

Census of Fatal Occupational Injuries

The [Injuries, Illnesses, and Fatalities](#) (IIF) program provides annual information on the rate and number of work-related injuries, illnesses, and fatal injuries, and how these statistics vary by incident, industry, geography, occupation, and other characteristics. The Census of Fatal Occupational Injuries (CFOI) collects and publishes a complete count of work-related fatal injuries and descriptive data on their circumstances.

The *Handbook of Methods* also provides information on the Survey of Occupational Injuries and Illnesses (SOII) at <https://www.bls.gov/opub/hom/soii/home.htm>. SOII is an establishment-based survey used to estimate incidence rates and counts of workplace injuries and illnesses.




Table of Contents

CONCEPTS2
 DATA SOURCES.....16
 DESIGN.....19
 CALCULATION.....20
 PRESENTATION26
 HISTORY.....30
 MORE INFORMATION....35

Quick Facts: Census of Fatal Occupational Injuries	
Subject areas	Workplace injuries, illnesses, and fatalities
Key measures	Fatal workplace injuries
How the data are obtained	Administrative records
Classification system	Demographic, Industry, Occupation
Periodicity of data availability	Annual
Geographic detail	Metro area, National, State
Scope	Government, Military, Private sector, State and local government
Key products	<ul style="list-style-type: none"> • News release: Census of Fatal Occupational Injuries Summary • Chart package • National and state rates
Program webpage	https://www.bls.gov/iif/oshcfoi1.htm

Concepts

Since 1992, the Census of Fatal Occupational Injuries (CFOI) has collected and published a comprehensive count of work-related fatal injuries and descriptive data on their circumstances. Limited information on fatalities had been available since 1972 from the Survey of Occupational Injuries and Illnesses (SOII).

CFOI data help safety and health experts and policymakers monitor the number and types of deadly work injuries over time and to identify factors associated with particularly high risks, such as driving a tractor trailer truck or working in the commercial fishing industry. ¹ Fatal injury profiles can be generated from the CFOI database for specific worker populations (such as the self-employed or female workers), for certain types of machinery (such as farm equipment), and for specific fatal circumstances (such as pedestrian fatalities in a work zone). Such profiles help identify existing work standards that may require revision and highlight safety hazards where intervention strategies may need to be developed.

CFOI is widely regarded as the leading source for data on fatal injuries in the workplace. In 1994 and 1995, several groups of safety experts, including the National Safety Council and the National Center for Health Statistics, endorsed CFOI as the [official count](#) of work-related fatalities.

In accordance with Bureau of Labor Statistics (BLS) policies, individually identifiable data collected by CFOI are used exclusively for statistical purposes and some are considered confidential. Some of these data are collected under a pledge of confidentiality and therefore are protected under the Confidential Information Protection and Statistical Efficiency Act of 2002 (CIPSEA) (Title V of Public Law 107-347).

Scope of CFOI

CFOI includes data for all fatal work injuries as long as the decedent was engaged in an activity related to work. Further clarification on the scope of CFOI can be found on the [CFOI scope page](#).

CFOI includes data for all fatal work injuries, regardless of whether the decedent was working in a job covered by the Occupational Safety and Health Administration (OSHA), other federal or state agency, or whether the job was covered by state workers' compensation. Consequently, comparisons made between the BLS fatality census counts and those released by other federal or state agencies should take into account the different coverage requirements and definitions used by each agency.

Fatal occupational illnesses not caused by an acute exposure are not included in CFOI. For many illnesses, the latency period between time of exposure and onset of illness as well as the fact that illnesses are often attributed to multiple individual and environmental causes pose uncertainties to linking illnesses directly to the workplace. Compiling a complete census of fatal illnesses within a given year is not feasible for the program. As a result, information on illness-related deaths is excluded from the CFOI count.

The CFOI includes all deaths in the reference year. This may include deaths that resulted from workplace injuries that occur in a prior year. However, typically around 95 percent of deaths occur within the same year as the injury. There is currently no limit on the length of time between the injury and death that would result in excluding a case from the CFOI. The CFOI does not revise data for past years.

Differences in coverage between CFOI and SOII

CFOI covers not only private, state government, and local government wage and salary workers covered in SOII, but also workers on small farms, the self-employed, family workers, and federal government workers not covered by SOII. Exhibit 1 details the differences between CFOI and SOII.

Because of these scope coverage differences, outlined in exhibit 1, CFOI and SOII data are not directly comparable.

Exhibit 1. Scope of covered incidents in Census of Fatal Occupational Injuries (CFOI) and Survey of Occupational Injuries and Illnesses (SOII)

Characteristic	CFOI	SOII
See footnotes at end of table.		
Collection method	Uses multiple source documents (e.g., death certificates, workers' compensation reports, and media reports) to substantiate each case, ensuring a census.	Uses a sample of approximately 230,000 establishments to generate detailed estimates. Mandatory survey from BLS for private sector establishments. ¹
Geographic scope	Data are collected from each state, the District of Columbia, New York City, Puerto Rico, the U.S. Virgin Islands, and Guam.	Data are collected from participating states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam. ²
Private sector workers	Included	Included
Government workers	Includes federal, state, local, foreign, and other government workers	Includes state and local workers since 2008 uniformly across the nation. ³
Self-employed	Included	Not included ⁴
Volunteer workers	Included ⁵	Varies ⁶
Agriculture, forestry, fishing and hunting	Included	Agriculture establishments (NAICS 111 and 112) with more than 10 employees ⁷
Mining	Included	Included ⁸
Railroad	Included	Included ⁹
Treatment of temporary workers	Coded to the industry in which they are directly employed ¹⁰	Coded to the industry in which they were injured
Specific industries	All included	Private households, Postal workers (NAICS 491), space research and technology (NAICS 927), and national security and international affairs (NAICS 928) not included ¹¹
Illnesses	Not included	Included
Age of workers included	All	All
Cases that occur in territorial waters	Included	Included ¹²

¹ Government establishments are not necessarily required by law to respond. "For State and local government employers, your State laws determine whether (SOII) is mandatory." <https://www.bls.gov/respondents/iif/faqs.htm#17>.

² Data for nonparticipating states are collected and used solely for the tabulation of national estimates.

³ SOII does not cover workers regulated by other federal agencies, 29 U.S.C. § 653(b)(1) (2011) For example, mines regulated by the Mine Safety and Health Administration or rail transportation firms regulated by the Federal Railroad Administration, nor does it cover federal workers per 29 U.S.C. § 652(5) (2011).

⁴ Self-employed workers are not covered by the Occupational Safety Act of 1970. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12775.

⁵ See Census of Fatal Occupational Injuries (CFOI): Definitions, <https://www.bls.gov/iif/oshcfdef.htm> and Matthew M. Gunter, "Fatal Occupational Injuries to Volunteer Workers, 2003–2007," Compensation and Working Conditions, <https://www.bls.gov/opub/mlr/cwc/fatal-occupational-injuries-to-volunteer-workers-200307.pdf>. (Gunter, 2010).

⁶ Different state Occupational Safety and Health Administration (OSHA) plans may cover volunteers. For more information on if a state covers volunteers, please contact the respective state OSHA office. National OSHA regulations do not cover volunteer workers, please see 29 C.F.R. § 1904(31)(a) (2013). See also: <https://webapps.dol.gov/elaws/osharecordkeeping.htm>.

⁷ The "small agriculture" exclusion is due to a recurring appropriations rider for OSHA that exempts agricultural operations employing 10 or fewer employees from the 1970 OSH Act in its entirety, including mandatory response to the BLS annual survey (Pollack and Gellerman Keimig, 1987: 19). See for example, OSHA Directive CPL-02-00-051.

⁸ Mining data are collected by the Mine Safety and Health Administration (MSHA) and are provided to SOII for inclusion in the estimates.

⁹ Railroad data are collected by the Federal railroad Administration (FRA) and are provided to SOII for inclusion in the estimates.

¹⁰ Starting in 2011, CFOI began collecting information on contractors and now temporary workers are coded to their directly employed industry as in the past, but also the industry to which they were fatally injured in as well, contractor industry. For more information on contractor data in CFOI see: <https://www.bls.gov/iif/oshcfdef.htm>.

¹¹ Though technically no longer excluded from coverage under the Occupational Safety and Health Act of 1970 due to amended language in the 1998 Postal Employees Safety Enhancement Act, BLS has not yet modified SOII to include the U.S. Postal Service. See, for example: https://www.osha.gov/Other_Docs/USPS/USPS.html.

¹² Cases that occur in territorial waters within 3 nautical miles from the general coastline or 9 nautical miles (3 leagues) from Texas, Florida, and Puerto Rico are included. For additional rules including if the vessel is attached to the seabed see: https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=29408.

Source: U.S. Bureau of Labor Statistics.

