

New Trends in Fatalities among Construction Workers

CPWR Data Center: Xiuwen Sue Dong, DrPH, Julie A. Largay, MPH, and Xuanwen Wang, PhD

The construction industry in the United States is well-known as a dangerous industry. Data from the Bureau of Labor Statistics' Census of Fatal Occupational Injuries (CFOI) show that in 2012, the number of fatalities in construction increased for the first time since the recent economic downturn; 849 construction workers were killed on the job — the highest number of fatalities in any industry.

The purpose of this Data Brief is to delve into the fatality numbers and highlight those areas where construction fatalities increased between 2011 and 2012.



PHOTO: CPWR/Neil Lippy

KEY FINDINGS

- In 2012, 222 Hispanic construction workers died on the job — a 12.7% increase from 2011, compared to an 8.7% increase for the overall construction industry.
- Between 2011 and 2012, the increase in the number of fatalities among older construction workers aged 45+ was 15.2% compared to 1.9% among their younger counterparts.
- Among self-employed construction workers, the number of fatalities increased 27.8% from 2011 to 2012 while the increase among wage-and-salary workers was 4.4%.
- There were 199 fatalities in residential construction¹ in 2012 — an annual increase of 37.2% compared to just a 3.0% increase in non-residential construction.
- Fall fatalities in all construction increased 9.3% from 269 to 294 between 2011 and 2012, but jumped 81.5% in residential building construction from 27 to 49 deaths.

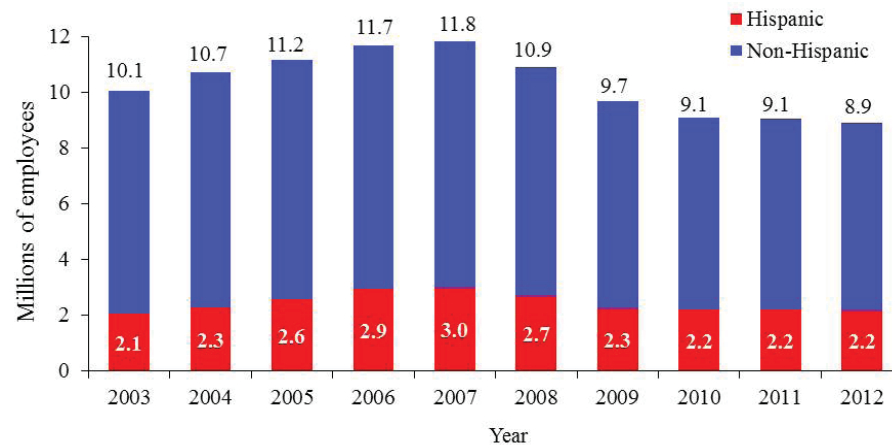
¹ Residential construction includes residential building construction and residential specialty trade contractors. Nonresidential construction includes nonresidential building construction and nonresidential specialty trade contractors.

SECTION 1: Construction Employment and Demographics

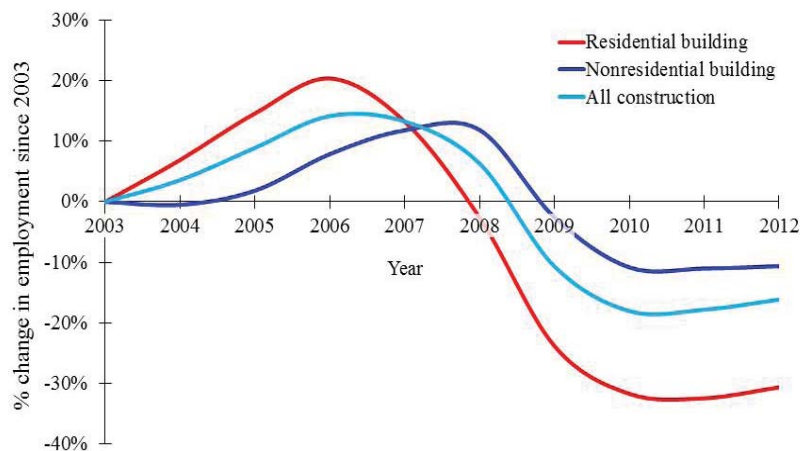
In 2012, the construction industry in the U.S. employed nearly 9 million workers, slightly fewer than in 2011 (Chart 1). However, the average hours worked per week in construction increased from 42.1 to 42.6 between 2011 and 2012.¹ During the economic boom from 2003 to 2007, construction employment grew from 10.1 million workers to 11.8 million. Since 2007, the number of workers declined by 25%.

