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Data Bulletin

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Fatal and Nonfatal Injuries in the Construction Industry

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OVERVIEW

Construction is one of the most hazardous industries in the United States. Construction workers are significantly overrepresented in injuries, comprising 7.3% of the workforce but 21.7% of fatal injuries in 2020. Timely and accurate data on injuries is vital to guide safety and health interventions in the industry. This Data Bulletin provides updated information on fatal and nonfatal injuries in construction, including by subsector, occupation, demographic group, primary source, and event/exposure. Numbers for fatal injuries for all employment were obtained from the U.S. Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI), a complete count of reported fatal injuries and their circumstances. Estimates of nonfatal injuries were based on employer logs obtained from the BLS Survey of Occupational Injuries and Illnesses (SOII) for private, *wage-and-salary* construction workers. Nonfatal injuries include injuries or illnesses that resulted in *days away from work (DAFW)*. It is important to note that SOII data has been found to underreport nonfatal injuries and specifically to underreport nonfatal injuries among Hispanic construction workers. Employment figures used for rate calculations were estimated using the BLS Current Population Survey (CPS)[2], a monthly population survey. CPWR calculated fatal injury rates per 100,000 *full-time equivalent workers (FTEs)*, whereas nonfatal rates were calculated per 10,000 FTEs. Chart 4 provides BLS calculated rates. Finally, data for private nonfarm wage-and-salary employment in construction subsectors was obtained from the BLS Current Employment Statistics (CES) program, as subsector level data is not available in CPS. Categories with missing data are noted in chart footnotes.

THIS ISSUE

This issue examines fatal and nonfatal injuries from 2011 to 2020, including by subsector, occupation, demographic group, primary source, and event/exposure.

KEY FINDINGS

From 2011 to 2020, there were an annual average of 963 fatal injuries among all construction workers and 78,000 nonfatal injuries among private wage-and-salary construction workers.
Charts 1, 7

Fatal injury rates (per 100,000 FTEs) increased from 2011 to 2020 among those who were under 55 (8.1 to 9.0), Hispanic (9.6 to 12.6), and male (9.7 to 10.8).
Chart 3

Of all construction and extraction occupations examined, roofers had the highest fatal injury rate in 2020, with 47 fatalities per 100,000 FTEs.
Chart 4

From 2018 to 2020, helpers had the highest nonfatal injury rate (501.8 per 10,000 FTEs).
Chart 10

Falls, slips, and trips were among the leading events/exposures, resulting in 376 fatal and 22,900 nonfatal injuries on average annually from 2018 to 2020.
Charts 6, 12

NEXT DATA BULLETIN

Impact of COVID-19 on the Construction Industry: 2 years in review

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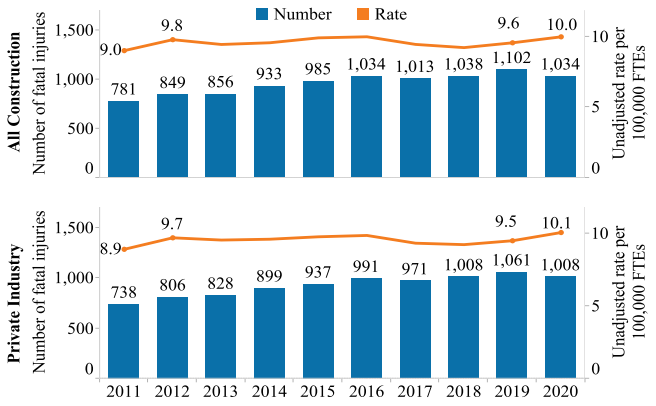
[2]The CPS is conducted by the U.S. Census Bureau for BLS.
Unless otherwise noted, numbers in text and charts were calculated by the CPWR Data Center.

From 2011 to 2020, 9,625 construction workers in the U.S. lost their lives due to an occupational injury, an annual average of 963 fatal injuries and a fatal injury rate of 9.6 per 100,000 FTEs (chart 1). During this period, the rate of fatal injuries increased 11.1%, from 9.0 to 10.0. During the first year of the COVID-19 pandemic (2019 to 2020), there was a 6.2% decrease in fatalities (1,102 to 1,034) but a 4.2% increase in the fatal injury rate (9.6 to 10.0). These figures are consistent with other findings that the pandemic had a minimal impact on the number of fatal injuries, but the decrease in construction employment during 2020 resulted in a higher fatal injury rate. Private industry followed a similar pattern as all construction, with a majority (average of 96.1%) of injuries occurring in the private industry.