At-work and injury definitions for CFOI

A traumatic injury is defined as any wound or damage to the body resulting from acute exposure to energy, such as heat or electricity; impact from a crash or fall; or from the absence of such essentials as heat or oxygen, caused by a specific event or incident within a single workday or shift. Included are open wounds, intracranial and internal injuries, heatstroke, hypothermia, asphyxiation, acute poisonings resulting from short-term exposures limited to the worker's shift, suicides and homicides, and work injuries listed as underlying or contributory causes of death. Heart attacks and strokes are considered illnesses and therefore excluded from CFOI unless a traumatic injury contributed to the death.

A case is included in CFOI if the injury or injuries incurred during the incident contribute in any way to the death. The injury or injuries need not be the sole, or even the primary, cause of death. So long as a traumatic injury played some role in the death, it would be included in CFOI provided the other criteria are also met.

In CFOI, a person is considered at work if an event or exposure results in the fatal injury or illness of a person:

- **ON** the employer's premises and the person was there to work; or
- **OFF** the employer's premises and the person was there to work, or the event or exposure was related to the person's work or status as an employee.

The *employer's premises* include buildings, grounds, parking lots, and other facilities and property used in the conduct of business. *Work* is defined as duties, activities, or tasks that produce a product (physical, digital, or experiential), result, or service; that are done in exchange for money, goods, services, profit, benefit, or other compensation, or in a volunteer capacity; and, that are legal activities in the jurisdiction they occurred in the United States.

For a fatality to be included in CFOI, the decedent must have been self-employed, working for pay, or volunteering at the time of the incident; engaged in a legal work activity; and present at the site of the incident as a job requirement. ² These criteria are generally broader than those used by federal and state agencies administering specific laws and regulations. Fatalities that occur during a person's normal commute to or from work are excluded from CFOI counts. Workers who are fatally injured while in their home offices generally have to be undertaking a task related to their job when the fatal incident occurred. Since those who work from home will spend a good amount of time at home while not in work status, there must be a definitive link to work for the worker to be included in CFOI.

There are many combinations of the general guidelines listed above that can deem a fatality to be work related or not. For detailed descriptions and examples of the scope criteria for CFOI, see the [CFOI Scope Determination Handbook](#).

For more information on the CFOI scope, definitions, and variables of interest, see the [CFOI definitions page](#). The [frequently asked questions page](#) also contains useful information.

Data elements

Over 30 data elements are collected, coded, and tabulated in CFOI, including information about the worker and the circumstances surrounding the fatal incident. Some of the elements collected include the following:

- **Case circumstances**
 - Confined space (2011-present)
 - Date of death (1992-present)
 - Date of incident (1992-present)
 - Event or exposure (1992-present)
 - Location type (farm, street, warehouse, etc.) (1992-present)
 - Narrative of how incident occurred (1992-present)
 - Nature of injury (1992-present)
 - Part of body affected by injury (1992-present)
 - Primary source of injury (1992-present)
 - Secondary source of injury (1992-present)
 - State of injury/death (1992-present)
 - Metropolitan Statistical Area (MSA) of injury (2001-present)
 - Time of incident (month, day of week, time of day) (1992-present)
 - Time workday began (1992-present)
 - Worker activity (driving a vehicle, tending a store, etc.) (1992-present)
- **Worker characteristics**
 - Age (1992-present)

- Country of birthplace (2001-present)
- Gender (1992-present)
- Race or ethnic origin (1992-present)
- **Employment information**
 - Employee status (wage and salary, self-employed, family business) (1992-present)
 - Industry of contracting entity (if any) (2011-present)
 - Industry of employer (1992-present)
 - Occupation (1992-present)
 - Ownership (private sector or state, local, or federal government) (1992-present)

Injury, illness, and fatality common classifications

BLS publishes statistics on nonfatal workplace injuries and illnesses from SOII and fatal workplace injuries from CFOI. Most of these data can be located at the [IIF homepage](#). SOII and CFOI share several systems to classify industry, occupation, case circumstances, and worker characteristics. Changes among these systems over the past several years have affected SOII (both estimates by industry and by case circumstances and worker characteristics) and CFOI outputs, as described below. More information on these classifications and how they have affected the data series can be found in the [online notice](#), the [presentation](#) section and the [history](#) section.

BLS uses Standard Occupational Classification (SOC) and Occupational Injury and Illness Classification System (OIICS) codes for both SOII and CFOI. BLS began using machine learning to automatically assign SOC codes to a portion of SOII cases starting with reference year 2014 data. For reference year 2015, BLS further expanded autocoding to include some OIICS codes. Currently, the autocoder assigns OIICS codes for nature, part, event, source, and secondary source. These automated techniques result in classification accuracies similar to those achieved by staff. BLS state and regional staff remain responsible for assigning many codes not yet handled by the autocoder, and review and validate all automatically assigned codes. The CFOI is still manually coded by state, regional, and national office employees. More information on [automated coding page](#) is available.

Occupational Injury and Illness Classification System (OIICS)

BLS developed OIICS to provide a consistent set of classifications of the circumstances of the characteristics associated with workplace injuries, illnesses, and fatalities. OIICS is used to classify the circumstances of each injury, illness, and fatality case. BLS developed the original OIICS structure with input from data users and states participating in the BLS Injuries, Illnesses, and Fatalities (IIF) federal/state cooperative programs. The original system was released in December 1992 and approved for use as the American National Standard for Information Management for Occupational Safety and Health in 1995 (ANSI Z16.2—1995). In September 2007, BLS updated OIICS classifications to incorporate various interpretations, improvements, and corrections.

The OIICS revision in September 2010 was the first major revision since this classification system was first developed in 1992. BLS implemented a revised OIICS structure based on input from many stakeholders. In February 2008, BLS issued a Federal Register Notice requesting suggestions for proposed changes to OIICS. In addition, BLS sent out numerous letters and e-mails to stakeholders who use the OIICS to classify injury and illness data. In April 2010, BLS issued a draft of the revised OIICS 2.0 manual to interested parties requesting their comments. The team evaluated the comments received, made revisions, and issued the completed OIICS 2.01

manual in September 2010. Due to substantial differences between OIICS 2.01 and the original OIICS structure, which was used from 1992 to 2010, BLS advises against making comparisons of the case characteristics from 2011 forward with case characteristics of prior years. BLS is working on OIICS 3, which it plans to deploy for reference year 2023 data. More information can be found at the [OIICS homepage](#). More information on the changes and process involved in updating the OIICS structure can be found in the article “[Updated BLS Occupational Injury and Illness Classification System](#)” and information on using OIICS as a safety and management tool can be found in the article “[Using the BLS Occupational Injury and Illness Classification System as a Safety and Health Management Tool.](#)”

SOII and CFOI use five classifications to describe each incident that led to a serious nonfatal injury or illness or a fatal injury:

- **Nature of injury or illness**—the characteristics of the disabling injury or illness, such as cuts and lacerations, fractures, sprains and strains, or electrocution
- **Part of body affected**—the part of body directly linked to the nature of injury or illness cited, such as finger, arm, back, or body systems
- **Event or exposure**—the manner in which the injury or illness was produced or inflicted, such as caught in running equipment; slips, trips, or falls; overexertion; or contact with electric current
- **Primary source**—the object, substance, exposure, or bodily motion that was responsible for producing or inflicting the disabling condition, such as machinery, patient, or electrical wiring
- **Secondary source**—the object, substance, or person, if any, that generated the source of injury or illness or that contributed to the event or exposure, such as ice or water that contributed to a fall

Exhibit 2 shows how a work-related injury is classified and how CFOI may use OIICS codes to describe an injury incident.

- **Nature of injury or illness:** 1850 Intracranial injuries and injuries to internal organs
- **Part of body:** 8300 Head and trunk
- **Event or exposure:** 2622 Vehicle struck object or animal on side of roadway
- **Primary source:** 8421 Semi, tractor-trailer, tanker truck
- **Secondary source:** 5871 Trees. [Rule 3.11](#) explains what to do when the vehicle collides with multiple objects: the object that produced the most severe impact should be coded as secondary source in these types of instances. Here, the narrative states that the truck traveled through a guardrail and fence before colliding with a tree. From that, we infer that striking the tree was the most severe impact.
- **Note:** This case is still considered a roadway incident even though the object that was struck was on the side of the road.

Industry

From 1992 to 2002, SOII and CFOI used the 1987 [Standard Industrial Classification](#) (SIC) system to define industry. The SIC system served as the foundation for SOII and CFOI statistics since the inception of each program—1972 and 1992, respectively, and was revised numerous times during its life cycle (most recently in 1987) to account for changes in the composition of the U.S. economy.

The [North American Industry Classification System](#) (NAICS) was adopted to define industry beginning with the 2003 reference year. Because of the substantial differences between NAICS and the SIC system, the results by industry in 2003 constitute a break in the series. NAICS 2017 was adopted to define industry starting with the 2019

reference year. NAICS 2012 was used to define industry for reference years 2014–18; NAICS 2007 was used to define industry for reference years 2009–13; and NAICS 2002 was used to define industry for reference years 2003–08. Comparisons of estimates using NAICS 2017 to previous years under prior NAICS coding structures should be made with caution. Users are also advised against making comparisons between industry data for 2003 forward and the industry data for previous years. Note that the change from NAICS 2007 to NAICS 2012 resulted in a break in the series among industry-level estimates from SOII; however, no series break resulted for the CFOI data. More details on the current NAICS classification as it is used in the IIF programs are below. A timeline with the details of which coding structures are used for which year can be found in the [history](#) section.

