one or more persons. The market replacement value of this time was reported in 1998 dollars and based on the hourly wages plus the employer’s legally required benefit costs from the Bureau of Labor Statistics’ Occupational Employment Statistics (OES) survey and the employer compensation cost report. Values of time for each sub-category were from a shorter list of the OES occupations that more accurately correlated with those activities involved in household production or providing care. Finally, daily values were distributed by age and sex for each sub-category (Expectancy Data, 2000). For this study values of household production and providing care were combined within each age and gender category and multiplied by 365 to obtain annual values. Dollar values were adjusted using the GDP deflator (See Appendix IX). Because household production data were unavailable by race and occupation and available only for age and sex, the model assumes that estimates by age and sex were constant or the same for race and occupation group.

For public health evaluations that assume a societal perspective, the social discount rate—the rate at which society as a whole is willing to exchange present costs for future benefits—is appropriate. The Panel on Cost-Effectiveness in Health and Medicine under the auspices of the Public Health Service recommended applying a constant real discount rate of 3%, a rate exclusive of adjustment for inflation (U.S. Department of Health and Human Services, 1996). This Panel recommended recalculating the cost estimates using alternative discount rates to demonstrate the effect of initial assumptions regarding the appropriate societal rate. Cost estimates using multiple discount rates are presented in Appendix XII.

The overall lifetime societal cost of a traumatic fatal occupational injury is obtained by combining these indirect costs (PVF) with the actual dollar expenditures related to the fatal injury (direct costs). This method provides a conservative estimate of direct costs because medical expenses—only one of the many possible direct costs—was the only direct cost included in the total estimate. Because the majority of fatalities reported through CFOI occurred within one day of the injury event, medical expenses were only included in the first year calculations.

## Discussion

The cost model used for developing these data tables produces a conservative estimate for lifetime economic costs of fatal occupational injuries. Moreover, it should be made clear that these estimates are not exact and precise; they are, instead, estimations, and are based on many factors. Estimates are subject to limitations of the model specification and the limitations associated with the level of detail and quality of data systems used in the calculations.

The model specification is most significantly limited by not producing a “complete” economic cost of occupational fatalities, in that intangible losses that are associated with premature death are not included. While it may be

intuitively appealing to provide some quantitative measure of these costs, rather than simply disregard them in determining the overall burden of the fatal injury, it is inescapable that the nature of the losses—pain, suffering, loss of consort and loss of traditional role, as well as emotional harm to the injured and the family—involve a subjective and personal component that is difficult to measure, if not immeasurable. It is for this reason that the intangible dimension is not considered in these calculations. Such a consideration would impose additional complexity and theoretical requirements on a model that is designed to provide a straightforward calculation of well-defined measures of costs associated with fatal occupational injury. This measure has great value in itself, and this measure should not be lessened by its failure to incorporate a measure that has confounded numerous authorities with advanced knowledge.

A further qualification of the findings of this study is that the use of a single category in the model to represent all direct costs of a fatal occupational injury contributes to the conservative nature of these estimates. Future work should explore inclusion of additional direct costs such as insurance administrative costs, employer retraining, and workplace disruption costs.

As a further measure to address the study limitation associated with the use of wage data that is State-specific, occupation-specific and of summed age categories, it is recommended that modifications to the model should include the use of values for multiple-job holders and age-specific estimates. Improvements in the specificity of benefits data by industry and occupation would greatly improve these cost estimates. Additionally, the accuracy of the estimates would benefit from a comprehensive analysis of the career growth-rate estimates. A longitudinal cohort study would shed needed light on the best method of deriving these estimates for the overall population.

Despite the acknowledged limitations of the estimates contained in these findings, the estimates themselves have substantial practical value, providing additional information about how injuries affect society and providing necessary information for decision-makers on relevant costs of fatal occupational injuries in relation to costs and selection of prevention programs. These cost outcomes additionally represent income that is not received and medical expenses incurred because of fatal injuries, and thus have direct bearing on State, regional and national economic measures of goods and services production, such as Gross Domestic Product (GDP) and other national income measures. These estimates can be further used to plan, augment and prioritize occupational injury prevention and control programs, policy analysis, evaluation of safety and health interventions, and advocacy for a safer work environment.

There remains substantive questions concerning various issues, such as the relative contribution of each of the components of the cost model, the possibly disproportionate contribution of the occupation, the industry division and the years of service to overall costs, the relative significance of the natural progression of career development, the aging of the workforce, and so forth.



It is unclear as to what component of the cost model is responsible for the greatest total costs or the highest average costs. Is there a cost premium for certain industries? Certain occupations? Certain age groups? It is known that certain occupations represent a stage of career development for certain persons, such as students, how do the changes in occupation effect the overall fatality cost estimates. As the population ages or proceeds in career-development, is there a natural progression from occupations with high risk characteristics to careers with lessened or altered risk characteristics that would reduce the overall costs of fatalities as occupations with less risk tend to have lower wages? Likewise, how does the mechanism by which women enter the workforce, and exit it during childbearing years, only to reenter it at a subsequent period in their lives, effect the cost of fatalities?

Finally, there remains an additional analysis that should be conducted. Based on total employment and labor-force participation by demographic category, trend analysis is warranted to help determine the best allocation of resources that are continually becoming scarcer.

### Conclusions

The cost model and data sources used in this report combine to form an effective mechanism for determining the cost of fatal occupational injury. These cost estimates can be used to determine the specific burden of injury to particular demographic groups, as well as the circumstances of injury. This can be extremely useful in determining the cost to various constituencies—to the Nation, to States and Census regions, to various groups, industries, and occupations. In addition, this report provides the frequency of these events to indicate the extent of the occupational health problem. The more extended nature of the extent of the occupational health problem includes a component that is not considered here, the cost of suffering and loss of role, but the contribution of these data tables, in identifying the financial cost of fatal occupational injury, constitutes a major component in delimiting the scope of this injury. The use of economic losses, such as those calculated using this model, provides an additional measure to existing societal measures of frequency and rate of injury, to assist in defining the overall dimensions of traumatic workplace fatalities.

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## Appendices

- I.** Bureau of Labor Statistics 1992 Occupational Injury and Illness Classification System (OIICS) for Event or Exposure and Source of Injury or Illness Code Structures)
- II.** 2000 Standard Occupational Classification (SOC) Structure
- III.** 2000 Standard Occupational Classification (SOC) Structure Major Groups
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- XII.** Sensitivity of Cost Estimates to Selected Discount Rates

**Appendix I**  
**Bureau of Labor Statistics 1992 Occupational Injury and Illness Classification System (OIICS) for Event or Exposure and Source of Injury or Illness Code Structures**

SOURCE OF INJURY OR ILLNESS CODE STRUCTURE

DEFINITION

The source of injury or illness identifies the object, substance, bodily motion, or exposure which directly produced or inflicted the previously identified injury or illness

RULES OF SELECTION:

3.1 Name as the source of injury or illness the object, substance, element, or bodily motion which directly produced the injury or illness previously identified in the nature of injury or illness classification.

3.2 If the injury or illness was inflicted by a specific part of a machine, tool, or vehicle, name the whole machine, tool, or vehicle as the source of injury except when:

- the part separated from or was independent of the "whole";
- the event is overexertion;
- the injury was inflicted by an overhead powerline or the electrical cord of an appliance, tool, or machine;
- the injury was inflicted by the floor of a vehicle in a non-transportation incident; or
- the incident involved a tractor and agricultural equipment combination.

In these instances, code that part as source.

3.3 If the injury or illness was inflicted by a specific part of a structure (window, door, stairs) name that part as the source of injury.

3.4 When an injury or illness was produced by a filled container, name the container, not the contents, as the source unless the injury or illness was directly inflicted by the contents, such as hot liquids or chemicals.

3.5. Coding Bodily motion or position as the source of injury or illness:

3.5.1 Name Bodily motion or position as the source of injury or illness only when the injury resulted solely from the stress or strain induced by the free movement of the body or its parts (voluntary or involuntary), or from the assumption of a strained or unnatural body position. Bodily motion or position includes injuries or illnesses resulting from reaching, turning, twisting, bending, walking, climbing,

running, and from efforts to recover from a loss of equilibrium, provided that the loss of equilibrium does not result in a fall or in forcible contact with an object above the working surface.

Do not name Bodily motion or position as the source of injury or illness if the injury or illness resulted from any of the following:

- 1) falling
- 2) bumping into or striking an external object
- 3) nonrepetitive lifting, pushing, pulling, wielding, or throwing an external object

3.5.2 For injuries or illnesses in which either Repetitive motion or Sustained viewing is coded as the event, select bodily motion or position as the source of injury or illness.

3.6 If, as the result of a transportation accident, a person who was in or on a vehicle or mobile equipment is injured, name the vehicle or mobile equipment as the source of injury.

3.7 Selecting Source from multiple objects or substances:

3.7.1 When an injury results from forcible contact with two or more objects, either simultaneously or in rapid sequence, and it is impossible to determine which object directly produced the injury, select the source as follows:

- 1) When the choice is between a moving object and a stationary object, select the moving object. Example: If a person is struck by a moving vehicle and thrown against a post, name the vehicle as the source of injury.
- 2) When the choice is between two moving objects or between two stationary objects, select that which was contacted last. Example: If a person falls from an elevator, striking one or more objects in the course of his fall, but finally striking the floor, name the floor surface as the source of injury.

3.7.2 When an injury or illness results from two or more different objects or substances, all of which contributed to producing the injury or illness, select the source code as follows:

- 1) When there are two substances from the Chemical Division, select the appropriate "Multiple" code for that combination of chemicals.
- 2) When the two objects or substances are in the same Division, select the Divisional n.e.c. code for that Division. If they are in the same group within a division, select the group n.e.c.
- 3) When the two objects or substances are not in the same Division, use the code for Other sources, n.e.c.

3.8 Select Weather and atmospheric conditions or geological events--Floods, Earthquakes, Avalanches--as the source of injury or illness when that is the only possible source identified. For example, if a worker sustained multiple injuries in an earthquake and no other source could be determined, select earthquake as the source of injury. However, if an employee were driving in a rainstorm and had an automobile accident resulting in injury, select vehicle as the source.

| Division Title                     | Source of Injury or Illness Rubric  |
|------------------------------------|---|
| 0* CHEMICALS AND CHEMICAL PRODUCTS | 00 Chemicals and chemical products, unspecified<br>01* Acids<br>010 Acids, unspecified<br>011* Acid gases--halogen<br>0110 Acid gases, unspecified<br>0111 Hydrogen bromide<br>0112 Hydrogen chloride<br>0113 Hydrogen fluoride<br>0114 Hydrogen iodide<br>0119 Acid gases, n.e.c.<br>012* Inorganic acids--halogens<br>0120 Inorganic acids--halogens, unspecified<br>0121 Hydriodic acid<br>0122 Hydrobromic acid<br>0123 Hydrochloric acid<br>0124 Hydrofluoric acid<br>0129 Inorganic acids--halogens, n.e.c.<br>013* Inorganic acids--other<br>0130 Inorganic acids, unspecified |

0131 Chlorine-containing oxyacids

0132 Nitric acid

0133 Phosphoric acid

0134 Sulfuric acid

0139 Inorganic acids, n.e.c.

014\* Organic acids

0140 Organic acids, unspecified

0141 Acetic acid, vinegar

0142 Acrylic acids

0143 Carboic acids

0144 Hydrocyanic acid

0145 Peracetic acid

0146 Picric acid

0149 Organic acids, n.e.c.

018 Multiple acids

019 Acids, n.e.c.

02\* Alkalies

020 Alkalies, unspecified

021\* Calcium hydroxides, calcium oxides

0210 Calcium hydroxide, calcium oxides, unspecified

0211 Cement, mortar mix--dry

0212 Cement, mortar--wet

0213 Lime

0219 Calcium hydroxide, calcium oxides, n.e.c.

022\* Carbonates--calcium, sodium

0220 Carbonates--calcium, sodium, unspecified

0221 Limestone, calcium carbonate



0222 Sodium bicarbonate, baking soda

0223 Sodium carbonate, soda ash

0229 Carbonates, n.e.c.

023 Lithium hydroxide

024 Sodium and potassium hydroxide, potassium carbonate

028 Multiple alkalis

029 Alkalies, n.e.c.

03\* Aromatics and hydrocarbon derivatives, except halogenated

030 Aromatics and hydrocarbon derivatives, except halogenated, unspecified

031\* Alcohols

0310 Alcohol, unspecified

0311 Antifreeze

0312 Ethanol

0313 Ethylene glycol

0314 Fusel oil

0315 Methanol

0316 Propanol

0319 Alcohol, n.e.c.

032\* Aldehydes

0320 Aldehydes, unspecified

0321 Acetaldehyde

0322 Acrolein

0323 Formaldehyde

0324 Formalin

0329 Aldehydes, n.e.c.

033\* Amines--nonaromatic

0330 Nonaromatic amines, unspecified

0331 Methyl amine

0339 Nonaromatic amines, n.e.c.

034\* Aromatics

0340 Aromatics, unspecified

0341 Aniline and other aromatic amines

0342 Benzene

0343 Toluene

0344 Xylene

0349 Aromatics, n.e.c.

035\* Ethers

0350 Ethers, unspecified

0351 Diethyl ether

0352 Dimethyl ether

0353 Ethylene oxide

0354 Methyl ethyl ether

0355 Vinyl ether

0359 Ethers, n.e.c.

036\* Ketones

0360 Ketones, unspecified

0361 Acetone

0362 Mesityl oxide

0363 Methyl ethyl ketone

0364 Methyl N-butyl ketone

0369 Ketones, n.e.c.

037\* Peroxides

0370 Peroxides, unspecified

0371 Benzoyl peroxide

0372 Hydrogen peroxide

0373 Lithium peroxide

0374 Potassium peroxide

0375 Sodium peroxide

0379 Peroxides, n.e.c.

038 Multiple aromatics and hydrocarbon derivatives, except halogenated

039\* Aromatics and hydrocarbon derivatives, except halogenated, n.e.c.

0391 Nitro hydrocarbons

0399 Other aromatics and hydrocarbon derivatives, except halogenated, n.e.c.

04\* Halogens and halogen compounds

040 Halogens and halogen compounds, unspecified

041\* Bromine and bromine compounds

0410 Bromine compounds, unspecified

0411 Bromine

0412 Ethylene dibromide

0413 Methyl bromide

0414 Potassium bromide

0419 Bromine compounds, n.e.c.

042\* Chlorine and chlorine compounds

0420 Chlorine compounds, unspecified

0421 Carbon tetrachloride

0422 Chlorine, chlorine bleach

0423 Methyl chloride

0424 Pentachlorophenol

0425 Perchloroethylene

0426 Polychlorinated biphenyls (PCBs)

0427 Trichloroethylene

0429 Chlorine compounds, n.e.c.

043\* Fluorine and fluorine compounds

0430 Fluorine compounds, unspecified

0431 Fluorine

0432 Fluorotrichloromethane

0433 Fluorocarbons, n.e.c.

0434 Methyl fluoride

0439 Fluorine compounds, n.e.c.

044 Iodine and iodine compounds

048 Multiple halogens and halogen compounds

049 Halogens and halogen compounds, n.e.c.

05\* Metallic particulates, trace elements, dusts, powders, fumes

050 Metallic particulates, trace elements, dusts, powders, fumes, unspecified

051 Arsenic, arsenic compound

052 Beryllium and beryllium compounds

053 Cadmium and cadmium compounds

054\* Lead and lead compounds

0540 Lead and lead compounds, unspecified

0541 Inorganic lead compounds

0542 Organic lead compounds

0549 Lead and lead compounds, n.e.c.

055 Mercury and compounds

056\* Other metallics and compounds

0561 Aluminum and aluminum compounds

0562 Antimony

0563 Chromium and chromium compounds

0564 Iron and iron compounds

0565 Magnesium and magnesium compounds

0566 Manganese

0567 Nickel and nickel compounds

0568 Zinc and zinc compounds

0569 Other metallics and compounds, n.e.c.

057 Welding or soldering fumes, unspecified or n.e.c.

058 Multiple metallics and metallic compounds

059 Metallic particulates, trace elements, dusts, powders, fumes, n.e.c.

06\* Agricultural chemicals and other pesticides

060 Agricultural chemicals and other pesticides, unspecified

061 Fertilizers, plant food, n.e.c.

062 Fumigants, n.e.c.

063 Fungicides

064\* Herbicides

0640 Herbicides, unspecified

0641 Benzoic and phenylacetic acids

0642 Bipyridyls

0643 Carbamate and thiocarbamate herbicides

0644 Dinitro compounds

0645 Phenols

0646 Triazines

0649 Herbicides, n.e.c.

065\* Insecticides

0650 Insecticides, unspecified

0651 Carbamate insecticides

0652 Organochlorine compounds

0653 Organophosphorus compounds

0658 Multiple insecticides

0659 Insecticides, n.e.c.

066 Rodenticides

068 Multiple agricultural and horticultural chemicals

069 Agricultural and horticultural chemicals, n.e.c.

07\* Chemical products--general

070 Chemical products, unspecified

071 Adhesives, glues, n.e.c.

072\* Beauty preparations, cosmetics, n.e.c.

