

Trends of Caught-In or -Between Injuries Among Construction Workers

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OVERVIEW

Large machines, temporary work systems (e.g., scaffolds), and earth support structures (e.g., trench shoring) increase the risk of *caught-in/between* injuries. These injuries result from [being squeezed, caught, crushed, pinched, or compressed between objects](#) and can cause fatalities or injuries like fractures and amputations. Caught-in/between injuries are one of OSHA's *Focus Four* hazards, which together cause the majority of work-related construction worker deaths. From 2023 through 2024, approximately [5% of on the job fatalities](#) among construction workers resulted from caught-in/between injuries. The [average exposure score \(e.g., frequency of exposure\) for hazardous equipment](#) was 2.4 times higher among construction workers than that of non-construction workers (68.2 versus 28.6).

This Data Bulletin examines caught-in/between injuries among U.S. construction workers, including fatal, nonfatal and severe by major industry, detailed *event/exposure*, and *major subsector*. Fatal injury data were obtained from the U.S. Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) and CPWR's Fatality Map. Nonfatal data come from the BLS Survey of Occupational Injuries and Illnesses (SOII) and the OSHA Severe Injury Reports. SOII and CFOI moved from [Occupational Injury and Illness Classification](#) (OIICS) version 2 to version 3 starting with reference year 2023 data, which limits comparability of caught-in/between injuries pre- and post-2023. Fatal rates were calculated per 100,000 *full-time equivalent workers* (FTEs), while nonfatal rates were calculated per 10,000 FTEs. FTE estimates were collected from the U.S. Census Bureau Current Population Survey.

In addition to national trends, this Data Bulletin also looks at state-level data and narrative reports from CPWR's Fatality Map and caught-in/between *severe injuries*. OSHA *citations and penalties* associated with trenching, with data obtained from OSHA enforcement data, were also explored because these figures potentially result from cave-ins from trench collapses.



THIS ISSUE

This Data Bulletin examines caught-in/between injuries among U.S. construction workers. It analyzes topics such as 1) fatal and nonfatal injuries by major industry, detailed event/exposure, and major subsector; 2) state statistics and narrative trends shown in CPWR's Fatality Map; 3) severe caught-in/between injuries; and 4) OSHA citations and penalties associated with trenching.

KEY FINDINGS

Of all industries, construction had the highest number and third highest rate of fatal caught-in/between injuries from 2023 to 2024 (n=96; 0.5 per 100,000 FTEs). The industry accounted for the third highest number and fourth highest rate of nonfatal caught-in/between injuries (n=3.4K; 1.9 per 10,000 FTEs).

Charts 1 and 6

Over two-thirds (68.8%) of caught-in/between fatalities resulted from collapse/engulfment.

Chart 2

More than 2 in 5 (41.9%) nonfatal caught-in/between injuries resulted from caught or wedged between non-running objects.

Chart 7

The average penalty per trenching citation increased 28.6% from 2011 to 2025 (\$3.5K to \$4.5K).

Chart 10

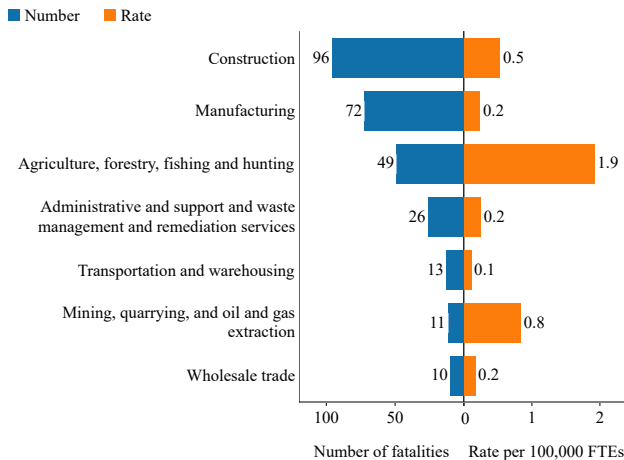
NEXT DATA BULLETIN

Chemical Exposures among Construction Workers

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First, fatal caught-in/between injuries were evaluated by major industry (Chart 1). From 2023 to 2024, construction had the highest number of fatal caught-in/between injuries (n=96), accounting for almost one-third (30.4%) of the total in all private industry. Construction also had the third highest rate of this type of fatalities (0.5 per 100,000 FTEs).