Residential building construction was more volatile than nonresidential building construction during the economic boom and decline (Chart 2). Residential building construction grew by 20% between 2003 and 2006 and was down 32% in 2010 from the 2003 level. Although there was also a decline in nonresidential building construction, it was less severe (11%).

**1. Construction employment in the United States, 2003-2012
(All employment)**



**2. Percent change in construction employment since 2003, 2003-2012
(Private wage-and-salary workers)**



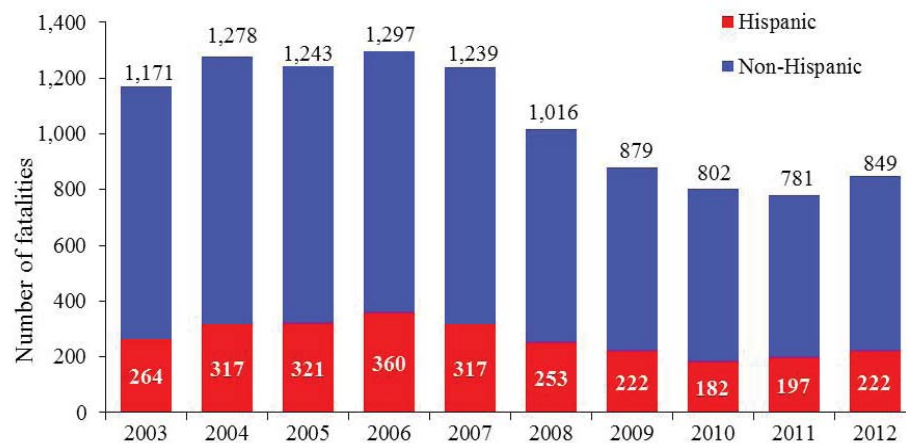
¹ Bureau of Labor Statistics, 2011-2012 Current Population Survey. Calculations by the authors.

Source: Chart 1 - U.S. Bureau of Labor Statistics, Current Population Survey. Calculations by the authors.

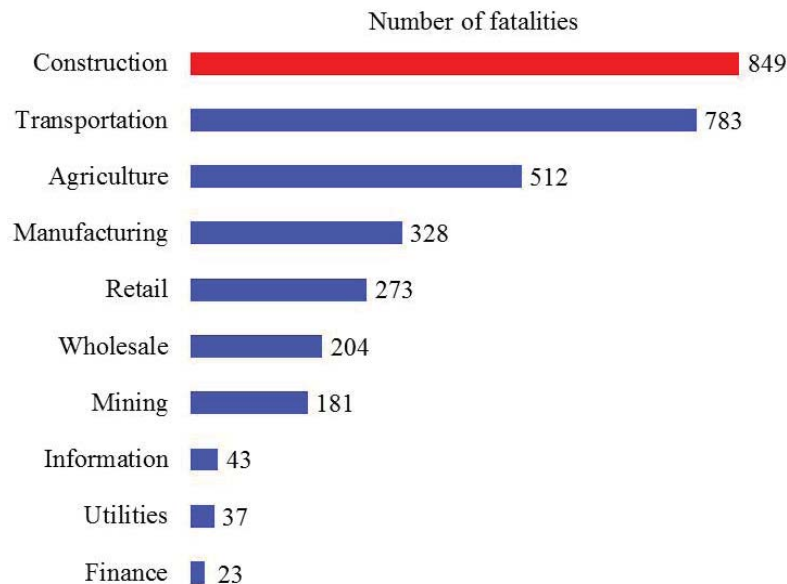
Source: Chart 2 - U.S. Bureau of Labor Statistics, Current Employment Statistics.