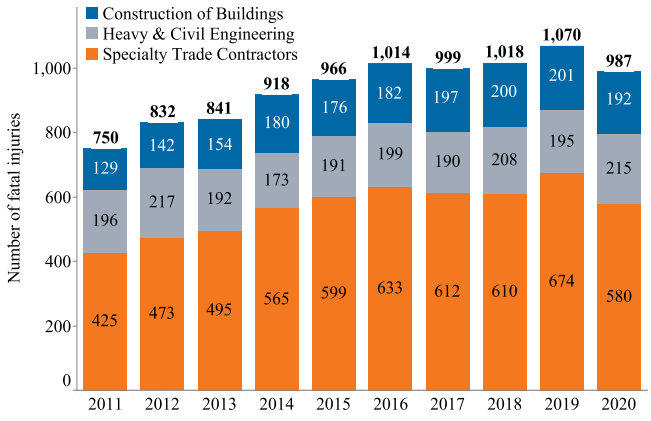
1. Number and rate of fatal injuries in construction, 2011-2020



Source: *U.S. Bureau of Labor Statistics, 2011-2020 Census of Fatal Occupational Injuries and 2011-2020 Current Population Survey.*

When divided according to *major subsector*, an average of 60.3% of fatal injuries in construction from 2011 to 2020 occurred in Specialty Trade Contractors (NAICS 238; chart 2). During this period, Construction of Buildings (NAICS 236) had the largest increase in fatal injuries (+48.8%; 129 to 192), followed by Specialty Trade Contractors (NAICS 238; +36.5%; 425 to 580). Heavy and Civil Engineering (NAICS 237) had the smallest increase (+9.7%) among the subsectors, from 196 to 215.

2. Fatal injuries, by major subsector, 2011-2020*

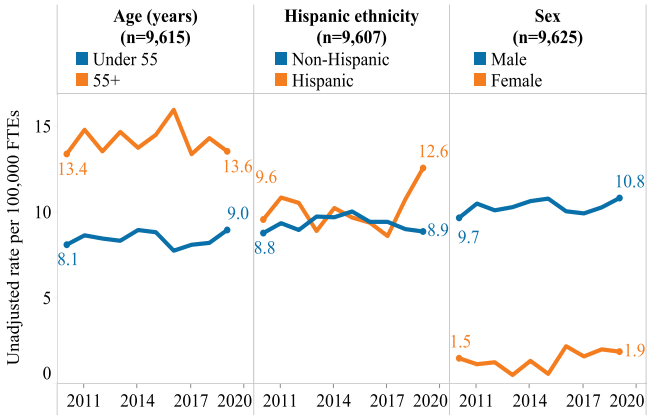


Source: *U.S. Bureau of Labor Statistics, 2011-2020 Census of Fatal Occupational Injuries.*

**Cases missing subsector data were excluded.*

The fatal injury rate (per 100,000 FTEs) increased in all demographic groups examined between 2011 and 2020 (chart 3). The largest increases in rates were for workers who were under 55 years old (8.1 to 9.0), Hispanic (9.6 to 12.6), or male (9.7 to 10.8). In 2020, the fatal injury rate in workers 55 or older was 51.1% higher than that of those younger than 55 (13.6 versus 9.0). The rate was 41.6% higher among Hispanic workers than among non-Hispanics in 2020 (12.6 versus 8.9). Interestingly, the fatal injury rate for Hispanic workers increased 46.5% from 2018 to 2020 (8.6 to 12.6), while the rate decreased 6.3% for non-Hispanic workers (9.5 to 8.9). Males had a 468.4% higher fatal injury rate than females in 2020 (10.8 versus 1.9).

