Industry and Occupation (I&O) data as applicable to mortality vital statistics, 2020: History, Background, and Control Tables

Andrea L. Steege, Rachael Billock, Arialdi Miniño

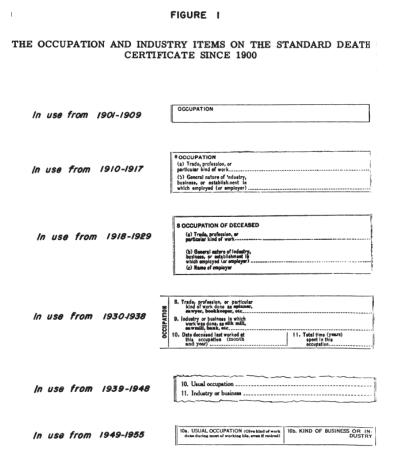
Summary

Starting with the 2020 data year, NCHS and the National Institute for Occupational Safety and Health (NIOSH) began a collaboration to translate Industry and Occupation information, submitted by jurisdictions to NCHS as part of their death certificate data, to US Census Bureau Industry and Occupation codes. As part of this program, Census codes and groupings for Industry and Occupation are now included as four new fields in the mortality multiple cause of death file for 47 jurisdictions. This document provides a short background on previous applications of the Industry and Occupation fields in mortality analyses, introductions to the new program and quality control process for Industry and Occupation coding, specific information on the death certificate fields where data originated, and instructions for processing the data, including use of Supplemental codes. The total numbers of records with Industry and Occupation codes and control tables with individual and grouped Industry and Occupation of death occupation of residence, and jurisdiction of death occurrence are included for data users to check their own analyses.

History and background

From 1850 through 1900, collection of vital statistics was done through the decennial census. Annual collection of mortality statistics through death certificates began with calendar year 1900 when a standard certificate was designed to improve uniformity of data collection. The United States Standard Certificate of Death has requested information on the occupation of the decedent since the first Standard Certificate in 1900, and on the industry of the decedent since 1910. Starting in 1939, the occupation field on death certificates changed from "occupation" to "usual occupation" (1) (2).

Figure 1. History of the inclusion of occupation and industry variables in standard death certificates (1).



Tabulations of mortality by occupation were made for 1870, 1880, and 1890 based on reports in the decennial census and continued with data drawn from death certificates in 1900 and 1908. Tabulations for 1910 and 1920 were completed but not published due to data limitations. Data evaluations compared industry and occupation (I&O) reported on death certificates with I&O from the decennial census to assess the potential use of census data as denominators for calculation of death rates by occupation. Two problems noted were mismatched I&O and the fact that census did not collect I&O for retired persons. Other discrepancies between the two data sources include differences in reporters (self for census, informant for death certificates) and questions (current I&O for census versus usual I&O for death certificates). An analysis of 1950 data focused on those under 65 years of age to account for lack of Census data on retired persons (1). A vital statistics special report in five parts, Mortality in 1950 by Occupation and Industry (3), was published on these data.

A different approach to examining I&O was investigated in studies using 1950, 1973 and 1975 death certificate data. Investigators at NCHS, the US Bureau of the Census (Census), and the National Institute for Occupational Safety and Health (NIOSH) sought to examine whether the I&O entries on death certificates could be coded to a level of detail that was sufficiently meaningful. Over the three studies, they found that approximately 90% of occupation entries were codable (including those not in the labor force). In the 1973 study, the percent codable was higher for female than male decedents (88% vs 76%, respectively). The 1975 study assessed codability by race and age, in addition to sex. In this study, occupation of decedents of races other than white were less codable than occupation of white decedents (88% vs 91%, respectively). These findings include "outside the labor force" entries such as Armed forces, students, housewives, and retired decedents. Industry was less codable than occupation (81% versus 91%) with similar results for sex and race. Both I&O entries of decedents ages 65 years and older were more codable than records of younger decedents (4).

A focus on the environment and health in the 1970s prompted a renewed interest in various data sources, including the I&O items on death certificates (5). Throughout the 1980s, NIOSH, NCHS, Census, the Association for Vital Records and Health Statistics (AVRHS, currently the National Association for Public Health Statistics and Information Systems or NAPHSIS) and later the National Cancer Institute (NCI) collaborated to improve the quality of I&O data collected on death certificates (6). Activities included: 1) adoption of the 1980 Bureau of Census occupational and industrial classification system (7); 2) publication of an instruction manual for I&O coding based on the Census manual for coding I&O data; 3) provision of training for state coders and quality control resources for coding; 4) development of a computer editing program to detect records with invalid codes; and 5) publication of an updated *Guidelines for Reporting Occupation and Industry on Death Certificates* by NCHS, with funding by NIOSH. Additional activities included development of a computer software package for proportionate mortality ratio analysis, funding for programs to aid state health departments in I&O coding for death certificates, and inclusion of I&O statements in routinely-collected vital statistics data (6).

Based on these activities, several states began submitting I&O data in coded, machine-readable form to NCHS in 1984. The first report using these data was a Monthly Vital Statistics Report Supplement that used 1984 data from 12 states (8). It described the data and presented cause-specific estimates of relative mortality for male and female workers in broad I&O categories. This initial report was followed by a major and more representative report on occupational mortality for 24 states for 1984 through 1988 (9). These types of reports have been used primarily to provide readily available background data to inform suspected associations between an occupation or industry and excess mortality.

The intra-agency collaborative program that began in 1984 was discontinued due to lack of funding, and the last data year that information on the decedent's usual I&O was integrated with mortality data was 1998. Although this specific initiative ended, NCHS and NIOSH continued efforts to code I&O narratives from death certificates to standardized codes and titles and conduct surveillance of mortality by occupation through the <u>NIOSH National Occupational Mortality Surveillance (NOMS)</u> program (10). The NOMS website includes a PMR Query System to look up Proportionate Mortality Ratios (PMRs) for combinations of occupation and cause of death, or industry and cause of death for death certificate data through 2014. Analyses of specific occupations, industries or causes of death have also been published from NOMS data (11). A few recent titles include: Law enforcement worker suicide: an updated national assessment (12), Mortality Among Persons with Both Asthma and Chronic Obstructive Pulmonary Disease Aged ≥25 Years, by Industry and Occupation—United States, 1999–2016 (13); and Occupational

patterns in unintentional and undetermined drug-involved and opioid-involved overdose deaths - United States, 2007-2012 (14).

NOMS collaborated directly with states to code data through data year 2014. Initially, NIOSH trained the states to code their data using the <u>US Census Bureau's Alphabetical Indexes of Industries and</u> <u>Occupations</u> (15) as had been done by NCHS previously. The Alphabetical Indexes is a list of Industries and Occupations that Census compiles from the decennial Census, the American Community Survey, and other surveys they administer. In 2010, NIOSH released the NIOSH Industry and Occupation Computerized Coding System (NIOCCS) and began allowing states to submit I&O narrative text from their death certificates in electronic form for coding. Some states preferred to code their own data with NIOSH training using NIOCCS through 2014 (16).

Also, during this time, the publication *Guidelines for Reporting Occupation and Industry on Death Certificates* was updated in 2012 by NIOSH in paper and electronic form and has recently been published in Spanish (17). NIOSH also maintains a <u>webpage</u> (18) with tips for funeral directors on collecting I&O information.

Widespread adoption of Electronic Death Registration Systems by jurisdictions and further development of NIOCCS allowed for the current efforts to expand access to coded I&O data.

Current program

In 2018, NCHS and NIOSH signed a Shared Benefit Agreement to prepare to code I&O narratives. This agreement included a month-long pre-pilot to test the systems created to automate exchange of data between NIOSH and NCHS in the first year. NCHS provided a file to NIOSH with I&O narratives and NIOSH returned a file to NCHS with Census industry and occupation codes. A pilot program for calendar year 2019 with ten states further tested the collaborative systems. A task was added to the Vital Statistics Cooperative Program (VSCP) contract with these ten states to formalize the process. The VSCP is a formal arrangement between NCHS and jurisdictions that provides for the sharing of data between jurisdictions and NCHS. NCHS can then edit, code, tabulate and publish vital statistics for the nation. This program began in 1973 and has changed over time. Currently, 5-year contracts are negotiated by NCHS and NAPHSIS (19). In 2020, this VSCP special project was expanded to include 47 states and jurisdictions. The Shared Benefit Agreement also included returning the data to jurisdictions and, depending on evaluation of data provided, including I&O codes in the National Vital Statistics System (NVSS) public use mortality data file. Collection of I&O narratives from all jurisdictions is included in the core VSCP contract that begins in calendar year 2022.

NIOSH staff process I&O narratives using the NIOCCS autocoder. After initial coding, narratives receive three levels of review by NIOSH expert coding staff: 1) Coder Review; 2) Quality Control (QC) Review; and 3) Consistency Review. In 2020, 214,711 records underwent coder review, and 210,085 records underwent QC Review. All records were reviewed for consistency (to detect intra-coder differences). Further documentation of this process is available upon request (20). NIOCCS outputs codes based on multiple classification systems, including the Census Industry and Occupation Classification system (21). Census Industry and Occupation codes have been used for mortality data since the beginning of the NCHS/NIOSH collaboration and may be aligned with other national data sources (7).

The US Standard Certificate of Death instructions for Occupation and Industry

The 2003 revision of the US Standard Certificate of Death (22), which the states use as a model, includes "Decedent's Usual Occupation" and "Kind of Business/Industry." See **Figure 2**, items 54 and 55. I&O information on the death certificate is reported by a funeral director as provided by an informant, when available.

Figure 2. Items 51 – 55 of the 2003 U.S. Standard Certificate of Death.

Γ		51. DECEDENT'S EDUCATION-Check the box that best describes the highest degree or level of	52. DECEDENT OF HISPANIC ORIGIN? Check the box that best describes whether the decedent is	 DECEDENT'S RACE (Check one or more races to indicate what the decedent considered himself or herself to be)
		school completed at the time of death.	Spanish/Hispanic/Latino. Check the "No" box if decedent is not Spanish/Hispanic/Latino.	White Black or African American
		 9th - 12th grade; no diploma 		 American Indian or Alaska Native (Name of the enrolled or principal tribe)
	æ	High school graduate or GED completed	No, not Spanish/Hispanic/Latino Yes. Mexican. Mexican American. Chicano	Asian Indian Chinese Filipino
A P	C1	 Some college credit, but no degree 		□ Japanese □ Korean
plete	DIRE	Associate degree (e.g., AA, AS)	Yes, Puerto Rican	Vietnamese Other Asian (Specify)
Com	RAL	 Bachelor's degree (e.g., BA, AB, BS) 	Yes, Cuban	Native Hawaiian Guamanian or Chamorro
Bo	FUNERAL DIRECTOR	 Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA) 	Yes, other Spanish/Hispanic/Latino (Specify)	Samoan Other Pacific Islander (Specify)
ŀ		 Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD) 		Other (Specify)
			te type of work done during most of working life. DO NOT USE RETI	RED).
		55. KIND OF BUSINESS/INDUSTRY		

Additional information is provided in the instructions for the 2003 standard death certificate, including an explanation of "Usual Occupation" (Figure 3). Usual occupation is the occupation the person did for "most of his or her working life." The funeral director is directed to provide the longest held paid occupation. This is not necessarily the occupation that the decedent was doing at the time of death. The kind of business/industry is the industry corresponding to the longest held occupation. Funeral directors may also consult the NIOSH document <u>Guidelines for Reporting Occupation and Industry on Death</u> <u>Certificates (17).</u>

Figure 3. 2003 U.S. Standard Certificate of Death, funeral director instructions for selected items.

ITEMS 54 AND 55. OCCUPATION AND INDUSTRY

Questions concerning occupation and industry must be completed for all decedents 14 years of age or older. This information is useful in studying deaths related to jobs and in identifying any new risks. For example, the link between lung disease and lung cancer and asbestos exposure in jobs such as shipbuilding or construction was made possible by this sort of information on death certificates. Information in this section will not appear on the certified copy of the death certificate.

ITEM 54. DECEDENT'S USUAL OCCUPATION

Enter the usual occupation of the decedent. This is not necessarily the last occupation of the decedent. Never enter "retired". Give kind of work decedent did during most of his or her working life, such as claim adjuster, farmhand, coal miner, janitor, store manager, college professor, or civil engineer. If the decedent was a homemaker at the time of death but had worked outside the household during his or her working life, enter that occupation. If the decedent was a homemaker during most of his or her working life, and never worked outside the household, enter "homemaker". Enter "student" if the decedent was a student at the time of death and was never regularly employed or employed full time during his or her working life. Information in this section will not appear on the certified copy of the death certificate.

ITEM 55. KIND OF BUSINESS/INDUSTRY

Kind of business to which occupation in item 54 is related, such as insurance, farming, coal mining, hardware store, retail clothing, university, or government. DO NOT enter firm or organization names. If decedent was a homemaker as indicated in item 54, then enter either "own home" or "someone else's home" as appropriate. If decedent was a student as indicated in item 54, then enter type of school, such as high school or college, in item 55. Information in this section will not appear on the certified copy of the death certificate.

Census 2012 Coding Scheme

For 2020, the 2012 census coding scheme was used to code I&O narratives to individual census occupation and industry codes. Titles for these codes can be found on the Census website (Referred to

as <u>2010 Census Occupation Codes [COCs] and 2012 Census Industry Codes [CICs]) (</u>23) as well as the NIOSH website: <u>Collecting and Using Industry and Occupation Data</u>: <u>More about Classification Systems</u> (21).

Supplemental codes (non-Census)

Since the 1970s, when NCHS and NIOSH first began collaborating to code I&O data from death certificates, there was an agreement to:

- Identify non-census codes for decedents whose longest industry and occupation was military service because death certificates do not include as much detail as the Census surveys (**Table A**).
- Include certain codes for decedents who were not in the civilian workforce, such as housewives, volunteers, students, and those without sufficient information to code (**Table B**).

These supplemental codes continue to be assigned in NIOCCS. They are not Census codes and are not found in Census documentation (21).

Table A. Supplemental codes for decedents where US military was indicated as their Usual Occupation and Industry

Military Response for Industry or Occupation	2012 Industry	2012 Occupation
Armed Forces	9790	
U.S. Army	9670	
U.S. Air Force	9680	
U.S. Coast Guard	9780	
U.S. Marines	9770	
U.S. Navy	9690	
Military, occupation blank		9830
Military, occupation Non-commissioned Officer and other enlisted personnel		9850
Military, occupation Commissioned officers and warrant officers		9840
Disabled Veteran	9790	9100

Table B. Supplemental codes for decedents whose Usual Occupation and Industry was non-paid, or no /insufficient information was available

Non-Paid worker titles	2012 Industry	2012 Occupation
Housewife/ Homemaker	9890	9010
Volunteer	9890	9020
Student	9890	9070
Retired	9880	9060
Did not work	9890	9100
Child or Infant	9890	9100
Patient	9890	9100
Disabled	9890	9100

Non-Paid worker titles	2012 Industry	2012 Occupation
Inmate	9890	9100
Blank, unknown, don't know, refused or information is inadequate	9990	9900

These non-paid worker titles resemble titles given codes by the early census (called "noneconomic" codes) and are found in the IPUMS documentation of the 1900 and 1910 Census I&O data (24) (25).

National Health Interview Survey (NHIS) simple recodes

In addition to individual Census occupation and industry codes, the 2020 mortality data also include variables with I&O groupings from the National Health Interview Survey (NHIS). The industry grouping is the 2-digit simple industry recode based on the 2012 North American Industry Classification System (NAICS)-informed codes obtained from Census. The occupation grouping is the 2-digit simple occupation recode based on the 2010 Standard Occupational Classification (SOC)-informed codes obtained from Census (26). SAS and R code to collapse CICs and COCs into these NHIS simple occupation and industry recodes are available (21).

Integrating industry and occupation data into the 2020 National Vital Statistics mortality file

For the calendar year 2020, 46 states and New York City provided I&O data, collected as free text in jurisdiction Electronic Death Registration Systems, for decedents aged ≥15 years to NIOSH and NCHS. Although Iowa also participated in the program, data were inconsistent with other states' data because of their method of data collection and are excluded. Arizona, North Carolina, Rhode Island, and the District of Columbia did not participate in this program for 2020. The raw narrative entries were coded to standard Census codes using NIOCCS and were reviewed by expert staff to ensure quality and consistency. The 2020 NVSS mortality file includes four new fields: 1) 4-digit 2012 Census Occupation Codes (tape location 806-809); 2) 2-digit occupation grouping based on NHIS simple recodes (tape location 810-811); 3) 4-digit 2012 Census Industry Codes (tape location 812-815); and 4) 2-digit industry grouping based on NHIS simple recodes (tape location 816-817) (27).