North American Industry Classification System (NAICS)

Despite periodic updates to the SIC system, increasing criticism led to the development of a new, more comprehensive system that reflects more recent and rapid economic changes. Many industrial changes were not accounted for under the SIC system, such as recent developments in information services, new forms of healthcare provision, expansion of the services sector, and high-tech manufacturing.

NAICS was developed in cooperation between the United States, Canada, and Mexico to replace the SIC system, and it was one of the most profound changes for statistical programs focused on measuring economic activities. NAICS uses a process-oriented conceptual framework to group establishments into industries according to the activity in which they are primarily engaged. Establishments using similar raw material inputs, similar capital equipment, and similar labor are classified in the same industry. In other words, establishments that do similar things in similar ways are classified together.

NAICS provides the means to ensure that SOII and CFOI statistics accurately reflect changes in a dynamic U.S. economy. The downside of this change is that these improved statistics resulted in time series breaks due to the significant differences between SIC and NAICS. Every sector of the economy was restructured and redefined under NAICS. A new information sector combined communications, publishing, motion picture and sound recording, and online services, recognizing our information-based economy. NAICS restructured the manufacturing sector to recognize new high-tech industries. A new subsector was devoted to computers and electronics, including reproduction of software. Retail trade was redefined. In addition, eating and drinking places were transferred to a new accommodation and food services sector. The difference between the retail trade and wholesale trade sectors is now based on how each store conducts business. For example, many computer stores were reclassified from wholesale to retail. Nine new service sectors and 250 new service-providing industries were recognized with the adoption of NAICS 2002.

NAICS uses a 6-digit hierarchical coding system to classify economic activities into 20 industry sectors—4 sectors are mainly goods-producing sectors and 16 are entirely service-providing sectors. The 6-digit hierarchical structure of NAICS 2017 allowed for the identification of 1,057 industries. NAICS is revised on a 5-year cycle to reflect changes in the economy, resulting in new standards for 2007, 2012, and 2017. These changes were incorporated into SOII and CFOI industry data 2 years later, for 2009, 2014, and 2019, respectively. These changes resulted in a series break for SOII industry data from 2013 to 2014, and footnotes should be consulted to check for incompatibility in other cases. NAICS 2017 changes were incorporated into SOII and CFOI in 2019. For additional

information regarding differences between NAICS 2002, NAICS 2007, NAICS 2012, and NAICS 2017 visit the U.S. Census Bureau [NAICS web page](#). See the [presentation](#) section for more information on the series.

Data elements in CFOI are coded to the most detailed level possible based on the information available for that case. Due to a lack of detail in source documents for some cases, a data element may not be coded to the most detailed level and is coded at a higher level. These cases are included in aggregate tabulations only and are not displayed separately. As a result, detailed tabulations may not sum to total.

Occupation

From 1992 to 2002, the program used the U.S. Census Bureau (BOC) occupational classification system. Beginning with the 2003 reference year, SOII and CFOI began using the Standard Occupational Classification (SOC) system to define occupations. Due to the substantial differences between the SOC and BOC systems, the results by occupation in 2003 constitute a break in series. Users are advised against making comparisons between occupation data in 2003 forward and the occupation data for previous years. More information on BOC can be found on the [Census website](#). More information on SOC can be found on the [SOC homepage](#). SOII and CFOI used the 2000 SOC to classify occupation data for years 2003 to 2010, the 2010 SOC for years 2011 to 2018, and uses the 2018 SOC for years 2019 forward. More details on the current SOC classification as it is used in the IIF programs are below.

Standard Occupational Classification (SOC)

Beginning with the 2019 reference year, CFOI and SOII began using the 2018 SOC system for coding occupations. The SOC 2010 system was used for reference years 2011 through 2018. Before 2011, the 2000 SOC for occupations was used. Comparisons of estimates using SOC 2018 to previous years under prior SOC coding structures should be made with caution. The 2018SOC system classifies workers at four levels of aggregation:

- Major group
- Minor group
- Broad occupation
- Detailed occupation

Occupations with similar skills or work activities are grouped at each of the four levels of hierarchy to facilitate comparisons. For example, life, physical, and social science occupations (19-0000) is divided into five minor groups: life scientists (19-1000); physical scientists (19-2000); social scientists and related workers (19-3000); and life, physical, and social science technicians (19-4000); and occupational health and safety specialists and technicians (19-5000). Life scientists contains broad occupations such as agriculture and food scientists (19-1010), and biological scientists (19-1020). The broad occupation biological scientists includes detailed occupations such as biochemists and biophysicists (19-1021) and microbiologists (19-1022).

Each item in the hierarchy is designated by a six-digit code. The first two digits of the SOC code represent the major group, the third digit represents the minor group, the fourth and fifth digits represent the broad occupation, and the detailed occupation is represented by the sixth digit. Major group codes end with 0000 (e.g., 33-0000, protective service occupations), minor groups end with 000 (e.g., 33-2000, firefighting and prevention), and broad

occupations end with 0 (e.g., 33-2020, fire inspectors). (The zeros are not always printed.) All residuals ("other," "miscellaneous," or "all other"), whether at the detailed or broad occupation or minor group level, contain a 9 at the level of the residual. Detailed residual occupations end in 9 (e.g., 33-9099, protective service workers, all other), broad occupations that are minor group residuals end in 90 (e.g., 33-9090, miscellaneous protective service workers), and minor groups that are major group residuals end in 9000 (e.g., 33-9000, other protective service workers):

33-0000 protective service occupations

 33-9000 other protective service workers

 33-9090 miscellaneous protective service workers

 33-9099 protective service workers, all other

Race and ethnicity standards

Both CFOI and the component of SOII capturing case circumstances and worker characteristics were implemented in 1992, following recommendations of a National Academies of Science review highlighting the need to capture detailed case circumstances and worker characteristics for fatal and nonfatal workplace incidents, respectively. At their inception, each of these series used separate methods to categorize the race or ethnicity of injured or ill workers. For example, SOII categorized Hispanics separately, whereas CFOI categorized Hispanics by race (e.g., Black or White) and also provided a total count of Hispanics. The remaining race and ethnicity categories for both series were:

- White
- Black
- Asian or Pacific Islander
- American Indian or Native Alaskan

The classification of workers by race and ethnicity for CFOI and SOII is based on the 1997 Standards for Federal Data on Race and Ethnicity as defined by the Office of Management and Budget.

In 1999, CFOI amended race categories so that Hispanics no longer counted as a race, but solely as an ethnicity. Each decedent in CFOI is counted only once in the race and ethnicity categories. Three additional changes were also incorporated to race and ethnicity categories:

- Asian became a separate category
- Native Hawaiian was combined with Pacific Islander to form a new category, Native Hawaiian or Pacific Islander
- Multirace was added

CFOI specific variables

The [CFOI definitions page](#) contains additional information about the variables published by CFOI.

Worker activity in CFOI

Describes the activity engaged in by the worker at the time of the fatal injury. More information on worker activity and the coding structure can be found in the [online manual](#).

Location in CFOI

Indicates the locale, such as, farm, residence, or road construction, where the incident or exposure occurred at the time of the fatal injury. More information on location and the coding structure can be found in the [online manual](#).

Contracted workers in CFOI

This variable indicates whether the decedent was a contracted worker at the time of the incident and began being collected in 2011. In CFOI, a contracted worker is a worker employed by one firm but working at the behest of another firm that exercises overall responsibility for the operations at the site where the decedent was killed. Some additional rules for classifying contracted workers in CFOI:

A business-to-business relationship to establish contracted worker status must exist. For example, a Heating, ventilation, and air conditioning (HVAC) repairman working at a private residence is not considered a contracted worker. That same HVAC repairman working at a restaurant is considered to be a contracted worker since a business-to-business relationship is present.

Incidents that occur at sites where a potential contracting firm does not exercise overall responsibility for the site, such as a public roadway, are not included as contracted workers with certain exceptions.

Suicides and other incidents that are initiated intentionally by the decedent are not included as contracted workers.

Contracted worker status can be inferred from available case data if not explicitly stated. If, for example, a security guard employed directly by a security firm is killed while working at a bar, the security guard must have been contracted by the bar or else he or she would not have been present.

Note that this definition of a contracted worker is unique to CFOI and likely differs from how contracted workers (sometimes called contractors) are defined elsewhere. Users should be cautious when comparing CFOI data on contracted workers to other data sources because of these definitional differences.

More information on contracted workers can be found in the article "[Fatal occupational injuries involving contractors, 2011](#)".

Contracted worker industry

This variable indicates the industry of the firm contracting the decedent, provided the decedent was working as a contracted worker at the time of the incident and began being collected in 2011.