1. Number and rate of fatal caught-in/between injuries, by selected major industry* (2023-2024; Private industry)

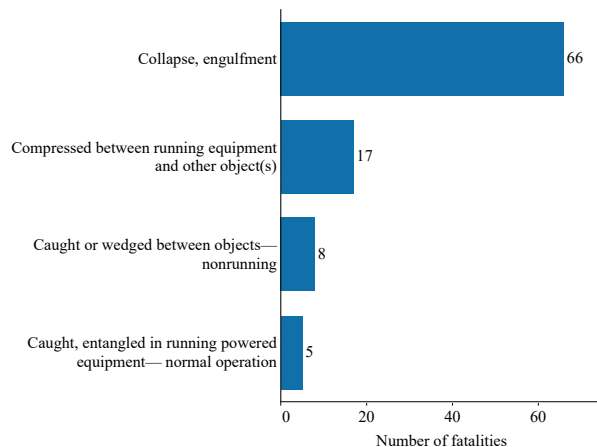


Source: BLS, 2023-2024 Census of Fatal Occupational Injuries and IPUMS, Current Population Survey.

*Chart shows injuries with major industry reported. Total does not sum to all caught-in/between injuries (316).

By detailed event/exposure, collapse/engulfment accounted for over two-thirds (68.8%; n=66) of all caught-in/between fatalities from 2023 to 2024 (Chart 2). This aligns with [prior findings that 68.6% of caught-in/between fatalities](#) were due to being caught or crushed by collapsing materials. Workers being compressed between running equipment and other object(s) was the second highest detailed event/exposure: these caused 17.7% (n=17) of caught-in/between fatalities from 2023-2024.

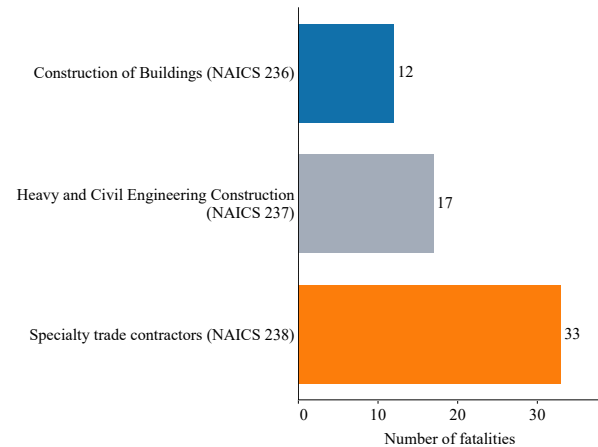
2. Number of fatal caught-in/between injuries in construction, by detailed event/exposure (2023-2024; Private industry)



Source: BLS, 2023-2024 Census of Fatal Occupational Injuries.

Collapse/engulfment caught-in/between injuries (n=66) were then analyzed by major subsector, with half of them occurring among Specialty Trade Contractors (NAICS 238; 50.0%; n=33; Chart 3). Prior work found that a [majority of all construction fatalities](#) occurred among Specialty Trade Contractors, which is the [largest construction subsector by employment](#).