0720 Beauty preparations, cosmetics, unspecified

0721 Hair preparations

0729 Other beauty preparations, cosmetics

073\* Cleaning and polishing agents, disinfectants, n.e.c.

0730 Cleaning and polishing agents, unspecified

0731 Bleach--nonchlorine, nonperoxide

0732 Disinfectants

0733 Drain and oven cleaners

0734 Polishes

0735 Scouring powders

0736 Soap products

0737 Synthetic detergents and shampoos

0738 Multiple cleaning and polishing agents

0739 Other cleaning and polishing agents

074\* Drugs, alcohol, medicines

0740 Drugs and medicines, unspecified

0741 Alcoholic beverages

0742 Drugs--nonmedicinal

0743 Medicines

0748 Multiple drugs, medicines

0749 Drugs and medicines, n.e.c.

075\* Explosives, blasting agents, n.e.c.

0750 Explosives, blasting agents, unspecified

0751 Dynamite

0752 Flammable gas, unspecified

0753 Gunpowder

0754 Pyrotechnics, fireworks

0759 Other explosives, blasting agents

076\* Paint, lacquer, shellac, varnish, n.e.c.

0760 Paint, lacquer, shellac, varnish, unspecified

0761 Lacquer, shellac, varnish

0762 Paint

0768 Multiple paint, lacquer, shellac, or varnishes

0769 Other paint, lacquer, shellac, varnish

077\* Solvents, degreasers, n.e.c.

0770 Solvents, degreasers, unspecified

0771 Naphtha solvents

0772 Paint removers, thinners

0773 Dry cleaning fluids, n.e.c.

0778 Multiple solvents, degreasers

0779 Other solvents, degreasers

079\* Other chemical products

0790 Other chemical products, unspecified

0791 Dyes, inks

0792 Tear gas, mace

0793 Photographic and copying solutions

0799 Chemical products, n.e.c.

08\* Coal, natural gas, petroleum fuels and products, n.e.c.

080 Coal, natural gas, petroleum fuels and products, unspecified

081\* Coal and coal products

0810 Coal products, unspecified

0811 Coal

0812 Coke and other coal manufactures

0819 Coal and coal products, n.e.c.

082 Natural gas

083 Petroleum, crude oil

084\* Petroleum fuels, distillates, products, n.e.c.

0840 Petroleum fuels, distillates, products, unspecified

0841 Butane

0842 Gasoline, diesel fuel, jet fuel

0843 Kerosene, heating oil

0844 Lubricating greases, cutting oils

0845 Propane

0849 Other petroleum fuels, distillates, products

089 Coal, natural gas, petroleum fuels and products, n.e.c.



09\* Other chemicals

091\* Ammonia and ammonium compounds

0910 Ammonia and ammonium compounds, unspecified

0911 Ammonia, anhydrous ammonia

0912 Ammonium hydroxide

0913 Ammonium nitrate

0914 Ammonium sulfate

0918 Multiple ammonia and ammonium compounds

0919 Ammonia and ammonium compounds, n.e.c.

092\* Cryogenic gases

0920 Cryogenic gases, unspecified

0921 Liquid fluorine

0922 Liquid helium

0923 Liquid hydrogen

0924 Liquid nitrogen

0925 Liquid oxygen

0929 Cryogenic gases, n.e.c.

093\* Cyanide and cyanide compounds, n.e.c.

0930 Cyanide and cyanide compounds, unspecified

0931 Hydrogen cyanide

0938 Multiple cyanides

0939 Other cyanide and cyanide compounds

094\* Oxygen and oxygen compounds, n.e.c.

0940 Oxygen and oxygen compounds, unspecified

0941 Carbon monoxide

0942 Carbon dioxide, dry ice

0943 Nitrogen oxides

0944 Oxygen--nonliquified

0945 Ozones

0948 Multiple oxygen and oxygen compounds

0949 Other oxygen and oxygen compounds, n.e.c.

095\* Plastics, resins

0950 Plastics, unspecified

0951 Cyanates

0952 Resins

0953 Urethanes

0954 Vinyl chloride, polyvinyl chloride

0959 Plastics, resins, n.e.c.

096\* Sewer gas, mine gas, methane

0960 Sewer gas, mine gas, unspecified

0961 Methane gas

0962 Mine gas

0963 Sewer gas

097\* Sulfur and sulfur compounds

0970 Sulfur and sulfur compounds, unspecified

0971 Carbon bisulfide

0972 Hydrogen sulfide

0973 Sulfur dioxide

0978 Multiple sulfur and sulfur compounds

0979 Sulfur and sulfur compounds, n.e.c.

098\* Multiple chemicals or chemical mixtures, n.e.c.

0980 Multiple chemicals or chemical mixtures, unspecified

0981 Ammonia and chlorine

0982 Chlorine and phosphoric acid

0983 Chlorine and cleaning agent, n.e.c.

0989 Other multiple chemicals or chemical mixtures

099 Chemicals and chemical products, n.e.c.

1\* CONTAINERS

10 Containers, unspecified

11\* Containers--nonpressurized

110 Containers--nonpressurized, unspecified

111 Bags, sacks, totes

112 Barrels, kegs, drums

113 Bottles, jugs, flasks

114 Boxes, crates, cartons

115 Buckets, baskets, pails

116 Cans

117 Pots, pans, trays

118 Tanks, bins, vats

119 Containers--nonpressurized, n.e.c.

12\* Containers--pressurized

120 Containers--pressurized, unspecified

121 Boilers

122 Hoses

123 Oxygen tanks

124 Pressure lines, except hoses

125 Propane tanks

129 Containers--pressurized, n.e.c.

13\* Containers--variable restraint

130 Containers--variable restraint, unspecified

131 Bundles, bales

132 Packages, parcels  
133 Reels, rolls  
139 Containers--variable restraint, n.e.c.  
14\* Dishes, drinking cups, beverage glasses  
140 Dishes, drinking cups, beverage glasses, unspecified  
141 Dishes, bowls  
142 Drinking cups, beverage glasses  
149 Dishes, drinking cups, beverage glasses, n.e.c.  
15\* Luggage, handbags  
150 Luggage, unspecified  
151 Briefcases  
152 Handbags, pocketbooks, wallets  
153 Suitcases  
159 Luggage, n.e.c.  
16 Skids, pallets  
19 Containers, n.e.c.

2\* FURNITURE AND FIXTURES

20 Furniture and fixtures, unspecified  
21\* Cases, cabinets, racks, shelves  
210 Cases, cabinets, racks, shelves, unspecified  
211 Bookcases  
212 Cabinets, cases--display, storage  
213 Counters, counter tops  
214 Garment racks, other racks  
215 Lockers  
216 Partitions  
217 Shelving