The final 2020 mortality file includes 3,390,278 records. Records where the decedent was less than 15 years old (or missing age) or a foreign resident are not included in the I&O coding program. After these exclusions, 3,354,879 records remained eligible for I&O coding. A total of 3,077,127 records (91.7% of eligible records) were received from participating states for coding and integration with the main statistical mortality file. After excluding 239,488 records from jurisdictions not included in the I&O coding program in 2020, 99% (3,077,127/3,115,391) of the remaining records contained coded I&O data. The records that were not coded (n=38,264) in the final mortality file did not have a matching I&O record when files were finalized (**Table C**). These unmatched records were not evenly distributed; Ohio and Texas had particularly high percentages (11.0% and 5.8%, respectively) of records with no industry and occupation records when looking at jurisdiction of residence (**Control Tables 7 and 12**).

supplementary codes		
Criteria	Number of records	
Total records for 2020	3,390,278	
Total records excluding those aged <15 years, with unknown age, and foreign residents	3,354,879	
Total records excluding non-participating jurisdictions, those aged <15 years, those with unknown age, and foreign residents	3,115,391	
Records not submitted for coding	38,264	
Records with coded Occupation and Industry Census and supplementary codes	3,077,127	
Records with Census Industry Codes	2,428,408	
Records with Census Occupation Codes	2,443,813	

Table C. Count of total records, records excluded, and total records coded to Census and
supplementary codes

Of the 3,077,127 records coded, 21% of both industry and occupation narratives were coded to supplementary codes. For occupation, 7.1% of the narratives were classified as "Uncodable/unclassifiable," 12.6% were classified as "housewives," 1.0% were classified as military and 0.35% as retired. Among industry narratives, 20.1% were classified as "Uncodable/unclassifiable," including unpaid industries. This subset includes housewives because there is no specific supplementary industry code to separate housewives from other uncodable records. There were also 1% of industry narratives classified as military and 0.26% where the narrative was "retired." Expected variation on these percentages was observed by sex, age, and state.

Control tables shown below present total frequencies and percentages of deaths by usual I&O groups overall and within demographic and geographic subpopulations. These tables may be applied to confirm estimates produced using I&O fields in the 2020 NVSS Mortality Multiple Cause-of-Death Public Use data file. Control tables include US resident decedents aged ≥15 years. They exclude decedents of unknown age and those who died in jurisdictions that did not have I&O data coded (DC, AZ, IA, NC, RI).

Control Tablespage
Control Table 1. Usual Occupation by Census and Supplementary Occupation Codes and Titles (Frequency and percentage)
Control Table 2. Usual Industry by Census and Supplementary Industry Codes and Titles (Frequency and percentage)24
Control Table 3. Usual Occupation by NHIS Simple Recodes and Sex (Frequency and percentage)
Control Table 4. Usual Occupation by NHIS Simple Recodes and Race and Ethnicity Frequency and percentage)
Control Table 5. Usual Occupation by NHIS Simple Recodes and Age Groups (Frequency and percentage)
Control Table 6. State of Death Occurrence by Census and Supplementary Occupation codes (Frequency and percentage)
Control Table 7. Jurisdiction of Decedent's Residence by Census and Supplementary Occupation codes (Frequency and percentage)
Control Table 8. Usual Industry by NHIS Simple Recodes and Sex (Frequency and percentage)
Control Table 9. Usual Industry by NHIS Simple Recodes and Race and Ethnicity (Frequency and percentage)
Control Table 10. Usual Industry by NHIS Simple Recodes and Age Groups (Frequency and percentage)
Control Table 11. State of Death Occurrence by Census and Supplementary Industry codes (Frequency and percentage)41
Control Table 12. Jurisdiction of Decedent's Residence by Census and Supplementary Industry codes (Frequency and percentage)43

Usual occupation		Total death
code	Usual occupation title	N (%
Total ¹		3,115,391 (100
0010	Chief executives	17,172 (0.6
0020	General and operations managers	11,386 (0.4
0030	Legislators	364 (0
0040	Advertising and promotions managers	656 (0
0050	Marketing and sales managers	6,284 (0.2
0060	Public relations and fundraising managers	442 (0
0100	Administrative services managers	1,116 (0
0110	Computer and information systems managers	2,979 (0.1
0120	Financial managers	16,120 (0.5
0135	Compensation and benefits managers	153 (0
0136	Human resources managers	2,485 (0.1
0137	Training and development managers	227 (0
0140	Industrial production managers	4,818 (0.2
0150	Purchasing managers	2,223 (0.1
0160	Transportation, storage, and distribution managers	5,746 (0.2
0205	Farmers, ranchers, and other agricultural managers	38,722 (1.2
0220	Construction managers	20,594 (0.7
0230	Education administrators	12,595 (0.4
0300	Architectural and engineering managers	891 (0
0310	Food service managers	19,040 (0.6
0325	Funeral service managers	33 (0
0330	Gaming managers	338 (0
0340	Lodging managers	3,066 (0.1
0350	Medical and health services managers	8,937 (0.3
0360	Natural sciences managers	83 (0
0400	Postmasters and mail superintendents	1,928 (0.1
0410	Property, real estate, and community association managers	9,591 (0.3
0420	Social and community service managers	2,750 (0.1
0425	Emergency management directors	103 (0
0430	Managers, all other	63,761 (2
0500	Agents and business managers of artists, performers, and athletes	386 (0
0510	Buyers and purchasing agents, farm products	403 (0
0520	Wholesale and retail buyers, except farm products	3,157 (0.1
0530	Purchasing agents, except wholesale, retail, and farm products	4,036 (0.1
0540	Claims adjusters, appraisers, examiners, and investigators	3,868 (0.1
0565	Compliance officers	2,252 (0.1
0600	Cost estimators	1,036 (0
0630	Human resources workers	5,889 (0.2
0640	Compensation, benefits, and job analysis specialists	416 (0
0650	Training and development specialists	557 (0
0700	Logisticians	1,406 (0

10

Usual occupation		Total deaths
code	Usual occupation title	N (%)
0710	Management analysts	2,608 (0.1)
0725	Meeting, convention, and event planners	355 (0)
0726	Fundraisers	245 (0)
0735	Market research analysts and marketing specialists	2,180 (0.1)
0740	Business operations specialists, all other	3,064 (0.1)
0800	Accountants and auditors	28,289 (0.9)
0810	Appraisers and assessors of real estate	1,421 (0)
0820	Budget analysts	603 (0)
0830	Credit analysts	146 (0)
0840	Financial analysts	1,045 (0)
0850	Personal financial advisors	2,919 (0.1)
0860	Insurance underwriters	1,485 (0)
0900	Financial examiners	82 (0)
0910	Credit counselors and loan officers	3,695 (0.1)
0930	Tax examiners and collectors, and revenue agents	2,127 (0.1)
0940	Tax preparers	1,332 (0)
0950	Financial specialists, all other	1,098 (0)
1005	Computer and information research scientists	299 (0)
1006	Computer systems analysts	4,345 (0.1)
1007	Information security analysts	259 (0)
1010	Computer programmers	5,648 (0.2)
1020	Software developers, applications and systems software	3,646 (0.1)
1030	Web developers	339 (0)
1050	Computer support specialists	1,594 (0.1)
1060	Database administrators	309 (0)
1105	Network and computer systems administrators	1,240 (0)
1106	Computer network architects	396 (0)
1107	Computer occupations, all other	4,441 (0.1)
1200	Actuaries	239 (0)
1210	Mathematicians	215 (0)
1220	Operations research analysts	1,956 (0.1)
1230	Statisticians	392 (0)
1240	Miscellaneous mathematical science occupations	2 (0)
1300	Architects, except naval	3,091 (0.1)
1310	Surveyors, cartographers, and photogrammetrists	1,967 (0.1)
1320	Aerospace engineers	4,630 (0.1)
1330	Agricultural engineers	155 (0)
1340	Biomedical engineers	299 (0)
1350	Chemical engineers	2,694 (0.1)
1360	Civil engineers	10,151 (0.3)
1400	Computer hardware engineers	1,283 (0)
1410	Electrical and electronics engineers	9,088 (0.3)
1420	Environmental engineers	510 (0)

Usual occupation Total deaths code Usual occupation title N (%) 1430 Industrial engineers, including health and safety 4,765 (0.2) 1440 Marine engineers and naval architects 411 (0) 1450 Materials engineers 797 (0) 1460 Mechanical engineers 8,214 (0.3) 1500 Mining and geological engineers, including mining safety engineers 268 (0) 1510 Nuclear engineers 379 (0) 1520 Petroleum engineers 1,022 (0) 1530 Engineers, all other 8,794 (0.3) 1540 Drafters 3,771 (0.1) 1550 Engineering technicians, except drafters 7,873 (0.3) 1560 Surveying and mapping technicians 170 (0) 1600 Agricultural and food scientists 993 (0) 1610 **Biological scientists** 1,445 (0) 1640 Conservation scientists and foresters 817 (0) 1650 Medical scientists 705 (0) 1660 Life scientists, all other 1(0) 1700 Astronomers and physicists 795 (0) Atmospheric and space scientists 1710 285 (0) 1720 Chemists and materials scientists 3,288 (0.1) 1740 Environmental scientists and geoscientists 1,682 (0.1) 1760 Physical scientists, all other 1,223 (0) 1800 **Economists** 629 (0) 1815 Survey researchers 12 (0) 1820 **Psychologists** 2,586 (0.1) 1830 Sociologists 50 (0) 1840 Urban and regional planners 346 (0) 1860 Miscellaneous social scientists and related workers 671 (0) 1900 Agricultural and food science technicians 730 (0) 1910 **Biological technicians** 111 (0) 1920 Chemical technicians 1,305 (0) 1930 Geological and petroleum technicians 406 (0) 1940 Nuclear technicians 109 (0) 1950 Social science research assistants 5 (0) 1965 Miscellaneous life, physical, and social science technicians 1,845 (0.1) 2000 Counselors 8,382 (0.3) 2010 Social workers 11,841 (0.4) 1,099 (0) 2015 Probation officers and correctional treatment specialists 2016 Social and human service assistants 1,400 (0) Miscellaneous community and social service specialists, including 2025 1,070(0) health educators and community health workers 2040 15,395 (0.5) Clergy 2050 Directors, religious activities and education 368 (0) 2060 Religious workers, all other

Industry and Occupation (I&O) data as applicable to mortality vital statistics, 2020

2,588 (0.1)

Usual occupation		Total deaths
code	Usual occupation title	N (%)
2100	Lawyers	11,648 (0.4)
2105	Judicial law clerks	74 (0)
2110	Judges, magistrates, and other judicial workers	1,319 (0)
2145	Paralegals and legal assistants	3,174 (0.1)
2160	Miscellaneous legal support workers	2,042 (0.1)
2200	Postsecondary teachers	15,480 (0.5)
2300	Preschool and kindergarten teachers	2,971 (0.1)
2310	Elementary and middle school teachers	80,974 (2.6)
2320	Secondary school teachers	9,009 (0.3)
2330	Special education teachers	2,267 (0.1)
2340	Other teachers and instructors	4,816 (0.2)
2400	Archivists, curators, and museum technicians	562 (0)
2430	Librarians	5,798 (0.2)
2440	Library technicians	307 (0)
2540	Teacher assistants	10,773 (0.3)
2550	Other education, training, and library workers	585 (0)
2600	Artists and related workers	8,184 (0.3)
2630	Designers	10,268 (0.3)
2700	Actors	970 (0)
2710	Producers and directors	1,389 (0)
2720	Athletes, coaches, umpires, and related workers	2,815 (0.1)
2740	Dancers and choreographers	340 (0)
2750	Musicians, singers, and related workers	7,347 (0.2)
2760	Entertainers and performers, sports and related workers, all other	1,291 (0)
2800	Announcers	1,218 (0)
2810	News analysts, reporters and correspondents	1,879 (0.1)
2825	Public relations specialists	1,043 (0)
2830	Editors	1,654 (0.1)
2840	Technical writers	685 (0)
2850	Writers and authors	3,472 (0.1)
2860	Miscellaneous media and communication workers	762 (0)
2900	Broadcast and sound engineering technicians and radio operators	1,266 (0)
2910	Photographers	2,527 (0.1)
2920	Television, video, and motion picture camera operators and editors	486 (0)
2960	Media and communication equipment workers, all other	10 (0)
3000	Chiropractors	726 (0)
3010	Dentists	2,990 (0.1)
3030	Dietitians and nutritionists	3,554 (0.1)
3040	Optometrists	531 (0)
3050	Pharmacists	3,727 (0.1)
3060	Physicians and surgeons	11,910 (0.4)
3110	Physician assistants	695 (0)
3120	Podiatrists	151 (0)

Usual occupation Total deaths code Usual occupation title N (%) 3140 Audiologists 99 (0) 3150 Occupational therapists 618 (0) 3160 Physical therapists 1,013 (0) **Radiation therapists** 3200 82 (0) 3210 **Recreational therapists** 198 (0) 3220 **Respiratory therapists** 1,257 (0) 3230 Speech-language pathologists 810 (0) 3235 Exercise physiologists 29 (0) 3245 Therapists, all other 1,084 (0) 3250 Veterinarians 904 (0) 3255 **Registered nurses** 55,156 (1.8) 3256 Nurse anesthetists 386 (0) 3257 Nurse midwives 34 (0) 3258 Nurse practitioners 877 (0) 3260 Health diagnosing and treating practitioners, all other 308 (0) 3300 Clinical laboratory technologists and technicians 4,503 (0.1) 3310 **Dental hygienists** 1,162 (0) 3320 Diagnostic related technologists and technicians 2,948 (0.1) 3400 Emergency medical technicians and paramedics 1,759 (0.1) 3420 Health practitioner support technologists and technicians 4,706 (0.2) 3500 Licensed practical and licensed vocational nurses 10,653 (0.3) Medical records and health information technicians 3510 1,335 (0) 3520 Opticians, dispensing 768 (0) 3535 Miscellaneous health technologists and technicians 1,366 (0) 3540 Other healthcare practitioners and technical occupations 552 (0) 3600 Nursing, psychiatric, and home health aides 40,146 (1.3) 3610 Occupational therapy assistants and aides 121 (0) 3620 Physical therapist assistants and aides 388 (0) 3630 Massage therapists 899 (0) 3640 Dental assistants 2,269 (0.1) 3645 Medical assistants 3,306 (0.1) 3646 Medical transcriptionists 1,641 (0.1) 3647 Pharmacy aides 552 (0) 3648 Veterinary assistants and laboratory animal caretakers 229 (0) 3649 Phlebotomists 1,119 (0) Healthcare support workers, all other, including medical equipment 3655 1,858 (0.1) preparers 3700 First-line supervisors of correctional officers 550 (0) 3710 First-line supervisors of police and detectives 2,415 (0.1) 3720 First-line supervisors of fire fighting and prevention workers 1,318(0) 3730 First-line supervisors of protective service workers, all other 1,140 (0) 3740 **Firefighters** 5,978 (0.2)

3750

Fire inspectors

Industry and Occupation (I&O) data as applicable to mortality vital statistics, 2020

381 (0)