3. Rate of fatal injuries in construction by demographics, 2011-2020*

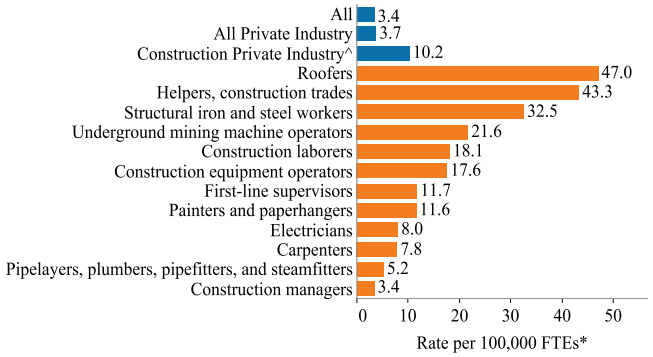


Source: *U.S. Bureau of Labor Statistics, 2011-2020 Census of Fatal Occupational Injuries and 2011-2020 Current Population Survey.*

**Cases missing age or ethnicity data were excluded.*

Fatal injury rates provided by BLS for select construction and extraction *occupations* in all industries in 2020 were examined (chart 4). The top three rates (per 100,000 FTEs) for the selected occupations were roofers (47.0), helpers (43.3), and structural iron and steel workers (32.5).

4. Rate of fatal injuries in construction and extraction occupations, 2020*



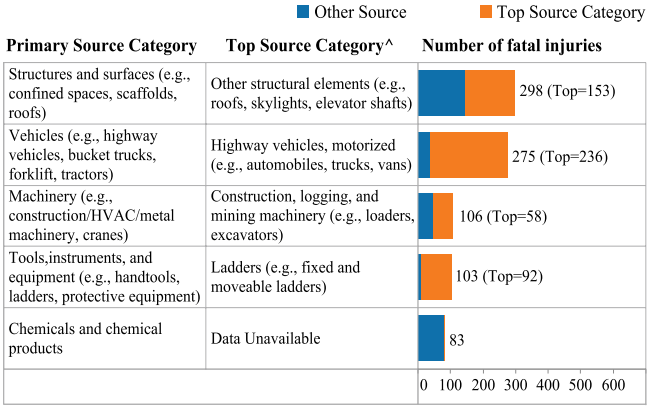
Source: *U.S. Bureau of Labor Statistics, Total hours worked and rate of fatal occupational injuries by selected worker characteristics, occupations, and industries, civilian workers, 2020. https://www.bls.gov/iif/oshwc/cfoi/cfoi_rates_2020hb.xlsx. Accessed April 2022.*

**BLS calculates the rate per 100,000 FTEs as Number of Fatal Injuries/Total Hours Worked X 200,000,000.*

^Due to differences in rate calculations and data this rate varies slightly from Chart 1.

Primary source (e.g., factor responsible for injury) was then examined for fatal injuries from 2018 to 2020 (chart 5). Structures and surfaces (n=298) were the most common primary source of fatal injuries, of which 51.3% resulted from other structural elements (n=153). The second most common primary source was vehicles (n=275), with motorized highway vehicles accounting for most of these injuries (85.8%; n=236). Ladders accounted for 89.3% (n=92) of fatal injuries resulting from tools, instruments, and equipment (n=103).

5. Number of fatal injuries in construction by the most common primary sources, average of 2018-2020*



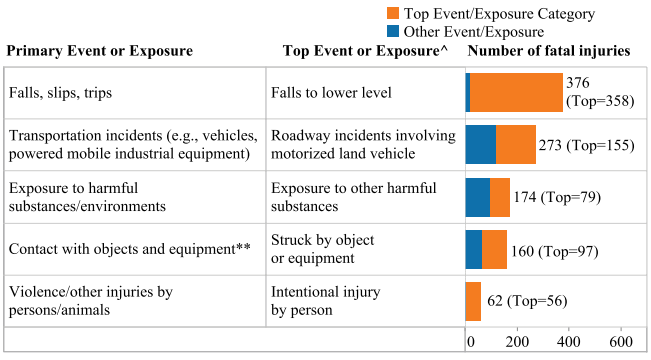
Source: *U.S. Bureau of Labor Statistics, 2018-2020 Census of Fatal Occupational Injuries.*

**Cases missing primary source data were excluded.*

^Defined as the most common category within the primary source category.

Next, *event or exposure* (e.g., manner in which the injury was caused) categories for fatal injuries were examined (chart 6). Falls, slips, and trips (n=376) were the most common, with 95.2% of these being falls to a lower level (n=358). Transportation incidents (n=273) were the second most common, with over half of these (56.8%; n=155) resulting from roadway incidents involving a motorized land vehicle.