3. Number of fatal collapse, engulfment^* injuries by major construction subsector (2023-2024; Private industry)



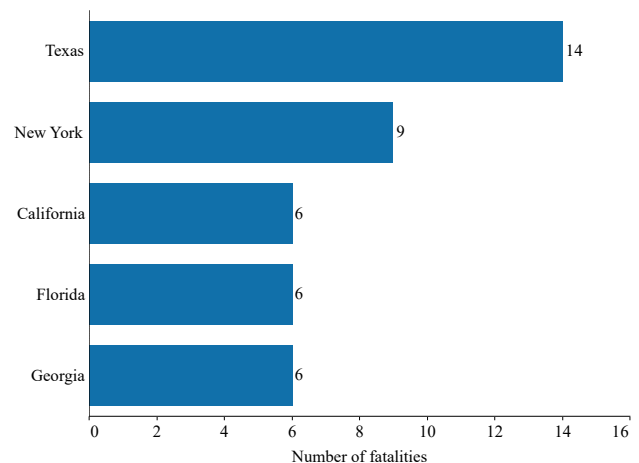
Source: BLS, 2023-2024 Census of Fatal Occupational Injuries.

^Collapse, engulfment was used for fatal injury trends by major subsector due to data availability.

*Total does not sum to total collapse, engulfment (n=66) shown in Chart 2 due to missing or suppressed subsector data.

Fatalities reported in CPWR's Fatality Map were examined next by state (Chart 4). From 2023 to 2024, there were 98 caught-in/between fatalities (data not shown). The states with the highest numbers of fatalities were Texas (n=14) and New York (n=9) followed by California, Florida, and Georgia, all of which had six. The states with the most caught-in/between fatalities were similar to those with the [largest numbers of construction workers](#): Texas, California, Florida, New York, and North Carolina.

4. Caught-in/between fatalities by state (2023-2024)



Source: CPWR - The Center for Construction Research and Training, 2023-2024 Construction Fatality Map.

OSHA narratives for caught-in/between fatalities from CPWR's Fatality Map were then explored through a word cloud showing the 25 words used most often (Chart 5). The top five caught-in/between incident-related words in the narratives were: trench (n=588), wall (n=340), collapsed (n=321), between (n=194), and pipe (n=166).

5. Commonly used words in caught-in/between injury narratives*

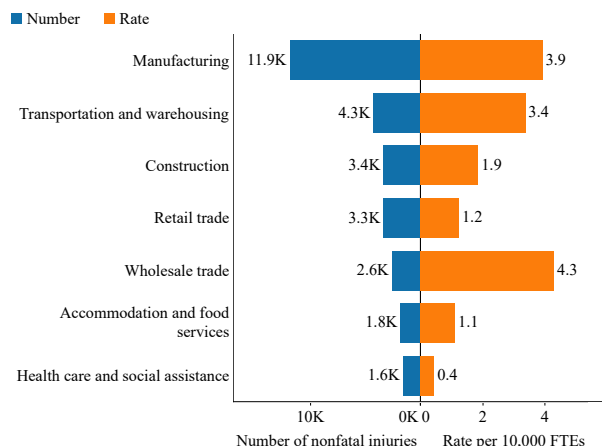


Source: CPWR—The Center for Construction Research and Training, 2023-2025 Construction Fatality Map Dashboard.

*Covers OSHA narratives in construction from 2011 through February of 2025. Excluded words: prepositions, articles, and employee(s).

Nonfatal caught-in/between injuries resulting in *days away from work* were then examined (Chart 6). Construction accounted for 9.8% of the 34.5K nonfatal caught-in/between injuries in all industries from 2023 to 2024. During this period, construction had the third highest number and fourth highest rate of these injuries (n=3.4 thousand (K); 1.9 per 10,000 FTEs). Manufacturing had the highest number (n=11.9K) and wholesale trade the highest rate (4.3 per 10,000 FTEs).

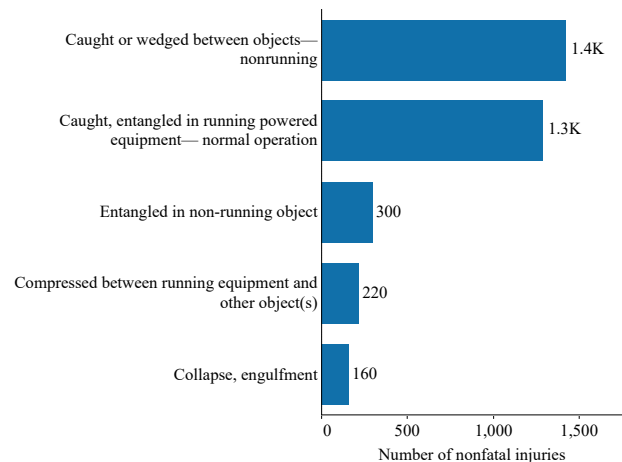
6. Number and rate of nonfatal caught-in/between injuries resulting in days away from work by major industry (2023-2024; Private industry)



Source: BLS, 2023-2024 Survey of Occupational Injuries and Illnesses and IPUMS, CPS.