Usual occupation		Total deaths
code	Usual occupation title	N (%
3800	Bailiffs, correctional officers, and jailers	6,203 (0.2
3820	Detectives and criminal investigators	2,528 (0.1
3830	Fish and game wardens	206 (0
3840	Parking enforcement workers	99 (0
3850	Police and sheriff's patrol officers	15,067 (0.5
3860	Transit and railroad police	55 (0
3900	Animal control workers	193 (0
3910	Private detectives and investigators	981 (0
3930	Security guards and gaming surveillance officers	15,435 (0.5
3940	Crossing guards	1,524 (0
3945	Transportation security screeners	221 (0
3955	Lifeguards and other recreational, and all other protective service workers	532 (0
4000	Chefs and head cooks	12,630 (0.4
4010	First-line supervisors of food preparation and serving workers	6,302 (0.2
4020	Cooks	32,098 (1
4030	Food preparation workers	3,419 (0.1
4040	Bartenders	5,027 (0.2
4050	Combined food preparation and serving workers, including fast food	2,067 (0.1
4060	Counter attendants, cafeteria, food concession, and coffee shop	716 (0
4110	Waiters and waitresses	19,138 (0.6
4120	Food servers, nonrestaurant	1,949 (0.1
4130	Dining room and cafeteria attendants and bartender helpers	4,361 (0.1
4140	Dishwashers	1,928 (0.1
4150	Hosts and hostesses, restaurant, lounge, and coffee shop	1,396 (0
4160	Food preparation and serving related workers, all other	337 (0
4200	First-line supervisors of housekeeping and janitorial workers	6,149 (0.2
4210	First-line supervisors of landscaping, lawn service, and groundskeeping workers	2,832 (0.1
4220	Janitors and building cleaners	42,505 (1.4
4230	Maids and housekeeping cleaners	26,058 (0.8
4240	Pest control workers	1,016 (0
4250	Grounds maintenance workers	16,538 (0.5
4300	First-line supervisors of gaming workers	333 (0
4320	First-line supervisors of personal service workers	2,494 (0.1
4340	Animal trainers	877 (0
4350	Nonfarm animal caretakers	1,517 (0
4400	Gaming services workers	1,211 (0
4410	Motion picture projectionists	171 (0
4420	Ushers, lobby attendants, and ticket takers	139 (0
4430	Miscellaneous entertainment attendants and related workers	904 (0
4460	Embalmers and funeral attendants	324 (0
4465	Morticians, undertakers, and funeral directors	1,363 (0

Usual occupation code	Usual occupation title	Total deaths N (%)
4500	Barbers	3,618 (0.1)
4510	Hairdressers, hairstylists, and cosmetologists	17,724 (0.6)
4520	Miscellaneous personal appearance workers	1,122 (0)
4530	Baggage porters, bellhops, and concierges	1,613 (0.1)
4540	Tour and travel guides	492 (0)
4600	Childcare workers	12,385 (0.4)
4610	Personal care aides	18,209 (0.6)
4620	Recreation and fitness workers	2,244 (0.1)
4640	Residential advisors	372 (0)
4650	Personal care and service workers, all other	840 (0)
4700	First-line supervisors of retail sales workers	59,911 (1.9)
4710	First-line supervisors of non-retail sales workers	10,625 (0.3)
4720	Cashiers	16,773 (0.5)
4720	Counter and rental clerks	10,773 (0.3) 798 (0)
4750		1,807 (0.1)
4760	Parts salespersons	65,312 (2.1)
	Retail salespersons	
4800	Advertising sales agents	1,515 (0)
4810	Insurance sales agents	11,119 (0.4)
4820	Securities, commodities, and financial services sales agents	2,799 (0.1)
4830	Travel agents	2,008 (0.1)
4840	Sales representatives, services, all other	5,023 (0.2)
4850	Sales representatives, wholesale and manufacturing	13,946 (0.4)
4900	Models, demonstrators, and product promoters	448 (0)
4920	Real estate brokers and sales agents	16,940 (0.5)
4930	Sales engineers	402 (0)
4940	Telemarketers	802 (0)
4950	Door-to-door sales workers, news and street vendors, and related workers	1,434 (0)
4965	Sales and related workers, all other	3,109 (0.1)
5000	First-line supervisors of office and administrative support workers	22,010 (0.7)
5010	Switchboard operators, including answering service	2,028 (0.1)
5020	Telephone operators	4,558 (0.1)
5030	Communications equipment operators, all other	116 (0)
5100	Bill and account collectors	1,269 (0)
5110	Billing and posting clerks	3,272 (0.1)
5120	Bookkeeping, accounting, and auditing clerks	29,283 (0.9)
5130	Gaming cage workers	42 (0)
5140	Payroll and timekeeping clerks	2,009 (0.1)
5150	Procurement clerks	461 (0)
5160	Tellers	6,157 (0.2)
5165	Financial clerks, all other	550 (0)
5200	Brokerage clerks	71 (0)
5210	Correspondence clerks	11 (0)

Usual occupation		Total deaths
code	Usual occupation title	N (%)
5220	Court, municipal, and license clerks	1,153 (0)
5230	Credit authorizers, checkers, and clerks	250 (0)
5240	Customer service representatives	16,243 (0.5)
5250	Eligibility interviewers, government programs	461 (0)
5260	File clerks	1,837 (0.1)
5300	Hotel, motel, and resort desk clerks	681 (0)
5310	Interviewers, except eligibility and loan	1,168 (0)
5320	Library assistants, clerical	1,216 (0)
5330	Loan interviewers and clerks	536 (0)
5340	New accounts clerks	61 (0)
5350	Order clerks	302 (0)
5360	Human resources assistants, except payroll and timekeeping	1,049 (0)
5400	Receptionists and information clerks	7,323 (0.2)
5410	Reservation and transportation ticket agents and travel clerks	1,993 (0.1)
5420	Information and record clerks, all other	1,141 (0)
5500	Cargo and freight agents	265 (0)
5510	Couriers and messengers	3,146 (0.1)
5520	Dispatchers	3,660 (0.1)
5530	Meter readers, utilities	504 (0)
5540	Postal service clerks	7,986 (0.3)
5550	Postal service mail carriers	7,442 (0.2)
5560	Postal service mail sorters, processors, and processing machine operators	994 (0)
5600	Production, planning, and expediting clerks	2,527 (0.1)
5610	Shipping, receiving, and traffic clerks	5,254 (0.2)
5620	Stock clerks and order fillers	10,655 (0.3)
5630	Weighers, measurers, checkers, and samplers, recordkeeping	443 (0)
5700	Secretaries and administrative assistants	79,374 (2.5)
5800	Computer operators	2,270 (0.1)
5810	Data entry keyers	3,210 (0.1)
5820	Word processors and typists	965 (0)
5830	Desktop publishers	12 (0)
5840	Insurance claims and policy processing clerks	2,271 (0.1)
5850	Mail clerks and mail machine operators, except postal service	1,065 (0)
5860	Office clerks, general	26,427 (0.8)
5900	Office machine operators, except computer	273 (0)
5910	Proofreaders and copy markers	371 (0)
5920	Statistical assistants	113 (0)
5940	Office and administrative support workers, all other	6,333 (0.2)
6005	First-line supervisors of farming, fishing, and forestry workers	1,228 (0)
6010	Agricultural inspectors	355 (0)
6020	Animal breeders	275 (0)
6040	Graders and sorters, agricultural products	476 (0)

Usual occupation code	Usual occupation title	Total deaths N (%)
6050	Miscellaneous agricultural workers	13,219 (0.4)
6100	Fishers and related fishing workers	2,519 (0.1)
6110	Hunters and trappers	21 (0)
6120	Forest and conservation workers	176 (0)
6130	Logging workers	4,030 (0.1)
6200	First-line supervisors of construction trades and extraction workers	21,855 (0.7)
6210	Boilermakers	1,039 (0)
6220	Brickmasons, blockmasons, and stonemasons	6,208 (0.2)
6230	Carpenters	31,771 (1)
6240	Carpet, floor, and tile installers and finishers	3,118 (0.1)
6250	Cement masons, concrete finishers, and terrazzo workers	1,957 (0.1)
6260	Construction laborers	51,950 (1.7)
6300	Paving, surfacing, and tamping equipment operators	284 (0)
6310	Pile-driver operators	59 (0)
6320	Operating engineers and other construction equipment operators	11,948 (0.4)
6330	Drywall installers, ceiling tile installers, and tapers	2,134 (0.1)
6355	Electricians	20,484 (0.7)
6360	Glaziers	921 (0)
6400	Insulation workers	586 (0)
6420	Painters, construction and maintenance	11,019 (0.4)
6430	Paperhangers	147 (0)
6440	Pipelayers, plumbers, pipefitters, and steamfitters	13,717 (0.4)
6460	Plasterers and stucco masons	554 (0)
6500	Reinforcing iron and rebar workers	18 (0)
6515	Roofers	5,089 (0.2)
6520	Sheet metal workers	3,368 (0.1)
6530	Structural iron and steel workers	2,599 (0.1)
6540	Solar photovoltaic installers	36 (0)
6600	Helpers, construction trades	245 (0)
6660	Construction and building inspectors	1,555 (0)
6700	Elevator installers and repairers	542 (0)
6710	Fence erectors	294 (0)
6720	Hazardous materials removal workers	308 (0)
6730	Highway maintenance workers	2,435 (0.1)
6740	Rail-track laying and maintenance equipment operators	292 (0)
6750	Septic tank servicers and sewer pipe cleaners	61 (0)
6765	Miscellaneous construction and related workers	215 (0)
6800	Derrick, rotary drill, and service unit operators, oil, gas, and mining	1,121 (0)
6820 6830	Earth drillers, except oil and gas	492 (0) 157 (0)
6830 6840	Explosives workers, ordnance handling experts, and blasters Mining machine operators	157 (0) 4 771 (0 2)
6840 6910	Mining machine operators	4,771 (0.2)
6910 6920	Roof bolters, mining Roustabouts, oil and gas	22 (0) 215 (0)

Usual occupation		Total deaths
code	Usual occupation title	N (%)
6930	Helpers–extraction workers	194 (0)
6940	Other extraction workers	2,437 (0.1)
7000	First-line supervisors of mechanics, installers, and repairers	6,799 (0.2)
7010	Computer, automated teller, and office machine repairers	3,349 (0.1)
7020	Radio and telecommunications equipment installers and repairers	4,944 (0.2)
7030	Avionics technicians	384 (0)
7040	Electric motor, power tool, and related repairers	219 (0)
7050	Electrical and electronics installers and repairers, transportation equipment	14 (0)
7100	Electrical and electronics repairers, industrial and utility	577 (0)
7110	Electronic equipment installers and repairers, motor vehicles	607 (0)
7120	Electronic home entertainment equipment installers and repairers	993 (0)
7130	Security and fire alarm systems installers	369 (0)
7140	Aircraft mechanics and service technicians	4,520 (0.1)
7150	Automotive body and related repairers	4,249 (0.1)
7160	Automotive glass installers and repairers	121 (0)
7200	Automotive service technicians and mechanics	27,350 (0.9)
7210	Bus and truck mechanics and diesel engine specialists	5,226 (0.2)
7220	Heavy vehicle and mobile equipment service technicians and mechanics	3,674 (0.1)
7240	Small engine mechanics	786 (0)
7260	Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers	855 (0)
7300	Control and valve installers and repairers	585 (0)
7315	Heating, air conditioning, and refrigeration mechanics and installers	5,329 (0.2)
7320	Home appliance repairers	763 (0)
7330	Industrial and refractory machinery mechanics	9,517 (0.3)
7340	Maintenance and repair workers, general	11,611 (0.4)
7350	Maintenance workers, machinery	271 (0)
7360	Millwrights	2,960 (0.1)
7410	Electrical power-line installers and repairers	2,942 (0.1)
7420	Telecommunications line installers and repairers	2,475 (0.1)
7430	Precision instrument and equipment repairers	971 (0)
7440	Wind turbine service technicians	24 (0)
7510	Coin, vending, and amusement machine servicers and repairers	311 (0)
7520	Commercial divers	87 (0)
7540	Locksmiths and safe repairers	630 (0)
7550	Manufactured building and mobile home installers	53 (0)
7560	Riggers	360 (0)
7600	Signal and track switch repairers	171 (0)
7610	Helpers-installation, maintenance, and repair workers	254 (0)
7630	Other installation, maintenance, and repair workers	1,796 (0.1)
7700	First-line supervisors of production and operating workers	21,172 (0.7)
7710	Aircraft structure, surfaces, rigging, and systems assemblers	176 (0)

Usual occupation Total deaths code Usual occupation title N (%) 7720 Electrical, electronics, and electromechanical assemblers 3,038 (0.1) 7730 Engine and other machine assemblers 326 (0) 7740 Structural metal fabricators and fitters 2,830 (0.1) 7750 Miscellaneous assemblers and fabricators 22,220 (0.7) 7800 Bakers 4,509 (0.1) 7810 Butchers and other meat, poultry, and fish processing workers 5,849 (0.2) Food and tobacco roasting, baking, and drying machine operators 7830 167 (0) and tenders 7840 Food batchmakers 1,083 (0) 7850 Food cooking machine operators and tenders 171 (0) 2,206 (0.1) 7855 Food processing workers, all other 7900 Computer control programmers and operators 400 (0) Extruding and drawing machine setters, operators, and tenders, 7920 98 (0) metal and plastic 7930 Forging machine setters, operators, and tenders, metal and plastic 211 (0) 7940 Rolling machine setters, operators, and tenders, metal and plastic 179 (0) Cutting, punching, and press machine setters, operators, and 7950 1,593 (0.1) tenders, metal and plastic Drilling and boring machine tool setters, operators, and tenders, 7960 96 (0) metal and plastic Grinding, lapping, polishing, and buffing machine tool setters, 8000 917 (0) operators, and tenders, metal and plastic Lathe and turning machine tool setters, operators, and tenders, 8010 174 (0) metal and plastic Milling and planing machine setters, operators, and tenders, metal 8020 119 (0) and plastic 8030 Machinists 19,850 (0.6) 8040 Metal furnace operators, tenders, pourers, and casters 468 (0) 8060 Model makers and patternmakers, metal and plastic 455 (0) Molders and molding machine setters, operators, and tenders, 8100 1,113 (0) metal and plastic Multiple machine tool setters, operators, and tenders, metal and 8120 154 (0) plastic 8130 Tool and die makers 4,103 (0.1) 8140 Welding, soldering, and brazing workers 16,826 (0.5) Heat treating equipment setters, operators, and tenders, metal and 8150 217 (0) plastic 8160 Layout workers, metal and plastic 201 (0) Plating and coating machine setters, operators, and tenders, metal 8200 343 (0) and plastic 8210 Tool grinders, filers, and sharpeners 212 (0) 8220 Metal workers and plastic workers, all other 4,466 (0.1) 8250 Prepress technicians and workers 1,321 (0)

8255

8256

8300

Printing press operators

Print binding and finishing workers

Laundry and dry-cleaning workers

Industry and Occupation (I&O) data as applicable to mortality vital statistics, 2020

7,398 (0.2)

2,865 (0.1)

790 (0)

Usual occupation		Total deaths
code	Usual occupation title	N (%)
8310	Pressers, textile, garment, and related materials	1,265 (0)
8320	Sewing machine operators	18,747 (0.6)
8330	Shoe and leather workers and repairers	848 (0)
8340	Shoe machine operators and tenders	832 (0)
8350	Tailors, dressmakers, and sewers	5,206 (0.2)
8360	Textile bleaching and dyeing machine operators and tenders	69 (0)
8400	Textile cutting machine setters, operators, and tenders	168 (0)
8410	Textile knitting and weaving machine setters, operators, and tenders	935 (0)
8420	Textile winding, twisting, and drawing out machine setters, operators, and tenders	723 (0)
8430	Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers	13 (0)
8440	Fabric and apparel patternmakers	89 (0)
8450	Upholsterers	1,367 (0)
8460	Textile, apparel, and furnishings workers, all other	2,201 (0.1)
8500	Cabinetmakers and bench carpenters	820 (0)
8510	Furniture finishers	301 (0)
8520	Model makers and patternmakers, wood	29 (0)
8530	Sawing machine setters, operators, and tenders, wood	624 (0)
8540	Woodworking machine setters, operators, and tenders, except sawing	162 (0)
8550	Woodworkers, all other	791 (0)
8600	Power plant operators, distributors, and dispatchers	893 (0)
8610	Stationary engineers and boiler operators	3,145 (0.1)
8620	Water and wastewater treatment plant and system operators	1,276 (0)
8630	Miscellaneous plant and system operators	978 (0)
8640	Chemical processing machine setters, operators, and tenders	1,509 (0)
8650	Crushing, grinding, polishing, mixing, and blending workers	1,065 (0)
8710	Cutting workers	668 (0)
8720	Extruding, forming, pressing, and compacting machine setters, operators, and tenders	600 (0)
8730	Furnace, kiln, oven, drier, and kettle operators and tenders	199 (0)
8740	Inspectors, testers, sorters, samplers, and weighers	12,676 (0.4)
8750	Jewelers and precious stone and metal workers	1,662 (0.1)
8760	Medical, dental, and ophthalmic laboratory technicians	1,318 (0)
8800	Packaging and filling machine operators and tenders	4,090 (0.1)
8810	Painting workers	2,269 (0.1)
8830	Photographic process workers and processing machine operators	664 (0)
8840	Semiconductor processors	2 (0)
8850	Adhesive bonding machine operators and tenders	71 (0)
8860	Cleaning, washing, and metal pickling equipment operators and tenders	23 (0)
8900	Cooling and freezing equipment operators and tenders	58 (0)
8910	Etchers and engravers	215 (0)

