



Job-Site Safety InstituteSM

Fatalities and Preventions in Residential Building Construction

January 2023

Research purpose

- Study intended to take a deep dive into existing information on fatalities within residential building construction to capture critical characteristics for job site injury prevention.
- Analyzing detailed, confidential fatality reports from U.S. Department of Labor's Bureau of Labor Statistics' (BLS) including the Census of Fatal Occupational Injuries (CFOI).
- Goal was to better understand the fatality incidents such as frequency, causes, and changes to reduce the risk of workers from injuries.
- Study performed by the Construction Management Program at Michigan State University.

Total fatalities

- From 2014–2018, a total of 5,003 fatal work injuries in construction were included, of which **603** were the **residential building** construction sector.
 - 2014: 933 cases (107 residential cases)
 - 2015: 985 cases (107 residential cases)
 - 2016: 1,034 cases (128 residential cases)
 - 2017: 1,013 cases (135 residential cases)
 - 2018: 1,038 cases (126 residential cases)

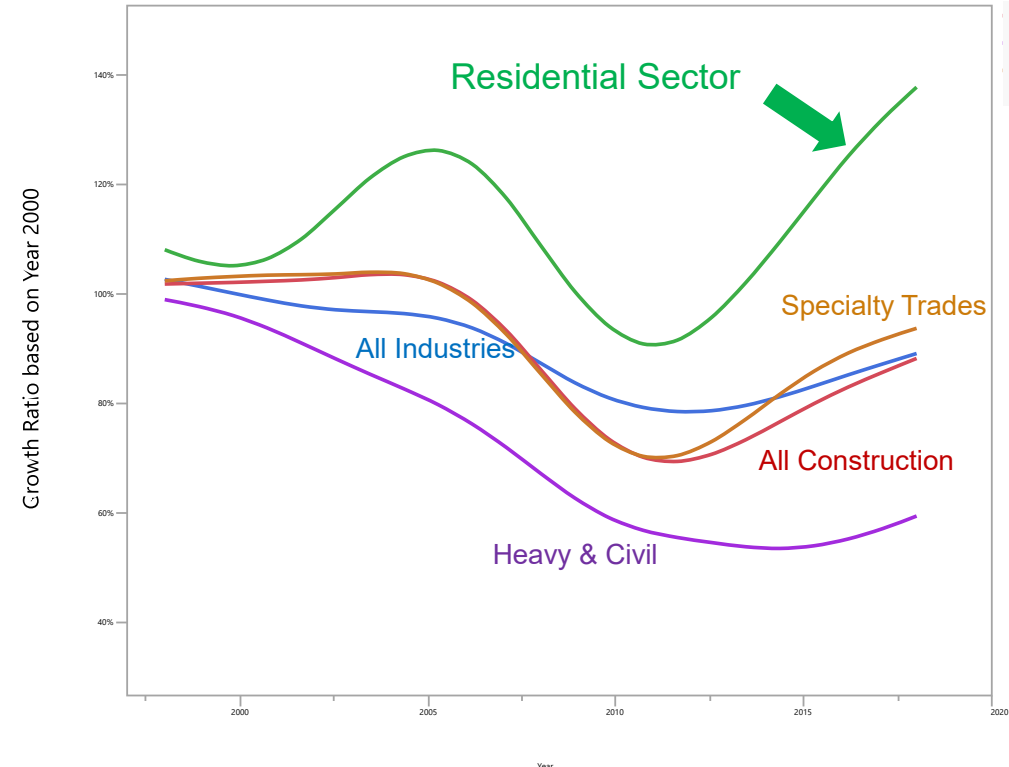
Fatality rate

- The fatality rate in residential construction was **10.9 deaths per 100,000** full-time equivalent workers, **11% higher** than the average fatality rate of all construction sectors.

Year	Residential Building Construction	Nonresidential Building Construction	All Construction
2014	10.5	6.4	9.8
2015	10.2	5.6	10.1
2016	11.5	4.3	10.1
2017	11.7	4.6	9.5
2018	10.5	5.7	9.5

Fatality trends

- The number of fatalities in residential construction continued to grow after the year 2011.
- The average **growth** from 2014 to 2018 was approximately **5% every year** in residential building construction.