219 Cases, cabinets, racks, shelves, n.e.c.

22\* Floor, wall, window coverings

220 Floor, wall, window coverings, unspecified

221 Floor coverings, nonstructural

222 Wall coverings

223 Window coverings, blinds, shades, or draperies

229 Floor, wall, window coverings, n.e.c.

23\* Furniture

230 Furniture, unspecified

231 Beds, bedding, mattresses

232 Benches, workbenches, saw horses

233 Chairs

234 Desks

235 Sofas

236 Tables, worktables

239 Furniture, n.e.c.

24\* Other fixtures

240 Other fixtures, unspecified

241\* Lighting equipment

2410 Lighting equipment, unspecified

2411 Lamps

2412 Light bulbs

2419 Lighting equipment, n.e.c.

242\* Plumbing fixtures

2420 Plumbing fixtures, unspecified

2421 Bathtubs

2422 Sinks

3\* MACHINERY

2423 Toilets

2429 Plumbing fixtures, n.e.c.

249 Other fixtures, n.e.c.

29 Furniture and fixtures, n.e.c.

30 Machinery, unspecified

31\* Agricultural and garden machinery

310 Agricultural and garden machinery, unspecified

311\* Harvesting and threshing machinery

3110 Harvesting and threshing machinery, unspecified

3111 Balers

3112 Combines

3113 Harvesters, reapers

3114 Threshers

3119 Harvesting and threshing machinery, n.e.c.

312\* Mowing machinery

3120 Mowing machinery, unspecified

3121 Lawn mowers--nonriding, powered

3122 Lawn mowers--riding

3123 Mowers--tractor

3129 Mowing machinery, n.e.c.

313\* Plowing, planting, and fertilizing machinery

3130 Plowing, planting, and fertilizing machinery, unspecified

3131 Plowing and cultivating machinery

3132 Seed planting machinery

3133 Spreading machinery--agricultural

3139 Plowing, planting, and fertilizing machinery, n.e.c.

319\* Other agricultural and garden machinery

3190 Other agricultural and garden machinery, unspecified

3191 Dairy and milk processing machinery--specialized

3192 Feed grinders, crushers, mixers--agricultural

3193 Spraying and dusting machinery--agricultural

3199 Agricultural and garden machinery, n.e.c.

32\* Construction, logging, and mining machinery

320 Construction, logging, and mining machinery, unspecified

321\* Excavating machinery

3210 Excavating machinery, unspecified

3211 Backhoes

3212 Bulldozers

3213 Steam and power shovels

3214 Trenchers

3219 Excavating machinery, n.e.c.

322\* Loaders

3220 Loaders, unspecified

3221 Bucket loaders

3222 End loaders

3223 Front end loaders

3229 Loaders, n.e.c.

323\* Logging and wood processing machinery--specialized

3230 Logging and wood processing machinery--specialized, unspecified

3231 Chippers

3232 Debarkers

3233 Harvesters, including feller-buncher, sheet

3234 Log loaders, including heel boom

3235 Forwarder/yarder

3236 Mechanical harvester

3237 Slasher

3238 Skidder--cable and grapple

3239 Logging and wood processing machinery--specialized, n.e.c.

324\* Mining and drilling machinery

3240 Mining and drilling machinery, unspecified

3241 Drilling machines, drilling augers

3242 Mineral sorters, separators, concentrators

3243 Tunnelling machines

3249 Mining and drilling machinery, n.e.c.

325\* Road grading and surfacing machinery

3250 Road grading and surfacing machinery, unspecified

3251 Asphalt and mortar spreaders

3252 Graders, levellers, planers, scrapers

3253 Road linemarking machinery

3254 Steam rollers, road pavers

3259 Road grading and surfacing machinery, n.e.c.

329\* Other construction, logging, and mining machinery

3290 Other construction, logging, and mining machinery, unspecified

3291 Agitators, mixers--earth, mineral

3292 Compactors, crushers, pulverizers--earth, mineral

3293 Pile drivers, tamping machinery

3294 Pile extractors

3299 Construction, logging, and mining machinery, n.e.c.



33\* Heating, cooling, and cleaning machinery and appliances

330 Heating, cooling, and cleaning machinery and appliances, unspecified

331\* Cooling and humidifying machinery and appliances

3310 Cooling and humidifying machinery and appliances, unspecified

3311 Air conditioning units

3312 Fans, blowers--wall, floor, ceiling, ventilation

3313 Humidifiers, dehumidifiers, vaporizers

3314 Refrigerators, freezers, ice makers

3319 Cooling and humidifying machinery and appliances, n.e.c.

332\* Heating and cooking machinery and appliances

3320 Heating and cooking machinery and appliances, unspecified

3321 Beverage heating and percolating equipment and appliances

3322 Broiling and frying equipment and appliances

3323 Fabric pressers and ironing appliances

3324 Furnaces, heaters

3325 Kilns

3326 Ranges, cooking ovens, grills, toasters, food warmers

3327 Steaming equipment and appliances

3329 Heating and cooking machinery and appliances, n.e.c.

333\* Washers, dryers, and cleaning machinery and appliances

3330 Washers, dryers, and cleaning machinery and appliances, unspecified

3331 Car or vehicle washing machinery

3332 Clothes dryers

3333 Clothes washers

3334 Dish washers

3335 Hair and hand dryers

3336 Vacuum cleaners

3339 Washers, dryers, and cleaning machinery and appliances,  
n.e.c.

339 Heating, cooling, and cleaning machinery and appliances,  
n.e.c.

34\* Material handling machinery

340 Material handling machinery, unspecified

341\* Conveyors--gravity

3410 Conveyors--gravity, unspecified

3411 Chutes

3412 Conveyors--roller

3413 Conveyors--wheel

3419 Conveyors--gravity, n.e.c.

342\* Conveyors--powered

3420 Conveyors--powered, unspecified

3421 Conveyors--belt

3422 Conveyors--bucket, cup

3423 Conveyors--chain

3424 Conveyors--live roller

3425 Conveyors--pan

3426 Conveyors--pneumatic

3427 Conveyors--screw, auger

3428 Conveyors--slot

3429 Conveyors--powered, n.e.c.

343\* Cranes

3430 Cranes, unspecified

3431 Cranes--floating

3432 Cranes--gantry

3433 Cranes--hammerhead

3434 Cranes--mobile, truck, rail mounted

3435 Cranes--monorail and underhung

3436 Cranes--overhead

3437 Cranes--portal, tower, pillar

3438 Storage and retrieval hoist systems

3439 Cranes, n.e.c.

344\* Overhead hoists

3440 Overhead hoists, unspecified

3441 Overhead hoists--electric powered

3442 Overhead hoists--manual

3443 Overhead hoists--pneumatic powered

3449 Overhead hoists, n.e.c.

345\* Derricks

3450 Derricks, unspecified

3451 Derricks--A-frame

3452 Derricks--basket

3453 Derricks--breast

3454 Derricks--gin pole

3455 Derricks--guy

3459 Derricks, n.e.c.

346\* Elevators, aerial lifts

3460 Elevators, aerial lifts, unspecified

3461 Bucket or basket hoist--truck mounted

3462 Dumbwaiters

3463 Elevators--electric

3464 Elevators--hydraulic

3465 Elevators--hand operated

3466 Manlifts

3469 Elevators, aerial lifts, n.e.c.

347\* Jacks

3470 Jacks, unspecified

3471 Jacks--hydraulic

3472 Jacks--mechanical

3473 Jacks--pneumatic

3479 Jacks, n.e.c.

349\* Other material handling machinery

3491 Winders, unwinders

3499 Material handling machinery, n.e.c.

35\* Metal, woodworking, and special material machinery

350 Metal, woodworking, and special material machinery, unspecified

351\* Bending, rolling, shaping machinery

3510 Bending, rolling, shaping machinery, unspecified

3511 Bending, crimping machines

3512 Shearing machines

3513 Rolling mills, rolling, calendering machinery

3519 Bending, rolling, shaping machinery, n.e.c.

352\* Boring, drilling, planing, milling machinery

3520 Boring, drilling, planing, milling machinery, unspecified

3521 Drills--stationary

3522 Planing machines

3523 Milling machines

3524 Reaming machines

3529 Boring, drilling, planing, milling machinery, n.e.c.

353\* Extruding, injecting, forming, molding machinery

3530 Extruding, injecting, forming, molding machinery, unspecified

3531 Casting machinery

3532 Extruding machinery

3533 Forging machinery

3534 Plastic injection molding machinery

3539 Extruding, injecting, forming, molding machinery, n.e.c.

354\* Grinding, polishing machinery

3540 Grinding, polishing machinery, unspecified

3541 Grinders, abraders

3542 Honing, polishing, lapping machinery

3549 Grinding, polishing machinery, n.e.c.

355\* Lathes

3550 Lathes, unspecified

3551 Metalworking lathes

3552 Woodworking lathes

3559 Lathes, n.e.c.

356\* Presses, except printing

3560 Presses, except printing, unspecified

3561 Assembly presses

3562 Brake presses

3563 Punch presses

3569 Presses, except printing, n.e.c.

357\* Sawing machinery--stationary

3570 Sawing machinery--stationary, unspecified

3571 Arm saws, radial arm saws

3572 Band saws

3573 Table saws

3579 Sawing machinery--stationary, n.e.c.

358 Threading and tapping machines

359\* Other metal, woodworking, and special material machinery

3591 Electrochemical and discharge machinery (EDM)

3592 Laser cutting machinery

3593 Pressure fluid cutting machinery

3594 Spot welding machinery

3599 Metal, woodworking, and special material machinery, n.e.c.

36\* Office and business machinery

360 Office and business machinery, unspecified

361\* Electronic computers and peripheral equipment

3610 Electronic computers and peripheral equipment, unspecified

3611 Cathode ray tubes (CRTs) and video display terminals (VDTs)

3612 Computers--electronic

3613 Keyboards--computer

3614 Optical scanners

3615 Printers and plotters--computer

3619 Electronic computers and peripheral equipment, n.e.c.

362\* Office, banking, and retail machinery

3620 Office and banking machinery, unspecified

3621 Automated teller machines

3622 Calculating machines and cash registers

3623 FAX machines

3624 Mailing and metering machines

3625 Photocopiers

3626 Typewriters and word processing equipment

3629 Office and banking machinery, n.e.c.

37\* Special process machinery

370 Special process machinery, unspecified

371\* Food and beverage processing machinery--specialized

3710 Food and beverage processing machinery--specialized, unspecified

3711 Food slicers

3712 Juice, oil, fat extractors

3713 Meat grinders

3714 Mixers, blenders, whippers--food and beverage

3719 Food and beverage processing machinery--specialized, n.e.c.

372\* Medical, surgical, and X-ray machinery and equipment

3720 Medical, surgical, and X-ray machinery and equipment, unspecified

3721 Medical machinery and equipment, except X-ray

3722 X-ray, magnetic resonance imaging (MRIs), and fluoroscope machinery and equipment

3729 Medical, surgical, and X-ray machinery and equipment, n.e.c.

373\* Packaging, bottling, wrapping machinery

3730 Packaging, bottling, wrapping machinery, unspecified

3731 Bottling, canning, filling machinery

3732 Packaging, wrapping, bundling machinery

3733 Product labeling machinery

3734 Sealing, stapling machinery

3739 Packaging, bottling, wrapping machinery, n.e.c.

374\* Paper production machinery

3740 Paper production machinery, unspecified

3741 Calendars/supercalendars--paper production

3742 Coaters--paper production

3743 Dryers--paper production

3744 Formers--paper production

3745 Slitters, winders--paper production

3746 Washers, bleachers, refiners--paper production

3749 Paper production machinery, n.e.c.

375\* Printing machinery and equipment

3750 Printing machinery and equipment, unspecified

3751 Bindery machinery

3752 Engraving machinery

3753 Presses--printing

3754 Typesetting machinery

3759 Printing machinery and equipment, n.e.c.

376\* Textile, apparel, leather production machinery

3760 Textile, apparel, leather production machinery, unspecified

3761 Dyeing machinery--textile

3762 Knitting machinery



3763 Picking, carding, combing machinery

3764 Sewing, stitching machinery

3765 Spinning machinery

3766 Weaving machinery

3769 Textile, apparel, leather production machinery, n.e.c.

379\* Other special process machinery

3790 Other special process machinery, unspecified

3791 Centrifuges

3792 Distilling and rectifying machinery

3793 Dyeing machinery, except textile

3794 Gas liquefying machinery

3795 Paint mixing machinery

3796 Painting, priming, metal coating machinery

3797 Pumps

3799 Special process machinery, n.e.c.

39\* Miscellaneous machinery

391\* Audio and video equipment

3910 Audio and video equipment, unspecified

3911 Radios, stereos, and other audio equipment

3912 Telephones and communication equipment

3913 Televisions

3914 Video players and recorders--tape and disk

3919 Audio and video equipment, n.e.c.

392 Product assembly machinery, n.e.c.

393 Product testing, inspecting, and diagnostic machinery, n.e.c.

399\* Other machinery

3990 Other machinery, unspecified

3991 Air compressors  
3992 Garbage disposals  
3993 Incinerators  
3994 Snowblowers  
3995 Snow plows  
3996 Street sweeping and cleaning machinery  
3997 Trash compactors  
3998 Vending machines  
3999 Machinery, n.e.c.

#### 4\* PARTS AND MATERIALS

40 Parts and materials, unspecified  
41\* Building materials--solid elements  
410 Building materials, unspecified  
411\* Bricks, blocks, structural stone  
4110 Bricks, blocks, structural stone, unspecified  
4111 Bricks and pavers  
4112 Concrete blocks, cinder blocks  
4113 Structural stones or slabs, n.e.c.  
4119 Bricks, blocks, structural stone, n.e.c.  
412\* Pipes, ducts, tubing  
4120 Pipes, ducts, tubing, unspecified  
4121 Concrete or clay pipes and conduits  
4122 Ducts  
4123 Metal pipe, tubing  
4124 Pipe fittings  
4125 Plastic or rubber pipe and tubing

4129 Pipes, ducts, tubing, n.e.c.

413\* Structural metal materials

4130 Structural metal materials, unspecified

4131 Angle irons

4132 Bars, rods, reinforcing bar (rebar)

4133 Beams

4134 Grates

4135 Plates, metal panels

4136 Rails

4137 Sheet metal

4139 Structural metal materials, n.e.c.

414\* Tiles, shingles

4140 Tiles, shingles, unspecified

4141 Ceiling tiles

4142 Ceramic or stone tiles--drain, roof, multipurpose

4143 Roof shingles, except tile

4144 Vinyl floor tiles

4149 Tiles, shingles, n.e.c.

415\* Wood, lumber

4150 Wood, lumber, unspecified

4151 Dimensional lumber: 2x4, 2x3, etc.

4152 Plywood, wood paneling; particle, chip, flake board

4153 Wood pieces, trim pieces, n.e.c.

4159 Wood, lumber, n.e.c.

419\* Other building materials--solid elements

4190 Other building materials--solid elements, unspecified

4191 Fencing and screening material, n.e.c.

4192 Flashing

4193 Glass, window panes

4194 Gutters, downspouts

4195 Sheet flooring

4196 Siding--aluminum, vinyl

4197 Structural hardware, n.e.c.

4198 Wallboard, drywall

4199 Other building materials--solid elements, n.e.c.

42\* Fasteners, connectors, ropes, ties

420 Fasteners, connectors, ropes, ties, unspecified

421\* Fasteners

4210 Fasteners, unspecified

4211 Clamps, couplings

4212 Nails, brads, tacks

4213 Nuts, bolts, washers

4214 Rivets

4215 Screws

4216 Spikes

4217 Staples

4219 Fasteners, n.e.c.

422\* Ropes, ties, chains

4220 Ropes, ties, chains, unspecified

4221 Bands

4222 Bungee cords

4223 Chains, n.e.c.

4224 Rope, twine, string

4225 Strapping

4226 Wire--nonelectrical

4229 Ropes, ties, chains, n.e.c.

423 Valves, nozzles

429 Fasteners, connectors, ropes, ties, n.e.c.

43\* Hoisting accessories

430 Hoisting accessories, unspecified

431 Fixtures, load indicators

432 Hooks, shackles, magnets, clamshells

433 Slings

439 Hoisting accessories, n.e.c.

44\* Machine, tool, and electric parts

440 Machine, tool, and electric parts, unspecified

441\* Electric parts

4410 Electric parts, unspecified

4411 Electrical wiring

4412 Generators

4413 Magnetic and electrolytic apparatus

4414 Motors

4415 Power lines, transformers, convertors

4416 Relays, rheostats, starters, controls

4417 Switchboards, switches, fuses

4419 Electric parts, n.e.c.

442\* Machine and appliance parts

4420 Machine and appliance parts, unspecified

4421 Dies, molds, patterns

4422 Drives--chain, leather, fabric, vee belt

4423 Drums, pulleys, sheaves

4424 Engines, turbines, except vehicle

4425 Friction clutches

4426 Gears

4427 Rollers

4429 Machine and appliance parts, n.e.c.

443\* Tool parts, accessories

4430 Tool parts, accessories, unspecified

4431 Drill bits--unattached

4432 Saw blades--unattached

4439 Tool parts, accessories, n.e.c.

449 Machine, tool, and electric parts, n.e.c.

45\* Metal materials--nonstructural

450 Metal materials--nonstructural, unspecified

451 Metal sheets, ingots, bars--nonstructural

452 Molten or hot metals, slag

459 Metal materials--nonstructural, n.e.c.

46\* Tars, sealants, caulking, insulating material

460 Tars, sealants, caulking, insulation, unspecified

461 Asphalt, roofing tar

462 Fiberglass insulation

463 Foam caulking, foam insulation

464 Joint compound, patching compounds

465 Plastic, vinyl caulking

466 Sealants, waterproofers, n.e.c.

469 Tars, sealants, caulking, insulation, n.e.c.

47\* Tarps and sheeting--nonmetal

470 Tarps and sheeting, nonmetal, unspecified

471 Roofing paper, roofing felt

472 Tarps; plastic, or fabric sheeting

479 Tarps and sheeting, nonmetal, n.e.c.

48\* Vehicle and mobile equipment parts

480 Vehicle and mobile equipment parts, unspecified

481\* Tires, inner tubes, wheels

4810 Tires, inner tubes, wheels, unspecified

4811 Bike tires

4812 Tire inner tubes

4813 Tires, except bike

4814 Wheels, tire rims

4819 Tires, inner tubes, wheels, n.e.c.

482\* Engine parts and accessories

4820 Engine parts and accessories, unspecified

4821 Battery

4822 Belts, hoses

4823 Engine block

4824 Fan

4825 Muffler, exhaust

4826 Radiator

4827 Transmission

4829 Engine parts and accessories, n.e.c.

483 Trailers

484 Windshields, vehicle windows

489 Vehicle and mobile equipment parts, n.e.c.

49 Parts and materials, n.e.c.

5\* PERSONS, PLANTS, ANIMALS,

AND MINERALS

51\* Animals and animal products

510 Animals, unspecified

511\* Animal products--nonfood

5110 Animal products--nonfood, unspecified

5111 Bones, shells

5112 Feathers

5113 Fur, wool

5114 Hides--leather

5119 Animal products--nonfood, n.e.c.

512\* Birds and fowl

5120 Birds and fowl, unspecified

5121 Birds, except fowl

5122 Chicken

5123 Ducks

5124 Geese

5125 Turkey

5129 Birds and fowl, n.e.c.

513 Fish, shellfish

514 Insects, arachnids (spiders, ticks, scorpions, etc.)

515\* Mammals, except humans

5150 Mammals, unspecified

5151 Cats

5152 Cattle

5153 Dogs

5154 Horses

5155 Rats, rodents



5156 Sheep

5157 Swine

5159 Mammals, n.e.c.

516 Reptiles, snakes

517 Animal waste products, including manure

519 Animals, n.e.c.

52\* Food products--fresh or processed

520 Food products, unspecified

521 Bakery products, candy, confections, snack foods

522 Beverages, n.e.c.

523 Dairy products

524 Fruits, nuts, vegetables

525 Grains, grain mill products

526 Meat, poultry

527 Seafood

528 Multiple foods or groceries

529\* Other food products--fresh or processed

5291 Fats, oils

5292 Sugar, cocoa, chocolate

5299 Other food products--fresh or processed, n.e.c.

53\* Infectious and parasitic agents

530 Infectious and parasitic agents, unspecified

531 Bacteria

532 Fungi

533 Viruses

539 Infectious and parasitic agents, n.e.c.

54\* Metallic minerals

540 Metallic minerals, unspecified

541 Metal ores--nonradiating

542\* Radiating metals, natural and processed

5420 Radiating metals, natural and processed, unspecified

5421 Plutonium

5422 Radium

5423 Uranium

5429 Radiating metals, natural and processed, n.e.c.

549 Metallic minerals, n.e.c.

55\* Nonmetallic minerals, except fuel

550 Nonmetallic minerals, except fuel, unspecified

551 Asbestos

552 Boulders

553 Clay--natural and processed

554 Dirt, earth

555 Rocks, crushed stone

556 Sand, gravel

557 Silica

559 Nonmetallic minerals, except fuel, n.e.c.

56\* Person--injured or ill worker

561 Bodily conditions of injured, ill worker

562 Bodily motion or position of injured, ill worker

569 Person--injured or ill worker, n.e.c.

57\* Person--other than injured or ill worker

570 Person--other than injured or ill worker, unspecified

571 Bodily fluids or substances of person

572 Co-worker, former co-worker of injured or ill worker

573 Health care patient or resident of health care facility  
574 Relative of injured or ill worker  
579 Person--other than injured or ill worker, n.e.c.  
58\* Plants, trees, vegetation--not processed  
580 Plants, trees, vegetation, unspecified  
581 Cash grain crops  
582 Field crops  
583 Flowers  
584 Houseplants  
585 Poison ivy, oak, sumac  
586 Shrubs, grasses  
587 Trees, logs  
589 Plants, trees, vegetation--not processed, n.e.c.  
59 Persons, plants, animals, and minerals, n.e.c.

## 6\* STRUCTURES AND SURFACES

60 Structures and surfaces, unspecified  
61\* Building systems  
610 Building system, unspecified  
611 Climate control system  
612 Plumbing system  
619 Building system, n.e.c.  
62\* Floors, walkways, ground surfaces  
620 Floors, walkways, ground surfaces, unspecified  
621 Escalators  
622\* Floors  
6220 Floor, unspecified  
6221 Floor of building

6222 Floor of elevator

6223 Floor of mine

6224 Floor of scaffold, staging, or temporary work platform

6225 Floor of vehicle

6229 Floor, n.e.c.

623 Ground

624 Sidewalks, paths, outdoor walkways

625\* Stairs, steps

6250 Stairs, steps, unspecified

6251 Stairs, steps—indoors

626 Street, road

627\* Surfaces below ground level, n.e.c.

6270 Surfaces below ground level, unspecified

6271 Ditches, channels, trenches, excavations

6279 Surfaces below ground level, n.e.c.

628 Parking lots

629\* Other floors, walkways, ground surfaces

6290 Other floors, walkways, ground surfaces, unspecified

6291 Piers, wharfs

6292 Ramps, runways, loading docks

6293 Moving walkways

6299 Floors, walkways, ground surfaces, n.e.c.

63\* Other structural elements

630 Other structural elements, unspecified

631 Doors

632 Fences, fence panels

633 Gates

634 Roof

635 Roof trusses

636 Skylights

637 Walls

638 Windows

639 Structural elements, n.e.c.

64\* Structures

640 Structures, unspecified

641 Bridges, dams, locks

642 Buildings--office, plant, residential

643 Grandstands, stadia

644\* Mines, caves, tunnels

6440 Mines, caves, tunnels, unspecified

6441 Mines, mine tunnels

6442 Pedestrian tunnels

6443 Sewers, manholes, storm drains

6444 Subway and train tunnels

6449 Mines, caves, tunnels, n.e.c.

645 Pools

646\* Scaffolds, staging

6460 Scaffolds--staging, unspecified

6461 Scaffolds--improvised staging

6462 Scaffolds--selfsupporting staging

6463 Scaffolds--staging supported by structure or other means

6464 Scaffolds--suspended staging

6469 Scaffolds--staging, n.e.c.

647 Towers, poles

648\* Other structures

6480 Other structures, unspecified

6481 Guardrails, road dividers

6482 Hydrants

6483 Wells

6489 Structures, n.e.c.

69 Structures and surfaces, n.e.c.

## 7\* TOOLS, INSTRUMENTS, AND

### EQUIPMENT

70 Tools, instruments, and equipment, unspecified

71\* Handtools--nonpowered

710 Handtools--nonpowered, unspecified

711\* Boring handtools--nonpowered

7110 Boring handtools--nonpowered, unspecified

7111 Augers

7112 Braces

7113 Drills

7119 Boring handtools--nonpowered, n.e.c.

712\* Cutting handtools--nonpowered

7120 Cutting handtools--nonpowered, unspecified

7121 Axes, hatchets

7122 Bolt cutters

7123 Chisels

7124 Knives

7125 Saws

7126 Scissors, snips, shears

7129 Cutting handtools--nonpowered, n.e.c.

713\* Digging handtools--nonpowered  
7130 Digging handtools--nonpowered, unspecified  
7131 Hoes  
7132 Picks  
7133 Shovels  
7134 Trowels  
7139 Digging handtools--nonpowered, n.e.c.  
714\* Gripping handtools--nonpowered  
7140 Gripping handtools--nonpowered, unspecified  
7141 Pliers, tongs  
7142 Vises, clamps  
7149 Gripping handtools--nonpowered, n.e.c.  
715\* Measuring handtools--nonpowered  
7150 Measuring handtools--nonpowered, unspecified  
7151 Calipers, micrometers  
7152 Dividers  
7153 Gauges  
7154 Levels  
7155 Plumb bobs  
7156 Rulers, tape measures  
7157 Squares  
7159 Measuring handtools--nonpowered, n.e.c.  
716\* Striking and nailing handtools--nonpowered  
7160 Striking handtools--nonpowered, unspecified  
7161 Hammers  
7162 Mallets  
7163 Punches, counterpunches, countersinks