In terms of detailed event/exposure, nearly four out of five nonfatal caught-in/between injuries in construction resulted either from workers being caught or wedged between non-running objects (n=1.4K; 41.9%) and caught, entangled in running powered equipment in normal operation (n=1.3K; 38.1%; Chart 7). [Previous studies](#) reported that the overwhelming majority (93.0%) of all nonfatal caught-in/between injuries in construction were a result of being caught or compressed by objects or equipment.

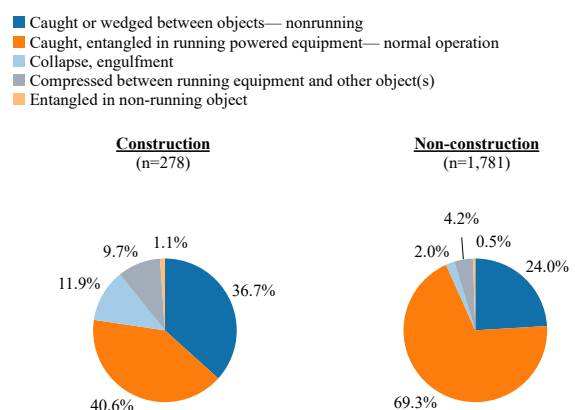
7. Number of nonfatal caught-in/between injuries resulting in days away from work in construction, by detailed event/exposure (2023-2024; Private industry)



Source: BLS, 2023-2024 Survey of Occupational Injuries and Illnesses

An examination of severe injuries found 278 caught-in/between injuries from 2024 to 2025 (Chart 8). Most of these (40.6%) were caught-in and entanglement injuries with running powered equipment. Injuries resulting from collapse/engulfment (11.9% versus 2.0%, respectively) and injuries resulting from being compressed between running equipment and other object(s) were a larger proportion of injuries among construction workers than workers in other industries (9.7% versus 4.2%, respectively).

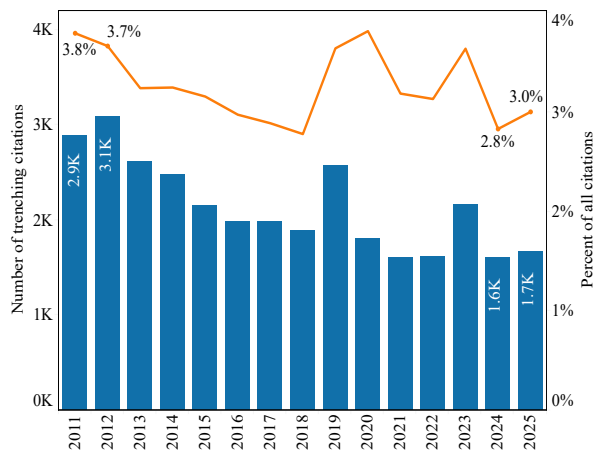
8. Severe caught-in/between injuries, by exposure type and construction versus non-construction (2024-2025)



Source: OSHA, Severe Injury Reports, 01/01/2024-12/31/2025.

OSHA citations and penalties were then examined for violations of *trenching standards* (Charts 9-12). On average, there were 2.1K trenching citations issued annually from 2011 to 2025, accounting for 3.3% of all citations to construction firms (Chart 9). There was an increase in trenching citations in 2019, after OSHA issued the [National Emphasis Program on Trenching and Excavation](#). There was also an increase in 2023, aligning with [enforcement guidance changes](#). In 2025, there were 1,700 trenching standard citations, which account for 3.0% of all citations issued to construction firms.