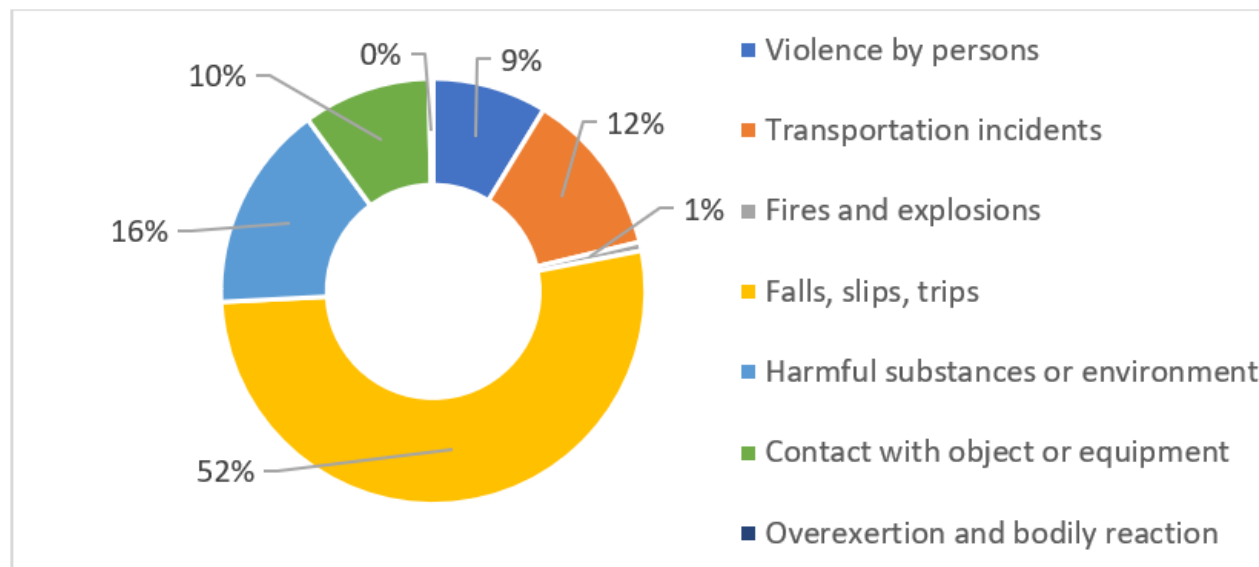
Worker activity

- What workers were doing at the time of the accident?

Activity Group	Examples	Fatalities	Percentage
Constructing	Building, repairing, cleaning, assembling, installing, painting, moving, etc.	329	55%
Vehicle operations	Driving, riding, boarding, transporting, etc.	83	14%
Physical activities	Climbing, entering, exiting, sitting, standing, walking, jumping, etc.	60	10%
Machinery	Operating machines, cutting, using tools, reading gauges, valves, welding, trimming, etc.	28	5%
Materials handling operations	Lifting, carrying, holding, loading, packing, etc.	22	4%

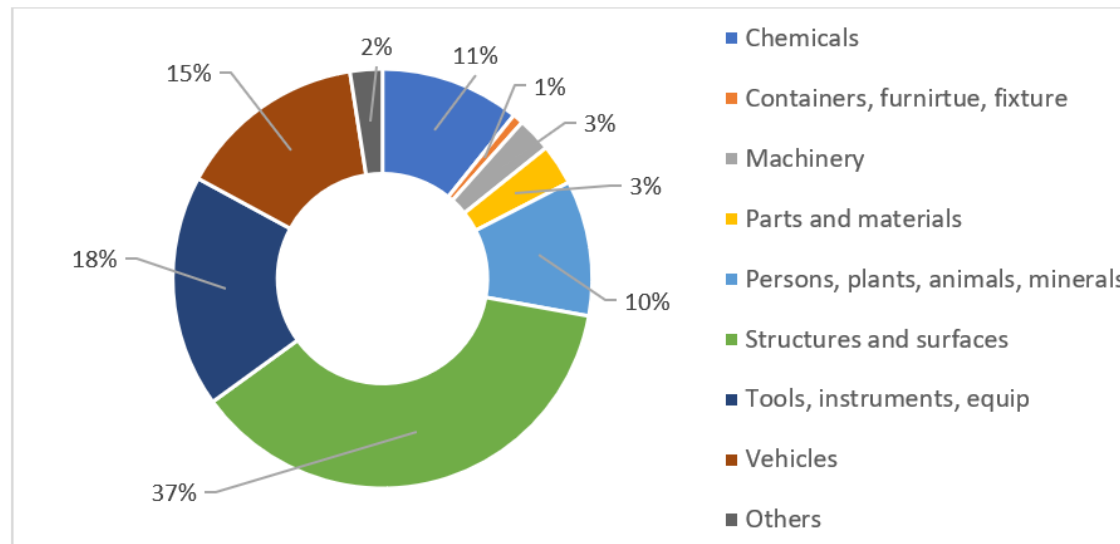
Fatality event and exposure

- More than half of fatalities were due to **falls from height** (52%). Most of the fatal falls were from **ladders, roofs, and scaffolds** and peaked at a height of 11–15 feet (16%).