Although construction employment remained low in 2012, construction fatalities increased for the first time since 2006 (Chart 3). In 2012, more workers died in construction than in any other major industry, and accounted for 18.3% of all work-related fatalities in the United States (Chart 4).¹

3. Number of fatalities in construction, by Hispanic ethnicity, 2003-2012



4. Number of fatalities, by major industry, 2012



¹ Bureau of Labor Statistics, 2012 Census of Fatal Occupational Injuries. Numbers are from the online CFOI database.

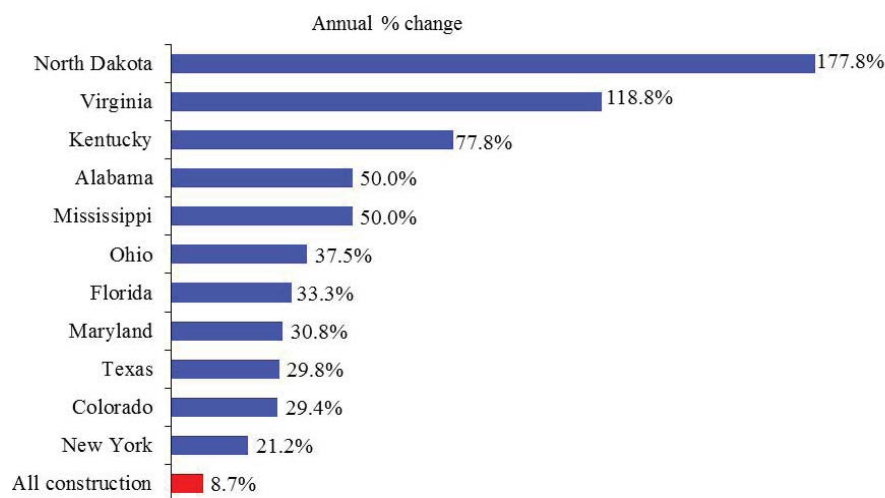
Source: Charts 3, 4 - U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries. Numbers are from the online CFOI database.

SECTION 2: Construction Fatalities in 2011 and 2012

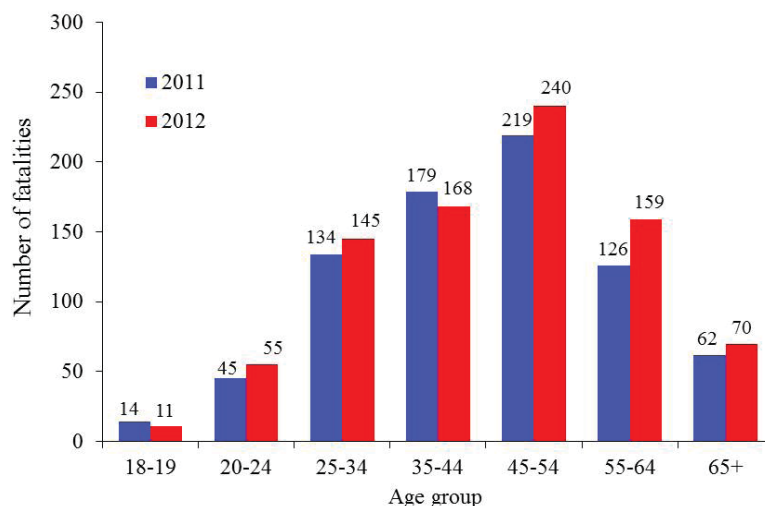
Between 2011 and 2012, the number of fatalities in construction increased 8.7% nationwide, but in North Dakota, the number nearly tripled — from 9 to 25 (Chart 5). The number of fatalities more than doubled in Virginia as well.