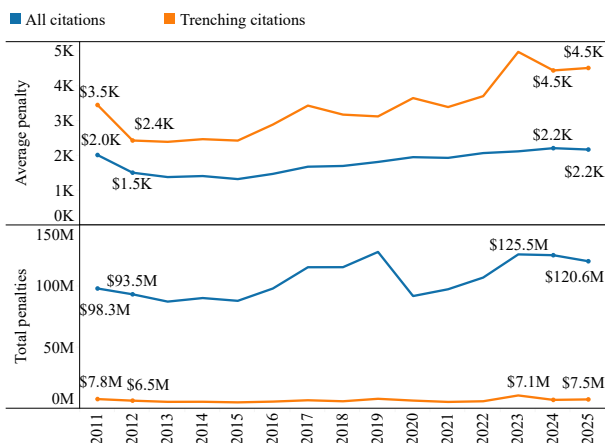
9. OSHA trenching citations in construction (2011-2025)



Source: Department of Labor; 2011-2025 OSHA Enforcement Data.

From 2011 to 2025, while total penalties for trenching standard violations decreased 3.8% (\$7.8M to \$7.5M), the average penalty per OSHA citation increased 28.6% (\$3.5K to \$4.5K; Chart 10). Over the same period, [inflation increased 43.2%](#). Average penalty per trenching violation increased in 2017, following the [Federal Civil Penalties Inflation Adjustment Act](#). There was also an increase in 2023 with the changes to enforcement guidance. In 2025, \$7.5 million penalties were issued for trenching violations, accounting for 6.2% of all penalties issued to construction firms.

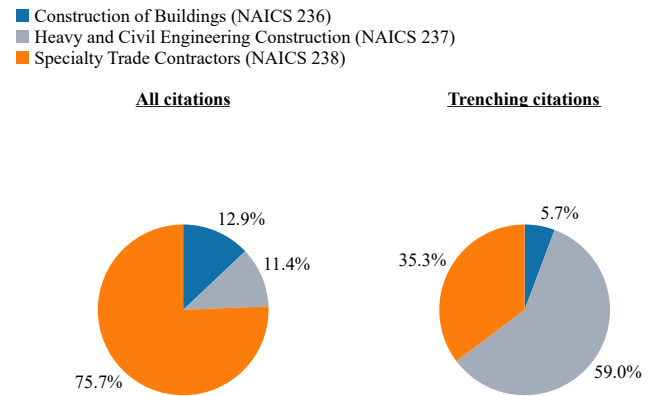
10. Average penalty per OSHA citation and total penalties in construction, all versus trenching citations (2011-2025; December 2018 dollars)



Source: Department of Labor; 2011-2025 OSHA Enforcement Data.

By major subsector, Specialty Trade Contractors (NAICS 238) received a majority of all citations issued in 2025 (75.7%; Chart 11). However, Heavy and Civil Engineering Construction (NAICS 237) accounted for most trenching citations (59.0%).

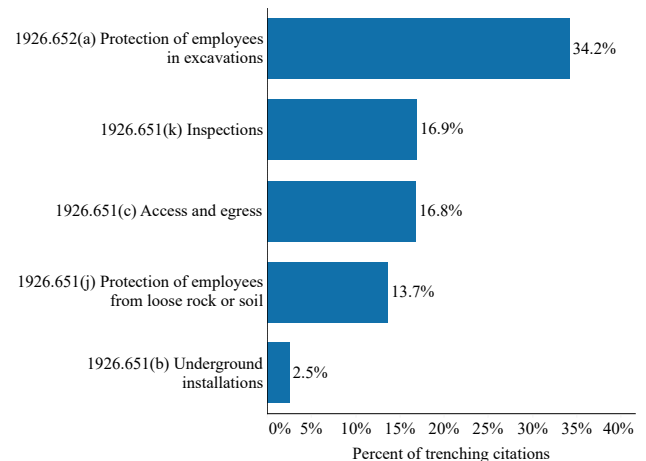
11. Citations by major subsector in construction, all versus trenching citations (2025)



Source: Department of Labor; 2025 OSHA Enforcement Data.