Contracted worker ownership

This variable indicates the ownership (private, federal, state, local, foreign, or other government) of the firm contracting the decedent provided the decedent was working as a contracted worker at the time of the incident and began being collected in 2011.

Birthplace in CFOI

This variable indicates the country of birth of the decedent and began being published in 2001. A list of the countries and regions can be found in the [definitions page](#).

Metropolitan statistical area in CFOI

Beginning in 1999, CFOI began publishing Metropolitan Statistical Area (MSA) information based on definitions from the Office of Management and Budget (OMB). For reference years 1999 to 2002, CFOI used the MSA definitions in OMB Bulletin Number 99-04, June 1999. For reference years 2003 to 2010, CFOI used the MSA definitions in OMB Bulletin Number 05-02, February 2005. For reference years 2011 to 2013, CFOI used the MSA definitions in OMB Bulletin Number 10-02, December 2009. For reference years 2014 to 2018, CFOI used the MSA definitions in OMB Bulletin Number 13-01, February 2013. For reference year 2019 forward, CFOI uses the MSA definitions in OMB Bulletin Number 18-04, September 2018. For more information on the definitions used in previous years, please see the [CFOI definitions page](#) and the [OMB MSA page](#).

Multiple fatality incidents

CFOI captures whether the worker was killed in an incident where at least one other worker was killed, a multiple-fatality incident, or in an incident where no other worker was killed, a single-fatality incident. Incident type was first collected in 1993. This is done using a linked code and only links decedents in the same reference year. If, for example, there was an explosion at a plant and one worker died in December and another worker was hospitalized but did not die until January, these two cases would not be linked, as the deaths crossed the calendar year.

Confined space

CFOI bases its definition of confined space on the Occupational Safety and Health Administration (OSHA) definition of a confined space. OSHA defines a confined space as a space that meets the following three criteria: 1) is large enough that an employee can enter and perform work, 2) has limited or restricted means for entry and exit, and 3) is not designed for continuous employee occupancy. Examples include: tanks, vessels, silos, storage bins, pits, crawl spaces, sewers, etc. See OSHA 1910.146 (b), www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.146 for more information.

Independent worker

This variable identifies independent workers as defined by CFOI and began being collected in 2016. Independent workers are workers whose jobs are usually short in duration and involve a discrete task. Independent workers must find their own work, and both the independent worker and prospective client must agree to the terms of the

job. Future work is not guaranteed for independent workers based on their past performance. More information on independent workers can be found in this article: www.bls.gov/opub/btn/volume-8/fatal-occupational-injuries-to-independent-workers.htm.

See below for a table showing the years in which data elements in CFOI are available. Not all data elements are complete, and some are available only for research through [microdata access](#).

Exhibit 3.

Data element	Years available
See footnotes at end of table.	
Age	1992–present
Alcohol/Drug (Y/N/U) (research only)	2011–present
Birthplace	2001–present
Confined space incident (research only)	2011–present
Contractor	2011–present
Contractor industry	2011–present
Contractor ownership	2011–present
Day of week of incident	1992–present
Disaster (research only)	2011–present
Educational attainment (research only)	2016–present
Employee status	1992–present
Establishment size class (research only)	1992–present
Event or exposure	1992–2010
Event or exposure 2011	2011–present
Gender	1992–present
Hispanic or Latino origin	1992–present
Impairment (research only)	1992–present
Independent worker (research only)	2016–present
Industry/NAICS	2003–present
Industry/SIC	1992–2002
Latency (research only)	1992–present
Link code (research only)	1992–present
Location	1992–present
Medical complication (research only)	1992–present
Month of incident	1992–present
Nature	1992–2010
Nature 2011	2011–present
Occupation	1992–2002
Occupation/SOC	2003–present
Ownership	1992–present
Part of body	1992–2010
Part of body 2011	2011–present
Primary source	1992–2010
Primary source 2011	2011–present
Race	1992–present
Seat belt usage (research only)	2011–present
Secondary source	1992–2010

Exhibit 3.

Data element	Years available
Secondary source 2011	2011–present
State of employment (research only)	1992–present
State of residence (research only)	1992–present
Time workday began (research only)	1992–present
Time of incident	1992–present
Union status (research only)	2011–present
Veteran status (research only)	2016–present
Worker activity	1992–present

Source: U.S. Bureau of Labor Statistics.

Last Modified Date: December 08, 2020

Data Sources

The Census of Fatal Occupational Injuries (CFOI) is a cooperative venture in which the operating costs are shared between the participating states and federal government. The CFOI program uses diverse state, federal, and independent data sources to identify, verify, and describe fatal work injuries. This ensures that counts are as complete and accurate as possible. Each year, states are responsible for data collection and coding. Collection of the data is continuous, starting on the first day of the calendar year of the reference period and ending in late fall of the following year, allowing ample time for source document collection, follow-up requests, and coding review. More information on the initial CFOI results and the methodology used can be found in the articles at [“Fatal work injuries: results from the 1992 national census”](#) and [“The changing character of fatal work injuries.”](#)

States obtain information on fatal work injuries from a variety of different sources. The types of source documents used in CFOI are listed below.

Confidentiality

All data collected in CFOI are subject to the [Bureau of Labor Statistics \(BLS\) confidentiality](#) requirements that prevent the disclosure of identifying information. The information that is gathered from our source document providers is used solely for statistical purposes. All BLS employees and the state grant agency partners who work with the CFOI data take an oath of confidentiality and are subject to fines and imprisonment for improperly disclosing information provided by respondents. Confidentiality certification training is required annually.

At BLS, the data are processed and stored on secure servers, with access limited to employees having security clearances. CFOI does have a micro data research file available upon approval of the research proposal and application. More information on [restricted data access](#) is available.

Source documents collected

Many of the source documents that CFOI uses are considered confidential by their provider. In this context, “confidential” indicates that it was collected under a pledge of confidentiality (meaning that it can be used for statistical purposes only). One of the main reasons CFOI has been able to collect such complete and comprehensive data is the use of these confidential sources. In order to continue to receive these confidential sources, the BLS must agree to protect the case-level data it receives from them and report those data in accordance with the agreements BLS has with those providers.

These source document agreements are established at both the state and national levels. BLS enters into agreements with federal source document providers while our state partners set up agreements with source document providers within their states, such as state vital records departments, coroners, medical examiners, and police departments. Many of these providers at both the state and federal levels only make their information available because BLS agrees to use the information for statistical purposes only. CFOI currently collects data in 55 jurisdictions—the 50 states, District of Columbia, New York City, Puerto Rico, the U.S. Virgin Islands, and

Guam. Each jurisdiction has its own regulations with regard to the availability of data. Some jurisdictions have largely public documents and others have largely confidential documents.

BLS state partners actively search for and request source documents. For the source documents provided to the states by the national BLS office, states are required to be matched to a case on the file, if determined to be an in-scope case, to ensure cases are not missed. There are also two Data Acceptance Programs requiring all states report their annual collection practices to BLS to ensure that access to key source documents is continuing and that these documents are being used correctly. Overall, state agencies collect more than 20,000 individual source documents each year or about an average of four documents from different sources for each fatal injury. To avoid duplication in the counts, source documents are matched using the decedent's name and other information (for more information on verifying the data see the [calculation](#) section).

Updated figures on the number and type of source documents used in the published CFOI cases are available at <https://www.bls.gov/charts/census-of-fatal-occupational-injuries/sources-of-data-fatal-work-injuries.htm>.

Source document categories received by CFOI

- Death certificate
- State workers' compensation report
- Medical examiner report
- Coroner report
- News media report
- Autopsy report
- Toxicology report
- Police report
- Occupational Safety and Health Administration (OSHA) reports
- Mine Safety and Health Administration (MSHA) report
- Federal Employee Compensation (FECA) report
- Fatality Assessment and Control Evaluation (FACE) report
- Department of Defense military report
- U.S. Coast Guard report
- Longshore and harbor workers incident report
- National Transportation Safety Board (NTSB) report
- Federal Emergency Management Agency (FEMA)/U.S. Fire Administration (USFA) report
- Agricultural report
- Other governmental report
- Informant report/questionnaire
- Employer report/questionnaire
- Hospital, physician, ambulance report
- Funeral home report
- Federal Railroad Administration (FRA) reports
- National Highway Traffic Safety Administration (NHTSA)/Fatality Analysis Reporting System (FARS)
- Social Security Death Index
- Traffic bureau report
- Survey of Occupational Injuries and Illnesses (SOII)
- Online sources

- Other state OSHA reports
- Other

Last Modified Date: December 08, 2020

Design

The Census of Fatal Occupational Injuries (CFOI) aims to capture all workers in any employee status (wage and salary, self-employed, volunteer, etc.) in all sectors (private, federal, including resident military, state, local, foreign, and other government) who have been fatally injured while working in the United States, including territorial waters.

Because the CFOI is a census and not a survey, there is no sampling frame, sample selection, sample refinement, or response rate. The CFOI program rigorously searches and collects data (as described in the [data sources](#) section) to ensure the final workplace fatality count is complete.