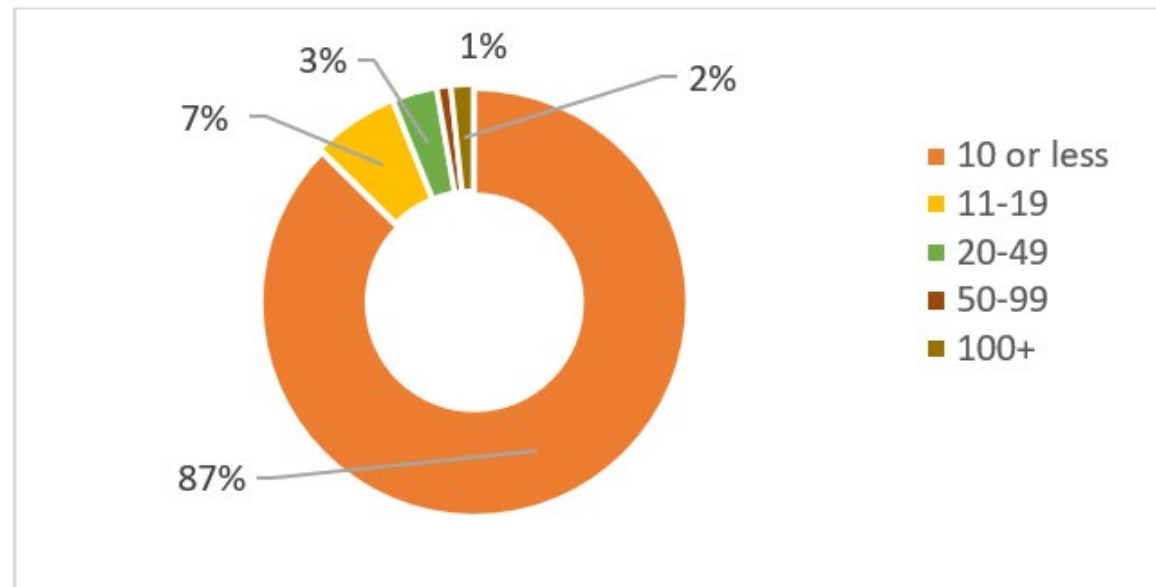
Source that produces fatal injury

- The highly ranked **single sources** were roof edge (8%), pickup truck (6%), general ladders (5%), extension ladders (5%), potable ladders (5%), scaffolds staging (4%), and general roofs (3%).



Firm size

- Small-sized establishments with **10 or fewer employees** were the core in the fatal work incidents (87%).



Workers at risk

- Construction **laborers** (40%), **carpenters** (22%), and **first-line supervisors** (21%) were the top high-risk occupations in fatal work incidents.
 - First-line supervisors (n=124)
- Workers **45-64 years of age** accounted for almost half of the fatalities: the age groups of 45-54 years (25%), and 55-64 years (24%).
- Most workers were white (77%) and multiracial (13%). **Hispanic** workers accounted for 27% of fatalities.
 - Non-Hispanic Whites account for the majority of workers in the construction industry (59%). Hispanics make up close to a third of the construction labor force (31.5%).

Notable change

- Most of the analyzed **factors were stable and consistent** during the reporting period, except for four factors: the worker activity, event and exposure, source of injury, and nature of the injury.
 - ***What does this mean?*** It may imply less improvement related to jobsite safety in the residential construction sector on existing problems.
- EXCEPTION: Exposures to harmful substances, especially **the use of drugs and alcohol**, became a **new** major cause of death (16%), followed by transportation accidents (12%).

Summary

- Falls remain the leading cause of death.
- Use of drugs and alcohol is an emerging cause.
- Small businesses account for largest share of construction fatalities.
- Laborers, carpenters, and first-line supervisors are at higher risk.
- Aging workforce remains an issue and diverse race groups emerge.
- New and innovative approaches are needed to prevent accidents.

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