From 2011 to 2025, the trenching standard cited most often was 1926.652(a), Protection of employees in excavations (e.g., sloping/benching, shoring, shielding/trench boxes), which accounted for 34.2% of all trenching citations issued in construction, followed by 1926.651(k) Inspections (16.9%) and 1926.651(c) Access and egress (16.8%; Chart 12).

12. Most cited trenching standards in construction (2011-2025)



Source: Department of Labor; 2011-2025 OSHA Enforcement Data.

Construction accounted for 30.4% of fatal and 9.8% of nonfatal caught-in/between injuries reported by BLS from 2023 to 2024, despite comprising only [approximately 7.5% of the workforce](#). The construction industry had the highest number of fatal and third highest number of nonfatal caught-in/between injuries during this period.

Detailed event/exposure varied between fatal and nonfatal injuries. Collapse/engulfment was the leading detailed event/exposure for fatal caught-in/between injuries (68.8%), while, caught or wedged between non-running objects was the leading detailed event/exposure for nonfatal injuries (41.9%).

Caught-in/between fatalities are preventable through addressing common hazards that can result in workers being squeezed, caught, crushed, pinched, or compressed between objects such as heavy equipment and machinery and trenches. The annual National Utility Contractors Association (NUCA) [Trench Safety Stand Down](#) highlights the importance of trench and excavation safety each summer, and [OSHA's Trenching Safety Initiative](#) keeps the focus on trenching all year long.

CPWR provides many resources and training tools to address caught-in/between injuries, including Hazard Alerts on [Lockout/Tagout](#), [Scaffolds](#), and [Trenches](#). These and other resources from CPWR, [NIOSH](#), [OSHA](#) and other partners can be found on our [Trench Safety page](#).

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 the Data Bulletin at: <https://www.cpwr.com/research/data-center/data-reports/>.

DEFINITIONS

- **Caught-in/between injuries** – A Focus Four (see below) injury that results from workers being caught, crushed, squeezed, or compressed between objects, equipment, materials, or collapsing structures. These injuries include OIICS 3.0 codes 63 (Collapse, engulfment), 653 (Caught, entangled in running powered equipment – normal operation), 654 (Compressed between running equipment and other object(s)), 662 (Entangled in non-running object), and 664 (caught or wedged between objects – nonrunning).
- **Citation** – Formal notice of violation of a standard for a specific hazard.
- **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.
- **Event/exposure** – The manner in which the injury or illness was produced or inflicted, such as a roadway collision, off road vehicle incident, etc. Full definitions can be found in the [OIICS Manual](#).

- **Focus Four** – The four injury groups that cause a majority of fatal injuries in construction, including fall, electrocution, struck-by, and caught-in/between injuries.
- **Full-time equivalent workers (FTEs)** – 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.
- **Penalty** – Current penalty assessed for a citation, adjusted for inflation to December 2018 dollars.
- **Severe injury** – An injury resulting in amputation of limb, loss of eye, or hospitalization.
- **Trenching standard** – Standards under OSHA CFR 1926 Subpart P- Excavations.

DATA SOURCES

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- Data for CPWR's Fatality Map comes from fatalities in OSHA's Enforcement Data, as well as media reports and incidents reported to CPWR's Data Center.

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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:

- Construction Solutions
<https://www.cpwrconstructionsolutions.org/>
- COVID-19 Construction Clearinghouse
<https://covid.elcosh.org/index.php>
- Electronic Library of Construction Occupational Safety and Health
<https://www.elcosh.org/index.php>
- eLCOSH Nano
<https://nano.elcosh.org/>
- Exposure Control Database
<https://ecd.cpwrconstructionsolutions.org/>
- Nano Safety Data Sheet Improvement Tool
<https://nanosds.elcosh.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/>