Last Modified Date: December 08, 2020

Calculation

Data are collected using a variety of source documents and entered manually by state partners once a fatal occupational injury has been identified. As more information is gathered, the data are revised until the case has been fully coded. See the [data source](#) section for more information on Census of Fatal Occupational Injuries (CFOI) source documents.

The CFOI system uses a matching scheme to keep duplicate entries for the same fatal injury from being entered. After data entry—but before tabulation—a final manual check and final computer-assisted check ensure there are no duplicates. The CFOI uses multiple source documents, rather than relying on a single data collection tool, to ensure a complete annual count of fatal work injuries.

To ensure an accurate count of fatal occupational injuries, the CFOI requires that, for each case, the work relationship (that is, whether a fatality is work-related) be substantiated by two or more independent source documents or a source document and a follow-up questionnaire. Follow-up questionnaires are sent either to the employer or to another contact with knowledge of the incident. The follow-up questionnaire is also used to collect information that may be missing from the source documents. At the end of the collection period, fatal injuries for which the state has only one source document are reviewed by the Bureau of Labor Statistics (BLS). The case is included in the national database only if the state and BLS agree that there is sufficient information on the sole source document to determine that it is work-related.

Data validation

CFOI uses a combination of system edits and manual review to validate CFOI case codes. Within the CFOI system, there are edits that might indicate missing information or a mismatch in codes according to various coding rules and structures. (See the [concepts](#) section for more information.)

The CFOI program conducts periodic reviews of both the case coding and source documents to ensure information transcribed and coded is correct. Coding review for each case is conducted by BLS offices to ensure consistency and accuracy throughout the nation. During the review, cases with unusual circumstances may be further vetted to ensure those cases meet the scope criteria for the CFOI—according to the definitions found on the [CFOI definitions page](#).

Data compilation

Once data validation checks have been completed, data are compiled by aggregating cross tabulated variables and applying publishability rules to protect the confidentiality of decedents. For a more complete listing of how the data are presented, see the [presentation](#) section.

Fatal injury rate methodology and calculation

Fatal injury rates estimate the risk of incurring a fatal occupational injury faced by all workers or a subgroup of workers and are used to compare risk over time and with other worker groups. Workers can be grouped for comparison by a number of variables, including industry, worker’s age, or gender. Because employment data are not collected by the CFOI, fatal injury rates are calculated using estimates of hours worked from the Current Population Survey (CPS).¹

In 2008, the CFOI adopted hours-based employment as the denominator of fatal injury rates to measure fatal injury risk (rates were calculated retroactively using this new method for 2006 and 2007 data). This methodology is generally considered to be more accurate than employment-based rates per the standardized length of exposure to risk of occupational injury. Hours-based fatal injury rates should not be directly compared to employment-based rates because of the differences in the numerators and denominators used. More information on the change from employment to hours-based fatal injury rates is available at <https://www.bls.gov/iif/oshnotice10.htm>. The article “[Change to Hours-Based Fatality Rates in the Census of Fatal Occupational Injuries](#)” details the impact of the methodology change.

National rates

To accurately describe fatal injury risk for a worker group, the numerator (fatal injuries) and denominator (total hours worked) of the rate must refer to the same group of workers. The hours-worked data from the CPS used in the rate calculations do not include workers under the age of 16, volunteers, and members of the resident military. Therefore, fatal injuries occurring to these workers are also excluded from the numerator. Industry data for national rates are broken out by ownership: private, overall government, federal government, state government, and local government.

National fatal injury rates use data from the CPS. Compared with the employment number, data on people *at work* exclude those who were temporarily absent from a job (classified in the zero-hours-worked category, *with a job but not at work*). Those not at work were absent from their jobs for the entire week for such reasons as bad weather, vacation, illness, or involvement in a labor dispute. The denominator, annual hours worked (EH), is calculated as the total hours worked by all workers in the group during an average reference week, multiplied by 50 weeks.

The hours-based rate (expressed per 100,000 full-time equivalent workers) is:

$$R = \left(\frac{N}{EH} \right) * 200,000,000$$

where:

R = hours-based rate of fatal injuries for a group,

N = number of fatal injuries in a group,

EH = total hours worked by all employees in a group during the calendar year, and

200,000,000 = base number of hours for 100,000 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

State rates

State rates by industry can be imputed by using national-level *total hours at work during an average reference week* data to calculate the total annual number of hours for each industry group across ownership. State rates are not available by demographic characteristics, occupational groups, or for public and private sectors separately.

The rate represents the number of fatal occupational injuries per 100,000 full-time equivalent workers and is calculated as:

$$R_s = \left(\frac{N_s}{EH_s} \right) * 200,000,000$$

where:

R_s = hours-based rate of fatal injuries for a state,

N_s = number of fatal work injuries in the state,

EH_s = total hours worked by all employees in the state during the calendar year, and

200,000,000 = base number of hours for 100,000 equivalent full-time workers (working 40 hours per week, 50 weeks per year).

State rates are imputed by using national-level *total hours* worked by industry information from CPS. These hours are divided by the number of employed persons by industry, also from CPS, to obtain an average number of hours worked per employee in that industry. This average is then multiplied by the annual average of employed people by industry in each state from [Local Area Unemployment Statistics \(LAUS\)](#) data. This apportionment is also expressed per 100,000 full-time equivalent employees.

Fatal injury rate variance estimation

Because the number of fatal injuries comes from a census, we assume there is no variance associated with the annual count of fatalities. However, when a rate is calculated, the hours-worked value is an estimate that comes from sample data so it does have variance. Therefore, the CFOI count does not have a variance, but the rate does.

The variance of the CFOI rate, R , is calculated as follows:

$$\text{Var}(R) = (N * (200,000,000))^2 * \left(\frac{1}{EH}\right)^4 * \text{Var}(EH)$$

where:

$\text{Var}(R)$ = variance of the CFOI rate,

N = number of fatal work injuries,

EH = total hours worked by all employees in a group during the calendar year, and

$\text{Var}(EH)$ = variance of the hours-worked number produced by CPS.

CFOI rates prior to 2008

CFOI fatal injury rates published by BLS for the years 1992 through 2007 were employment-based rates and measured the risk of fatal injury for those employed during a given period, regardless of hours worked. The formula for calculating a fatality rate from 1992 through 2007 is to divide the number of fatally injured workers, 16 years and older, by the number of employed workers, 16 years and older, multiplied by 100,000.

Comparisons of national and state rates

CFOI uses the [Local Area Unemployment Statistics \(LAUS\)](#) data to calculate state rates.

State industry rates are not directly comparable with national industry rates. Because of the difference in the way LAUS and national CPS calculate their employment data—state rates include government workers in their respective industry sector and are not broken out separately—both the numerator and denominator include a different group of workers than that of the national rates.

If users decide to add up all the states in one industry and average out their rates to compare it with the national average, they will not get the national average as a result of this data difference, with the all-ownership/state rates most likely being slightly higher because of the added fatal injuries and different employment data.

Comparisons of state rates to other state rates

Comparisons of state fatal injury rates across states should be made with caution as differences in rates can be due to many factors. Large differences in the industry composition of employment by state, for example, may affect the overall state fatal injury rate. Comparing rates for a state with a large agricultural economy with that of a state with a large industrial economy should be done with caution as agriculture has one of the highest fatal injury rates while manufacturing generally has a lower rate. In addition, the number of fatalities and their circumstances can vary markedly within a state from one year to the next, in part reflecting single incidents involving multiple deaths, such as airplane crashes and natural disasters.

CPS data limitations

There are several *limitations* of using CPS data in CFOI rate calculations. LAUS estimates for states are derived from signal-plus-noise models that use the monthly employment and unemployment measures tabulated from the CPS as the primary input and therefore the caveats from CPS apply to the LAUS data as well.

Employment sampling error: The CPS data used to calculate the CFOI rates are estimates based on a sample rather than a complete count. Therefore, the CPS estimates and corresponding fatality rates have sampling error. The margin of error in the fatality rates is a result of the sampling error of the CPS data used as the denominators. The fatality rates calculated using the CPS may differ from those that would have been obtained from a census of employed persons. See the [Explanatory Notes and Estimates of Error](#) in the February 2004 Employment and Earnings for an explanation of CPS sampling and estimation methodology, and standard error computations. The relative standard errors of the CPS estimates can be used to approximate confidence ranges for the fatality rates. Margins of error are presented for the national fatality rates at the 95 percent confidence interval. More information on the reliability of estimates can be found at https://www.bls.gov/iif/osh_rse.htm.

- Primary job versus job at the time of incident: The CPS annual average employment data used in the rate calculations count workers according to their primary job, whereas CFOI uses the job held when fatally injured, which may differ.
- State of residence versus state of incident: CPS counts workers by their state of residence, whereas CFOI counts workers by state of incident.
- The annual average of hours worked represent total hours at work for CPS respondents, including those that work more than one job. Total hours worked for respondents with multiple jobs will be recorded in the occupation and industry of the primary job.
- Rates are calculated at the level of detail available from the CPS data. Rates are only calculated for those occupations and industries that met minimum thresholds of having at least 5 fatal injuries and 40 million hours worked for national data. The threshold for calculating state fatal injury rates is 5 fatal injuries. See the following section on using fatality rates to evaluate risk for more discussion on the importance of thresholds.