7164 Sledges

7169 Striking handtools--nonpowered, n.e.c.

717\* Surfacing handtools--nonpowered

7170 Surfacing handtools--nonpowered, unspecified

7171 Files

7172 Planes

7173 Sanders

7174 Sharpening stones and wheels

7179 Surfacing handtools--nonpowered, n.e.c.

718\* Turning handtools--nonpowered

7180 Turning handtools--nonpowered, unspecified

7181 Screwdrivers

7182 Wrenches

7189 Turning handtools--nonpowered, n.e.c.

719\* Other handtools--nonpowered

7190 Other handtools--nonpowered, unspecified

7191 Brooms, mops, and other cleaning tools

7192 Crowbars

7193 Pitchforks, sading forks

7194 Rakes

7195 Stapling tools--nonpowered

7199 Handtools--nonpowered, n.e.c.

72\* Handtools--powered

720 Handtools--powered, unspecified

721\* Boring handtools--powered

7210 Boring handtools--powered, unspecified

7211 Augers--powered



7212 Braces--powered  
7213 Drills--powered  
7214 Routers and molders--powered  
7219 Boring handtools--powered, n.e.c  
722\* Cutting handtools--powered  
7220 Cutting handtools--powered, unspecified  
7221 Chainsaws--powered  
7222 Chisels--powered  
7223 Knives--powered  
7224 Saws--powered, except chainsaws  
7229 Cutting handtools--powered, n.e.c.  
723\* Striking and nailing handtools--powered  
7230 Striking handtools--powered, unspecified  
7231 Hammers--powered  
7232 Jackhammers--powered  
7233 Punches--powered  
7234 Riveters--powered  
7239 Striking handtools--powered, n.e.c.  
724\* Surfacing handtools--powered  
7240 Surfacing handtools--powered, unspecified  
7241 Buffers, polishers, waxers--powered  
7242 Hand grinders--powered  
7243 Sanders--powered  
7244 Sandblasters--powered  
7249 Surfacing handtools--powered, n.e.c.  
725\* Turning handtools--powered  
7250 Turning handtools--powered, unspecified

7251 Bolt setters--powered

7252 Impact wrenches--powered

7253 Screwdrivers--powered

7259 Turning handtools--powered, n.e.c.

726\* Welding and heating handtools--powered

7260 Welding and heating handtools--powered, unspecified

7261 Blow torches

7262 Soldering irons--powered

7263 Welding torches--powered

7269 Welding and heating handtools--powered, n.e.c.

729\* Other handtools--powered

7290 Other handtools--powered, unspecified

7291 Nail guns--powered

7293 Scrubbers--powered

7294 Sprayers--paint

7295 Stapling tools--electric or pneumatic

7299 Handtools--powered, n.e.c.

73\* Handtools--power not determined

730 Handtools--power not determined, unspecified

731\* Boring handtools--power not determined

7310 Boring handtools--power not determined, unspecified

7311 Augers--power not determined

7312 Braces--power not determined

7313 Drills--power not determined

7319 Boring handtools--power not determined, n.e.c.

732\* Cutting handtools--power not determined

7320 Cutting handtools--power not determined, unspecified

7321 Chisels--power not determined

7322 Knives--power not determined

7323 Saws--power not determined

7329 Cutting handtools--power not determined, n.e.c.

733\* Striking and nailing handtools--power not determined

7330 Striking and nailing handtools--power not determined, unspecified

7331 Hammers--power not determined

7332 Punches--power not determined

7339 Striking and nailing handtools--power not determined, n.e.c.

734\* Surfacing handtools--power not determined

7340 Surfacing handtools--power not determined, unspecified

7341 Sanders--power not determined

7349 Surfacing handtools--power not determined, n.e.c.

735\* Turning handtools--power not determined

7350 Turning handtools--power not determined, unspecified

7351 Screwdrivers--power not determined

7352 Wrenches--power not determined

7359 Turning handtools--power not determined, n.e.c.

739\* Other handtools--power not determined

7391 Staplers--power not determined

7399 Handtools--power not determined, n.e.c.

74\* Ladders

740 Ladders, unspecified

741 Ladders--fixed

742\* Ladders--movable

7420 Movable ladders, unspecified

7421 Extension ladders

7422 Step ladders

7423 Straight ladders

7424 Truck mounted ladders, aerial ladder trams

7429 Movable ladders, n.e.c.

749 Ladders, n.e.c.

75\* Medical and surgical instruments

750 Medical and surgical instruments, unspecified

751 Needles and syringes

752 Scalpels

759 Medical and surgical instruments, n.e.c.

76\* Photographic equipment

760 Photographic equipment, unspecified

761 Cameras--still and motion picture

762 Photographic paper and cloth

763 Projectors--still and motion picture

764 Tripods, stands

769 Photographic equipment, n.e.c.

77\* Protective equipment, except clothing

770 Protective equipment, except clothing, unspecified

771 Dust masks

772 Earplugs and hearing protectors

773 Face shields, welding masks

774 Hard hats

775 Lifelines, lanyards, safety belts or harnesses

776 Respirators

777 Safety glasses or goggles

779 Protective equipment, except clothing, n.e.c.

78\* Recreation and athletic equipment

780 Recreation and athletic equipment, unspecified

781 Camping equipment

782 Gymnasium and exercise equipment

783 Playground equipment

784 Riding goods and equipment

785 Snow skiing goods and equipment

786 Water sports equipment

789 Recreation and athletic equipment, n.e.c.

79\* Other tools, instruments, and equipment

791 Clocks

792 Cooking and eating utensils, except knives

793\* Firearms

7930 Firearm, unspecified

7931 Pistol, handgun, revolver

7932 Rifle

7933 Shotgun

7939 Firearm, n.e.c.

794 Health care and orthopedic equipment, n.e.c.

795\* Musical instruments

7950 Musical instrument, unspecified

7951 Pianos

7959 Other musical instruments

796\* Sewing notions, n.e.c.

7960 Sewing notions, unspecified

7961 Fabric pins, safety pins  
7962 Sewing needles  
7969 Sewing notions, n.e.c.  
797 Wheelchairs  
798\* Writing, drawing, and art supplies.  
7980 Writing, drawing, and art supplies, unspecified  
7981 Art supplies and materials, except paint  
7982 Chalk, crayons, marking devices  
7983 Pens and pencils  
7989 Writing, drawing, and art supplies, n.e.c.  
799 Tools, instruments, and equipment, n.e.c

8\* VEHICLES

80 Vehicle, unspecified  
81\* Air vehicle  
810 Aircraft, unspecified  
811\* Aircraft--powered fixed wing  
8110 Aircraft--powered fixed wing, unspecified  
8111 Jet  
8112 Propeller-driven aircraft  
8119 Aircraft--powered fixed wing, n.e.c.  
812\* Aircraft--powered rotary wing  
8120 Aircraft--rotary wing, unspecified  
8121 Helicopter  
8122 Hovercraft  
8129 Aircraft--rotary wing, n.e.c.  
813\* Aircraft--nonpowered  
8130 Aircraft--nonpowered, unspecified

8131 Glider, nonpowered

8132 Parachute

8139 Aircraft--nonpowered, n.e.c.

819 Aircraft, n.e.c.

82\* Highway vehicle, motorized

820 Highway vehicle, unspecified

821 Automobile

822 Bus

823 Motorcycle, moped

824 Motor home, recreational vehicle

825\* Truck

8250 Truck, unspecified

8251 Delivery truck

8252 Dump truck

8253 Pickup truck

8254 Semitrailer, tractor trailer, trailer truck

8259 Truck, n.e.c.

826 Van--passenger or light delivery

829 Highway vehicle, motorized, n.e.c.

83\* Highway vehicle, nonmotorized

830 Highway vehicle, nonmotorized, unspecified

831\* Animal or human powered vehicle

8311 Horse drawn carriage

8312 Bicycle

8319 Animal or human powered vehicle, n.e.c.

839 Highway vehicle, nonmotorized, n.e.c.

84\* Offroad vehicle, nonindustrial

840 Offroad vehicle, nonindustrial, unspecified

841 All terrain vehicle (ATV)

842 Golf cart, powered

843 Snowmobile

849 Offroad vehicle, nonindustrial, n.e.c.

85\* Plant and industrial powered vehicles, tractors

850 Plant and industrial powered vehicles, unspecified

851\* Forklift

8510 Forklift, unspecified

8511 Counterbalance rider--high lift

8512 Hand/rider forklift truck--motorized

8513 Order picker high lift truck

8514 Pallet lift truck--motorized

8515 Platform lift truck--high or low lift

8516 Reach rider lift truck

8517 Single side loader rider truck

8518 Straddle rider lift truck

8519 Forklift, n.e.c.

852\* Powered industrial carrier, except forklifts

8520 Powered industrial carrier, unspecified

8521 Container carrier

8522 Lumber carrier

8523 Stacker carrier

8524 Straddle carrier

8529 Powered industrial carrier, n.e.c.

853 Tractor

859 Plant and industrial powered vehicle, n.e.c.



86\* Plant and industrial vehicle--nonpowered  
860 Plant and industrial vehicle--nonpowered, unspecified  
861 Cart, dolly, handtruck  
862 Wheelbarrow  
869 Plant and industrial vehicle--nonpowered, n.e.c.  
87\* Rail vehicle  
870 Rail vehicle, unspecified  
871 Amusement park rail vehicle  
872 Streetcar, trolley  
873 Subway  
874 Train  
879 Rail vehicle, n.e.c.  
88\* Water vehicle  
880 Water vehicle, unspecified  
881 Barge  
882 Canoe, kayak, rowboat, raft  
883 Jet skis  
884 Motorboat, yachts  
885 Sailboat, sailing ship  
886 Ships--other than sail powered  
887 Tugboat, commercial fishing boat  
889 Water vehicle, n.e.c.  
89 Vehicles, n.e.c.

9\* OTHER SOURCES

91\* Ammunition  
910 Ammunition, unspecified  
911 Bullets

912 Explosive devices

913 Pellets

919 Ammunition, n.e.c.

92\* Apparel and textiles

920 Apparel and textiles, unspecified

921\* Clothing and shoes

9210 Clothing, unspecified

9211 Belts, gloves, neckties, scarves

9212 Blouses, shirts, dresses, trousers, skirts

9213 Hats, caps

9214 Shoes, boots, slippers, sandals

9215 Suits, coats, jackets

9219 Clothing, n.e.c.

922\* Eye glasses, jewelry, and watches

9221 Eye glasses, sunglasses

9222 Jewelry

9223 Watches

923\* Textile products

9230 Textile products, unspecified

9231 Fabric

9232 Yarn, thread

9239 Textile products, n.e.c.

924 Laundry

929 Apparel and textiles, n.e.c.

93\* Atmospheric and environmental conditions

930 Atmospheric and environmental conditions, unspecified

931\* Air pressure

9310 Air pressure, unspecified

9311 High pressure

9312 Low pressure

932 Avalanche, mud slide

933 Earthquake

934\* Fire, flame, smoke

9340 Fire, flame, smoke, unspecified

9341 Fire, flame

9342 Smoke, fire gases

935 Flood

936\* Temperature extremes--environmental

9360 Temperature extremes--environmental, unspecified

9361 Cold--environmental

9362 Heat--environmental

937\* Weather and atmospheric conditions

9370 Weather and atmospheric conditions, unspecified

9371 Fog

9372 High winds, gusts

9373 Ice, sleet, snow

9374 Lightning

9375 Rain

9376 Smog

9377 Tornado, hurricane. typhoon

9379 Weather and atmospheric conditions, n.e.c.

939\* Other environmental conditions

9391 Noise

9392 Sun

9399 Environmental conditions, n.e.c.

94\* Paper, books, magazines

940 Paper, books, magazines, unspecified

941 Books, notebooks, magazines, catalogues

942 Paper, sheets

949 Paper, books, magazines, n.e.c.

95\* Scrap, waste, debris

950 Scrap, waste, debris, unspecified

951\* Chips, particles, splinters

9510 Chips, particles, splinters, unspecified

9511 Dirt particles

9512 Glass chips or fibers

9513 Metal chips, particles

9514 Wood chips, sawdust

9519 Chips, particles, splinters, n.e.c.

952 Sewage

953 Trash, garbage

959 Scrap, waste, debris, n.e.c.

96\* Steam, vapors, liquids, n.e.c.

961 Steam, vapors--nonchemical

962\* Liquids

9620 Liquids, unspecified

9621 Water

9629 Liquids, n.e.c.

98 Other sources, n.e.c.

9999 Nonclassifiable

\* - Asterisks indicate division, major group, or group titles.

Source: U. S. Department of Labor, Bureau of Labor Statistics at [www.bls.gov/iif/osh/iics.htm](http://www.bls.gov/iif/osh/iics.htm)

## Appendix II

### 2000 Standard Occupational Classification (SOC) 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

11-3051 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

11-9110 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, 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

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

11-9110 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, 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 Science Occupations

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 Science Occupations

15-2091 Mathematical Technicians

15-2099 Mathematical Science Occupations, All Other

**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

19-4011 Agricultural and Food Science Technicians

19-4020 Biological Technicians  
19-4021 Biological Technicians  
19-4030 Chemical Technicians  
19-4031 Chemical Technicians  
19-4040 Geological and Petroleum Technicians  
19-4041 Geological and Petroleum Technicians  
19-4050 Nuclear Technicians  
19-4051 Nuclear Technicians  
19-4060 Social Science Research Assistants  
19-4061 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  
21-1011 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  
21-1021 Child, Family, and School Social Workers

21-1022 Medical and Public Health Social Workers  
21-1023 Mental Health and Substance Abuse Social Workers  
21-1029 Social Workers, All Other  
21-1090 Miscellaneous Community and Social Service Specialists  
21-1091 Health Educators  
21-1092 Probation Officers and Correctional Treatment Specialists  
21-1093 Social and Human Service Assistants  
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

**23-0000 Legal Occupations**

23-1000 Lawyers, Judges, and Related Workers  
23-1010 Lawyers  
23-1011 Lawyers  
23-1020 Judges, Magistrates, and Other Judicial Workers  
23-1021 Administrative Law Judges, Adjudicators, and Hearing Officers  
23-1022 Arbitrators, Mediators, and Conciliators  
23-1023 Judges, Magistrate Judges, and Magistrates  
23-2000 Legal Support Workers  
23-2010 Paralegals and Legal Assistants  
23-2011 Paralegals and Legal Assistants

23-2090 Miscellaneous Legal Support Workers

23-2091 Court Reporters

23-2092 Law Clerks

23-2093 Title Examiners, Abstractors, and Searchers

23-2099 Legal Support Workers, All Other

## **25-0000 Education, Training, and Library Occupations**

25-1000 Postsecondary Teachers

25-1010 Business Teachers, Postsecondary

25-1011 Business Teachers, Postsecondary

25-1020 Math and Computer Teachers, Postsecondary

25-1021 Computer Science Teachers, Postsecondary

25-1022 Mathematical Science Teachers, Postsecondary

25-1030 Engineering and Architecture Teachers, Postsecondary

25-1031 Architecture Teachers, Postsecondary

25-1032 Engineering Teachers, Postsecondary

25-1040 Life Sciences Teachers, Postsecondary

25-1041 Agricultural Sciences Teachers, Postsecondary

25-1042 Biological Science Teachers, Postsecondary

25-1043 Forestry and Conservation Science Teachers, Postsecondary

25-1050 Physical Sciences Teachers, Postsecondary

25-1051 Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary

25-1052 Chemistry Teachers, Postsecondary

25-1053 Environmental Science Teachers, Postsecondary

25-1054 Physics Teachers, Postsecondary

25-1060 Social Sciences Teachers, Postsecondary

25-1061 Anthropology and Archeology Teachers, Postsecondary

25-1062 Area, Ethnic, and Cultural Studies Teachers, Postsecondary

25-1063 Economics Teachers, Postsecondary

25-1064 Geography Teachers, Postsecondary

25-1065 Political Science Teachers, Postsecondary

25-1066 Psychology Teachers, Postsecondary

25-1067 Sociology Teachers, Postsecondary

25-1069 Social Sciences Teachers, Postsecondary, All Other

25-1070 Health Teachers, Postsecondary

25-1071 Health Specialties Teachers, Postsecondary

25-1072 Nursing Instructors and Teachers, Postsecondary

25-1080 Education and Library Science Teachers, Postsecondary

25-1081 Education Teachers, Postsecondary

25-1082 Library Science Teachers, Postsecondary

25-1110 Law, Criminal Justice, and Social Work Teachers, Postsecondary

25-1111 Criminal Justice and Law Enforcement Teachers, Postsecondary

25-1112 Law Teachers, Postsecondary

25-1113 Social Work Teachers, Postsecondary

25-1120 Arts, Communications, and Humanities Teachers, Postsecondary

25-1121 Art, Drama, and Music Teachers, Postsecondary

25-1122 Communications Teachers, Postsecondary

25-1123 English Language and Literature Teachers, Postsecondary

25-1124 Foreign Language and Literature Teachers, Postsecondary

25-1125 History Teachers, Postsecondary

25-1126 Philosophy and Religion Teachers, Postsecondary

25-1190 Miscellaneous Postsecondary Teachers

25-1191 Graduate Teaching Assistants

25-1192 Home Economics Teachers, Postsecondary

25-1193 Recreation and Fitness Studies Teachers, Postsecondary

25-1194 Vocational Education Teachers, Postsecondary

25-1199 Postsecondary Teachers, All Other

25-2000 Primary, Secondary, and Special Education School Teachers

25-2010 Preschool and Kindergarten Teachers

25-2011 Preschool Teachers, Except Special Education

25-2012 Kindergarten Teachers, Except Special Education

25-2020 Elementary and Middle School Teachers

25-2021 Elementary School Teachers, Except Special Education

25-2022 Middle School Teachers, Except Special and Vocational Education

25-2023 Vocational Education Teachers, Middle School

25-2030 Secondary School Teachers

25-2031 Secondary School Teachers, Except Special and Vocational Education

25-2032 Vocational Education Teachers, Secondary School

25-2040 Special Education Teachers

25-2041 Special Education Teachers, Preschool, Kindergarten, and Elementary School