Usual occupation		Total deaths
code	Usual occupation title	N (%)
8920	Molders, shapers, and casters, except metal and plastic	652 (0)
8930	Paper goods machine setters, operators, and tenders	1,063 (0)
8940	Tire builders	386 (0)
8950	Helpers-production workers	168 (0)
8965	Production workers, all other	41,287 (1.3)
9000	Supervisors of transportation and material moving workers	3,491 (0.1)
9030	Aircraft pilots and flight engineers	2,538 (0.1)
9040	Air traffic controllers and airfield operations specialists	1,037 (0)
9050	Flight attendants	1,129 (0)
9110	Ambulance drivers and attendants, except emergency medical technicians	354 (0)
9120	Bus drivers	13,926 (0.4)
9130	Driver/sales workers and truck drivers	78,254 (2.5)
9140	Taxi drivers and chauffeurs	5,855 (0.2)
9150	Motor vehicle operators, all other	218 (0)
9200	Locomotive engineers and operators	1,604 (0.1)
9230	Railroad brake, signal, and switch operators	731 (0)
9240	Railroad conductors and yardmasters	1,632 (0.1)
9260	Subway, streetcar, and other rail transportation workers	1,122 (0)
9300	Sailors and marine oilers	1,214 (0)
9310	Ship and boat captains and operators	1,282 (0)
9330	Ship engineers	121 (0)
9340	Bridge and lock tenders	163 (0)
9350	Parking lot attendants	497 (0)
9360	Automotive and watercraft service attendants	783 (0)
9410	Transportation inspectors	660 (0)
9415	Transportation attendants, except flight attendants	437 (0)
9420	Other transportation workers	321 (0)
9500	Conveyor operators and tenders	46 (0)
9510	Crane and tower operators	2,493 (0.1)
9520	Dredge, excavating, and loading machine operators	356 (0)
9560	Hoist and winch operators	52 (0)
9600	Industrial truck and tractor operators	8,901 (0.3)
9610	Cleaners of vehicles and equipment	2,309 (0.1)
9620	Laborers and freight, stock, and material movers, hand	76,209 (2.4)
9630	Machine feeders and offbearers	193 (0)
9640	Packers and packagers, hand	2,860 (0.1)
9650	Pumping station operators	445 (0)
9720	Refuse and recyclable material collectors	2,345 (0.1)
9730	Mine shuttle car operators	2,545 (0.1) 9 (0)
9740	Tank car, truck, and ship loaders	4 (0)
9750	Material moving workers, all other	930 (0)

Usual occupation		Total deaths
code	Usual occupation title	N (%)
9830	Rank unknown or occupation listed (i.e., diesel mechanic, communications specialist)	15,885 (0.5)
9840	Commissioned officers and warrant officers	6,589 (0.2)
9850	Non-commissioned officer and other enlisted personnel	7,886 (0.3)
9010	Own Home/Homemaker	387,422 (12.4)
9020	Volunteer, not for pay	1,094 (0)
9060	Retired	10,862 (0.3)
9070	Student attending a high school or college	11,476 (0.4)
9100	Cannot work, never worked, disabled, patient or inmate	73,560 (2.4)
9900	Blank, unknown, refused, or don't know	118,540 (3.8)
Not submitted for I/O coding		38,264 (1.2)

Usual industry code	Usual industry title	Total deaths N (%)
Total ¹		3,115,391 (100)
0170	Crop production	44,971 (1.4)
0180	Animal production	12,120 (0.4)
0190	Forestry except logging	883 (0)
0270	Logging	5,023 (0.2)
0280	Fishing, hunting, and trapping	2,765 (0.1)
0290	Support activities for agriculture and forestry	2,740 (0.1)
0370	Oil and gas extraction	6,429 (0.2)
0380	Coal mining	5,099 (0.2)
0390	Metal ore mining	867 (0)
0470	Nonmetallic mineral mining and quarrying	1,616 (0.1)
0480	Not specified type of mining	2,010 (0.1)
0490	Support activities for mining	6,685 (0.2)
0570	Electric power generation, transmission and distribution	15,235 (0.5)
0580	Natural gas distribution	2,886 (0.1)
0590	Electric and gas, and other combinations	947 (0)
0670	Water, steam, air-conditioning, and irrigation systems	3,958 (0.1)
0680	Sewage treatment facilities	1,118 (0)
0690	Not specified utilities	6,092 (0.2)
0770	Construction (the cleaning of buildings and dwellings is incidental during construction and immediately after construction)	224,353 (7.2)
1070	Animal food, grain and oilseed milling	1,374 (0)
1080	Sugar and confectionery products	1,593 (0.1)
1090	Fruit and vegetable preserving and specialty food manufacturing	2,102 (0.1)
1170	Dairy product manufacturing	2,209 (0.1)
1180	Animal slaughtering and processing	5,971 (0.2)
1190	Retail bakeries	3,109 (0.1)
1270	Bakeries, except retail	3,228 (0.1)
1280	Seafood and other miscellaneous foods, n.e.c.	1,648 (0.1)
1290	Not specified food industries	8,003 (0.3)
1370	Beverage manufacturing	3,687 (0.1)
1390	Tobacco manufacturing	716 (0)
1470	Fiber, yarn, and thread mills	208 (0)
1480	Fabric mills, except knitting mills	11,411 (0.4)
1490	Textile and fabric finishing and coating mills	331 (0)
1570	Carpet and rug mills	514 (0)
1590	Textile product mills, except carpets and rugs	776 (0)
1670	Knitting fabric mills, and apparel knitting mills	655 (0)
1680	Cut and sew apparel manufacturing	18,925 (0.6)
1690	Apparel accessories and other apparel manufacturing	75 (0)
1770	Footwear manufacturing	2,392 (0.1)

Total deaths Usual industry code Usual industry title N (%) Leather tanning and finishing and other allied products 1790 668 (0) manufacturing 1870 Pulp, paper, and paperboard mills 6,804 (0.2) 1880 Paperboard containers and boxes 802 (0) 1890 Miscellaneous paper and pulp products 827 (0) 1990 Printing and related support activities 12,964 (0.4) 2070 Petroleum refining 3,537 (0.1) 2090 Miscellaneous petroleum and coal products 95 (0) 2170 Resin, synthetic rubber and fibers, and filaments manufacturing 395 (0) 2180 Agricultural chemical manufacturing 326 (0) 2190 Pharmaceutical and medicine manufacturing 4,636 (0.1) 2270 Paint, coating, and adhesive manufacturing 968 (0) 2280 Soap, cleaning compound, and cosmetics manufacturing 1,537 (0) 2290 Industrial and miscellaneous chemicals 9,531 (0.3) 2370 Plastics product manufacturing 4,223 (0.1) 2380 Tire manufacturing 2,257 (0.1) 1,093 (0) 2390 Rubber products, except tires, manufacturing 2470 Pottery, ceramics, and plumbing fixture manufacturing 672 (0) 2480 Structural clay product manufacturing 552 (0) 2490 Glass and glass product manufacturing 3,592 (0.1) Cement, concrete, lime, and gypsum product manufacturing 2570 2,007 (0.1) 2590 Miscellaneous nonmetallic mineral product manufacturing 514 (0) 2670 Iron and steel mills and steel product manufacturing 13,998 (0.4) 2680 Aluminum production and processing 1,775 (0.1) 2690 Nonferrous metal, except aluminum, production and processing 1,135 (0) 2770 Foundries 2,189 (0.1) Metal forgings and stampings 2780 412 (0) 2790 Cutlery and hand tool manufacturing 672 (0) Structural metals, and boiler, tank, and shipping container 2870 4,843 (0.2) manufacturing 2880 Machine shops; turned product; screw, nut and bolt manufacturing 2,031 (0.1) Coating, engraving, heat treating and allied activities 581 (0) 2890 2970 Ordnance 1,112 (0) 2980 Miscellaneous fabricated metal products manufacturing 2,748 (0.1) 2990 Not specified metal industries 2,549 (0.1) 3070 Agricultural implement manufacturing 1,378 (0) Construction, and mining and oil and gas field machinery 3080 1,052 (0) manufacturing 3095 Commercial and service industry machinery manufacturing 1,494 (0) 3170 Metalworking machinery manufacturing 4,217 (0.1) Engines, turbines, and power transmission equipment 3180 697 (0) manufacturing 3190 Machinery manufacturing, n.e.c. 4,343 (0.1)

Usual industry code	Usual industry title	Total deaths N (%)
3290	Not specified machinery manufacturing	2,850 (0.1)
3365	Computer and peripheral equipment manufacturing	2,653 (0.1)
3370	Communications, audio, and video equipment manufacturing	1,565 (0.1)
3380	Navigational, measuring, electromedical, and control instruments manufacturing	2,227 (0.1)
3390	Electronic component and product manufacturing, n.e.c.	8,824 (0.3)
3470	Household appliance manufacturing	1,406 (0)
3490	Electric lighting and electrical equipment manufacturing, and other electrical component manufacturing, n.e.c.	5,530 (0.2)
3570	Motor vehicles and motor vehicle equipment manufacturing	31,928 (1)
3580	Aircraft and parts manufacturing	8,853 (0.3)
3590	Aerospace products and parts manufacturing	13,921 (0.4)
3670	Railroad rolling stock manufacturing	306 (0)
3680	Ship and boat building	5,082 (0.2)
3690	Other transportation equipment manufacturing	263 (0)
3770	Sawmills and wood preservation	2,959 (0.1)
3780	Veneer, plywood, and engineered wood products	449 (0)
3790	Prefabricated wood buildings and mobile homes manufacturing	421 (0)
3875	Miscellaneous wood products	1,831 (0.1)
3895	Furniture and related product manufacturing	4,903 (0.2)
3960	Medical equipment and supplies manufacturing	4,213 (0.1)
3970	Sporting and athletic goods, and doll, toy and game manufacturing	1,177 (0)
3980	Miscellaneous manufacturing, n.e.c.	3,955 (0.1)
3990	Not specified manufacturing industries	107,327 (3.4)
4070	Motor vehicles, parts and supplies merchant wholesalers	1,196 (0)
4080	Furniture and home furnishing merchant wholesalers	264 (0)
4090	Lumber and other construction materials merchant wholesalers	837 (0)
4170	Professional and commercial equipment and supplies merchant wholesalers	1,991 (0.1)
4180	Metals and minerals, except petroleum, merchant wholesalers	613 (0)
4195	Household appliances and electrical and electronic goods merchant wholesalers	764 (0)
4265	Hardware, plumbing and heating equipment, and supplies merchant wholesalers	504 (0)
4270	Machinery, equipment, and supplies merchant wholesalers	3,020 (0.1)
4280	Recyclable material merchant wholesalers	1,971 (0.1)
4290	Miscellaneous durable goods merchant wholesalers	627 (0)
4370	Paper and paper products merchant wholesalers	313 (0)
4380	Drugs, sundries, and chemical and allied products merchant wholesalers	1,507 (0)
4390	Apparel, fabrics, and notions merchant wholesalers	812 (0)
4470	Groceries and related products merchant wholesalers	6,001 (0.2)
4480	Farm product raw materials merchant wholesalers	1,042 (0)

Total deaths Usual industry code Usual industry title N (%) 4490 Petroleum and petroleum products merchant wholesalers 1,135 (0) 4560 Alcoholic beverages merchant wholesalers 759 (0) 4570 Farm supplies merchant wholesalers 187 (0) 4580 Miscellaneous nondurable goods merchant wholesalers 533 (0) 4585 Wholesale electronic markets agents and brokers 105 (0) 4590 Not specified wholesale trade 4,150 (0.1) 4670 Automobile dealers 18,560 (0.6) 4680 Other motor vehicle dealers 1,371 (0) 4690 Auto parts, accessories, and tire stores 7,814 (0.3) 4770 Furniture and home furnishings stores 6,314 (0.2) 4780 Household appliance stores 1,399 (0) 4795 **Electronics stores** 5,192 (0.2) 4870 Building material and supplies dealers 9,556 (0.3) 4880 Hardware stores 2,816 (0.1) 4890 Lawn and garden equipment and supplies stores 2,487 (0.1) 4970 Grocery stores 31,731 (1) 4980 Specialty food stores 3,822 (0.1) 4990 Beer, wine, and liquor stores 1,353 (0) 5070 Pharmacies and drug stores 8,618 (0.3) 5080 Health and personal care, except drug, stores 2,996 (0.1) 5090 Gasoline stations 4,671 (0.1) 5170 **Clothing stores** 6,517 (0.2) 5180 Shoe stores 818 (0) 5190 Jewelry, luggage, and leather goods stores 3,312 (0.1) 5275 Sporting goods, and hobby and toy stores 2,604 (0.1) 5280 Sewing, needlework, and piece goods stores 1,057 (0) 5295 Musical instrument and supplies stores 509 (0) 5370 Book stores and news dealers 1,133 (0) 5380 Department stores and discount stores 10,280 (0.3) 5390 Miscellaneous general merchandise stores 1,604 (0.1) 5470 **Retail florists** 3,860 (0.1) 5480 Office supplies and stationery stores 1,529 (0) 5490 Used merchandise stores 2,771 (0.1) 5570 Gift, novelty, and souvenir shops 993 (0) 5580 Miscellaneous retail stores 3,324 (0.1) 5590 Electronic shopping 939 (0) 5591 **Electronic auctions** 1(0) 5592 Mail order houses 121 (0) 5670 Vending machine operators 727 (0) 5680 **Fuel dealers** 2,506 (0.1) 5690 Other direct selling establishments 1,653 (0.1) 5790 Not specified retail trade 65,275 (2.1)

6070

Air transportation

Industry and Occupation (I&O) data as applicable to mortality vital statistics, 2020

11,114 (0.4)

Usual industry code	Usual industry title	Total deaths N (%)	
6080	Rail transportation	11,976 (0.4)	
6090	Water transportation	2,668 (0.1)	
6170	Truck transportation	63,566 (2)	
6180	Bus service and urban transit	11,274 (0.4)	
6190	Taxi and limousine service	5,468 (0.2)	
6270	Pipeline transportation	642 (0)	
6280	Scenic and sightseeing transportation	502 (0)	
6290	Services incidental to transportation	17,065 (0.5)	
6370	Postal Service	21,878 (0.7)	
6380	Couriers and messengers	4,739 (0.2)	
6390	Warehousing and storage	10,316 (0.3)	
6470	Newspaper publishers	6,541 (0.2)	
6480	Periodical, book, and directory publishers	4,281 (0.1)	
6490	Software publishers	6 (0)	
6570	Motion pictures and video industries	3,500 (0.1)	
6590	Sound recording industries	576 (0)	
	Radio and television broadcasting and cable subscription		
6670	programming	4,608 (0.1)	
5672	Internet publishing and broadcasting and web search portals	71 (0	
5680	Wired telecommunications carriers	22,350 (0.7	
5690	Other telecommunications services	8,230 (0.3	
5695	Data processing, hosting, and related services	975 (0	
5770	Libraries and archives	4,197 (0.1	
5780	Other information services	221 (0	
5870	Banking and related activities	31,700 (1	
5880	Savings institutions, including credit unions	1,099 (0	
5890	Non-depository credit and related activities	9,551 (0.3)	
6970	Securities, commodities, funds, trusts, and other financial investments	11,368 (0.4)	
6990	Insurance carriers and related activities	34,397 (1.1	
7070	Real estate	35,907 (1.2)	
7080	Automotive equipment rental and leasing	731 (0	
7170	Video tape and disk rental	14 (0	
7180	Other consumer goods rental	209 (0)	
7190	Commercial, industrial, and other intangible assets rental and leasing	429 (0	
7270	Legal services	21,226 (0.7	
7280	Accounting, tax preparation, bookkeeping, and payroll services	22,181 (0.7	
7290	Architectural, engineering, and related services	20,491 (0.7	
7370	Specialized design services	6,291 (0.2	
7380	Computer systems design and related services	19,725 (0.6	
7390	Management, scientific, and technical consulting services	6,007 (0.2	
7460	Scientific research and development services	6,670 (0.2	
7470	Advertising and related services	3,982 (0.1	