6. Number of fatal injuries in construction by the most common event or exposure categories, average of 2018-2020*



Source: *U.S. Bureau of Labor Statistics, 2018-2020 Census of Fatal Occupational Injuries.*

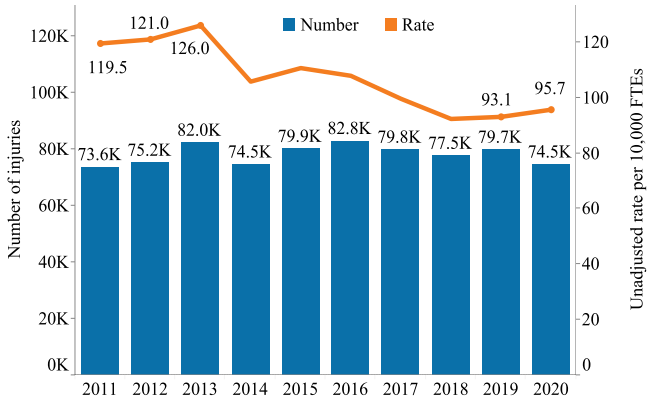
**Cases missing event or exposure data were excluded.*

^Defined as the most common category within the primary event or exposure category.

***Contact injuries involving a fall, transportation incident, fire, explosion, or violence are included in those categories. Primary event or exposure categories are mutually exclusive.*

Nonfatal injury trends in construction were then analyzed. Among private wage-and-salary construction workers, an average of 78.0 thousand (K) nonfatal injuries resulted in DAFW per year from 2011 to 2020 (chart 7). During that period, the rate of these injuries (per 10,000 FTEs) declined 19.9%, from 119.5 to 95.7. As was true with fatal injuries, from 2019 to 2020 the number of nonfatal injuries decreased (-6.5%, from 79.7K to 74.5K) but their rate increased (+2.8%, from 93.1 to 95.7).

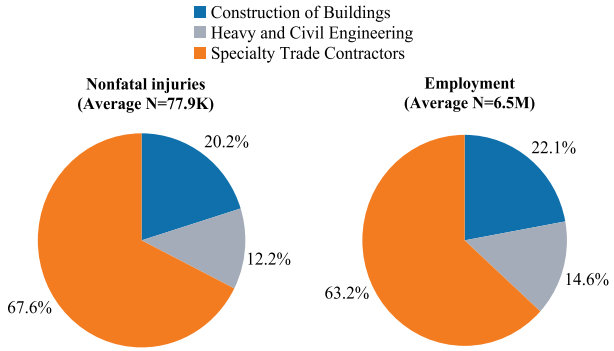
7. Number and rate of nonfatal injuries in construction, 2011-2020 (Private wage-and-salary workers)



Source: *U.S. Bureau of Labor Statistics, 2011-2020 Survey of Occupational Injuries and Illnesses and 2011-2020 Current Population Survey.*

Specialty Trade Contractors (NAICS 238) were slightly overrepresented in nonfatal construction injuries from 2011 to 2020, accounting for 63.2% of the private wage-and-salary workforce yet 67.6% of nonfatal injuries (chart 8).

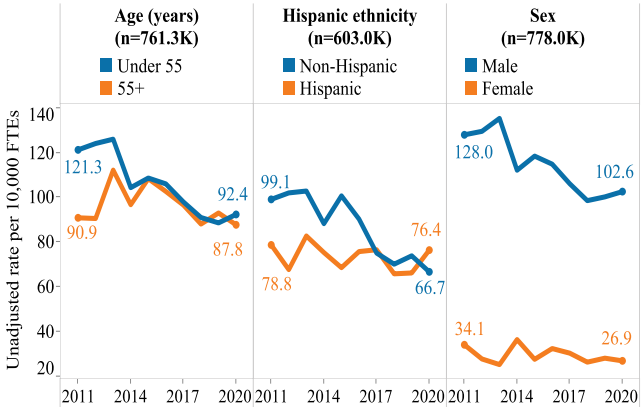
8. Nonfatal injuries and employment in construction, by major subsector, average of 2011-2020 (Private wage-and-salary workers)



Source: *U.S. Bureau of Labor Statistics, 2011-2020 Survey of Occupational Injuries and Illnesses and 2011-2020 Current Employment Statistics.*

The nonfatal injury rate (per 10,000 FTEs) declined in all demographic groups examined between 2011 and 2020 (chart 9). Differences in injury risk between age groups and ethnicities narrowed during this period. In 2011, the nonfatal injury rate among workers younger than 55 was 33.4% higher than that of those 55 or older (121.3 versus 90.9) but only 5.2% higher in 2020 (92.4 versus 87.8). The injury rate among Hispanic workers[3] in 2011 was 20.5% lower than that of non-Hispanic workers (78.8 versus 99.1) but was 14.5% higher in 2020 (76.4 versus 66.7).