25-2042 Special Education Teachers, Middle School

25-2043 Special Education Teachers, Secondary School

25-3000 Other Teachers and Instructors

25-3010 Adult Literacy, Remedial Education, and GED 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

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  
25-4021 Librarians  
25-4030 Library Technicians  
25-4031 Library Technicians  
25-9000 Other Education, Training, and Library Occupations  
25-9010 Audio-Visual Collections Specialists  
25-9011 Audio-Visual Collections Specialists  
25-9020 Farm and Home Management Advisors  
25-9021 Farm and Home Management Advisors  
25-9030 Instructional Coordinators  
25-9031 Instructional Coordinators  
25-9040 Teacher Assistants  
25-9041 Teacher Assistants  
25-9090 Miscellaneous Education, Training, and Library Workers  
25-9099 Education, Training, and Library Workers, All Other

**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

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

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

27-3091 Interpreters and Translators

27-3099 Media and Communication Workers, All Other

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

## **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 First-Line Supervisors/Managers, 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 First-Line Supervisors/Managers, Protective Service Workers

33-1099 First-Line Supervisors/Managers, Protective Service Workers, All Other

33-2000 Fire Fighting and Prevention Workers

33-2010 Fire Fighters

33-2011 Fire Fighters

33-2020 Fire Inspectors

33-2021 Fire Inspectors and Investigators

33-2022 Forest Fire Inspectors and Prevention Specialists

33-3000 Law Enforcement Workers

33-3010 Bailiffs, Correctional Officers, and Jailers

33-3011 Bailiffs

33-3012 Correctional Officers and Jailers

33-3020 Detectives and Criminal Investigators

33-3021 Detectives and Criminal Investigators

33-3030 Fish and Game Wardens

33-3031 Fish and Game Wardens

33-3040 Parking Enforcement Workers

33-3041 Parking Enforcement Workers

33-3050 Police Officers

33-3051 Police and Sheriff's Patrol Officers

33-3052 Transit and Railroad Police  
33-9000 Other Protective Service Workers  
33-9010 Animal Control Workers  
33-9011 Animal Control Workers  
33-9020 Private Detectives and Investigators  
33-9021 Private Detectives and Investigators  
33-9030 Security Guards and Gaming Surveillance Officers  
33-9031 Gaming Surveillance Officers and Gaming Investigators  
33-9032 Security Guards  
33-9090 Miscellaneous Protective Service Workers  
33-9091 Crossing Guards  
33-9092 Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers  
33-9099 Protective Service Workers, All Other

**35-0000 Food Preparation and Serving Related Occupations**

35-1000 Supervisors, Food Preparation and Serving Workers  
35-1010 First-Line Supervisors/Managers, Food Preparation and Serving Workers  
35-1011 Chefs and Head Cooks  
35-1012 First-Line Supervisors/Managers of Food Preparation and Serving Workers  
35-2000 Cooks and Food Preparation Workers  
35-2010 Cooks  
35-2011 Cooks, Fast Food  
35-2012 Cooks, Institution and Cafeteria  
35-2013 Cooks, Private Household  
35-2014 Cooks, Restaurant  
35-2015 Cooks, Short Order  
35-2019 Cooks, All Other

35-2020 Food Preparation Workers

35-2021 Food Preparation Workers

35-3000 Food and Beverage Serving Workers

35-3010 Bartenders

35-3011 Bartenders

35-3020 Fast Food and Counter Workers

35-3021 Combined Food Preparation and Serving Workers, Including Fast Food

35-3022 Counter Attendants, Cafeteria, Food Concession, and Coffee Shop

35-3030 Waiters and Waitresses

35-3031 Waiters and Waitresses

35-3040 Food Servers, Nonrestaurant

35-3041 Food Servers, Nonrestaurant

35-9000 Other Food Preparation and Serving Related Workers

35-9010 Dining Room and Cafeteria Attendants and Bartender Helpers

35-9011 Dining Room and Cafeteria Attendants and Bartender Helpers

35-9020 Dishwashers

35-9021 Dishwashers

35-9030 Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop

35-9031 Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop

35-9090 Miscellaneous Food Preparation and Serving Related Workers

35-9099 Food Preparation and Serving Related Workers, All Other

**37-0000 Building and Grounds Cleaning and Maintenance Occupations**

37-1000 Supervisors, Building and Grounds Cleaning and Maintenance Workers

37-1010 First-Line Supervisors/Managers, Building and Grounds Cleaning and Maintenance Workers

37-1011 First-Line Supervisors/Managers of Housekeeping and Janitorial Workers

37-1012 First-Line Supervisors/Managers of Landscaping, Lawn Service, and Groundskeeping Workers



37-2000 Building Cleaning and Pest Control Workers

37-2010 Building Cleaning Workers

37-2011 Janitors and Cleaners, Except Maids and Housekeeping Cleaners

37-2012 Maids and Housekeeping Cleaners

37-2019 Building Cleaning Workers, All Other

37-2020 Pest Control Workers

37-2021 Pest Control Workers

37-3000 Grounds Maintenance Workers

37-3010 Grounds Maintenance Workers

37-3011 Landscaping and Groundskeeping Workers

37-3012 Pesticide Handlers, Sprayers, and Applicators, Vegetation

37-3013 Tree Trimmers and Pruners

37-3019 Grounds Maintenance Workers, All Other

**39-0000 Personal Care and Service Occupations**

39-1000 Supervisors, Personal Care and Service Workers

39-1010 First-Line Supervisors/Managers of Gaming Workers

39-1011 Gaming Supervisors

39-1012 Slot Key Persons

39-1020 First-Line Supervisors/Managers of Personal Service Workers

39-1021 First-Line Supervisors/Managers of Personal Service Workers

39-2000 Animal Care and Service Workers

39-2010 Animal Trainers

39-2011 Animal Trainers

39-2020 Nonfarm Animal Caretakers

39-2021 Nonfarm Animal Caretakers

39-3000 Entertainment Attendants and Related Workers

39-3010 Gaming Services Workers

39-3011 Gaming Dealers

39-3012 Gaming and Sports Book Writers and Runners

39-3019 Gaming Service Workers, All Other

39-3020 Motion Picture Projectionists

39-3021 Motion Picture Projectionists

39-3030 Ushers, Lobby Attendants, and Ticket Takers

39-3031 Ushers, Lobby Attendants, and Ticket Takers

39-3090 Miscellaneous Entertainment Attendants and Related Workers

39-3091 Amusement and Recreation Attendants

39-3092 Costume Attendants

39-3093 Locker Room, Coatroom, and Dressing Room Attendants

39-3099 Entertainment Attendants and Related Workers, All Other

39-4000 Funeral Service Workers

39-4010 Embalmers

39-4011 Embalmers

39-4020 Funeral Attendants

39-4021 Funeral Attendants

39-5000 Personal Appearance Workers

39-5010 Barbers and Cosmetologists

39-5011 Barbers

39-5012 Hairdressers, Hairstylists, and Cosmetologists

39-5090 Miscellaneous Personal Appearance Workers

39-5091 Makeup Artists, Theatrical and Performance

39-5092 Manicurists and Pedicurists

39-5093 Shampooers

39-5094 Skin Care Specialists

39-6000 Transportation, Tourism, and Lodging Attendants

39-6010 Baggage Porters, Bellhops, and Concierges

39-6011 Baggage Porters and Bellhops

39-6012 Concierges

39-6020 Tour and Travel Guides

39-6021 Tour Guides and Escorts

39-6022 Travel Guides

39-6030 Transportation Attendants

39-6031 Flight Attendants

39-6032 Transportation Attendants, Except Flight Attendants and Baggage Porters

39-9000 Other Personal Care and Service Workers

39-9010 Child Care Workers

39-9011 Child Care Workers

39-9020 Personal and Home Care Aides

39-9021 Personal and Home Care Aides

39-9030 Recreation and Fitness Workers

39-9031 Fitness Trainers and Aerobics Instructors

39-9032 Recreation Workers

39-9040 Residential Advisors

39-9041 Residential Advisors

39-9090 Miscellaneous Personal Care and Service Workers

39-9099 Personal Care and Service Workers, All Other

## **41-0000 Sales and Related Occupations**

41-1000 Supervisors, Sales Workers

41-1010 First-Line Supervisors/Managers, Sales Workers

41-1011 First-Line Supervisors/Managers of Retail Sales Workers

41-1012 First-Line Supervisors/Managers of Non-Retail Sales Workers

41-2000 Retail Sales Workers

41-2010 Cashiers

41-2011 Cashiers

41-2012 Gaming Change Persons and Booth Cashiers

41-2020 Counter and Rental Clerks and Parts Salespersons

41-2021 Counter and Rental Clerks

41-2022 Parts Salespersons

41-2030 Retail Salespersons

41-2031 Retail Salespersons

41-3000 Sales Representatives, Services

41-3010 Advertising Sales Agents

41-3011 Advertising Sales Agents

41-3020 Insurance Sales Agents

41-3021 Insurance Sales Agents

41-3030 Securities, Commodities, and Financial Services Sales Agents

41-3031 Securities, Commodities, and Financial Services Sales Agents

41-3040 Travel Agents

41-3041 Travel Agents

41-3090 Miscellaneous Sales Representatives, Services

41-3099 Sales Representatives, Services, All Other

41-4000 Sales Representatives, Wholesale and Manufacturing

41-4010 Sales Representatives, Wholesale and Manufacturing

41-4011 Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products

41-4012 Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products

41-9000 Other Sales and Related Workers

41-9010 Models, Demonstrators, and Product Promoters

41-9011 Demonstrators and Product Promoters

41-9012 Models

41-9020 Real Estate Brokers and Sales Agents

41-9021 Real Estate Brokers

41-9022 Real Estate Sales Agents

41-9030 Sales Engineers

41-9031 Sales Engineers

41-9040 Telemarketers

41-9041 Telemarketers

41-9090 Miscellaneous Sales and Related Workers

41-9091 Door-To-Door Sales Workers, News and Street Vendors, and Related Workers

41-9099 Sales and Related Workers, All Other

**43-0000 Office and Administrative Support Occupations**

43-1000 Supervisors, Office and Administrative Support Workers

43-1010 First-Line Supervisors/Managers of Office and Administrative Support Workers

43-1011 First-Line Supervisors/Managers of Office and Administrative Support Workers

43-2000 Communications Equipment Operators

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 and Travel Clerks  
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  
45-1012 Farm Labor Contractors  
45-2000 Agricultural Workers  
45-2010 Agricultural Inspectors  
45-2011 Agricultural Inspectors  
45-2020 Animal Breeders  
45-2021 Animal Breeders

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 Farmworkers and Laborers, Crop, Nursery, and Greenhouse  
45-2093 Farmworkers, Farm and Ranch Animals  
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 Fallers  
45-4022 Logging Equipment Operators  
45-4023 Log Graders and Scalers  
45-4029 Logging 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

47-2041 Carpet Installers

47-2042 Floor Layers, Except Carpet, Wood, and Hard Tiles

47-2043 Floor Sanders and Finishers

47-2044 Tile and Marble Setters

47-2050 Cement Masons, Concrete Finishers, and Terrazzo Workers

47-2051 Cement Masons and Concrete Finishers

47-2053 Terrazzo Workers and Finishers

47-2060 Construction Laborers

47-2061 Construction Laborers

47-2070 Construction Equipment Operators

47-2071 Paving, Surfacing, and Tamping Equipment Operators

47-2072 Pile-Driver Operators

47-2073 Operating Engineers and Other Construction Equipment Operators

47-2080 Drywall Installers, Ceiling Tile Installers, and Tapers

47-2081 Drywall and Ceiling Tile Installers

47-2082 Tapers

47-2110 Electricians

47-2111 Electricians

47-2120 Glaziers

47-2121 Glaziers

47-2130 Insulation Workers

47-2131 Insulation Workers, Floor, Ceiling, and Wall

47-2132 Insulation Workers, Mechanical

47-2140 Painters and Paperhangers

47-2141 Painters, Construction and Maintenance

47-2142 Paperhangers

47-2150 Pipelayers, Plumbers, Pipefitters, and Steamfitters

47-2151 Pipelayers

47-2152 Plumbers, Pipefitters, and Steamfitters

47-2160 Plasterers and Stucco Masons

47-2161 Plasterers and Stucco Masons

47-2170 Reinforcing Iron and Rebar Workers

47-2171 Reinforcing Iron and Rebar Workers

47-2180 Roofers

47-2181 Roofers

47-2210 Sheet Metal Workers

47-2211 Sheet Metal Workers

47-2220 Structural Iron and Steel Workers

47-2221 Structural Iron and Steel Workers

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

47-4040 Hazardous Materials Removal Workers

47-4041 Hazardous Materials Removal Workers

47-4050 Highway Maintenance Workers

47-4051 Highway Maintenance Workers

47-4060 Rail-Track Laying and Maintenance Equipment Operators

47-4061 Rail-Track Laying and Maintenance Equipment Operators

47-4070 Septic Tank Servicers and Sewer Pipe Cleaners

47-4071 Septic Tank Servicers and Sewer Pipe Cleaners

47-4090 Miscellaneous Construction and Related Workers

47-4091 Segmental Pavers

47-4099 Construction and Related Workers, All Other

47-5000 Extraction Workers

47-5010 Derrick, Rotary Drill, and Service Unit Operators, Oil, Gas, and Mining

47-5011 Derrick Operators, Oil and Gas

47-5012 Rotary Drill Operators, Oil and Gas

47-5013 Service Unit Operators, Oil, Gas, and Mining

47-5020 Earth Drillers, Except Oil and Gas

47-5021 Earth Drillers, Except Oil and Gas

47-5030 Explosives Workers, Ordnance Handling Experts, and Blasters

47-5031 Explosives Workers, Ordnance Handling Experts, and Blasters

47-5040 Mining Machine Operators

47-5041 Continuous Mining Machine Operators

47-5042 Mine Cutting and Channeling Machine Operators

47-5049 Mining Machine Operators, All Other

47-5050 Rock Splitters, Quarry

47-5051 Rock Splitters, Quarry

47-5060 Roof Bolters, Mining

47-5061 Roof Bolters, Mining

47-5070 Roustabouts, Oil and Gas

47-5071 Roustabouts, Oil and Gas

47-5080 Helpers--Extraction Workers

47-5081 Helpers--Extraction Workers

47-5090 Miscellaneous Extraction Workers

47-5099 Extraction Workers, All Other

#### **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

49-9050 Line Installers and Repairers

49-9051 Electrical Power-Line Installers and Repairers

49-9052 Telecommunications Line Installers and Repairers

49-9060 Precision Instrument and Equipment Repairers

49-9061 Camera and Photographic Equipment Repairers

49-9062 Medical Equipment Repairers

49-9063 Musical Instrument Repairers and Tuners

49-9064 Watch Repairers

49-9069 Precision Instrument and Equipment Repairers, All Other

49-9090 Miscellaneous Installation, Maintenance, and Repair Workers

49-9091 Coin, Vending, and Amusement Machine Servicers and Repairers



49-9092 Commercial Divers  
49-9093 Fabric Menders, Except Garment  
49-9094 Locksmiths and Safe Repairers  
49-9095 Manufactured Building and Mobile Home Installers  
49-9096 Riggers  
49-9097 Signal and Track Switch Repairers  
49-9098 Helpers--Installation, Maintenance, and Repair Workers  
49-9099 Installation, Maintenance, and Repair Workers, All Other

**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

51-4031 Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic

51-4032 Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic

51-4033 Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic

51-4034 Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic

51-4035 Milling and Planning Machine 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