Total deaths Usual industry code Usual industry title N (%) 2,218 (0.1) 7480 Veterinary services 7490 Other professional, scientific, and technical services 4,448 (0.1) 7570 Management of companies and enterprises 4,587 (0.1) 7580 **Employment services** 2,414 (0.1) 7590 **Business support services** 3,760 (0.1) 7670 Travel arrangements and reservation services 4,306 (0.1) 7680 Investigation and security services 12,223 (0.4) Services to buildings and dwellings (except cleaning during 7690 23,458 (0.8) construction and immediately after construction) 7770 Landscaping services 16,956 (0.5) 7780 Other administrative and other support services 2,181 (0.1) 7790 Waste management and remediation services 5,986 (0.2) 7860 Elementary and secondary schools 169,281 (5.4) 7870 Colleges and universities, including junior colleges 29,371 (0.9) 7880 Business, technical, and trade schools and training 1,256 (0) 7890 Other schools and instruction, and educational support services 3,634 (0.1) 7970 Offices of physicians 17,901 (0.6) 7980 Offices of dentists 8,234 (0.3) 7990 Offices of chiropractors 951 (0) 8070 Offices of optometrists 1,251 (0) 8080 Offices of other health practitioners 3,726 (0.1) 8090 **Outpatient care centers** 32,391 (1) 8170 Home health care services 18,108 (0.6) 8180 Other health care services 2,999 (0.1) 8190 Hospitals 112,198 (3.6) 8270 Nursing care facilities 34,178 (1.1) 8290 Residential care facilities, without nursing 3,731 (0.1) 8370 Individual and family services 16,198 (0.5) 8380 Community food and housing, and emergency services 586 (0) 8390 Vocational rehabilitation services 1,215 (0) 8470 Child day care services 12,903 (0.4) Independent artists, performing arts, spectator sports, and related 8560 23,462 (0.8) industries 8570 Museums, art galleries, historical sites, and similar institutions 3,957 (0.1) 8580 **Bowling centers** 631 (0) 8590 Other amusement, gambling, and recreation industries 12,330 (0.4) 8660 Traveler accommodation 15,739 (0.5) Recreational vehicle parks and camps, and rooming and boarding 8670 691 (0) houses 8680 Restaurants and other food services 93,256 (3) 8690 Drinking places, alcoholic beverages 4,431 (0.1) 8770 Automotive repair and maintenance 37,120 (1.2) 8780 Car washes 1,966 (0.1)

Usual industry code	Usual industry title	Total deaths N (%)
8790	Electronic and precision equipment repair and maintenance	2,098 (0.1)
8870	Commercial and industrial machinery and equipment repair and maintenance	8,749 (0.3)
8880	Personal and household goods repair and maintenance	6,793 (0.2)
8890	Footwear and leather goods repair	290 (0)
8970	Barber shops	3,343 (0.1)
8980	Beauty salons	20,425 (0.7)
8990	Nail salons and other personal care services	2,245 (0.1)
9070	Drycleaning and laundry services	5,597 (0.2)
9080	Funeral homes, cemeteries, and crematories	3,234 (0.1)
9090	Other personal services	3,254 (0.1)
9160	Religious organizations	24,332 (0.8)
9170	Civic, social, advocacy organizations, and grantmaking and giving services	6,502 (0.2)
9180	Labor unions	1,669 (0.1)
9190	Business, professional, political, and similar organizations	984 (0)
9290	Private households	17,269 (0.6)
9370	Executive offices and legislative bodies	1,830 (0.1)
9380	Public finance activities	5,376 (0.2)
9390	Other general government and support	56,879 (1.8)
9470	Justice, public order, and safety activities	46,957 (1.5)
9480	Administration of human resource programs	9,448 (0.3)
9490	Administration of environmental quality and housing programs	1,922 (0.1)
9570	Administration of economic programs and space research	7,188 (0.2)
9590	National security and international affairs	15 <i>,</i> 893 (0.5)
9670	U. S Army	7,143 (0.2)
9680	U. S. Air Force	6,522 (0.2)
9690	U. S. Navy	5,360 (0.2)
9770	U. S. Marines	1,415 (0)
9780	U. S. Coast Guard	373 (0)
9790	U. S. Armed Forces, Branch not specified	9 <i>,</i> 635 (0.3)
9870	Military Reserves or National Guard	596 (0)
9880	Retired	8,244 (0.3)
9890	Housewife, volunteer, student, cannot work, never worked, disabled, patient or inmate	472,033 (15.2)
9990	Blank, unknown, refused, or don't know	137,398 (4.4)
Not submitted for I/O coding		38,264 (1.2)

n.e.c=Not elsewhere classified

Usual occupation	Total deaths	Female	Male N (%)	
Usual occupation	N (%)	N (%)		
Total ²	3,115,391	1,487,287 (47.7)	1,628,104 (52.3)	
Management	254,603 (8.2)	78,473 (30.8)	176,130 (69.2)	
Business and financial operations	76,100 (2.4)	35,560 (46.7)	40,540 (53.3)	
Computer and mathematical	25,320 (0.8)	6,413 (25.3)	18,907 (74.7	
Architecture and engineering	70,332 (2.3)	4,647 (6.6)	65,685 (93.4	
Life, physical, and social science	20,039 (0.6)	5,616 (28.0)	14,423 (72.0	
Community and social services	42,143 (1.4)	20,222 (48.0)	21,921 (52.0	
Legal	18,257 (0.6)	6,485 (35.5)	11,772 (64.5	
Education, training, and library	133,542 (4.3)	94,659 (70.9)	38,883 (29.1	
Arts, design, entertainment, sports, and media	47,606 (1.5)	20,179 (42.4)	27,427 (57.6	
Healthcare practitioners and technical	116,891 (3.8)	88,369 (75.6)	28,522 (24.4	
Healthcare support	52,528 (1.7)	48,087 (91.5)	4,441 (8.5	
Protective service	54,826 (1.8)	8,494 (15.5)	46,332 (84.5	
Food preparation and serving related	91,368 (2.9)	56,093 (61.4)	35,275 (38.6	
Building and grounds cleaning and maintenance	95,098 (3.1)	37,416 (39.3)	57,682 (60.7	
Personal care and service	67,952 (2.2)	51,981 (76.5)	15,971 (23.5	
Sales and related	214,771 (6.9)	94,695 (44.1)	120,076 (55.9	
Office and administrative support	272,811 (8.8)	218,692 (80.2)	54,119 (19.8	
Farming, fishing, and forestry	22,299 (0.7)	3,537 (15.9)	18,762 (84.1	
Construction and extraction	206,217 (6.6)	3,475 (1.7)	202,742 (98.3	
Installation, maintenance, and repair	106,146 (3.4)	3,775 (3.6)	102,371 (96.4	
Production	240,443 (7.7)	84,221 (35.0)	156,222 (65.0	
Transportation and material moving	214,521 (6.9)	33,138 (15.4)	181,383 (84.6	
Military	30,360 (1.0)	1,548 (5.1)	28,812 (94.9	
Other-misc (excl. housewife)	215,532 (6.9)	80,177 (37.2)	135,355 (62.8	
Other–housewife	387,422 (12.4)	385,053 (99.4)	2,369 (0.6	
Not submitted for I/O coding	38,264 (1.2)	16,282 (42.6)	21,982 (57.4	

Table 3. Usual Occupation by NHIS Simple Recodes¹ and Sex (Frequency and percentage)

¹National Center for Health Statistics. Dataset documentation 2018. Document Version Date: 03-Sep-19. National Health Interview Survey (NHIS). Available from: https://ftp.cdc.gov/pub/health_Statistics/NCHs/Dataset_Documentation/NHIS/2018/samadult_layout.pdf. See Occupation Appendix page 465.

	-		• • •	Non-His	panic		
	Hispanic	American Indian or Alaskan Native	Asian	Black	Multiple Races	Native Hawaiian or Other Pacific Islander	White
Usual occupation	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Total ²	282,768 (9.1)	19,407 (0.6)	88,339 (2.8)	410,312 (13.2)	13,597 (0.4)	4,176 (0.1)	2,296,792 (73.7)
Management	14,386 (5.7)	1,110 (0.4)	8,291 (3.3)	18,534 (7.3)	1,019 (0.4)	230 (0.1)	211,033 (82.9)
Business and financial operations	3,874 (5.1)	278 (0.4)	2,663 (3.5)	6,531 (8.6)	306 (0.4)	95 (0.1)	62,353 (81.9)
Computer and mathematical	872 (3.4)	65 (0.3)	1,208 (4.8)	2,398 (9.5)	147 (0.6)	20 (0.1)	20,610 (81.4)
Architecture and engineering	2,805 (4.0)	170 (0.2)	3,676 (5.2)	3,202 (4.6)	251 (0.4)	49 (0.1)	60,179 (85.6)
Life, physical, and social science	756 (3.8)	102 (0.5)	877 (4.4)	1,263 (6.3)	97 (0.5)	15 (0.1)	16,929 (84.5)
Community and social services	2,910 (6.9)	407 (1.0)	942 (2.2)	8,590 (20.4)	204 (0.5)	127 (0.3)	28,963 (68.7)
Legal	755 (4.1)	78 (0.4)	332 (1.8)	1,087 (6.0)	65 (0.4)	15 (0.1)	15,925 (87.2)
Education, training, and library	6,093 (4.6)	610 (0.5)	3,969 (3.0)	15,377 (11.5)	407 (0.3)	116 (0.1)	106,970 (80.1)
Arts, design, entertainment, sports, and media	3,110 (6.5)	350 (0.7)	1,104 (2.3)	4,233 (8.9)	338 (0.7)	56 (0.1)	38,415 (80.7)
Healthcare practitioners and technical	5,208 (4.5)	540 (0.5)	4,778 (4.1)	15,767 (13.5)	509 (0.4)	88 (0.1)	90,001 (77.0)
Healthcare support	3,859 (7.3)	436 (0.8)	943 (1.8)	16,959 (32.3)	292 (0.6)	58 (0.1)	29,981 (57.1)
Protective service	3,879 (7.1)	560 (1.0)	923 (1.7)	10,616 (19.4)	334 (0.6)	167 (0.3)	38,347 (69.9)
Food preparation and serving related	11,161 (12.2)	828 (0.9)	4,264 (4.7)	18,107 (19.8)	602 (0.7)	163 (0.2)	56,243 (61.6)
Building and grounds cleaning and maintenance	16,438 (17.3)	974 (1.0)	2,231 (2.3)	27,152 (28.6)	485 (0.5)	240 (0.3)	47,578 (50.0)
Personal care and service	6,962 (10.2)	670 (1.0)	2,217 (3.3)	14,036 (20.7)	433 (0.6)	172 (0.3)	43,462 (64.0)
Sales and related	12,728 (5.9)	745 (0.3)	5,989 (2.8)	14,529 (6.8)	926 (0.4)	177 (0.1)	179,677 (83.7)
Office and administrative support	13,015 (4.8)	1,133 (0.4)	5,080 (1.9)	27,852 (10.2)	1,072 (0.4)	343 (0.1)	224,316 (82.2)
Farming, fishing, and forestry	8,052 (36.1)	480 (2.2)	546 (2.4)	2,268 (10.2)	103 (0.5)	36 (0.2)	10,814 (48.5)
Construction and extraction	25,984 (12.6)	2,191 (1.1)	1,878 (0.9)	23,522 (11.4)	1,135 (0.6)	306 (0.1)	151,201 (73.3)
Installation, maintenance, and repair	9,603 (9.0)	704 (0.7)	1,614 (1.5)	10,150 (9.6)	491 (0.5)	119 (0.1)	83,465 (78.6)
Production	25,792 (10.7)	1,291 (0.5)	7,146 (3.0)	31,785 (13.2)	767 (0.3)	246 (0.1)	173,416 (72.1)
Transportation and material moving	23,626 (11.0)	1,399 (0.7)	2,892 (1.3)	48,560 (22.6)	891 (0.4)	337 (0.2)	136,816 (63.8)
Military	1,282 (4.2)	114 (0.4)	1,217 (4.0)	3,863 (12.7)	167 (0.6)	94 (0.3)	23,623 (77.8)
Other–misc (excl. housewife)	25,992 (12.1)	1,725 (0.8)	5,955 (2.8)	50,427 (23.4)	1,186 (0.6)	306 (0.1)	129,941 (60.3)
Other–housewife	48,614 (12.5)	2,351 (0.6)	16,927 (4.4)	24,781 (6.4)	1,272 (0.3)	562 (0.1)	292,915 (75.6)
Not submitted for I/O coding	5,012 (13.1)	96 (0.3)	677 (1.8)	8,723 (22.8)	98 (0.3)	39 (0.1)	23,619 (61.7)

Table 4. Usual Occupation by NHIS Simple Recodes¹ and Race and Ethnicity (Frequency and percentage)

¹National Center for Health Statistics. Dataset documentation 2018. Document Version Date: 03-Sep-19. National Health Interview Survey (NHIS). Available from:

https://ftp.cdc.gov/pub/health_Statistics/NCHs/Dataset_Documentation/NHIS/2018/samadult_layout.pdf. See Occupation Appendix page 465.

Usual occupation	15-24 years N (%)	25-34 years N (%)	35-44 years N (%)	45-54 years N (%)	55-64 years N (%)	65-74 years N (%)	75-84 years N (%)	85 years and over N (%)
Total ²	32,864 (1.1)	67,822 (2.2)	96,947 (3.1)	177,435 (5.7)	409,378 (13.1)	625,749 (20.1)	761,980 (24.5)	943,216 (30.3)
Management	519 (0.2)	2,621 (1.0)	5,320 (2.1)	11,519 (4.5)	27,843 (10.9)	50,346 (19.8)	70,969 (27.9)	85,466 (33.6)
Business and financial operations	158 (0.2)	929 (1.2)	1,797 (2.4)	3,654 (4.8)	8,670 (11.4)	17,057 (22.4)	20,570 (27.0)	23,265 (30.6)
Computer and mathematical	112 (0.4)	664 (2.6)	1,231 (4.9)	2,253 (8.9)	4,556 (18.0)	6,770 (26.7)	6,011 (23.7)	3,723 (14.7)
Architecture and engineering	79 (0.1)	536 (0.8)	881 (1.3)	1,954 (2.8)	6,282 (8.9)	12,623 (17.9)	20,355 (28.9)	27,622 (39.3)
Life, physical, and social science	59 (0.3)	292 (1.5)	408 (2.0)	740 (3.7)	1,838 (9.2)	4,120 (20.6)	5,594 (27.9)	6,988 (34.9)
Community and social services	85 (0.2)	443 (1.1)	955 (2.3)	1,957 (4.6)	4,712 (11.2)	9,871 (23.4)	11,402 (27.1)	12,718 (30.2)
Legal	20 (0.1)	187 (1.0)	442 (2.4)	897 (4.9)	2,141 (11.7)	4,463 (24.4)	5,138 (28.1)	4,969 (27.2)
Education, training, and library	157 (0.1)	788 (0.6)	1,671 (1.3)	3,756 (2.8)	8,887 (6.7)	24,709 (18.5)	38,574 (28.9)	55,000 (41.2)
Arts, design, entertainment, sports, and media	471 (1.0)	1,437 (3.0)	1,819 (3.8)	2,848 (6.0)	5,827 (12.2)	10,592 (22.2)	10,995 (23.1)	13,617 (28.6)
Healthcare practitioners and technical	205 (0.2)	1,250 (1.1)	2,498 (2.1)	5,290 (4.5)	13,467 (11.5)	25,025 (21.4)	29,911 (25.6)	39,245 (33.6)
Healthcare support	376 (0.7)	1,471 (2.8)	2,346 (4.5)	4,102 (7.8)	8,871 (16.9)	11,823 (22.5)	12,004 (22.9)	11,535 (22.0)
Protective service	387 (0.7)	1,165 (2.1)	1,638 (3.0)	3,783 (6.9)	8,148 (14.9)	14,112 (25.7)	14,915 (27.2)	10,678 (19.5)
Food preparation and serving related	2,335 (2.6)	5,645 (6.2)	6,264 (6.9)	8,446 (9.2)	15,264 (16.7)	15,992 (17.5)	16,924 (18.5)	20,498 (22.4)
Building and grounds cleaning and maintenance	903 (0.9)	2,688 (2.8)	3,806 (4.0)	7,111 (7.5)	17,543 (18.4)	21,717 (22.8)	21,327 (22.4)	20,003 (21.0)
Personal care and service	582 (0.9)	2,127 (3.1)	3,024 (4.5)	5,309 (7.8)	10,166 (15.0)	14,850 (21.9)	16,082 (23.7)	15,812 (23.3)
Sales and related	1,802 (0.8)	4,543 (2.1)	6,150 (2.9)	10,800 (5.0)	24,310 (11.3)	41,543 (19.3)	57,048 (26.6)	68,575 (31.9)
Office and administrative support	1,313 (0.5)	3,525 (1.3)	5,209 (1.9)	10,179 (3.7)	26,136 (9.6)	50,535 (18.5)	69,565 (25.5)	106,349 (39.0)
Farming, fishing, and forestry	259 (1.2)	579 (2.6)	760 (3.4)	1,404 (6.3)	3,552 (15.9)	4,890 (21.9)	5,517 (24.7)	5,338 (23.9)
Construction and extraction	2,585 (1.3)	7,945 (3.9)	11,769 (5.7)	18,167 (8.8)	41,080 (19.9)	46,581 (22.6)	43,357 (21.0)	34,733 (16.8)
Installation, maintenance, and repair	830 (0.8)	2,655 (2.5)	3,792 (3.6)	7,151 (6.7)	18,335 (17.3)	25,156 (23.7)	26,374 (24.8)	21,853 (20.6)
Production	1,183 (0.5)	3,560 (1.5)	4,647 (1.9)	9,714 (4.0)	27,962 (11.6)	48,639 (20.2)	65,556 (27.3)	79,182 (32.9)
Transportation and material moving	2,727 (1.3)	6,634 (3.1)	8,471 (3.9)	16,727 (7.8)	38,867 (18.1)	52,390 (24.4)	50,733 (23.6)	37,972 (17.7)
Military	406 (1.3)	541 (1.8)	568 (1.9)	847 (2.8)	2,453 (8.1)	6,323 (20.8)	9,155 (30.2)	10,067 (33.2)
Other-misc (excl. housewife)	13,977 (6.5)	11,403 (5.3)	13,831 (6.4)	23,168 (10.7)	46,249 (21.5)	47,474 (22.0)	33,815 (15.7)	25,615 (11.9)
Other-housewife	463 (0.1)	2,664 (0.7)	5,627 (1.5)	12,204 (3.2)	29,056 (7.5)	49,582 (12.8)	92,425 (23.9)	195,401 (50.4)
Not submitted for I/O coding	871 (2.3)	1,530 (4.0)	2,023 (5.3)	3,455 (9.0)	7,163 (18.7)	8,566 (22.4)	7,664 (20.0)	6,992 (18.3)