9. Rate of nonfatal injuries in construction by demographics*, 2011-2020 (Private wage-and-salary workers)

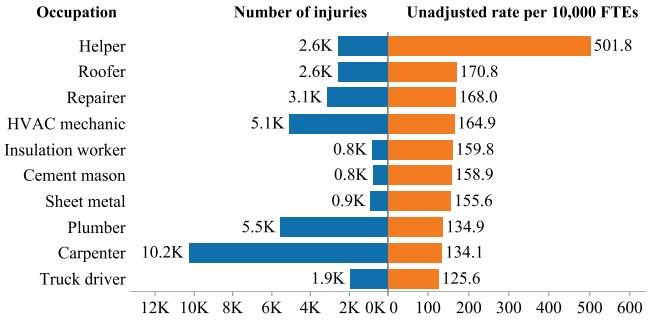


Source: *U.S. Bureau of Labor Statistics, 2011-2020 Survey of Occupational Injuries and Illnesses and 2011-2020 Current Population Survey.*

**Cases with unreported or missing demographic data were excluded.*

Helpers, roofers, repairers, HVAC mechanics, and insulation workers were the occupations with particularly high rates of nonfatal injuries (per 10,000 FTEs) from 2018 to 2020 (annual average of more than 159; chart 10). Notably, the rate among construction trades helpers over those years was equivalent to five injuries per 100 full-time workers annually (501.8).

10. Number and rate of nonfatal injuries in the 10 construction occupations* with the highest injury rate^, average of 2018-2020 (Private wage-and-salary workers)



Source: *U.S. Bureau of Labor Statistics, 2018-2020 Survey of Occupational Injuries and Illnesses and 2018-2020 Current Population Survey.*

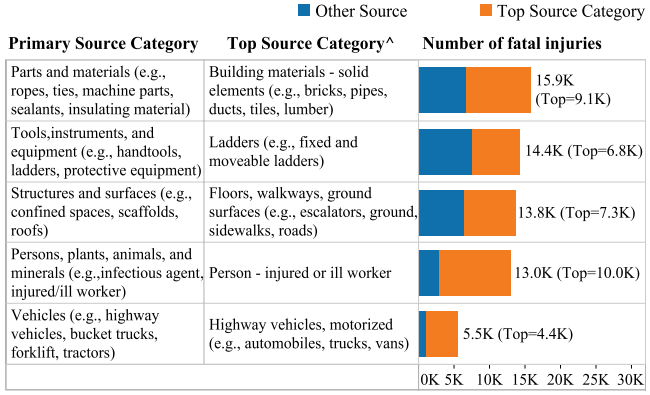
**Occupations with N of less than 30 in any year in the CPS data were excluded.*

^CPWR rates may not align with published BLS SOII rates as they use employer logs which vary from CPS data.

[3]As noted above, race/ethnicity estimates should be interpreted with caution due to potential underreporting among Hispanic workers. From 2011 to 2020, 22% of nonfatal injuries were missing race/ethnicity information in SOII.

On average from 2018 to 2020, parts and materials were the most common primary source of nonfatal injuries, accounting for 15.9K injuries in the industry each year, with almost 60% (n=9.1K) due to building materials (chart 11). Ladders were another common source, representing 6.8K yearly nonfatal injuries, and almost half (47.2%) of the injuries related to tools, instruments, and equipment (n=14.4K).