51-4072 Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic

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

51-4191 Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic

51-4192 Lay-Out Workers, Metal and Plastic

51-4193 Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic

51-4194 Tool Grinders, Filers, and Sharpeners

51-4199 Metal Workers and Plastic Workers, All Other

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 Workers

51-6091 Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers

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

51-9012 Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders

51-9020 Crushing, Grinding, Polishing, Mixing, and Blending Workers

51-9021 Crushing, Grinding, and 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

51-9041 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

51-9196 Paper Goods Machine Setters, Operators, and Tenders

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

53-1021 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 Airline Pilots, Copilots, and Flight Engineers

53-2012 Commercial Pilots

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

53-7121 Tank Car, Truck, and Ship Loaders

53-7190 Miscellaneous Material Moving Workers

53-7199 Material Moving Workers, All Other

### **55-0000 Military Specific Occupations**

55-1000 Military Officer Special and Tactical Operations Leaders/Managers

55-1010 Military Officer Special and Tactical Operations Leaders/Managers

55-1011 Air Crew Officers

55-1012 Aircraft Launch and Recovery Officers

55-1013 Armored Assault Vehicle Officers

55-1014 Artillery and Missile Officers

55-1015 Command and Control Center Officers

55-1016 Infantry Officers

55-1017 Special Forces Officers

55-1019 Military Officer Special and Tactical Operations Leaders/Managers, All Other

55-2000 First-Line Enlisted Military Supervisor/Managers

55-2010 First-Line Enlisted Military Supervisors/Managers

55-2011 First-Line Supervisors/Managers of Air Crew Members

55-2012 First-Line Supervisors/Managers of Weapons Specialists/Crew Members

55-2013 First-Line Supervisors/Managers of All Other Tactical Operations Specialists

55-3000 Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members

55-3010 Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members

55-3011 Air Crew Members

55-3012 Aircraft Launch and Recovery Specialists

55-3013 Armored Assault Vehicle Crew Members

55-3014 Artillery and Missile Crew Members

55-3015 Command and Control Center Specialists

55-3016 Infantry

55-3017 Radar and Sonar Technicians

55-3018 Special Forces

55-3019 Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members, All Other

Source: Department of Labor, Bureau of Labor Statistics, Standard Occupational Classification Structure

[www.bls.gov/soc/2000/socguide.html#link2](http://www.bls.gov/soc/2000/socguide.html#link2)

**Appendix III**  
**2000 Standard Occupational Classification (SOC) Structure Major Groups**

11-0000 Management Occupations  
13-0000 Business and Financial Operations Occupations  
15-0000 Computer and Mathematical Occupations  
17-0000 Architecture and Engineering Occupations  
19-0000 Life, Physical, and Social Science Occupations  
21-0000 Community and Social Services Occupations  
23-0000 Legal Occupations  
25-0000 Education, Training, and Library Occupations  
27-0000 Arts, Design, Entertainment, Sports, and Media Occupations  
29-0000 Healthcare Practitioners and Technical Occupations  
31-0000 Healthcare Support Occupations  
33-0000 Protective Service Occupations  
35-0000 Food Preparation and Serving Related Occupations  
37-0000 Building and Grounds Cleaning and Maintenance Occupations  
39-0000 Personal Care and Service Occupations  
41-0000 Sales and Related Occupations  
43-0000 Office and Administrative Support Occupations  
45-0000 Farming, Fishing, and Forestry Occupations  
47-0000 Construction and Extraction Occupations  
49-0000 Installation, Maintenance, and Repair Occupations  
51-0000 Production Occupations  
53-0000 Transportation and Material Moving Occupations

NOTE: This list includes only those major groups used in the current data tables.

Source: Department of Labor, Bureau of Labor Statistics, Standard Occupational Classification Structure  
([www.bls.gov/soc/2000/socguide.htm#LINK2](http://www.bls.gov/soc/2000/socguide.htm#LINK2))

## Appendix IV

### National Occupational Research Agenda (NORA) and Census of Fatal Occupational Injury (CFOI) Industry Categories

| NORA Sector Group                            | NAICS Industry Codes  |
|--|---|
| Agriculture, Forestry and Fishing            | 111110--115310  |
| Construction                                 | 236115--238990  |
| Healthcare and Social Assistance             | 621111--624410  |
| Manufacturing                                | 311111--339999  |
| Mining                                       | 212111--212399 and 213113--213115   |
| Oil and Gas Extraction                       | 211111--211112 and 213111--213112   |
| Public Safety                                | 115310, 621910, 922120, 922140, and 922160  |
| Services                                     | 511110--562998, 611110--611710, 711110--713990,<br>721110--722410, 811111--814110, 921110--928120 |
| Transportation, Warehousing and<br>Utilities | 481111--493190 and 221111--221330   |
| Wholesale and Retail Trade                   | 423110--425120 and 441110--454390   |

| CFOI Industry Division                       | NAICS Industry Codes   |
|--|------------------------|
| Construction                                 | 23                     |
| Education and health services                | 61, 62                 |
| Financial activities                         | 52, 53                 |
| Information                                  | 51                     |
| Leisure and hospitality                      | 71, 72                 |
| Manufacturing                                | 31, 32, 33             |
| Natural resources and mining                 | 11, 21                 |
| Other services, except public administration | 81                     |
| Professional and business services           | 54, 55, 56             |
| Public administration                        | 92                     |
| Trade, transportation, and utilities         | 22, 42, 44, 45, 48, 49 |
| Unclassified                                 | 99                     |

Source: Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health (NIOSH); Department of Labor, Bureau of Labor Statistics (BLS)

## Appendix V

### Selected SOC Occupational and NAICS Industry Categories

| Occupation Code | 2000 Standard Occupational Classification (SOC) Title                         |
|-----------------|---|
| 53-3032         | Truck Drivers, Heavy and Tractor-Trailer                                      |
| 11-9012         | Farmers and Ranchers  |
| 47-2061         | Construction Laborers   |
| 33-3051         | Police and Sheriff's Patrol Officers  |
| 41-1011         | First-Line Supervisors/Managers of Retail Sales Workers                       |
| 53-7062         | Laborers and Freight, Stock, and Material Movers, Hand                        |
| 47-1011         | First-Line Supervisors/Managers of Construction Trades and Extraction Workers |
| 47-2031         | Carpenters  |
| 37-3011         | Landscaping and Groundskeeping Workers  |
| 47-2111         | Electricians  |

Source: Department of Labor, Bureau of Labor Statistics, Standard Occupational Classification Structure ([www.bls.gov.gov/soc/2000/socguide.htm#LINK2](http://www.bls.gov.gov/soc/2000/socguide.htm#LINK2))



| Industry Code | North American Industry Classification Systems (NAICS) Title |
|---------------|--|
| 238           | Specialty Trade Contractors                                  |
| 484           | Truck Transportation   |
| 111           | Crop Production  |
| 561           | Administrative and Support Services                          |
| 237           | Heavy and Civil Engineering Construction                     |
| 236           | Construction of Buildings                                    |
| 922           | Justice, Public Order, and Safety Activities                 |
| 112           | Animal Production  |
| 722           | Food Services and Drinking Places                            |
| 811           | Repair and Maintenance                                       |
|               |  |

Source: Department of Commerce, Bureau of Census ([www.census.gov/eos/www/naics/](http://www.census.gov/eos/www/naics/))

Industry data from 2003 to 2008 are classified using the 2002 North American Industry Classification System (NAICS). Industry data after 2008 are classified using the 2007 NAICS. Adoption of NAICS 2007 did not result in series breaks (<http://www.bls.gov/opub/hom/pdf/homch9.pdf>)

**Appendix VI**  
**Inflation Adjustment Factors Based**  
**on Consumer Price Index**  
**(Medical Care Major Group)**

| Base Year | Original CPI Number | Dollar Year |           |           |           |           |           |           |           |
|-----------|---------------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|           |                     | 2003        | 2004      | 2005      | 2006      | 2007      | 2008      | 2009      | 2010      |
| 2003      | 297.1               | 1           | 0.958078  | 0.919245  | 0.8837002 | 0.8463085 | 0.8160631 | 0.7909737 | 0.7648622 |
| 2004      | 310.1               | 1.0437563   | 1         | 0.9594678 | 0.9223676 | 0.8833399 | 0.851771  | 0.8255838 | 0.7983297 |
| 2005      | 323.2               | 1.0878492   | 1.0422444 | 1         | 0.9613325 | 0.9206561 | 0.8877536 | 0.8604601 | 0.8320547 |
| 2006      | 336.2               | 1.1316055   | 1.0841664 | 1.0402228 | 1         | 0.9576874 | 0.9234615 | 0.8950702 | 0.8655222 |
| 2007      | 351.054             | 1.1816022   | 1.1320671 | 1.0861819 | 1.044182  | 1         | 0.9642619 | 0.9346162 | 0.9037628 |
| 2008      | 364.065             | 1.2253955   | 1.1740245 | 1.1264387 | 1.0828822 | 1.0370627 | 1         | 0.9692556 | 0.9372586 |
| 2009      | 375.613             | 1.2642646   | 1.2112641 | 1.1621689 | 1.1172308 | 1.0699579 | 1.0317196 | 1         | 0.9669881 |
| 2010      | 388.436             | 1.3074251   | 1.2526153 | 1.2018441 | 1.1553718 | 1.106485  | 1.0669413 | 1.0341389 | 1         |

Source: U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index (Medical Care Major Group)

**Appendix VII**  
**Probability of Surviving an Additional Year by Age, Race, and Sex**

| Black   |         | Other   |         |
|---------|---------|---------|---------|
| Male    | Female  | Male    | Female  |
| 0.99890 | 0.99962 | 0.99918 | 0.99963 |
| 0.99866 | 0.99957 | 0.99903 | 0.99958 |
| 0.99842 | 0.99951 | 0.99891 | 0.99956 |
| 0.99818 | 0.99945 | 0.99882 | 0.99955 |
| 0.99792 | 0.99939 | 0.99872 | 0.99955 |
| 0.99765 | 0.99932 | 0.99862 | 0.99954 |
| 0.99747 | 0.99926 | 0.99857 | 0.99953 |
| 0.99741 | 0.99922 | 0.99857 | 0.99952 |
| 0.99745 | 0.99918 | 0.99861 | 0.99951 |
| 0.99753 | 0.99915 | 0.99867 | 0.99950 |
| 0.99758 | 0.99910 | 0.99871 | 0.99949 |
| 0.99761 | 0.99905 | 0.99873 | 0.99947 |
| 0.99759 | 0.99898 | 0.99872 | 0.99944 |
| 0.99753 | 0.99890 | 0.99868 | 0.99941 |
| 0.99745 | 0.99882 | 0.99864 | 0.99937 |
| 0.99738 | 0.99872 | 0.99858 | 0.99932 |
| 0.99727 | 0.99861 | 0.99851 | 0.99927 |
| 0.99714 | 0.99848 | 0.99842 | 0.99920 |
| 0.99699 | 0.99833 | 0.99832 | 0.99912 |

|         |         |         |         |
|---------|---------|---------|---------|
| 0.99683 | 0.99819 | 0.99820 | 0.99904 |
| 0.99664 | 0.99804 | 0.99808 | 0.99896 |
| 0.99641 | 0.99786 | 0.99794 | 0.99887 |
| 0.99612 | 0.99765 | 0.99778 | 0.99876 |
| 0.99577 | 0.99741 | 0.99760 | 0.99865 |
| 0.99540 | 0.99715 | 0.99741 | 0.99853 |
| 0.99501 | 0.99688 | 0.99720 | 0.99840 |
| 0.99456 | 0.99661 | 0.99697 | 0.99826 |
| 0.99404 | 0.99634 | 0.99671 | 0.99813 |
| 0.99345 | 0.99606 | 0.99643 | 0.99799 |
| 0.99278 | 0.99575 | 0.99612 | 0.99784 |
| 0.99207 | 0.99542 | 0.99578 | 0.99767 |
| 0.99136 | 0.99507 | 0.99543 | 0.99748 |
| 0.99069 | 0.99472 | 0.99510 | 0.99727 |
| 0.99005 | 0.99435 | 0.99478 | 0.99703 |
| 0.98938 | 0.99395 | 0.99444 | 0.99678 |
| 0.98863 | 0.99352 | 0.99407 | 0.99651 |
| 0.98783 | 0.99305 | 0.99364 | 0.99621 |
| 0.98693 | 0.99253 | 0.99312 | 0.99586 |
| 0.98592 | 0.99195 | 0.99251 | 0.99546 |
| 0.98475 | 0.99129 | 0.99177 | 0.99499 |
| 0.98344 | 0.99052 | 0.99095 | 0.99446 |

|          |         |         |         |         |         |         |
|----------|---------|---------|---------|---------|---------|---------|
| 57 to 58 | 0.99072 | 0.99428 | 0.98209 | 0.98970 | 0.99006 | 0.99388 |
| 58 to 59 | 0.98983 | 0.99370 | 0.98080 | 0.98887 | 0.98914 | 0.99328 |
| 59 to 60 | 0.98891 | 0.99309 | 0.97961 | 0.98803 | 0.98821 | 0.99266 |
| 60 to 61 | 0.98788 | 0.99241 | 0.97844 | 0.98718 | 0.98718 | 0.99196 |
| 61 to 62 | 0.98669 | 0.99162 | 0.97717 | 0.98624 | 0.98600 | 0.99117 |
| 62 to 63 | 0.98540 | 0.99078 | 0.97571 | 0.98519 | 0.98471 | 0.99031 |
| 63 to 64 | 0.98403 | 0.98990 | 0.97394 | 0.98398 | 0.98333 | 0.98941 |
| 64 to 65 | 0.98257 | 0.98898 | 0.97188 | 0.98261 | 0.98184 | 0.98846 |
| 65 to 66 | 0.98106 | 0.98800 | 0.96968 | 0.98115 | 0.98029 | 0.98744 |
| 66 to 67 | 0.97949 | 0.98705 | 0.96733 | 0.97974 | 0.97870 | 0.98647 |
| 67 to 68 | 0.97765 | 0.98594 | 0.96478 | 0.97823 | 0.97684 | 0.98536 |
| 68 to 69 | 0.97551 | 0.98465 | 0.96201 | 0.97661 | 0.97469 | 0.98407 |
| 69 to 70 | 0.97311 | 0.98320 | 0.95904 | 0.97485 | 0.97229 | 0.98261 |
| 70 to 71 | 0.97059 | 0.98162 | 0.95591 | 0.97297 | 0.96974 | 0.98102 |
| 71 to 72 | 0.96785 | 0.97982 | 0.95258 | 0.97088 | 0.96698 | 0.97921 |
| 72 to 73 | 0.96475 | 0.97770 | 0.94899 | 0.96849 | 0.96387 | 0.97708 |
| 73 to 74 | 0.96124 | 0.97525 | 0.94511 | 0.96578 | 0.96034 | 0.97460 |
| 74 to 75 | 0.95733 | 0.97246 | 0.94097 | 0.96281 | 0.95641 | 0.97178 |
| 75 to 76 | 0.95300 | 0.96932 | 0.93659 | 0.95962 | 0.95208 | 0.96863 |
| 76 to 77 | 0.94835 | 0.96591 | 0.93199 | 0.95618 | 0.94745 | 0.96521 |
| 77 to 78 | 0.94326 | 0.96213 | 0.92707 | 0.95246 | 0.94239 | 0.96143 |
| 78 to 79 | 0.93770 | 0.95795 | 0.92184 | 0.94844 | 0.93688 | 0.95726 |
| 79 to 80 | 0.93163 | 0.95333 | 0.91626 | 0.94410 | 0.93088 | 0.95267 |
| 80 to 81 | 0.92502 | 0.94823 | 0.91032 | 0.93941 | 0.92436 | 0.94760 |

|           |         |         |         |         |         |         |
|-----------|---------|---------|---------|---------|---------|---------|
| 81 to 82  | 0.91783 | 0.94261 | 0.90400 | 0.93436 | 0.91728 | 0.94203 |
| 82 to 83  | 0.91002 | 0.93642 | 0.89729 | 0.92892 | 0.90960 | 0.93591 |
| 83 to 84  | 0.90154 | 0.92961 | 0.89016 | 0.92307 | 0.90128 | 0.92918 |
| 84 to 85  | 0.89236 | 0.92213 | 0.88261 | 0.91678 | 0.89229 | 0.92181 |
| 85 to 86  | 0.88244 | 0.91393 | 0.87461 | 0.91003 | 0.88258 | 0.91375 |
| 86 to 87  | 0.87173 | 0.90496 | 0.86615 | 0.90279 | 0.87213 | 0.90493 |
| 87 to 88  | 0.86020 | 0.89516 | 0.85721 | 0.89503 | 0.86089 | 0.89532 |
| 88 to 89  | 0.84782 | 0.88448 | 0.84777 | 0.88672 | 0.84883 | 0.88487 |
| 89 to 90  | 0.83455 | 0.87286 | 0.83784 | 0.87785 | 0.83593 | 0.87351 |
| 90 to 91  | 0.82037 | 0.86026 | 0.82738 | 0.86839 | 0.82216 | 0.86122 |
| 91 to 92  | 0.80525 | 0.84664 | 0.81640 | 0.85832 | 0.80750 | 0.84793 |
| 92 to 93  | 0.78919 | 0.83194 | 0.80489 | 0.84761 | 0.79194 | 0.83362 |
| 93 to 94  | 0.77218 | 0.81614 | 0.79283 | 0.83624 | 0.77546 | 0.81825 |
| 94 to 95  | 0.75423 | 0.79921 | 0.78024 | 0.82421 | 0.75809 | 0.80179 |
| 95 to 96  | 0.73535 | 0.78114 | 0.76710 | 0.81148 | 0.73981 | 0.78425 |
| 96 to 97  | 0.71556 | 0.76193 | 0.75343 | 0.79806 | 0.72067 | 0.76560 |
| 97 to 98  | 0.69491 | 0.74159 | 0.73923 | 0.78395 | 0.70069 | 0.74586 |
| 98 to 99  | 0.67344 | 0.72015 | 0.72451 | 0.76913 | 0.67991 | 0.72506 |
| 99 to 100 | 0.65122 | 0.69766 | 0.70928 | 0.75361 | 0.65840 | 0.70323 |