Table 5. Usual Occupation by NHIS Simple Recodes¹ and Age Groups (Frequency and percentage)

¹National Center for Health Statistics. Dataset documentation 2018. Document Version Date: 03-Sep-19. National Health Interview Survey (NHIS). Available from:

https://ftp.cdc.gov/pub/health_Statistics/NCHs/Dataset_Documentation/NHIS/2018/samadult_layout.pdf See Occupation Appendix page 465.

				Other unpaid		
State of death occurrence	Census: Paid, civilian usual occupations	Military usual occupations	Housewife/Home maker occupations	occupations (student, volunteer)	Blank, unknown, or insufficient information	Not submitted for I/O coding
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Total ¹	2,443,813 (78.4)	30,360 (1.0)	387,422 (12.4)	12,570 (0.4)	202,962 (6.5)	38,264 (1.2)
AK	3,897 (79.2)	100 (2.0)	409 (8.3)	38 (0.8)	473 (9.6)	_
AL	48,670 (77.6)	1,112 (1.8)	7,718 (12.3)	215 (0.3)	5,033 (8.0)	-
AR	29,285 (78.2)	528 (1.4)	5,020 (13.4)	140 (0.4)	2,457 (6.6)	—
CA	252,984 (79.8)	3,035 (1.0)	41,521 (13.1)	1,789 (0.6)	17,286 (5.5)	398 (0.1)
СО	37,754 (80.2)	778 (1.7)	5,511 (11.7)	326 (0.7)	2,735 (5.8)	0 (0)
СТ	30,352 (80.1)	138 (0.4)	3,874 (10.2)	106 (0.3)	3,336 (8.8)	75 (0.2
DE	8,699 (79.9)	132 (1.2)	1,091 (10.0)	45 (0.4)	901 (8.3)	14 (0.1)
FL	193,157 (80.6)	3,959 (1.7)	28,018 (11.7)	923 (0.4)	13,471 (5.6)	29 (0
GA	77,683 (75.9)	1,517 (1.5)	10,810 (10.6)	421 (0.4)	11,314 (11.1)	571 (0.6
ні	9,880 (82.8)	238 (2.0)	1,074 (9.0)	34 (0.3)	591 (5)	114 (1
ID	13,029 (79.9)	187 (1.1)	2,247 (13.8)	105 (0.6)	725 (4.4)	14 (0.1
IL	100,604 (78.8)	434 (0.3)	18,180 (14.2)	533 (0.4)	7,841 (6.1)	13 (0
IN	61,441 (78.4)	420 (0.5)	9,958 (12.7)	264 (0.3)	5,957 (7.6)	346 (0.4
KS	24,857 (80.7)	412 (1.3)	3,725 (12.1)	129 (0.4)	1,644 (5.3)	20 (0.1
КҮ	41,978 (76.1)	562 (1.0)	8,425 (15.3)	203 (0.4)	3,981 (7.2)	-
LA	43,777 (77.9)	514 (0.9)	8,173 (14.5)	270 (0.5)	3,432 (6.1)	10 (0
MA	57,750 (84.3)	251 (0.4)	7,326 (10.7)	233 (0.3)	2,939 (4.3)	18 (0
MD	48,337 (81.7)	663 (1.1)	5,698 (9.6)	250 (0.4)	2,625 (4.4)	1,555 (2.6
ME	12,739 (82.1)	165 (1.1)	1,594 (10.3)	47 (0.3)	953 (6.1)	19 (0.1
MI	93,361 (81.6)	438 (0.4)	14,997 (13.1)	359 (0.3)	5,277 (4.6)	11 (0
MN	41,552 (80.4)	229 (0.4)	6,549 (12.7)	201 (0.4)	3,171 (6.1)	-
MO	61,364 (81.3)	707 (0.9)	8,968 (11.9)	280 (0.4)	4,117 (5.5)	88 (0.1
MS	29,297 (75.3)	500 (1.3)	4,332 (11.1)	134 (0.3)	3,385 (8.7)	1,246 (3.2
МТ	9,717 (81.6)	164 (1.4)	1,456 (12.2)	67 (0.6)	510 (4.3)	0 (0
ND	6,941 (79.4)	81 (0.9)	1,327 (15.2)	40 (0.5)	357 (4.1)	-
NE	15,399 (79.1)	169 (0.9)	2,963 (15.2)	94 (0.5)	851 (4.4)	0 (0)

 Table 6. State of Death Occurrence by Census and Supplementary Occupation codes (Frequency and percentage)

State of death occurrence	Census: Paid, civilian usual occupations	Military usual occupations	Housewife/Home maker occupations	Other unpaid occupations (student, volunteer)	Blank, unknown, or insufficient information	Not submitted for I/O coding
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
NH	11,121 (82.8)	117 (0.9)	1,337 (10.0)	36 (0.3)	823 (6.1)	_
NJ	75,719 (79.7)	281 (0.3)	11,446 (12.1)	252 (0.3)	5,928 (6.2)	1,339 (1.4)
NM	17,702 (77.3)	364 (1.6)	3,047 (13.3)	135 (0.6)	1,610 (7)	40 (0.2)
NV	24,723 (79.8)	575 (1.9)	2,977 (9.6)	160 (0.5)	2,464 (8)	73 (0.2)
NY	155,309 (77.7)	520 (0.3)	24,822 (12.4)	715 (0.4)	18,078 (9)	389 (0.2)
ОН	100,412 (70.4)	622 (0.4)	17,466 (12.2)	371 (0.3)	7,719 (5.4)	16,036 (11.2)
ОК	37,503 (81.6)	704 (1.5)	5,822 (12.7)	149 (0.3)	1,786 (3.9)	_
OR	33,105 (82.9)	342 (0.9)	4,637 (11.6)	161 (0.4)	1,696 (4.2)	_
PA	125,559 (80.8)	778 (0.5)	19,985 (12.9)	450 (0.3)	8,592 (5.5)	65 (0)
SC	48,320 (80.8)	1,000 (1.7)	5,524 (9.2)	207 (0.3)	4,008 (6.7)	715 (1.2)
SD	8,003 (79.9)	82 (0.8)	1,573 (15.7)	49 (0.5)	294 (2.9)	13 (0.1)
TN	69,044 (78.9)	1,098 (1.3)	10,429 (11.9)	334 (0.4)	6,577 (7.5)	_
ТХ	172,035 (68.8)	3,025 (1.2)	34,970 (14.0)	1,291 (0.5)	24,003 (9.6)	14,660 (5.9)
UT	17,118 (78.5)	221 (1.0)	3,487 (16.0)	168 (0.8)	625 (2.9)	175 (0.8)
VA	62,348 (79.2)	1,682 (2.1)	8,259 (10.5)	269 (0.3)	6,102 (7.8)	62 (0.1)
VT	5,226 (84.9)	42 (0.7)	601 (9.8)	17 (0.3)	266 (4.3)	0 (0)
WA	50,709 (81.2)	936 (1.5)	7,134 (11.4)	307 (0.5)	3,273 (5.2)	54 (0.1)
WI	51,500 (83.1)	262 (0.4)	7,667 (12.4)	169 (0.3)	2,357 (3.8)	_
WV	19,353 (76.0)	209 (0.8)	4,585 (18.0)	61 (0.2)	1,191 (4.7)	64 (0.3)
WY	4,500 (82.0)	67 (1.2)	690 (12.6)	23 (0.4)	208 (3.8)	0 (0)

¹Total excludes decedents <15 years of age, those missing age, foreign residents, and jurisdictions not included in the I&O coding project.

-Data were suppressed for values greater than 0 and less than 10 for jurisdiction specific data.

Jurisdiction of residence	Census: Paid, civilian usual occupations	Military usual occupations	Housewife/Homem aker occupations	Other unpaid occupations (student, volunteer)	Blank, unknown, or insufficient information	Not submitted for I/O coding
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Total (1)	2,443,813 (78.4)	30,360 (1.0)	387,422 (12.4)	12,570 (0.4)	202,962 (6.5)	38,264 (1.2)
AK	4,003 (79.4)	102 (2.0)	415 (8.2)	40 (0.8)	478 (9.5)	—
AL	49,746 (77.5)	1,130 (1.8)	7,894 (12.3)	210 (0.3)	5,143 (8.0)	27 (0)
AR	29,465 (78.2)	533 (1.4)	5,063 (13.4)	142 (0.4)	2,480 (6.6)	14 (0)
AZ*	1,237 (80.3)	26 (1.7)	140 (9.1)	23 (1.5)	107 (6.9)	—
CA	252,727 (79.8)	3,019 (1.0)	41,558 (13.1)	1,783 (0.6)	17,271 (5.5)	423 (0.1)
СО	37,117 (80.0)	779 (1.7)	5,456 (11.8)	317 (0.7)	2,693 (5.8)	-
СТ	30,059 (80.1)	136 (0.4)	3,814 (10.2)	104 (0.3)	3,325 (8.9)	76 (0.2)
DC*	913 (84.3)	—	38 (3.5)	—	84 (7.8)	31 (2.9)
DE	8,805 (80.2)	130 (1.2)	1,100 (10.0)	42 (0.4)	888 (8.1)	18 (0.2)
FL	191,243 (80.5)	3,928 (1.7)	27,912 (11.8)	913 (0.4)	13,392 (5.6)	79 (0)
GA	77,283 (75.9)	1,500 (1.5)	10,782 (10.6)	423 (0.4)	11,225 (11.0)	549 (0.5)
HI	9,868 (82.8)	232 (1.9)	1,075 (9.0)	33 (0.3)	594 (5.0)	114 (1.0)
IA*	1,210 (83.2)	16 (1.1)	149 (10.2)	12 (0.8)	65 (4.5)	_
ID	12,943 (79.9)	187 (1.2)	2,238 (13.8)	101 (0.6)	717 (4.4)	15 (0.1)
IL	103,290 (78.9)	456 (0.3)	18,498 (14.1)	563 (0.4)	8,029 (6.1)	29 (0)
IN	60,561 (78.3)	410 (0.5)	9,775 (12.6)	265 (0.3)	5,912 (7.6)	450 (0.6)
KS	25,629 (80.8)	417 (1.3)	3,822 (12.1)	131 (0.4)	1,683 (5.3)	26 (0.1)
КҮ	42,077 (76.0)	578 (1.0)	8,388 (15.2)	193 (0.3)	3,980 (7.2)	146 (0.3)
LA	43,637 (77.8)	501 (0.9)	8,190 (14.6)	260 (0.5)	3,450 (6.2)	54 (0.1)
MA	56,633 (84.2)	242 (0.4)	7,220 (10.7)	230 (0.3)	2,911 (4.3)	21 (0)
MD	47,177 (81.7)	627 (1.1)	5,584 (9.7)	250 (0.4)	2,597 (4.5)	1,503 (2.6)
ME	12,832 (82.1)	165 (1.1)	1,609 (10.3)	47 (0.3)	958 (6.1)	20 (0.1)
MI	94,615 (81.6)	446 (0.4)	15,135 (13.1)	375 (0.3)	5,344 (4.6)	62 (0.1)
MN	41,622 (80.4)	227 (0.4)	6,574 (12.7)	202 (0.4)	3,157 (6.1)	-
МО	59,368 (81.1)	683 (0.9)	8,767 (12.0)	255 (0.3)	4,002 (5.5)	93 (0.1)

 Table 7. Jurisdiction of Decedent's Residence by Census and Supplementary Occupation codes (Frequency and percentage)

WY	4,840 (82.0)	71 (1.2)	747 (12.6)	24 (0.4)	221 (3.7)	
WV	19,586 (75.8)	231 (0.9)	4,663 (18.0)	58 (0.2)	1,210 (4.7)	90 (0.3)
WI	51,588 (83.1)	267 (0.4)	7,640 (12.3)	174 (0.3)	2,382 (3.8)	—
WA	50,722 (81.2)	954 (1.5)	7,136 (11.4)	300 (0.5)	3,279 (5.3)	54 (0.1)
VT	5,451 (84.9)	45 (0.7)	620 (9.7)	17 (0.3)	288 (4.5)	_
VA	62,156 (79.1)	1,683 (2.1)	8,320 (10.6)	258 (0.3)	6,124 (7.8)	78 (0.1)
UT	16,562 (78.5)	212 (1.0)	3,397 (16.1)	159 (0.8)	604 (2.9)	169 (0.8)
ТХ	170,206 (68.9)	2,996 (1.2)	34,566 (14.0)	1,281 (0.5)	23,727 (9.6)	14,421 (5.8)
TN	65,761 (78.9)	1,055 (1.3)	9,943 (11.9)	315 (0.4)	6,263 (7.5)	26 (0)
SD	7,675 (79.7)	82 (0.9)	1,522 (15.8)	49 (0.5)	291 (3.0)	11 (0.1)
SC	48,178 (80.8)	998 (1.7)	5,478 (9.2)	198 (0.3)	4,028 (6.8)	717 (1.2)
RI*	419 (86.9)	—	34 (7.1)	_	18 (3.7)	_
PA	124,623 (80.7)	766 (0.5)	19,931 (12.9)	433 (0.3)	8,507 (5.5)	90 (0.1)
OR	33,045 (82.8)	334 (0.8)	4,641 (11.6)	164 (0.4)	1,711 (4.3)	_
ОК	38,525 (81.4)	727 (1.5)	5,997 (12.7)	153 (0.3)	1,862 (3.9)	63 (0.1)
ОН	100,549 (70.6)	615 (0.4)	17,505 (12.3)	367 (0.3)	7,733 (5.4)	15,619 (11.0)
NY	157,048 (77.8)	523 (0.3)	25,080 (12.4)	708 (0.4)	18,131 (9.0)	415 (0.2)
NV	24,145 (79.8)	567 (1.9)	2,904 (9.6)	158 (0.5)	2,395 (7.9)	77 (0.3)
NM	18,056 (77.0)	381 (1.6)	3,148 (13.4)	144 (0.6)	1,665 (7.1)	56 (0.2)
NJ	76,120 (79.8)	287 (0.3)	11,384 (11.9)	288 (0.3)	5,983 (6.3)	1,326 (1.4)
NH	11,306 (83.1)	126 (0.9)	1,336 (9.8)	35 (0.3)	807 (5.9)	_
NE	15,082 (79.0)	162 (0.8)	2,940 (15.4)	86 (0.5)	819 (4.3)	_
ND	6,238 (78.7)	77 (1.0)	1,248 (15.8)	35 (0.4)	323 (4.1)	_
NC*	2,212 (83.7)	45 (1.7)	193 (7.3)	27 (1.0)	142 (5.4)	24 (0.9)
MT	9,683 (81.5)	162 (1.4)	1,455 (12.2)	63 (0.5)	511 (4.3)	—
MS	29,977 (75.5)	509 (1.3)	4,398 (11.1)	150 (0.4)	3,453 (8.7)	1,225 (3.1)

¹Total excludes decedents <15 years of age, those missing age, foreign residents, and jurisdictions not included in the I&O coding project.