11. Number of nonfatal injuries in construction by the most common primary sources, average of 2018-2020*



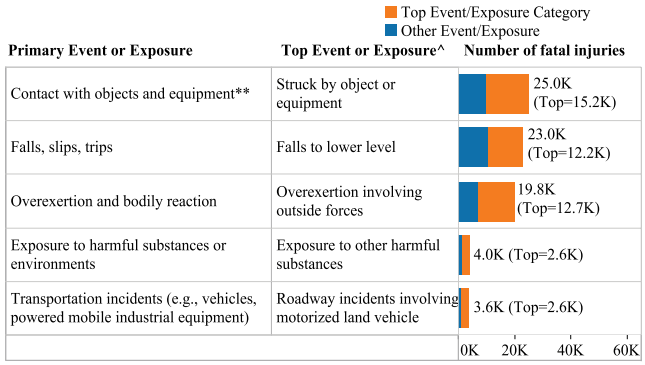
Source: *U.S. Bureau of Labor Statistics, 2018-2020 Survey of Occupational Injuries and Illnesses.*

**Cases missing primary source data were excluded.*

^Defined as the most common category within the primary source category.

Contact with objects and equipment was a leading cause of event or exposure for injuries from 2018 to 2020, averaging 25.0K yearly, or nearly one-third (32.3%) of total injuries (chart 12). Struck-by object or equipment injuries were the most common in this group, averaging 15.2K yearly. Falls, slips, and trips were next highest event/exposure category, averaging 23.0K injures per year, with falls to a lower level accounting for over half (53.0%; n=12.2K) of the total.

12. Number of nonfatal injuries in construction by the most common event or exposure categories, average of 2018-2020*



Source: *U.S. Bureau of Labor Statistics, 2018-2020 Survey of Occupational Injuries and Illnesses.*

**Cases missing event or exposure data were excluded.*

^Defined as the most common category within the primary event or exposure category.

***Contact injuries involving a fall, transportation incident, fire, explosion, or violence are included in those categories. Primary event or exposure categories are mutually exclusive.*

Construction continues to be one of the country's most dangerous industries. From 2011 to 2020, fatal injury rates increased most significantly for Hispanic workers, including an alarming spike between 2018 and 2020. This group's nonfatal injury rates also saw a smaller decrease than among non-Hispanic workers. As previously documented, Hispanic workers are an increasingly significant part of the construction workforce, growing from a quarter to a third of the workforce from 2011 to 2020. This expansion highlights the need to address their safety and health disparities and to support Spanish-speaking workers; as part of this effort, CPWR translates as many resources as possible into Spanish. Check out our "Lista de rescursos en español" for an overview of what is available.

Struck-by incidents and falls were among the top event or exposures for both fatal and nonfatal injuries, indicating the need for continued efforts to address the Construction Focus Four: falls, caught-in/between, electrocutions, and struck-by.

Ladders were a leading primary source of fatal and nonfatal injuries among construction workers. To raise awareness of fall hazards, the NORA Construction Sector Council, OSHA, CPWR, and NIOSH implemented the Campaign to Prevent Falls in Construction, which includes the Stand-Down to Prevent Falls in Construction. The 2022 Stand-Down is May 2-6, but participation in the campaign throughout the year is encouraged. Check out the One-Stop Stand-Down Shop for free stickers, Toolbox Talks, videos, handouts, and more, and keep fall prevention programs going all year long with these 10 ideas.

Transportation incidents were also a top event/exposure for both fatal and nonfatal injuries. A key element of the Infrastructure Investment and Jobs Act is the improvement of roadway and bridge infrastructure. The greater spending will result in additional jobs which may increase the risk of injuries, especially with new employers. To help keep workers safe on these and other infrastructure projects, CPWR has created a website section providing easy access to free resources relevant to the main categories of infrastructure projects: transportation; climate, energy and the environment; and broadband.

CPWR works closely with OSHA and NIOSH to address high-priority hazards, and both of those organizations also provide good resources to help contractors, supervisors, workers, researchers, and others reduce occupational injuries and illnesses on construction job sites.

ACCESS THE CHARTS & MORE

View the charts in PowerPoint and the data underlying the charts in Excel. Downloading will start when you click on each link. These files can also be found under this Data Bulletin at: cpwr.com/data-reports. In addition, see our latest Interactive Data Dashboards on Fatal and Nonfatal Injuries in Construction, Musculoskeletal Disorders in Construction, and Falls, Slips, and Trips in Construction, as well as updates to the Construction Focus Four and Severe Injury dashboards.