Source: Centers for Disease Control and Prevention, National Center for Health Statistics: Vital Statistics of the United States, National Vital Statistics Reports, Volume 57, Number 1, August 5, 2008

**Appendix VIII**

**Adjustment to Earnings by Age and Sex of Decedent at Time of Death**

**Male**

| Age | Year of Death |          |         |         |          |          |          |          |
|-----|---------------|----------|---------|---------|----------|----------|----------|----------|
|     | 2003          | 2004     | 2005    | 2006    | 2007     | 2008     | 2009     | 2010     |
| 16  | 0.421582      | 0.432907 | 0.44889 | 0.45689 | 0.434987 | 0.440664 | 0.41801  | 0.389624 |
| 17  | 0.456517      | 0.468285 | 0.48368 | 0.49286 | 0.466841 | 0.471115 | 0.449389 | 0.422512 |
| 18  | 0.491451      | 0.503664 | 0.51847 | 0.52883 | 0.498695 | 0.501566 | 0.480769 | 0.4554   |
| 19  | 0.526386      | 0.539042 | 0.55325 | 0.5648  | 0.530548 | 0.532018 | 0.512149 | 0.488289 |
| 20  | 0.56132       | 0.574421 | 0.58804 | 0.60077 | 0.562402 | 0.562469 | 0.543529 | 0.521177 |
| 21  | 0.596255      | 0.609799 | 0.62283 | 0.63674 | 0.594256 | 0.59292  | 0.574908 | 0.554066 |
| 22  | 0.631189      | 0.645178 | 0.65761 | 0.67271 | 0.62611  | 0.623371 | 0.606288 | 0.586954 |
| 23  | 0.666124      | 0.680557 | 0.6924  | 0.70868 | 0.657963 | 0.653822 | 0.637668 | 0.619842 |
| 24  | 0.701058      | 0.715935 | 0.72719 | 0.74465 | 0.689817 | 0.684273 | 0.669048 | 0.652731 |
| 25  | 0.735993      | 0.751314 | 0.76197 | 0.78062 | 0.721671 | 0.714724 | 0.700427 | 0.685619 |
| 26  | 0.770927      | 0.786692 | 0.79676 | 0.81659 | 0.753525 | 0.745175 | 0.731807 | 0.718507 |
| 27  | 0.805862      | 0.822071 | 0.83154 | 0.85256 | 0.785379 | 0.775627 | 0.763187 | 0.751396 |
| 28  | 0.840796      | 0.857449 | 0.86633 | 0.88854 | 0.817232 | 0.806078 | 0.794567 | 0.784284 |
| 29  | 0.875731      | 0.892828 | 0.90112 | 0.92451 | 0.849086 | 0.836529 | 0.825946 | 0.817172 |
| 30  | 0.910665      | 0.928207 | 0.9359  | 0.96048 | 0.88094  | 0.86698  | 0.857326 | 0.850061 |
| 31  | 0.937902      | 0.958108 | 0.96647 | 0.99141 | 0.909008 | 0.895426 | 0.885287 | 0.878701 |
| 32  | 0.957442      | 0.982533 | 0.99282 | 1.01732 | 0.93329  | 0.921867 | 0.909829 | 0.903095 |
| 33  | 0.976982      | 1.006957 | 1.01917 | 1.04322 | 0.957572 | 0.948308 | 0.934371 | 0.927488 |
| 34  | 0.996521      | 1.031382 | 1.04552 | 1.06913 | 0.981854 | 0.974749 | 0.958913 | 0.951881 |
| 35  | 1.016061      | 1.055806 | 1.07187 | 1.09503 | 1.006136 | 1.00119  | 0.983455 | 0.976274 |
| 36  | 1.035601      | 1.080231 | 1.09822 | 1.12094 | 1.030418 | 1.027632 | 1.007998 | 1.000667 |

|    |          |          |         |         |          |          |          |          |
|----|----------|----------|---------|---------|----------|----------|----------|----------|
| 37 | 1.05514  | 1.104655 | 1.12457 | 1.14684 | 1.0547   | 1.054073 | 1.03254  | 1.025061 |
| 38 | 1.07468  | 1.12908  | 1.15091 | 1.17275 | 1.078982 | 1.080514 | 1.057082 | 1.049454 |
| 39 | 1.09422  | 1.153505 | 1.17726 | 1.19865 | 1.103264 | 1.106955 | 1.081624 | 1.073847 |
| 40 | 1.113759 | 1.177929 | 1.20361 | 1.22456 | 1.127546 | 1.133396 | 1.106166 | 1.09824  |
| 41 | 1.127082 | 1.194064 | 1.21908 | 1.24203 | 1.142037 | 1.148434 | 1.121551 | 1.112803 |
| 42 | 1.134187 | 1.20191  | 1.22367 | 1.25105 | 1.146736 | 1.152068 | 1.127778 | 1.117536 |
| 43 | 1.141292 | 1.209755 | 1.22826 | 1.26008 | 1.151436 | 1.155702 | 1.134005 | 1.122269 |
| 44 | 1.148398 | 1.2176   | 1.23285 | 1.26911 | 1.156136 | 1.159336 | 1.140232 | 1.127002 |
| 45 | 1.155503 | 1.225446 | 1.23744 | 1.27814 | 1.160836 | 1.16297  | 1.146459 | 1.131735 |
| 46 | 1.162608 | 1.233291 | 1.24203 | 1.28717 | 1.165535 | 1.166604 | 1.152686 | 1.136468 |
| 47 | 1.169714 | 1.241137 | 1.24661 | 1.2962  | 1.170235 | 1.170238 | 1.158913 | 1.141201 |
| 48 | 1.176819 | 1.248982 | 1.2512  | 1.30523 | 1.174935 | 1.173872 | 1.16514  | 1.145934 |
| 49 | 1.183924 | 1.256828 | 1.25579 | 1.31426 | 1.179634 | 1.177506 | 1.171368 | 1.150667 |
| 50 | 1.19103  | 1.264673 | 1.26038 | 1.32329 | 1.184334 | 1.18114  | 1.177595 | 1.1554   |
| 51 | 1.194212 | 1.26756  | 1.26282 | 1.32818 | 1.188251 | 1.182895 | 1.180586 | 1.159284 |
| 52 | 1.193472 | 1.265487 | 1.26312 | 1.32892 | 1.191384 | 1.182769 | 1.180342 | 1.162318 |
| 53 | 1.192732 | 1.263415 | 1.26341 | 1.32966 | 1.194517 | 1.182644 | 1.180098 | 1.165352 |
| 54 | 1.191992 | 1.261343 | 1.26371 | 1.3304  | 1.19765  | 1.182519 | 1.179853 | 1.168386 |
| 55 | 1.191252 | 1.25927  | 1.26401 | 1.33114 | 1.200783 | 1.182393 | 1.179609 | 1.17142  |
| 56 | 1.190511 | 1.257198 | 1.2643  | 1.33188 | 1.203916 | 1.182268 | 1.179365 | 1.174454 |
| 57 | 1.189771 | 1.255125 | 1.2646  | 1.33262 | 1.20705  | 1.182143 | 1.179121 | 1.177488 |
| 58 | 1.189031 | 1.253053 | 1.2649  | 1.33336 | 1.210183 | 1.182018 | 1.178877 | 1.180522 |
| 59 | 1.188291 | 1.250981 | 1.26519 | 1.3341  | 1.213316 | 1.181892 | 1.178632 | 1.183556 |
| 60 | 1.187551 | 1.248908 | 1.26549 | 1.33484 | 1.216449 | 1.181767 | 1.178388 | 1.18659  |
| 61 | 1.170972 | 1.232921 | 1.25002 | 1.31715 | 1.201893 | 1.169799 | 1.167643 | 1.176881 |
| 62 | 1.138554 | 1.20302  | 1.21878 | 1.28103 | 1.169648 | 1.14599  | 1.146398 | 1.15443  |



|    |          |          |         |         |          |          |          |          |
|----|----------|----------|---------|---------|----------|----------|----------|----------|
| 63 | 1.106136 | 1.173118 | 1.18755 | 1.24491 | 1.137402 | 1.12218  | 1.125153 | 1.131978 |
| 64 | 1.073718 | 1.143217 | 1.15632 | 1.20879 | 1.105157 | 1.098371 | 1.103907 | 1.109527 |
| 65 | 1.0413   | 1.113315 | 1.12508 | 1.17267 | 1.072911 | 1.074561 | 1.082662 | 1.087075 |
| 66 | 1.008882 | 1.083414 | 1.09385 | 1.13656 | 1.040666 | 1.050752 | 1.061416 | 1.064624 |
| 67 | 0.976464 | 1.053512 | 1.06262 | 1.10044 | 1.00842  | 1.026942 | 1.040171 | 1.042172 |
| 68 | 0.944046 | 1.02361  | 1.03138 | 1.06432 | 0.976175 | 1.003133 | 1.018926 | 1.019721 |
| 69 | 0.911628 | 0.993709 | 1.00015 | 1.0282  | 0.94393  | 0.979323 | 0.99768  | 0.997269 |
| 70 | 0.87921  | 0.963807 | 0.96891 | 0.99208 | 0.911684 | 0.955514 | 0.976435 | 0.974818 |

**Female**

| Age | YEAR OF DEATH |          |         |         |          |          |          |
|-----|---------------|----------|---------|---------|----------|----------|----------|
|     | 2003          | 2004     | 2005    | 2006    | 2007     | 2008     | 2009     |
| 16  | 0.586801      | 0.582105 | 0.5887  | 0.62027 | 0.528339 | 0.515125 | 0.501522 |
| 17  | 0.619374      | 0.619274 | 0.62707 | 0.65784 | 0.558958 | 0.546944 | 0.533486 |
| 18  | 0.651946      | 0.656442 | 0.66543 | 0.69541 | 0.589577 | 0.578762 | 0.565449 |
| 19  | 0.684518      | 0.69361  | 0.7038  | 0.73298 | 0.620195 | 0.61058  | 0.597412 |
| 20  | 0.71709       | 0.730779 | 0.74217 | 0.77055 | 0.650814 | 0.642398 | 0.629376 |
| 21  | 0.749663      | 0.767947 | 0.78054 | 0.80811 | 0.681433 | 0.674216 | 0.661339 |
| 22  | 0.782235      | 0.805116 | 0.8189  | 0.84568 | 0.712052 | 0.706034 | 0.693303 |
| 23  | 0.814807      | 0.842284 | 0.85727 | 0.88325 | 0.742671 | 0.737853 | 0.725266 |
| 24  | 0.84738       | 0.879452 | 0.89564 | 0.92082 | 0.77329  | 0.769671 | 0.75723  |
| 25  | 0.879952      | 0.916621 | 0.93401 | 0.95839 | 0.803909 | 0.801489 | 0.789193 |
| 26  | 0.912524      | 0.953789 | 0.97237 | 0.99595 | 0.834528 | 0.833307 | 0.821157 |
| 27  | 0.945097      | 0.990958 | 1.01074 | 1.03352 | 0.865147 | 0.865125 | 0.85312  |
| 28  | 0.977669      | 1.028126 | 1.04911 | 1.07109 | 0.895765 | 0.896944 | 0.885084 |
| 29  | 1.010241      | 1.065294 | 1.08748 | 1.10866 | 0.926384 | 0.928762 | 0.917047 |
| 30  | 1.042814      | 1.102463 | 1.12584 | 1.14623 | 0.957003 | 0.96058  | 0.949011 |
| 31  | 1.063196      | 1.125743 | 1.14982 | 1.1712  | 0.978094 | 0.981113 | 0.9707   |
| 32  | 1.071389      | 1.135135 | 1.15941 | 1.18359 | 0.989658 | 0.990361 | 0.982116 |
| 33  | 1.079582      | 1.144527 | 1.16901 | 1.19598 | 1.001221 | 0.999608 | 0.993531 |
| 34  | 1.087775      | 1.153919 | 1.1786  | 1.20837 | 1.012785 | 1.008856 | 1.004947 |
| 35  | 1.095968      | 1.163311 | 1.18819 | 1.22076 | 1.024349 | 1.018103 | 1.016362 |
| 36  | 1.104161      | 1.172703 | 1.19778 | 1.23315 | 1.035912 | 1.027351 | 1.027778 |
| 37  | 1.112354      | 1.182095 | 1.20737 | 1.24554 | 1.047476 | 1.036599 | 1.039193 |

|    |          |          |         |         |          |          |          |
|----|----------|----------|---------|---------|----------|----------|----------|
| 38 | 1.120548 | 1.191487 | 1.21697 | 1.25793 | 1.059039 | 1.045846 | 1.050609 |
| 39 | 1.128741 | 1.200879 | 1.22656 | 1.27032 | 1.070603 | 1.055094 | 1.062024 |
| 40 | 1.136934 | 1.210271 | 1.23615 | 1.28271 | 1.082166 | 1.064342 | 1.07344  |
| 41 | 1.144127 | 1.216666 | 1.24324 | 1.2903  | 1.088681 | 1.070925 | 1.079376 |
| 42 | 1.150322 | 1.220063 | 1.24784 | 1.2931  | 1.090147 | 1.074843 | 1.079833 |
| 43 | 1.156517 | 1.22346  | 1.25244 | 1.2959  | 1.091612 | 1.078762 | 1.080289 |
| 44 | 1.162712 | 1.226857 | 1.25703 | 1.2987  | 1.093078 | 1.08268  | 1.080746 |
| 45 | 1.168906 | 1.230254 | 1.26163 | 1.30149 | 1.094544 | 1.086599 | 1.081202 |
| 46 | 1.175101 | 1.233651 | 1.26622 | 1.30429 | 1.09601  | 1.090517 | 1.081659 |
| 47 | 1.181296 | 1.237049 | 1.27082 | 1.30709 | 1.097476 | 1.094436 | 1.082116 |
| 48 | 1.187491 | 1.240446 | 1.27542 | 1.30989 | 1.098941 | 1.098354 | 1.082572 |
| 49 | 1.193685 | 1.243843 | 1.28001 | 1.31268 | 1.100407 | 1.102273 | 1.083029 |
| 50 | 1.19988  | 1.24724  | 1.28461 | 1.31548 | 1.101873 | 1.106191 | 1.083486 |
| 51 | 1.20018  | 1.247939 | 1.28641 | 1.31678 | 1.102769 | 1.108464 | 1.084855 |
| 52 | 1.194585 | 1.245941 | 1.28541 | 1.31658 | 1.103094 | 1.109091 | 1.087139 |
| 53 | 1.188989 | 1.243943 | 1.28441 | 1.31638 | 1.10342  | 1.109718 | 1.089422 |
| 54 | 1.183394 | 1.241944 | 1.28341 | 1.31618 | 1.103746 | 1.110345 | 1.091705 |
| 55 | 1.177799 | 1.239946 | 1.28241 | 1.31598 | 1.104072 | 1.110972 | 1.093988 |
| 56 | 1.172204 | 1.237948 | 1.28141 | 1.31578 | 1.104397 | 1.111599 | 1.096271 |
| 57 | 1.166608 | 1.235949 | 1.28041 | 1.31558 | 1.104723 | 1.112226 | 1.098554 |
| 58 | 1.161013 | 1.233951 | 1.27941 | 1.31538 | 1.105049 | 1.112853 | 1.100837 |
| 59 | 1.155418 | 1.231953 | 1.27841 | 1.31518 | 1.105375 | 1.11348  | 1.10312  |
| 60 | 1.149823 | 1.229955 | 1.27741 | 1.31498 | 1.1057   | 1.114107 | 1.105403 |
| 61 | 1.132637 | 1.215267 | 1.26223 | 1.30009 | 1.094055 | 1.102821 | 1.097032 |
| 62 | 1.103862 | 1.18789  | 1.23285 | 1.27052 | 1.07044  | 1.079624 | 1.078006 |
| 63 | 1.075086 | 1.160514 | 1.20348 | 1.24095 | 1.046824 | 1.056426 | 1.05898  |

|    |          |          |         |         |          |          |          |
|----|----------|----------|---------|---------|----------|----------|----------|
| 64 | 1.046311 | 1.133137 | 1.1741  | 1.21137 | 1.023208 | 1.033229 | 1.039954 |
| 65 | 1.017535 | 1.10576  | 1.14473 | 1.1818  | 0.999593 | 1.010031 | 1.020928 |
| 66 | 0.98876  | 1.078383 | 1.11535 | 1.15222 | 0.975977 | 0.986834 | 1.001903 |
| 67 | 0.959984 | 1.051007 | 1.08598 | 1.12265 | 0.952362 | 0.963636 | 0.982877 |
| 68 | 0.931208 | 1.02363  | 1.0566  | 1.09307 | 0.928746 | 0.940439 | 0.963851 |
| 69 | 0.902433 | 0.996253 | 1.02723 | 1.0635  | 0.90513  | 0.917241 | 0.944825 |
| 70 | 0.873657 | 0.968876 | 0.99785 | 1.03392 | 0.881515 | 0.894044 | 0.925799 |