*Only includes deaths that occurred in one of the participating jurisdictions.

- Data were suppressed for values greater than 0 and less than 10 for jurisdiction specific data.

	Total deaths	Female	Male
Usual industry	N (%)	N (%)	N (%)
Total ²	3,115,391	1,487,287 (47.7)	1,628,104 (52.3)
Agriculture, forestry, fishing, and hunting	68,502 (2.2)	11,058 (16.1)	57,444 (83.9)
Mining	22,706 (0.7)	1,206 (5.3)	21,500 (94.7)
Utilities	30,236 (1.0)	5,364 (17.7)	24,872 (82.3)
Construction	224,353 (7.2)	10,009 (4.5)	214,344 (95.5)
Manufacturing	386,796 (12.4)	120,986 (31.3)	265,810 (68.7)
Wholesale trade	28,331 (0.9)	5,926 (20.9)	22,405 (79.1)
Retail trade	220,233 (7.1)	105,386 (47.9)	114,847 (52.1)
Transportation and warehousing	161,208 (5.2)	25,503 (15.8)	135,705 (84.2)
Information	55,556 (1.8)	26,367 (47.5)	29,189 (52.5)
Finance and insurance	88,115 (2.8)	50,916 (57.8)	37,199 (42.2)
Real estate, rental, and leasing	37,290 (1.2)	18,250 (48.9)	19,040 (51.1)
Professional, scientific, and technical services	113,239 (3.6)	43,854 (38.7)	69,385 (61.3)
Management of companies and enterprises	4,587 (0.1)	2,469 (53.8)	2,118 (46.2)
Administrative, support, and waste services	71,284 (2.3)	20,490 (28.7)	50,794 (71.3)
Education services	203,542 (6.5)	139,303 (68.4)	64,239 (31.6)
Healthcare and social assistance	266,570 (8.6)	213,401 (80.1)	53,169 (19.9)
Arts, entertainment, and recreation	40,380 (1.3)	15,366 (38.1)	25,014 (61.9)
Accommodation and food services	114,117 (3.7)	61,347 (53.8)	52,770 (46.2)
Other services (except public administration)	145,870 (4.7)	61,008 (41.8)	84,862 (58.2)
Public administration	145,493 (4.7)	57,019 (39.2)	88,474 (60.8)
Military	31,044 (1.0)	1,598 (5.1)	29,446 (94.9)
Other-misc, missing	617,675 (19.8)	474,179 (76.8)	143,496 (23.2)
Not submitted for I/O coding	38,264 (1.2)	16,282 (42.6)	21,982 (57.4)

¹National Center for Health Statistics. Dataset documentation 2018. Document Version Date: 03-Sep-19. National Health Interview Survey (NHIS). Available from: <u>https://ftp.cdc.gov/pub/health_Statistics/NCHs/Dataset_Documentation/NHIS/2018/samadult_layout.pdf. See Industry</u> <u>Appendix page 461.</u>

••	•		/ \	Non-His	panic		
	Hispanic	American Indian or Alaskan Native	Asian	Black	Multiple Races	Native Hawaiian or Other Pacific Islander	White
Usual industry	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Total ²	282,768 (9.1)	19,407 (0.6)	88,339 (2.8)	410,312 (13.2)	13,597 (0.4)	4,176 (0.1)	2,296,792 (73.7)
Agriculture, forestry, fishing, and hunting	12,011 (17.5)	809 (1.2)	2,337 (3.4)	4,310 (6.3)	223 (0.3)	76 (0.1)	48,736 (71.1)
Mining	1,652 (7.3)	281 (1.2)	151 (0.7)	1,105 (4.9)	92 (0.4)	6 (0.0)	19,419 (85.5)
Utilities	1,360 (4.5)	169 (0.6)	447 (1.5)	2,521 (8.3)	117 (0.4)	40 (0.1)	25,582 (84.6)
Construction	27,094 (12.1)	2,115 (0.9)	2,357 (1.1)	24,099 (10.7)	1,226 (0.5)	324 (0.1)	167,138 (74.5)
Manufacturing	30,785 (8.0)	1,467 (0.4)	9,501 (2.5)	43,895 (11.3)	1,107 (0.3)	313 (0.1)	299,728 (77.5)
Wholesale trade	2,383 (8.4)	100 (0.4)	894 (3.2)	2,200 (7.8)	125 (0.4)	38 (0.1)	22,591 (79.7)
Retail trade	15,505 (7.0)	885 (0.4)	6,337 (2.9)	18,185 (8.3)	946 (0.4)	204 (0.1)	178,171 (80.9)
Transportation and warehousing	14,814 (9.2)	789 (0.5)	3,190 (2.0)	29,553 (18.3)	761 (0.5)	336 (0.2)	111,765 (69.3)
Information	2,198 (4.0)	147 (0.3)	961 (1.7)	4,973 (9.0)	227 (0.4)	51 (0.1)	46,999 (84.6)
Finance and insurance	3,481 (4.0)	144 (0.2)	2,408 (2.7)	6,256 (7.1)	302 (0.3)	64 (0.1)	75,460 (85.6)
Real estate, rental, and leasing	2,502 (6.7)	135 (0.4)	909 (2.4)	3,076 (8.2)	169 (0.5)	29 (0.1)	30,470 (81.7)
Professional, scientific, and technical services	5,614 (5.0)	274 (0.2)	4,475 (4.0)	6,852 (6.1)	482 (0.4)	85 (0.1)	95,457 (84.3)
Management of companies and enterprises	180 (3.9)	23 (0.5)	72 (1.6)	255 (5.6)		0 (0.0)	4,043 (88.1)
Administrative, support, and waste services	11,654 (16.3)	483 (0.7)	1,492 (2.1)	15,104 (21.2)	431 (0.6)	217 (0.3)	41,903 (58.8)
Education services	10,371 (5.1)	1,086 (0.5)	4,954 (2.4)	27,285 (13.4)	655 (0.3)	184 (0.1)	159,007 (78.1)
Healthcare and social assistance	16,590 (6.2)	1,881 (0.7)	7,670 (2.9)	54,292 (20.4)	1,281 (0.5)	345 (0.1)	184,511 (69.2)
Arts, entertainment, and recreation	3,258 (8.1)	781 (1.9)	1,010 (2.5)	5,077 (12.6)	338 (0.8)	81 (0.2)	29,835 (73.9)
Accommodation and food services	14,569 (12.8)	907 (0.8)	6,553 (5.7)	19,670 (17.2)	805 (0.7)	243 (0.2)	71,370 (62.5)
Other services (except public administration)	15,569 (10.7)	982 (0.7)	3,827 (2.6)	25,860 (17.7)	709 (0.5)	254 (0.2)	98,669 (67.6)
Public administration	7,587 (5.2)	1,540 (1.1)	3,883 (2.7)	22,367 (15.4)	818 (0.6)	279 (0.2)	109,019 (74.9)
Military	1,323 (4.3)	122 (0.4)	1,218 (3.9)	4,057 (13.1)	173 (0.6)	94 (0.3)	24,057 (77.5)
Other-misc, missing	77,256 (12.5)	4,191 (0.7)	23,016 (3.7)	80,597 (13.0)	2,498 (0.4)	874 (0.1)	429,243 (69.5)
Not submitted for I/O coding	5,012 (13.1)	96 (0.3)	677 (1.8)	8,723 (22.8)	98 (0.3)	39 (0.1)	23,619 (61.7)

Table 9. Usual Industry by NHIS Simple Recodes¹ and Race and Ethnicity (Frequency and percentage)

¹National Center for Health Statistics. Dataset documentation 2018. Document Version Date: 03-Sep-19. National Health Interview Survey (NHIS). Available from: https://ftp.cdc.gov/pub/health_Statistics/NCHs/Dataset_Documentation/NHIS/2018/samadult_layout.pdf. See Industry Appendix page 461.

Usual industry	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	75-84 years	85 years and over
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Total	32,864 (1.1)	67,822 (2.2)	96,947 (3.1)	177,435 (5.7)	409,378 (13.1)	625,749 (20.1)	761,980 (24.5)	943,216 (30.3)
Agriculture, forestry, fishing, and hunting	387 (0.6)	915 (1.3)	1,250 (1.8)	2,470 (3.6)	7,139 (10.4)	12,158 (17.7)	18,400 (26.9)	25,783 (37.6)
Mining	131 (0.6)	492 (2.2)	774 (3.4)	1,117 (4.9)	3,064 (13.5)	5,526 (24.3)	6,108 (26.9)	5,494 (24.2)
Utilities	104 (0.3)	359 (1.2)	548 (1.8)	1,090 (3.6)	3,361 (11.1)	6,815 (22.5)	8,579 (28.4)	9,380 (31.0)
Construction	2,742 (1.2)	8,542 (3.8)	12,731 (5.7)	20,036 (8.9)	45,072 (20.1)	50,105 (22.3)	46,792 (20.9)	38,333 (17.1)
Manufacturing	1,694 (0.4)	5,108 (1.3)	6,910 (1.8)	14,754 (3.8)	42,410 (11.0)	76,798 (19.9)	108,023 (27.9)	131,099 (33.9)
Wholesale trade	189 (0.7)	570 (2.0)	746 (2.6)	1,554 (5.5)	3,793 (13.4)	5,875 (20.7)	7,430 (26.2)	8,174 (28.9)
Retail trade	2,373 (1.1)	5,492 (2.5)	7,204 (3.3)	12,387 (5.6)	27,964 (12.7)	42,641 (19.4)	54,360 (24.7)	67,812 (30.8)
Transportation and warehousing	1,204 (0.7)	3,399 (2.1)	4,843 (3.0)	10,770 (6.7)	26,449 (16.4)	39,957 (24.8)	40,646 (25.2)	33,940 (21.1)
Information	183 (0.3)	708 (1.3)	1,132 (2.0)	2,128 (3.8)	4,876 (8.8)	11,293 (20.3)	14,449 (26.0)	20,787 (37.4)
Finance and insurance	157 (0.2)	942 (1.1)	1,773 (2.0)	3,784 (4.3)	8,325 (9.4)	17,146 (19.5)	24,598 (27.9)	31,390 (35.6)
Real estate, rental, and leasing	107 (0.3)	480 (1.3)	789 (2.1)	1,803 (4.8)	4,449 (11.9)	7,677 (20.6)	10,430 (28.0)	11,555 (31)
Professional, scientific, and technical services	336 (0.3)	1,895 (1.7)	3,349 (3.0)	6,286 (5.6)	13,949 (12.3)	24,599 (21.7)	29,772 (26.3)	33,053 (29.2)
Management of companies and enterprises	5 (0.1)	31 (0.7)	58 (1.3)	125 (2.7)	337 (7.3)	823 (17.9)	1,238 (27.0)	1,970 (42.9)
Administrative, support, and waste services	1,051 (1.5)	3,180 (4.5)	4,216 (5.9)	7,025 (9.9)	14,261 (20.0)	16,177 (22.7)	14,200 (19.9)	11,174 (15.7)
Education services	255 (0.1)	1,100 (0.5)	2,435 (1.2)	5,847 (2.9)	15,684 (7.7)	38,295 (18.8)	58,181 (28.6)	81,745 (40.2)
Healthcare and social assistance	1,030 (0.4)	4,304 (1.6)	7,878 (3.0)	15,833 (5.9)	37,544 (14.1)	60,620 (22.7)	65,906 (24.7)	73,455 (27.6)
Arts, entertainment, and recreation	569 (1.4)	1,561 (3.9)	1,851 (4.6)	2,953 (7.3)	6,152 (15.2)	9,759 (24.2)	8,788 (21.8)	8,747 (21.7)
Accommodation and food services	3,040 (2.7)	7,081 (6.2)	8,096 (7.1)	10,999 (9.6)	19,514 (17.1)	20,681 (18.1)	21,509 (18.8)	23,197 (20.3)
Other services (except public administration)	985 (0.7)	3,429 (2.4)	4,916 (3.4)	9,341 (6.4)	21,165 (14.5)	30,750 (21.1)	35,703 (24.5)	39,581 (27.1)
Public administration	262 (0.2)	1,104 (0.8)	2,123 (1.5)	5,473 (3.8)	15,464 (10.6)	33,621 (23.1)	41,538 (28.5)	45,908 (31.6)
NIOSH NCHS military	406 (1.3)	570 (1.8)	620 (2.0)	896 (2.9)	2,560 (8.2)	6,620 (21.3)	9,238 (29.8)	10,134 (32.6)
NIOSH NCHS other-misc, missing	14,783 (2.4)	15,030 (2.4)	20,682 (3.3)	37,309 (6.0)	78,683 (12.7)	99,247 (16.1)	128,428 (20.8)	223,513 (36.2)
Not submitted for I/O coding	871 (2.3)	1,530 (4.0)	2,023 (5.3)	3,455 (9.0)	7,163 (18.7)	8,566 (22.4)	7,664 (20.0)	6,992 (18.3)

Table 10. Usual Industry by NHIS Simple Recodes¹ and Age Groups (Frequency and percentage)

¹National Center for Health Statistics. Dataset documentation 2018. Document Version Date: 03-Sep-19. National Health Interview Survey (NHIS). <u>Available from:</u> <u>https://ftp.cdc.gov/pub/health_Statistics/NCHs/Dataset_Documentation/NHIS/2018/samadult_layout.pdf. See Industry Appendix page 461.</u>

			Unpaid, blank,	
	Census: Paid,		unknown, or	
	civilian usual	Military usual	insufficient	Not submitted
	industries	industries	information	for I/O coding
State of death	N (%)	N (%)	N (%)	N (%)
۲otal ¹	2,428,408 (77.9)	31,044 (1.0)	617,675 (19.8)	38,264 (1.2)
 ΑK	3,846 (78.2)	102 (2.1)	969 (19.7)	-
AL .	48,831 (77.8)	1,135 (1.8)	12,782 (20.4)	—
٩R	28,950 (77.3)	539 (1.4)	7,941 (21.2)	_
CA	252,213 (79.6)	3,037 (1.0)	61,365 (19.4)	398 (0.1)
0	37,613 (79.9)	791 (1.7)	8,700 (18.5)	0 (0)
CT	30,414 (80.3)	145 (0.4)	7,247 (19.1)	75 (0.2)
DE	8,605 (79.1)	132 (1.2)	2,131 (19.6)	14 (0.1)
۶L	192,089 (80.2)	4,043 (1.7)	43,396 (18.1)	29 (0)
GΑ	77,570 (75.8)	1,554 (1.5)	22,621 (22.1)	571 (0.6)
41	9,913 (83.1)	238 (2.0)	1,666 (14.0)	114 (1.0)
D	12,962 (79.5)	192 (1.2)	3,139 (19.2)	14 (0.1)
L	95,811 (75.1)	442 (0.3)	31,339 (24.6)	13 (0)
N	61,758 (78.8)	438 (0.6)	15,844 (20.2)	346 (0.4)
<s< td=""><td>24,999 (81.2)</td><td>425 (1.4)</td><td>5,343 (17.4)</td><td>20 (0.1)</td></s<>	24,999 (81.2)	425 (1.4)	5,343 (17.4)	20 (0.1)
٢Y	42,013 (76.2)	580 (1.1)	12,556 (22.8)	_
A	43,417 (77.3)	529 (0.9)	12,220 (21.8)	10 (0)
MA	57,638 (84.1)	262 (0.4)	10,599 (15.5)	18 (0)
MD	47,938 (81.1)	666 (1.1)	8,969 (15.2)	1,555 (2.6)
ME	12,689 (81.8)	172 (1.1)	2,637 (17.0)	19 (0.1)
MI	93,163 (81.4)	448 (0.4)	20,821 (18.2)	11 (0)
MN	41,089 (79.5)	237 (0.5)	10,376 (20.1)	
MO	61,196 (81.0)	721 (1.0)	13,519 (17.9)	88 (0.1)
VIS	29,508 (75.9)	516 (1.3)	7,624 (19.6)	1,246 (3.2)
MT	9,629 (80.8)	168 (1.4)	2,117 (17.8)	0 (0)