DEFINITIONS

Days away from work (DAFW) *– Nonfatal injury cases resulting in at least one day away from work beyond the day of injury or illness onset. A full definition with an example can be found in the Survey of Occupational Injuries and Illnesses Handbook of Methods.*

Event/Exposure *– The manner in which the injury or illness was produced or inflicted, such as a fall, heat-related illness, etc. For example, a worker who fell from a ladder may have a reported event or exposure of "Falls to lower level," with their reported primary source being "Tools, instruments, and equipment: Ladders". Specific event/exposure definitions can be found in the Occupational Injury and Illness Classification Manual Section 2.4 Event or Exposure.*

Full-time equivalent worker (FTE) *– Determined by the hours worked per employee on a full-time basis, defined as working 2,000 hours (40 hours x 50 weeks) per year.*

Major subsector *– 3-digit NAICS codes within construction, including Construction of Buildings (NAICS 236), Heavy and Civil Engineering (NAICS 237), and Specialty Trade Contractors (NAICS 238).*

Primary source *– The objects, substances, equipment, and other factors that were responsible for the injury or illness incurred by the worker, such as a ladder, cutting hand tools, etc. For example, a worker who fell from a ladder may have a reported event or exposure of "Falls to lower level" with their reported primary source being "Tools, instruments, and equipment: Ladders." Specific source definitions can be found in the Occupational Injury and Illness Classification Manual Section 2.3 Source and Secondary Source of Injury or Illness.*

Occupation *–*

- ***For fatal injuries:*** *Occupation was classified according to the 2018 Standard Occupational Classification (SOC) code for workers in all industries.*
- ***For nonfatal injuries:*** *Main occupation for workers in the construction industry were coded according to the 2010 and 2018 Census Classification Scheme. Data were aligned using their standard occupational classification (SOC) code. Codes for occupations in chart 10 are listed below:*
  - ***Carpenter*** *– Occupation coded as 6230 (Carpenters)*
  - ***Cement mason*** *– Occupation coded as 6250 (Cement masons, concrete finishers, and terrazzo workers)*
  - ***Helper*** *– Occupation coded as 6600 (Helpers, construction trades)*
  - ***HVAC mechanic*** *– Occupation coded as 7315 (Heating, air conditioning, and refrigeration mechanics and installers)*

- ***Insulation worker*** – *Occupation coded as 6400 (Insulation workers)*
- ***Plumber*** – *Occupation coded as 6440-6442 (Pipelayers, plumbers, pipefitters, and steamfitters)*
- ***Repairer*** – *Occupation coded as 7000-7300, 7320-7360, or 7430-7640 (Installation, Maintenance, and Repair Occupations, apart from HVAC mechanics, power-line installers, and telecom-line installers, which are analyzed individually)*
- ***Roofer*** – *Occupation coded as 6515 (Roofers)*
- ***Sheet metal*** – *Occupation coded as 6520 (Sheet metal workers)*
- ***Truck driver*** – *Occupation coded as 9130 (Driver/sales workers and truck drivers)*

Wage-and-salary – Workers who receive wages, salaries, commissions, tips, or pay from their employer.

DATA SOURCES

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ABOUT THE CPWR DATA CENTER

The CPWR Data Center is part of CPWR–The Center for Construction Research and Training. CPWR is a 501(c)(3) nonprofit research and training institution created by NABTU, and serves as its research arm. CPWR has focused on construction safety and health research since 1990. The Data Bulletin, a series of publications analyzing construction-related data, is part of our ongoing surveillance project funded by the National Institute for Occupational Safety and Health (NIOSH).

Besides cpwr.com, visit CPWR's other online resources to help reduce construction safety and health hazards:

- Choose Hand Safety
  https://choosehandsafety.org/
- Construction Safety and Health Network
  https://safeconstructionnetwork.org/
- Construction Solutions
  https://www.cpwrconstructionsolutions.org/
- Construction Solutions ROI Calculator
  https://www.safecalc.org/
- COVID-19 Construction Clearinghouse
  https://covid.elcosh.org/index.php
- COVID-19 Exposure Control Planning Tool
  https://www.covidcpwr.org
- Electronic Library of Construction Occupational Safety and Health
  https://www.elcosh.org/index.php
- Exposure Control Database
  https://ecd.cpwrconstructionsolutions.org/
- Safety Climate - Safety Management Information System (SC-SMIS)
  www.scsmis.com
- Stop Construction Falls
  https://stopconstructionfalls.com/
- Work Safely with Silica
  https://www.silica-safe.org/

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