## Appendix IX

### Inflation Adjustment Factors Based on Gross Domestic Product Deflator

| Year of Death | Initial GDP | Dollar Year |          |         |          |          |          |          |          |
|---------------|-------------|-------------|----------|---------|----------|----------|----------|----------|----------|
|               |             | 2003        | 2004     | 2005    | 2006     | 2007     | 2008     | 2009     | 2010     |
| 2003          | 94.10       | 1           | 0.972409 | 0.941   | 0.911318 | 0.885264 | 0.866331 | 0.858459 | 0.85036  |
| 2004          | 96.77       | 1.028374    | 1        | 0.9677  | 0.937176 | 0.910382 | 0.890912 | 0.882817 | 0.874488 |
| 2005          | 100.00      | 1.062699    | 1.033378 | 1       | 0.968457 | 0.940769 | 0.920649 | 0.912284 | 0.903677 |
| 2006          | 103.26      | 1.097311    | 1.067035 | 1.03257 | 1        | 0.97141  | 0.950635 | 0.941997 | 0.93311  |
| 2007          | 106.30      | 1.129607    | 1.09844  | 1.06296 | 1.029431 | 1        | 0.978613 | 0.969721 | 0.960573 |
| 2008          | 108.62      | 1.154293    | 1.122445 | 1.08619 | 1.051929 | 1.021854 | 1        | 0.990914 | 0.981565 |
| 2009          | 109.62      | 1.164878    | 1.132737 | 1.09615 | 1.061575 | 1.031224 | 1.00917  | 1        | 0.990566 |
| 2010          | 110.66      | 1.175972    | 1.143526 | 1.10659 | 1.071685 | 1.041046 | 1.018781 | 1.009524 | 1        |

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Implicit Price Deflators for  
Gross Domestic Product

**Appendix X**

**Adjustment Factors for Increases Associated with Career Growth by Age, Sex, and Race**

| Age | Male      |           |           | Female    |           |           |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|
|     | Other     | White     | Black     | Other     | White     | Black     |
| 16  | 1.178421  | 1.1807463 | 1.1499645 | 1.110945  | 1.110392  | 1.1135419 |
| 17  | 1.178421  | 1.1807463 | 1.1499645 | 1.110945  | 1.110392  | 1.1135419 |
| 18  | 1.178421  | 1.1807463 | 1.1499645 | 1.110945  | 1.110392  | 1.1135419 |
| 19  | 1.178421  | 1.1807463 | 1.1499645 | 1.110945  | 1.110392  | 1.1135419 |
| 20  | 1.178421  | 1.1807463 | 1.1499645 | 1.110945  | 1.110392  | 1.1135419 |
| 21  | 1.178421  | 1.1807463 | 1.1499645 | 1.110945  | 1.110392  | 1.1135419 |
| 22  | 1.178421  | 1.1807463 | 1.1499645 | 1.110945  | 1.110392  | 1.1135419 |
| 23  | 1.178421  | 1.1807463 | 1.1499645 | 1.110945  | 1.110392  | 1.1135419 |
| 24  | 1.178421  | 1.1807463 | 1.1499645 | 1.110945  | 1.110392  | 1.1135419 |
| 25  | 1.0386253 | 1.0390839 | 1.0257374 | 1.0145462 | 1.013302  | 1.0110395 |
| 26  | 1.0386253 | 1.0390839 | 1.0257374 | 1.0145462 | 1.013302  | 1.0110395 |
| 27  | 1.0386253 | 1.0390839 | 1.0257374 | 1.0145462 | 1.013302  | 1.0110395 |
| 28  | 1.0386253 | 1.0390839 | 1.0257374 | 1.0145462 | 1.013302  | 1.0110395 |
| 29  | 1.0386253 | 1.0390839 | 1.0257374 | 1.0145462 | 1.013302  | 1.0110395 |
| 30  | 1.0386253 | 1.0390839 | 1.0257374 | 1.0145462 | 1.013302  | 1.0110395 |
| 31  | 1.0386253 | 1.0390839 | 1.0257374 | 1.0145462 | 1.013302  | 1.0110395 |
| 32  | 1.0386253 | 1.0390839 | 1.0257374 | 1.0145462 | 1.013302  | 1.0110395 |
| 33  | 1.0386253 | 1.0390839 | 1.0257374 | 1.0145462 | 1.013302  | 1.0110395 |
| 34  | 1.0386253 | 1.0390839 | 1.0257374 | 1.0145462 | 1.013302  | 1.0110395 |
| 35  | 1.0088495 | 1.0086268 | 1.0047512 | 1.0004308 | 1.0004565 | 1.0090623 |
| 36  | 1.0088495 | 1.0086268 | 1.0047512 | 1.0004308 | 1.0004565 | 1.0090623 |

**Appendix X**

**Adjustment Factors for Increases Associated with Career Growth by Age, Sex, and Race**

| Age | Male      |           |           | Female    |           |           |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|
|     | Other     | White     | Black     | Other     | White     | Black     |
| 37  | 1.0088495 | 1.0086268 | 1.0047512 | 1.0004308 | 1.0004565 | 1.0090623 |
| 38  | 1.0088495 | 1.0086268 | 1.0047512 | 1.0004308 | 1.0004565 | 1.0090623 |
| 39  | 1.0088495 | 1.0086268 | 1.0047512 | 1.0004308 | 1.0004565 | 1.0090623 |
| 40  | 1.0088495 | 1.0086268 | 1.0047512 | 1.0004308 | 1.0004565 | 1.0090623 |
| 41  | 1.0088495 | 1.0086268 | 1.0047512 | 1.0004308 | 1.0004565 | 1.0090623 |
| 42  | 1.0088495 | 1.0086268 | 1.0047512 | 1.0004308 | 1.0004565 | 1.0090623 |
| 43  | 1.0088495 | 1.0086268 | 1.0047512 | 1.0004308 | 1.0004565 | 1.0090623 |
| 44  | 1.0088495 | 1.0086268 | 1.0047512 | 1.0004308 | 1.0004565 | 1.0090623 |
| 45  | 0.9864074 | 0.9867512 | 0.9781418 | 0.9815216 | 0.9827107 | 0.9722566 |
| 46  | 0.9864074 | 0.9867512 | 0.9781418 | 0.9815216 | 0.9827107 | 0.9722566 |
| 47  | 0.9864074 | 0.9867512 | 0.9781418 | 0.9815216 | 0.9827107 | 0.9722566 |
| 48  | 0.9864074 | 0.9867512 | 0.9781418 | 0.9815216 | 0.9827107 | 0.9722566 |
| 49  | 0.9864074 | 0.9867512 | 0.9781418 | 0.9815216 | 0.9827107 | 0.9722566 |
| 50  | 0.9864074 | 0.9867512 | 0.9781418 | 0.9815216 | 0.9827107 | 0.9722566 |
| 51  | 0.9864074 | 0.9867512 | 0.9781418 | 0.9815216 | 0.9827107 | 0.9722566 |
| 52  | 0.9864074 | 0.9867512 | 0.9781418 | 0.9815216 | 0.9827107 | 0.9722566 |
| 53  | 0.9864074 | 0.9867512 | 0.9781418 | 0.9815216 | 0.9827107 | 0.9722566 |
| 54  | 0.9864074 | 0.9867512 | 0.9781418 | 0.9815216 | 0.9827107 | 0.9722566 |
| 55  | 0.9678103 | 0.9674387 | 0.9734898 | 0.9847603 | 0.9856224 | 0.9727295 |
| 56  | 0.9678103 | 0.9674387 | 0.9734898 | 0.9847603 | 0.9856224 | 0.9727295 |

**Appendix X (Cont'd)**

**Adjustment Factors for Increases Associated with Career Growth by Age, Sex, and Race**

| Age | Male      |           |           | Female    |           |           |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|
|     | Other     | White     | Black     | Other     | White     | Black     |
| 57  | 0.9678103 | 0.9674387 | 0.9734898 | 0.9847603 | 0.9856224 | 0.9727295 |
| 58  | 0.9678103 | 0.9674387 | 0.9734898 | 0.9847603 | 0.9856224 | 0.9727295 |
| 59  | 0.9678103 | 0.9674387 | 0.9734898 | 0.9847603 | 0.9856224 | 0.9727295 |
| 60  | 0.9678103 | 0.9674387 | 0.9734898 | 0.9847603 | 0.9856224 | 0.9727295 |
| 61  | 0.9678103 | 0.9674387 | 0.9734898 | 0.9847603 | 0.9856224 | 0.9727295 |
| 62  | 0.9678103 | 0.9674387 | 0.9734898 | 0.9847603 | 0.9856224 | 0.9727295 |
| 63  | 0.9678103 | 0.9674387 | 0.9734898 | 0.9847603 | 0.9856224 | 0.9727295 |
| 64  | 0.9678103 | 0.9674387 | 0.9734898 | 0.9847603 | 0.9856224 | 0.9727295 |
| 65  | 0.9774616 | 0.9774221 | 0.9736104 | 0.9928663 | 0.993195  | 0.9830658 |
| 66  | 0.9774616 | 0.9774221 | 0.9736104 | 0.9928663 | 0.993195  | 0.9830658 |
| 67  | 0.9774616 | 0.9774221 | 0.9736104 | 0.9928663 | 0.993195  | 0.9830658 |



**Appendix XI**

**Annual Household Production Values by Age and Sex**

| Age | Male       | Female     | Age | Male      | Female    |
|-----|------------|------------|-----|-----------|-----------|
| 16  | \$5,299.80 | \$5,799.85 | 42  | 10,278.40 | 15,665.80 |
| 17  | 5,299.80   | 5,799.85   | 43  | 10,278.40 | 15,665.80 |
| 18  | 6,088.20   | 11,081.40  | 44  | 10,278.40 | 15,665.80 |
| 19  | 6,088.20   | 11,081.40  | 45  | 10,716.40 | 15,366.50 |
| 20  | 6,088.20   | 11,081.40  | 46  | 10,716.40 | 15,366.50 |
| 21  | 6,088.20   | 11,081.40  | 47  | 10,716.40 | 15,366.50 |
| 22  | 6,088.20   | 11,081.40  | 48  | 10,716.40 | 15,366.50 |
| 23  | 6,088.20   | 11,081.40  | 49  | 10,716.40 | 15,366.50 |
| 24  | 6,088.20   | 11,081.40  | 50  | 10,716.40 | 15,366.50 |
| 25  | 8,792.85   | 13,873.65  | 51  | 10,716.40 | 15,366.50 |
| 26  | 8,792.85   | 13,873.65  | 52  | 10,716.40 | 15,366.50 |
| 27  | 8,792.85   | 13,873.65  | 53  | 10,716.40 | 15,366.50 |
| 28  | 8,792.85   | 13,873.65  | 54  | 10,716.40 | 15,366.50 |
| 29  | 8,792.85   | 13,873.65  | 55  | 12,647.25 | 16,939.65 |
| 30  | 8,792.85   | 13,873.65  | 56  | 12,647.25 | 16,939.65 |
| 31  | 8,792.85   | 13,873.65  | 57  | 12,647.25 | 16,939.65 |
| 32  | 8,792.85   | 13,873.65  | 58  | 12,647.25 | 16,939.65 |
| 33  | 8,792.85   | 13,873.65  | 59  | 12,647.25 | 16,939.65 |
| 34  | 8,792.85   | 13,873.65  | 60  | 12,647.25 | 16,939.65 |
| 35  | 10,278.40  | 15,665.80  | 61  | 12,647.25 | 16,939.65 |
| 36  | 10,278.40  | 15,665.80  | 62  | 12,647.25 | 16,939.65 |
| 37  | 10,278.40  | 15,665.80  | 63  | 12,647.25 | 16,939.65 |

|    |           |           |    |           |           |
|----|-----------|-----------|----|-----------|-----------|
| 38 | 10,278.40 | 15,665.80 | 64 | 12,647.25 | 16,939.65 |
| 39 | 10,278.40 | 15,665.80 | 65 | 13,870.00 | 16,571.00 |
| 40 | 10,278.40 | 15,665.80 | 66 | 13,870.00 | 16,571.00 |
| 41 | 10,278.40 | 15,665.80 | 67 | 13,870.00 | 16,571.00 |

**Appendix XII**

**Sensitivity of Cost Estimates to Selected Discount Rates**

| Year of Death | 0% Discount Rate                  | 3% Discount Rate | 5% Discount Rate | 10% Discount Rate |
|---------------|-----------------------------------|------------------|------------------|-------------------|
|               | Total Lifetime Costs <sup>1</sup> |                  |                  |                   |
| 2003          | \$8,422,880                       | \$5,843,403      | \$4,816,130      | \$3,357,577       |
| 2004          | 8,809,340                         | 6,156,261        | 5,092,855        | 3,572,046         |
| 2005          | 8,654,954                         | 6,046,164        | 5,002,193        | 3,510,820         |
| 2006          | 9,005,509                         | 6,306,447        | 5,223,769        | 3,673,451         |
| 2007          | 8,070,957                         | 5,648,446        | 4,680,155        | 3,296,978         |
| 2008          | 7,416,457                         | 5,225,040        | 4,342,629        | 3,073,656         |
| 2009          | 6,192,369                         | 4,417,402        | 3,694,587        | 2,642,956         |
| 2010          | 6,490,631                         | 4,626,045        | 3,867,905        | 2,766,660         |
| Total         | 63,063,098                        | 44,269,208       | 36,720,223       | 25,894,145        |

<sup>1</sup>Costs are expressed in 2010U.S.dollars and presented in thousands.

| Year of Death | 0% Discount Rate        |                           | 3% Discount Rate        |                           | 5% Discount Rate        |                           | 10% Discount Rate       |                           |
|---------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|
|               | Mean Costs <sup>1</sup> | Median Costs <sup>1</sup> | Mean Costs <sup>1</sup> | Median Costs <sup>1</sup> | Mean Costs <sup>1</sup> | Median Costs <sup>1</sup> | Mean Costs <sup>1</sup> | Median Costs <sup>1</sup> |
| 2003          | \$1,536                 | \$1,533                   | \$1,066                 | \$1,047                   | \$878                   | \$858                     | \$612                   | \$594                     |
| 2004          | 1,552                   | 1,536                     | 1,085                   | 1,060                     | 897                     | 879                       | 629                     | 615                       |
| 2005          | 1,530                   | 1,536                     | 1,069                   | 1,048                     | 884                     | 865                       | 621                     | 601                       |
| 2006          | 1,561                   | 1,559                     | 1,093                   | 1,082                     | 906                     | 888                       | 637                     | 621                       |
| 2007          | 1,449                   | 1,459                     | 1,014                   | 1,007                     | 840                     | 831                       | 592                     | 581                       |
| 2008          | 1,443                   | 1,448                     | 1,017                   | 1,006                     | 845                     | 831                       | 598                     | 579                       |

|       |       |       |       |       |     |     |     |     |
|-------|-------|-------|-------|-------|-----|-----|-----|-----|
| 2009  | 1,388 | 1,394 | 990   | 973   | 828 | 808 | 593 | 575 |
| 2010  | 1,403 | 1,373 | 1,000 | 971   | 836 | 811 | 598 | 580 |
| Total | 1,488 | 1,486 | 1,045 | 1,027 | 866 | 848 | 611 | 593 |

<sup>1</sup>Costs are expressed in 2010 U.S. dollars and presented in thousands.