Using fatality rates to evaluate risk and dangerous jobs

Fatal injury rates estimate the risk of incurring a fatal work injury for workers in a given worker group expressed as the proportion of fatal injuries per total hours worked annually per 100,000 full-time equivalent workers. This allows risks to be compared among different worker groups. Occupations with few fatal injuries and low employment in the reference year are removed from annual fatal injury rate tabulations. Therefore, rates produced in prior years may not appear in future years if they do not meet this threshold.

There are many other elements that factor into any definition of a “dangerous job” such as the likelihood of incurring a nonfatal injury, the potential severity of that nonfatal injury, the safety precautions necessary to perform the job, and the physical and mental rigors the job entails.

Because there is no universal definition of “dangerous” or “hazardous,” the Injuries, Illnesses, and Fatalities (IIF) program does not frame occupations as the “most dangerous” in a particular year. The IIF program also has certain minimum thresholds that must be met for a fatal injury rate to be published. As such, fatal injury rates are not calculated for many occupations that have a relatively small number of fatal work injuries and employment. Please see “[Using fatality rates to evaluate risk and dangerous jobs](#)” for more information.

Comparisons between fatal and nonfatal data

The IIF program has two components that collect and publish data on injuries, illnesses, and fatalities in the workplace: the Survey of Occupational Injuries and Illnesses (SOII) and the Census of Fatal Occupational Injuries (CFOI).

SOII and CFOI collect data and publish incidence rates in different ways, and thus should not be compared with each other. Nonfatal incidence rates by industry are calculated using hours-worked data collected as part of the SOII and are expressed per 100 full-time workers for injury and illness, or injury only cases, and per 10,000 full-time workers for illness cases. Incidence rates for case circumstances and worker characteristics are calculated using hours-worked data collected as part of the SOII for industry and case characteristic rates, as well occupational employment data from the CPS and Occupational Employment Survey (OES) for demographic and occupational rates. Incidence rates for case circumstances and worker characteristics are expressed per 10,000 full-time workers. Fatal injury rates are calculated using hours-worked data provided by the CPS and are expressed per 100,000 full-time equivalent (FTE) workers.

Users should consider a few important factors when comparing different types of nonfatal incidence rates and fatal injury rates.

Caution should be used when comparing estimates between private sector and public sector industries in any particular state because of potential differences in industry makeup and the nature of work done between ownership groups. CFOI state data is only published for all ownerships together at the industry sector level.

Different industry mixes at the industry sector level (the only level at which CFOI publishes state fatal injury rates) mean state-to-state comparisons should be made with caution.

These different industry mixes are a factor when examining both SOII and CFOI rates. Take for instance, a comparison of rates in the agriculture industry in Wisconsin and Florida. Wisconsin’s agriculture industry is primarily animal production; for Florida, it is primarily crop production. Comparing rates in the agriculture industry between these two states would not be advisable because one would be comparing two very different types of agriculture; each with its own workers, equipment, work environments, specific job tasks, hazards, etc.

¹ For further discussion, see Joyce Northwood, “Change to Hours-Based Fatality Rates in the Census of Fatal Occupational Injuries,” *Monthly Labor Review* (January 2010), <https://www.bls.gov/opub/mlr/cwc/change-to-hours-based-fatality-rates-in-the-census-of-fatal-occupational-injuries.pdf>.

Presentation

Summary information including the key fatal injury circumstances (event/exposure, occupation, and industry) and the demographics of workers fatally injured on the job, along with overall counts, are included in a national news release issued annually, about a year after the end of the reference period. ¹ The latest news release for the Census of Fatal Occupational Injuries (CFOI) can be found at the Injuries, Illnesses, and Fatalities (IIF) [program homepage](#). Data are available at the national, state, and metropolitan statistical area (MSA) level. More information on the schedule of the data releases can be found on the [news release page](#).

CFOI provides annual fatal injury counts by case circumstances and worker characteristics in a variety of ways. Following is a list of the cross-tabulations that appear on the [CFOI homepage](#) and are produced every year:

- Industry by selected event or exposure
- Occupation by event or exposure
- Worker characteristics (worker status, gender, age, race or ethnic origin) by event or exposure
- Event or exposure by major private industry sector

Also found on the CFOI homepage are the [interactive charts](#), [national fatal injury rates](#), and [MSA tables](#). For more information on methodology for calculating rates or a description of the variables collected and coded for CFOI see the [calculation](#) section. All of the rates produced by the CFOI program are available online.

Besides national data, state-specific data on workplace fatalities are available from participating state agencies. A [list of state agencies](#) along with their telephone numbers is available online or by calling (202) 691-6170. The state page also contains a basic data table for each state as well as state fatal injury rates (for methodology on calculating state rates, please see the [calculation](#) section).

Data tools

There are a variety of tools available both online and through special request to aid data users. To accommodate the series breaks in CFOI (see the [history](#) section for more information), the online data tools can be run for the periods 1992–2002, 2003–10, and 2011 forward individually, but cannot cross over these time periods.

For CFOI reference years 2011 through 2018, it is possible for a total value to be suppressed for confidentiality purposes when one or more component pieces of the total value do not meet CFOI's publishability criteria.

In these cases, the detailed category is composed of cases that are all from public source documents, whereas the higher level, or aggregate category, that is not publishable is made up of cases that are not all from public source documents.

Profiles on the Web

The [data profiles tool on the web](#) allows users to create customized tables of the number of work-related fatal injuries based on user-specified criteria. This is a good way to get an overview of the data available in an area of interest, both in magnitude and detail.

Databases

There are various ways to retrieve specific data on our [databases page](#). There are single and multiscreen data searches, as well as a series report. More information on the way the CFOI data are classified into series [identification codes](#) can be found online.

The discontinued data series (resulting from the breaks in series) are at the bottom of the database page.

Flat files

Flat files of the entire CFOI database or parts of the database are available through the Bureau of Labor Statistics (BLS) [download server](#) site. Each data series on the BLS download site includes a two-character series designator. Clicking on the series designator expands the directory to provide a list of the files included with each series. Included with each series (generally the last file in each series directory) is a text file that provides: (1) a survey definition and a listing of the FTP files listed in the survey directory; (2) time series, series file, data file, and mapping file definitions and relationships; (3) series, data, and mapping file formats and definitions; and (4) a data element directory. The CFOI series have experienced several breaks due to changes in coding systems. Data from these separate series may not be comparable with one another. The following flat file series identifiers cover available CFOI data reflective of the series breaks (See [history](#) section for more.):

cf—1992–2002 (1987 SIC, BOC)

fi—2003–10 (2002 NAICS, 2000 SOC)

fw—2011 forward (OIICS 2.01)

Special tabulations

In addition to the data available online, some fatality data may be available by contacting the CFOI program directly.

CFOI microdata

BLS may approve access to the CFOI microdata research file of individual fatality cases. These data are collected under a pledge of confidentiality and therefore protected under the [Confidential Information Protection and Statistical Efficiency Act of 2002](#) (CIPSEA). The CFOI microdata research file is available only to researchers who agree to protect the confidentiality of the data. In addition, proposed projects must have a well-defined research

question of scientific merit that is of a purely statistical nature. Final approval for access rests with the BLS Commissioner. More information on the restricted data file is available at <https://www.bls.gov/rda/>.

Publications

Articles and detailed tables containing both national and state data are published regularly in the BLS online publications, [Beyond the Numbers \(BTN\)](#), [Monthly Labor Review \(MLR\)](#), [The Economics Daily \(TED\)](#), and other publications. There are also some articles in the no-longer-published [Compensation and Working Conditions](#).

A list of some of the articles, additional fact sheets, as well as archived special studies and compendiums with both Survey of Occupational Injuries and Illnesses and CFOI data, can be found on the [Injuries, Illnesses, and Fatalities \(IFF\) publications page](#).

Data correction

The IIF program has procedures to promptly address statistical products that contain previously unrecognized errors. Statistical products include tabulations, analyses, graphical depictions, or other statistical reports. These procedures promote objectivity and transparency, and align with the Office of Management and Budget (OMB) guidelines as well as with the BLS Commissioner's Orders on correcting published and unpublished errors to data analyses.

IIF will never knowingly release erroneous data. Data that have not yet been released to the public will be corrected before it is released publicly, if possible. If corrections cannot be made in time for a scheduled release, data errors will be suppressed. If the error is substantial, a re-release of the data will be scheduled and IIF will inform the public.

For publishing errors, such as an incorrect statement or figure, or estimation errors, IIF will evaluate the impact of an error based on the following factors:

- Currency: How recent are the data that are affected?
- Prevalence: How many data points are affected in the correction?
- Extent: Where are all the places that corrections are needed? How many products are affected?
- Prominence: Is the error a headline or frequently cited figure? Do others use the affected data points in their work?
- Sensitivity: Is the affected data considered "sensitive" in any way?
- Magnitude: How much do the published and correct values differ? Is the change statistically significant? Would data users perceive it as significant?