 Table 11. State of Death Occurrence by Census and Supplementary Industry codes (Frequency and percentage)

Unpaid, blank, Census: Paid, unknown, or insufficient Military usual civilian usual Not submitted industries industries information for I/O coding State of death N (%) N (%) N (%) N (%) occurrence 6,954 (79.5) 1,711 (19.6) 81 (0.9) ND _ NE 15,426 (79.2) 173 (0.9) 3,877 (19.9) 0 (0) NH 11,011 (82.0) 119 (0.9) 2,304 (17.1) 1,339 (1.4) NJ 74,695 (78.7) 295 (0.3) 18,636 (19.6) NM 17,685 (77.2) 372 (1.6) 4,801 (21.0) 40 (0.2) NV 24,681 (79.7) 578 (1.9) 5,640 (18.2) 73 (0.2) NY 389 (0.2) 153,609 (76.9) 551 (0.3) 45,284 (22.7) ОН 98,314 (68.9) 656 (0.5) 27,620 (19.4) 16,036 (11.2) ОК 37,537 (81.7) 706 (1.5) 7,721 (16.8) OR 32,848 (82.2) 348 (0.9) 6,745 (16.9) PΑ 124,754 (80.3) 805 (0.5) 29,805 (19.2) 65 (0) SC 48,904 (81.8) 1,019 (1.7) 9,136 (15.3) 715 (1.2) SD 8,066 (80.5) 86 (0.9) 1,849 (18.5) 13 (0.1) 69,400 (79.3) ΤN 1,123 (1.3) 16,959 (19.4) _ ТΧ 169,257 (67.7) 3,125 (1.3) 62,942 (25.2) 14,660 (5.9) UT 17,145 (78.7) 222 (1.0) 4,252 (19.5) 175 (0.8) VA 63,333 (80.5) 1,732 (2.2) 13,595 (17.3) 62 (0.1) VT 5,226 (84.9) 42 (0.7) 884 (14.4) 0 (0) 50,519 (80.9) 10,896 (17.5) WA 944 (1.5) 54 (0.1) WI 51,397 (83.0) 270 (0.4) 10,288 (16.6) WV 19,302 (75.8) 215 (0.8) 5,882 (23.1) 64 (0.3) 4,491 (81.8) 70 (1.3) 927 (16.9) 0 (0) WY

¹Total excludes decedents <15 years of age, those missing age, foreign residents, and jurisdictions not included in the I&O coding project.

- Data were suppressed for values greater than 0 and less than 10 for jurisdiction specific data.

			Unpaid, blank,	
	Census: Paid, civilian		unknown, or insufficient	Not submitted
	usual industries	Military usual industries	information	for I/O coding
Jurisdiction of residence	N (%)	N (%)	N (%)	N (%)
Total ¹	2,428,408 (77.9)	31,044 (1.0)	617,675 (19.8)	38,264 (1.2)
AK	3,954 (78.4)	104 (2.1)	980 (19.4)	—
AL	49,915 (77.8)	1,151 (1.8)	13,057 (20.4)	27 (0)
AR	29,152 (77.3)	544 (1.4)	7,987 (21.2)	14 (0)
AZ*	1,239 (80.4)	27 (1.8)	267 (17.3)	—
CA	251,926 (79.5)	3,021 (1.0)	61,411 (19.4)	423 (0.1)
CO	36,975 (79.7)	792 (1.7)	8,595 (18.5)	—
СТ	30,121 (80.3)	143 (0.4)	7,174 (19.1)	76 (0.2)
DC*	871 (80.4)	-	172 (15.9)	31 (2.9)
DE	8,717 (79.4)	131 (1.2)	2,117 (19.3)	18 (0.2)
FL	190,174 (80.1)	4,009 (1.7)	43,205 (18.2)	79 (0)
GA	77,203 (75.9)	1,536 (1.5)	22,474 (22.1)	549 (0.5)
Н	9,899 (83.1)	232 (1.9)	1,671 (14.0)	114 (1.0)
IA*	1,214 (83.5)	16 (1.1)	222 (15.3)	—
ID	12,871 (79.4)	192 (1.2)	3,123 (19.3)	15 (0.1)
IL	98,495 (75.3)	463 (0.4)	31,878 (24.4)	29 (0)
IN	60,898 (78.7)	430 (0.6)	15,595 (20.2)	450 (0.6)
KS	25,772 (81.3)	428 (1.3)	5,482 (17.3)	26 (0.1)
КҮ	42,125 (76.1)	592 (1.1)	12,499 (22.6)	146 (0.3)
LA	43,293 (77.2)	516 (0.9)	12,229 (21.8)	54 (0.1)
MA	56,513 (84.0)	253 (0.4)	10,470 (15.6)	21 (0)
MD	46,839 (81.1)	630 (1.1)	8,766 (15.2)	1,503 (2.6)
ME	12,779 (81.8)	172 (1.1)	2,660 (17.0)	20 (0.1)
MI	94,395 (81.4)	457 (0.4)	21,063 (18.2)	62 (0.1)
MN	41,167 (79.5)	236 (0.5)	10,379 (20.0)	_
MO	59,195 (80.9)	697 (1.0)	13,183 (18.0)	93 (0.1)
MS	30,177 (76.0)	525 (1.3)	7,785 (19.6)	1,225 (3.1)

Table 12. Jurisdiction of Decedent's Residence by Census and Supplementary Industry codes (Frequency and percentage)

			Unpaid, blank,	
	Census: Paid, civilian		unknown, or insufficient	Not submitted
	usual industries	Military usual industries	information	for I/O coding
Jurisdiction of residence	N (%)	N (%)	N (%)	N (%)
MT	9,599 (80.8)	166 (1.4)	2,109 (17.8)	_
NC*	2,202 (83.3)	45 (1.7)	372 (14.1)	24 (0.9)
ND	6,241 (78.8)	77 (1.0)	1,603 (20.2)	_
NE	15,101 (79.1)	166 (0.9)	3,822 (20.0)	—
NH	11,203 (82.3)	128 (0.9)	2,279 (16.7)	—
NJ	75,108 (78.7)	301 (0.3)	18,653 (19.6)	1,326 (1.4)
NM	18,020 (76.8)	390 (1.7)	4,984 (21.3)	56 (0.2)
NV	24,103 (79.7)	571 (1.9)	5,495 (18.2)	77 (0.3)
NY	155,331 (76.9)	554 (0.3)	45,605 (22.6)	415 (0.2)
ОН	98,469 (69.2)	649 (0.5)	27,651 (19.4)	15,619 (11.0)
ОК	38,528 (81.4)	729 (1.5)	8,007 (16.9)	63 (0.1)
OR	32,789 (82.2)	341 (0.9)	6,765 (17.0)	_
PA	123,817 (80.2)	793 (0.5)	29,650 (19.2)	90 (0.1)
RI*	417 (86.5)	_	58 (12.0)	_
SC	48,743 (81.8)	1,018 (1.7)	9,119 (15.3)	717 (1.2)
SD	7,736 (80.3)	86 (0.9)	1,797 (18.7)	11 (0.1)
TN	66,097 (79.3)	1,084 (1.3)	16,156 (19.4)	26 (0)
ТХ	167,486 (67.8)	3,096 (1.3)	62,194 (25.2)	14,421 (5.8)
UT	16,584 (78.6)	212 (1.0)	4,138 (19.6)	169 (0.8)
VA	63,144 (80.3)	1,731 (2.2)	13,666 (17.4)	78 (0.1)
VT	5,451 (84.9)	45 (0.7)	925 (14.4)	_
WA	50,533 (80.9)	962 (1.5)	10,896 (17.4)	54 (0.1)
WI	51,482 (83.0)	275 (0.4)	10,294 (16.6)	_
WV	19,514 (75.5)	238 (0.9)	5,996 (23.2)	90 (0.3)
WY	4,831 (81.8)	75 (1.3)	997 (16.9)	_

*Only includes deaths that occurred in one of the participating states.

¹Total excludes decedents <15, those missing age, foreign residents, and jurisdictions not included in the I&O coding project.

- Data were suppressed for values greater than 0 and less than 10 for jurisdiction specific data.

Acknowledgements

This project to code and include I&O codes into the National Vital Statistics mortality data would not have been possible without funeral directors across the country who take time to speak with decedents' loved ones and record the I&O fields on the death certificate. We appreciate the support and participation of State Vital Statistics offices, and the National Association for Public Health Statistics and Information Systems (NAPHSIS). We appreciate the support of both NIOSH and NCHS, especially the following: Paul Sutton, Karen Knight, Rajesh Virkar, Prameela Sathunuru, Chrissy Jarman, Steven Steimel, Dave Johnson, Robert Anderson, Elizabeth Arias, Isabelle Horon, Amy Branum, Marie Haring Sweeney, Teresa Schnorr and Lauralynn McKernan. Finally, this project would not have been possible without the dedication and attention to detail of the NIOCCS coding team: Stacey Marovich, Jennifer Cornell, Kelly Vanoli, Jeff Purdin, Pam Schumacher-Young, Matthew Hirst, Elizabeth A. Smith, Katrina Bicknaver, Crystal Greene, Rebecca Purdin, Susan Burton, Joetta Thornton, Surprese Watts, and Hannah Free.

REFERENCES

- 1. Guralnick L. Mortality by Occupation and Industry Among Men 20-64 years of age: United States, 1950. National Vital Statistics Division. Vital Statistics—Special Reports. 53(2). 1962.
- 2. Hetzel AM. History and organization of the vital statistics system. National Center for Health Statistics. 1997.
- Mortality in 1950 by Occupation and Industry. National Office of Vital Statistics, National Center for Health Statistics, National Vital Statistics Division. Bethesda, Maryland: Vital Statistics— Special Reports vol 53 nos. 1-5. 1961.
- Rosenberg HM, Burnham D, Spirtas R, Valdisera V. Occupation and Industry Information from the death certificate: assessment of the completeness of reporting. Scheuren F, DelBene L. (eds) Statistical Uses of Administrative Records with Emphasis on Mortality and Disability Research. Washington DC: Social Security Administration, Office of Research and Statistics. 1979.
- 5. Cohen BB, Perlman JA, Rice DP. Environmental Health: A Plan for collecting and coordinating statistical and epidemiologic data. Hyattsville, Maryland: DHHS Publication No. (PHS) 80-1248.
- Dubrow R, Sestito JP, Lalich NR, Burnett CA, Salg JA. Death Certificate-based Occupational Mortality Surveillance in the United States. Am Journal of Industrial Medicine. 11:329-342. 1987. DOI: 10.1002/ajim.4700110309
- Crouse W, Schuster L, Rosenberg H, Kametani D, Sestito J. Using the Census Bureau's Occupation and Industry Coding System for Coding Death Certificates. Session IX. Applications of administrative records for epidemiological research. Proceedings of the Survey Research Methods Section, ASA. 1983. <u>http://www.asasrms.org/Proceedings/y1983f.html</u>
- Rosenberg HM, Burnett C, Maurer J, Spirtas R. Mortality by occupation, industry, and cause of death: 12 reporting states, 1984. NCHS Monthly Vital Statistics Report; 42(4), Suppl. DHHS (PHS) 93-1120. 1993.
- Burnett C, Maurer J, Rosenberg HM, Dosemeci M. Mortality by Occupation, Industry, and Cause of Death—24 Reporting States, 1984-1988. Cincinnati Ohio: HHS (NIOSH) Pub No. 97-114. 1997. <u>https://www.cdc.gov/niosh/docs/97-114/pdfs/97-114.pdf?id=10.26616/NIOSHPUB97114</u>
- 10. National Institute for Occupational Safety and Health (NIOSH). National Occupational Mortality Surveillance. Available from: <u>https://www.cdc.gov/niosh/topics/noms/default.html</u>.
- 11. National Institute for Occupational Safety and Health (NIOSH). Publications NOMS. Available from: <u>https://www.cdc.gov/niosh/topics/noms/link.html</u>.

- 12. Violanti JM, Steege AL. Law enforcement worker suicide: an updated national assessment. Policing. 44(1):18-31. 2021. doi: <u>10.1108/PIJPSM-09-2019-0157</u>
- Dodd KE, Wood J, Mazurek JM. Mortality Among Persons with Both Asthma and Chronic Obstructive Pulmonary Disease Aged ≥25 Years, by Industry and Occupation — United States, 1999–2016. MMWR Morb Mortal Wkly Rep. 69(22):670-679. 2020. <u>https://www.cdc.gov/mmwr/volumes/69/wr/mm6922a3.htm</u>
- Harduar Morano L, Steege AL, Luckhaupt SE. Occupational Patterns in Unintentional and Undetermined Drug-Involved and Opioid-Involved Overdose Deaths — United States, 2007– 2012. MMWR Morb Mortal Wkly Rep. 67:925–930. 2018. <u>https://www.cdc.gov/mmwr/volumes/67/wr/mm6733a3.htm</u>
- 15. United States Census Bureau. Industry and Occupation Indexes. Available from: <u>https://www.census.gov/topics/employment/industry-occupation/guidance/indexes.html</u>.
- 16. NIOSH Industry and Occupation Computerized Coding System (NIOCCS). Available from: <u>https://csams.cdc.gov/nioccs/Default.aspx</u>.
- Robinson C, Schumacher P, Sweeney MH, Steege AL, Free H, Lainez J. Guidelines for reporting occupation and industry on death certificates. Cincinnati, Ohio: DHHS (NIOSH) Pub No. 2012-149 (revised 01/2021). 2021
- National Institute for Occupational Safety and Health (NIOSH). Funeral Directors: Recording Usual Occupation and Industry on Death Certificates. Available from: <u>https://www.cdc.gov/niosh/topics/noms/funeral.html</u>.
- National Research Council (US) Committee on National Statistics. Vital Statistics: Summary of a Workshop. Washington (DC): National Academies Press (US); 2009. B, The U.S. Vital Statistics System: A National Perspective. Available from: https://www.ncbi.nlm.nih.gov/books/NBK219884/
- 20. National Institute for Occupational Safety and Health (NIOSH). Contact Information NOMS. Available from: <u>https://www.cdc.gov/niosh/topics/noms/contact.html</u>.
- 21. National Institute for Occupational Safety and Health (NIOSH). More about Classification Systems. Available from: <u>https://www.cdc.gov/niosh/topics/coding/more.html</u>.
- 22. National Center for Health Statistics. 2003 revision of the U.S. Standard Certificate of Death. Available from: https://<u>www.cdc.gov/nchs/data/dvs/DEATH11-03final-acc.pdf</u>.
- 23. United States Census Bureau. Industry and Occupation Code Lists & Crosswalks. Available from: https://www.census.gov/topics/employment/industry-occupation/guidance/code-lists.html.
- 24. IPUMS. Occupational coding in the 1900 public use microdata sample. Available from: https://usa.ipums.org/usa/volii/90occtc.shtml.
- 25. IPUMS. Coding for occupation, industry, and class of worker in the 1910. Available from: https://usa.ipums.org/usa/volii/91occtc.shtml.
- 26. National Center for Health Statistics. Dataset documentation 2018. Document Version Date: 03-Sep-19. National Health Interview Survey (NHIS). Available from: <u>https://ftp.cdc.gov/pub/health_Statistics/NCHs/Dataset_Documentation/NHIS/2018/samadult_layout.pdf</u>.
- 27. National Center for Health Statistics. Vital Statistics Online Data Portal. Available from: https://www.cdc.gov/nchs/data_access/Vitalstatsonline.htm