All errors will be noted and archived on the [BLS errata page](#) and posted for at least 60 days on the [IIF website banner](#). Substantial errors require that affected product(s) are re-released with corrections, and a note with the correction date is included in the product for user reference. Unsubstantial errors will have a note appended to the product noting the errata and the date it was discovered.

IIF evaluates all errata for lessons that can be learned from the issue and makes procedural, systems, or administrative changes accordingly to mitigate future incidents.

NOTE

¹ Data before 2015 were released twice for each reference year. The first publication was preliminary data released about 9 months after the reference period, followed by a revised and final release of the data about 16 months after the end of the reference period, or about 7 months after the preliminary data. Beginning with the 2015 reference year, final data from the Census of Fatal Occupational Injuries (CFOI) will be released in December—4 months earlier than in past years.

Last Modified Date: December 08, 2020

History

Data on safety and health conditions for workers on the job have been produced by the Bureau of Labor Statistics (BLS) since before World War I. In 1912, the first safety and health report issued by BLS summarized industrial accidents in the iron and steel industries, presenting information on the frequency and severity of injuries, the occupation of the injured workers, and the nature of their injuries. ¹

Work-related illnesses also were the subject of BLS studies conducted in the early 1900s, such as the pioneering research on lead poisoning in the workplace done by Dr. Alice Hamilton. ²

The current BLS Survey of Occupational Injuries and Illnesses (SOII) evolved from annual BLS surveys first conducted in the 1940s, when injury recordkeeping standards became sufficiently uniform to permit the collection of nationwide work injury data. Spanning three decades, those nationwide surveys proved useful in measuring and monitoring injury frequency and severity, but they had two major limitations. First, the survey data were compiled from and represented only employers who volunteered to record and report work injuries. Second, work injuries were limited to those that resulted in death, permanent impairment, or temporary disability, defined as unable to perform regular job duties beyond the day of injury. Thus, survey estimates excluded many employers and, by definition, numerous cases that required medical treatment (beyond first aid) or restricted work duties but did not result in days away from work.

These and other limitations were addressed in a landmark piece of safety legislation passed by the U.S. Congress: the Occupational Safety and Health Act of 1970 (OSH Act). Under the OSH Act, Congress delegated the responsibility for developing a comprehensive statistical system covering work-related injuries, illnesses, and fatalities in private industry to BLS. The separation of responsibilities at the national level between data collection (BLS), regulatory action (OSHA), and safety and health research (CDC/NIOSH) was the original vision of the OSH Act and still remains our primary operating principle. Our data providers and stakeholders rely on BLS data being compiled without bias, without regulatory retribution, or without the possibility of confidentially collected information being released. Because OSHA and NIOSH use BLS data for regulatory and formal advisory purposes, it is important that BLS remains separate from them to maintain impartiality. The 1970 act and its implementing regulations required that most private industry employers regularly maintain records and prepare reports on work-related injuries and illnesses, which include all disabling, serious, or significant injuries and illnesses, whether or not involving time away from work. ³

In 1972, BLS, in cooperation with many state governments, designed the SOII to estimate the number and frequency of work-related injuries and illnesses by detailed industry for the nation and for states participating in the program. The data published from the survey continues to be a great resource to the safety and health community when deciding how to allocate prevention resources among diverse industries, across which, workers' risks of injury and illness vary widely.

As originally designed, however, the SOII had limitations. Although the survey identified industries with dangerous work settings, it failed to produce a reliable count of workplace fatalities. Also, the SOII shed little light on worker

demographics or the circumstances of an injury or illness. For example, the survey did not ask about the manner in which an incident occurred and which occupations were involved.

In 1987, a congressionally funded National Academy of Sciences (NAS) study recommended that these deficiencies be corrected by collecting detailed data on severe, nonfatal occupational injuries and illnesses reported in the SOII and by compiling complete accounts of occupational fatalities from administrative records, such as death certificates and workers' compensation reports. ⁴ This critical review of the SOII provided the impetus for the redesign of the SOII and the creation of the Census of Fatal Occupational Injuries (CFOI).

Some of the NAS recommendations suggested using multiple data sources such as death certificates and workers' compensation reports to identify and profile fatal work injuries for all workers. More specifically, the Keystone Dialogue Group recommended the development of a method for counting work-related fatalities, stating that the "development of an accepted count of workplace deaths should mute controversy on this issue stemming from the variety of estimates coming from different sources." ⁵ In this regard, fatality estimates made by different organizations at that time varied greatly from 3,000 to 11,000 deaths nationally per year. ⁶

The CFOI approach to compiling data on fatal work injuries was initially tested in a BLS cooperative effort with the Texas Department of Health during 1988. That study, which collected fatality data retrospectively for 1986, highlighted the need for multiple data sources and the feasibility of matching fatalities and their circumstances across those sources. ⁷ This approach was tested again in Texas and Colorado in 1990, with results confirming that the same kind of data could be obtained from multiple data sources on a current basis. ⁸ The CFOI was initially implemented in 32 states and New York City in 1991 and expanded to cover all 50 states and the District of Columbia in 1992. As of 2011, the U.S. territories Puerto Rico, Virgin Islands, and Guam are also included.

Several changes that have had significant impacts on data from the BLS safety and health statistics program, including updated recordkeeping requirements, new industry and occupation classification systems, and changes in race and ethnicity standards, are discussed in the [concepts](#) section.

Timeline

The following timeline illustrates key developments in identifying and quantifying the annual number of work-related injuries, illnesses, and fatalities. Most changes were milestones in program development, such as the Occupational Safety and Health Act of 1970 and the National Academy of Sciences' National Research Council report, while others were fundamentally philosophical, such as the New Deal's new attitudes toward labor law and regulation. In 2018, the National Academy of Sciences completed a [study](#) recommending additional changes to the occupational injury, illness, and fatalities program. BLS is evaluating these recommendations.

Key developments

- **1894:** BLS begins publishing extensively on new developments in state and foreign social legislation and practices, including accident prevention and workers' compensation. In the years preceding World War I, BLS begins to give special attention to industrial accidents and occupational diseases.

- **1912:** BLS issues its first annual report on injury rates in the iron and steel industry. A few years later, cooperative arrangements with Massachusetts, New York, and Ohio are established for reporting industrial accidents; additional states later join the program.
- **1926:** BLS introduces an annual survey tracking the frequency and severity of industrial injuries for several manufacturing industries using data compiled from state records, as well as reports from establishments in targeted industries. By 1930, BLS data covered a quarter of the workforce in some 30 manufacturing industries.
- **1939:** Occupational fatality data are added to the survey.
- **WWII (1941–45):** BLS publishes monthly injury data for industries of particular wartime importance. After the war, BLS adds more industries; by 1966, more than 650 industries were included.
- **1970:** The Occupational Safety and Health Act of 1970 institutes common definitions and recordkeeping standards and requires employers to maintain accurate workplace injury and illness records.
- **1974:** Data from SOII (summary) are first published, for survey year 1972.
- **1987:** The National Academy of Sciences' National Research Council completes a study that leads to a substantial redesign of the occupational injury, illness, and fatalities statistical program.
- **1992:** BLS restructures the survey to include data on characteristics of injured or ill workers and circumstances of the specific nonfatal injury or illness involving lost workday cases and launches a census to capture all fatal occupational injuries. (Modern CFOI and SOII program started.)
- **1992:** BOC system is used to classify occupation, SIC to classify industry, and original Occupational Injury and Illness Classification System (OIICS) to code the case characteristics of injuries illnesses and fatalities.
- **1994:** CFOI begins publishing a preliminary report, followed by a revised and final report of occupational fatalities.
- **1999:** CFOI begins collecting and publishing Metropolitan Statistical Area data. (See the CFOI [definitions](#) page and the concepts section for more information.)
- **Early 2000s:** BLS begins to provide a variety of web-based tools to facilitate reporting and data dissemination.
- **2001:** CFOI begins collecting data on birthplace. (See the CFOI [definitions](#) page for more information.)
- **2002:** [OSHA recordkeeping changes](#) result in SOII series break.

- **2003:** BLS moves to the 2000 edition of the Standard Occupational Classification (SOC) system to code occupations and the 2002 edition North American Industrial Classification System (NAICS) to code industry resulting in SOII and CFOI series break.
- **2008:** SOII begins publishing national estimates for state and local government.
- **2009:** SOII and CFOI adopt the NAICS 2007 edition—not resulting in a series break.
- **2011:** SOII and CFOI series break, BLS moves to the Occupational Injury and Illness Classification System (OIICS) 2.01 to code case characteristics. BLS also adopts SOC 2010 edition definitions. CFOI begins collecting and publishing data on contracted workers. (See the CFOI [definitions](#) page and [concepts](#) section for more information.)
- **2014:** SOII and CFOI adopt NAICS 2012 edition. This does not result in a series break for CFOI or SOII—Case and Demographics, but does result in a series break for SOII—Annual Summary.
- **2015:** CFOI discontinues issuing a preliminary data release, and begins publishing a single final data release in December (4 months earlier than in previous years).
- **2018:** The National Academies of Sciences, Engineering, and Medicine completes a [study](#) that recommends changes to the occupational Injuries, Illnesses, and Fatalities program.
- **2019:** SOII and CFOI adopt NAICS 2017 edition and SOC 2018 edition. This does not result in a series break for CFOI or SOII.

More information on the history of the Injuries, Illnesses, and Fatalities (IIF) program can be found on the [IIF History homepage](#). For more information on the historical development of occupational injury, illness and fatality data, see the articles “[Improvements in the BLS safety and health statistical system](#),” “[Occupational safety and health statistics: new data for a new century](#),” “[A Century-Long Quest for Meaningful and Accurate Occupational Injury and Illness Statistics](#),” and “[The quest for meaningful and accurate occupational health and safety statistics](#).” For more information on the OSHA record-keeping changes, see the article “[Occupational injury and illness: new recordkeeping requirements](#).”

NOTES

¹ The Safety Movement in the Iron and Steel Industry, Bulletin 234 (Bureau of Labor Statistics, 1918).

² The White-Lead Industry in the United States, Bulletin 95 (Bureau of Labor, 1911).

³ See section 24(a) of the Occupational Safety and Health Act of 1970 (Public Law 91–596).

⁴ See E.S. Pollack and D.F. Keimig, eds., *Counting Injuries and Illnesses in the Workplace: Proposals for a Better System* (Washington, National Research Council, National Academy Press, 1987), pp. 103–06.

⁵ See the Keystone Center's final report, "Keystone National Policy Dialogue on Work-Related Illness and Injury Recordkeeping" (Keystone, CO, January 1989), pp. 47. For an account of various attempts to count fatalities at work, see Dino Drudi, "The evolution of occupational fatality statistics in the United States," *Compensation and Working Conditions*, July 1995.

⁶ See BLS Survey of Occupational Injuries and Illnesses (1972–91) (available upon request); the [National Safety Council Accidents Facts](#); and the [National Institute for Occupational Safety and Health's National Traumatic Occupational Fatality Study A Decade of Surveillance, 1980–1989](#).

⁷ See Janice Windau and Donna Goodrich, "Testing a census approach to compiling data on fatal work injuries," *Monthly Labor Review*, December 1990, pp. 47–49. The study also found that, for verification purposes, timeliness is important in maximizing respondents' recall and in reducing the number of those failing to respond because they have relocated.

⁸ See Guy Toscano and Janice Windau, "Further testing of a census approach to compiling data on fatal work injuries," *Monthly Labor Review*, October 1991, pp. 33–36.

Archives

- [August 13, 2012](#)
- [November 03, 2017](#)
- [July 16, 2018](#)

Last Modified Date: December 08, 2020

More Information

Technical references

Katharine G. Abraham, William L. Weber, and Martin E. Personick, "Improvements in the BLS safety and health statistical program," *Monthly Labor Review*, April 1996, pp. 3–12, <https://www.bls.gov/opub/mlr/1996/04/art1full.pdf>.

Jeff Brown, "Nonfatal injuries and illnesses in state and local government workplaces in 2008," *Monthly Labor Review*, February 2011, pp. 33–40, <https://www.bls.gov/opub/mlr/2011/02/art3full.pdf>.

Dino Drudi, "A century-long quest for meaningful and accurate occupational injury and illness statistics," *Compensation and Working Conditions*, Winter 1997, pp. 19–27, <https://www.bls.gov/opub/mlr/cwc/a-century-long-quest-for-meaningful-and-accurate-occupational-injury-and-illness-statistics.pdf>.

Dino Drudi, "The quest for meaningful and accurate occupational injury and illness statistics," *Monthly Labor Review*, December 2015, <https://www.bls.gov/opub/mlr/2015/article/the-quest-for-meaningful-and-accurate-occupational-health-and-safety-statistics.htm>.

Joyce Northwood, Eric Sygnatur, and Janice Windau, "Updated BLS Occupational Injury and Illness Classification System," *Monthly Labor Review*, August 2012, pp. 19–28, <https://www.bls.gov/opub/mlr/2012/08/art3full.pdf>.

Guy A. Toscano and Janice Windau, "Fatal Work Injuries from the 1992 National Census," *Monthly Labor Review*, October 1993, pp. 39–48, <https://www.bls.gov/opub/mlr/1993/10/art3full.pdf>.

Guy A. Toscano, Janice Windau, and Dino Drudi, "Using the BLS Occupational Injury and Illness Classification System as a Safety Management Tool," *Compensation and Working Conditions*, June 1996, pp. 19–28, <https://www.bls.gov/iif/oshwc/cfar0014.pdf>.

Details on the first data reported on fatal occupational injuries incurred by contracted workers, reference year 2011 can be found at "Contractor data from the Census of Fatal Occupational Injuries (CFOI)," (U.S. Bureau of Labor Statistics, 2011), <https://www.bls.gov/iif/oshwc/cfoi/contractor2011.pdf>.

"Corrections to Survey of Occupational Injuries and Illnesses data, 2011 and 2012" (U.S. Bureau of Labor Statistics), https://www.bls.gov/bls/errata/iif_errata_1014.htm.

"Days of job transfer or restriction pilot study," (U.S. Bureau of Labor Statistics), <https://www.bls.gov/iif/days-of-job-transfer-or-restriction.htm>.

Explanation of the differences between employment-based fatal injury rates and the hours-based fatal injury rates that are currently published can be found at "Census of Fatal Occupational Injuries—hours-based rates," (U.S. Bureau of Labor Statistics), <https://www.bls.gov/iif/oshnotice10.htm>.

More articles on safety and health topics can be found from the *Monthly Labor Review* at <https://www.bls.gov/opub/mlr/subject/a.htm>.

Detailed BLS coding structures used to classify workplace injuries resulting in death and for nonfatal injuries and illnesses resulting in days away from work, with explanatory article can be found at “Occupational Injury and Illness Classification System (OIICS) manual,” (U.S. Bureau of Labor Statistics, version 2.0, September 2010), <https://www.bls.gov/iif/oshoiics.htm>.

Explanation and research on the ongoing work to evaluate accuracy, quality, and completeness of the SOII can be found at “Survey of Occupational Injuries and Illnesses Data Quality Research,” (U.S. Bureau of Labor Statistics), <https://www.bls.gov/iif/data-quality.htm>.

“Standard Occupational Classification,” (U.S. Bureau of Labor Statistics), <https://www.bls.gov/soc>.

Guidelines to assist employers in comparing their injury and illness experience to others with similar-size workforces in the same industry can be found at “Using Survey data to evaluate your firm’s injury and illness experience,” (U.S. Bureau of Labor Statistics), <https://www.bls.gov/iif/osheval.htm>.

U.S. Bureau of Labor Statistics. *Workplace injuries and illnesses, Nonfatal occupational injuries and illnesses requiring days away from work, and National census of fatal occupational injuries*. News releases issued annually. Available for 1994 forward at <https://www.bls.gov/iif>.

“North American Industry Classification System,” (U.S. Census Bureau), <https://www.census.gov/eos/www/naics/>.

“Safety and Health in the Workplace,” *Report on the American Workforce* (U.S. Department of Labor. 1994), chapter 3.

“OSHA Injury and Illness Recordkeeping,” (U.S. Department of Labor), <http://www.osha.gov/recordkeeping/index.html>.

“Standard Industrial Classification,” (U.S. Occupational Safety and Health Administration), http://www.osha.gov/pls/imis/sic_manual.html.

William J. Wiatrowski, “Occupational safety and health statistics: new data for a new century,” *Monthly Labor Review* (October 2005), pp. 3–10, <https://www.bls.gov/opub/mlr/2005/10/art1full.pdf>.

William J. Wiatrowski, “Using workplace safety and health data for injury prevention,” *Monthly Labor Review* (October 2013), <https://www.bls.gov/opub/mlr/2013/article/using-workplace-safety-data-for-prevention.htm>.

William J. Wiatrowski and Jill A. Janocha, “Comparing fatal work injuries in the United States and the European Union,” *Monthly Labor Review* (June 2013), <https://www.bls.gov/opub/mlr/2014/article/comparing-fatal-work-injuries-us-eu.htm>.

Contact us

The Office of Safety, Health, and Working Conditions will be glad to assist you with questions about the CFOI.

Email: Use the [online form](#) to submit an inquiry by email

Telephone: (202) 691-6170 (Monday–Friday, 8:30 a.m.–4:30 p.m. Eastern Time)

Services for individuals with a sensory impairment

Information voice phone: (202) 691-5200

The Federal Relay Service: 1-800-877-8339

Write us at

Bureau of Labor Statistics

OSHWC

2 Massachusetts Ave., N.E. - Suite 3180

Washington, D.C. 20212-0001

Last Modified Date: December 08, 2020