By age group, the largest percent increase in fatalities was among the 55-64 year age group (26.2%; Chart 6). When comparing younger workers (aged 18-44) with older workers (aged 45+), the difference was striking: a 15.2% increase for older workers, and a 1.9% increase for their younger counterparts. This may mirror the aging workforce.

5. Annual % change in the number of fatalities in construction, selected states, 2011-2012



6. Number of fatalities in construction, by age group, 2011-2012

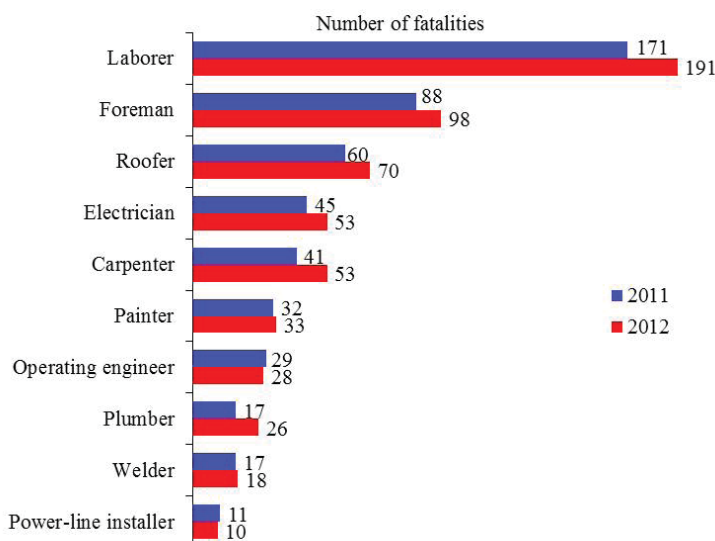


Source: Charts 5, 6 - U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries. Numbers are from the online CFOI database.

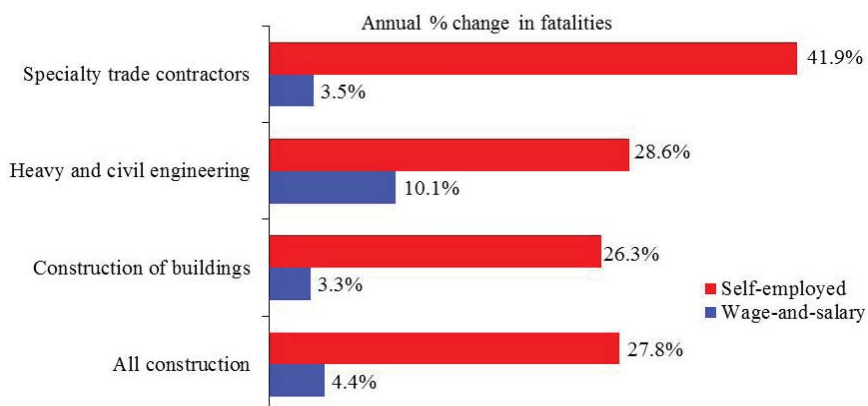
Among construction occupations in the private sector, laborers had the largest number of fatalities (Chart 7). Between 2011 and 2012, the number of fatalities increased from 171 to 191—a 12% increase for this occupation. Foremen had the second highest fatality numbers, jumping from 88 in 2011 to 98 in 2012. Overall, most construction occupations (except a few, such as operating engineers and power-line installers), experienced an increase in fatalities during the time period.

The changes in construction fatalities differed by employment class. While the increase in the number of fatalities among wage-and-salary workers in construction was 4.4% between 2011 and 2012, the increase was 27.8% among the self-employed (Chart 8). The annual change in the number of fatalities was 41.9% among self-employed specialty trade contractors.

7. Number of fatalities, selected construction occupations, 2011-2012 (Private industry)



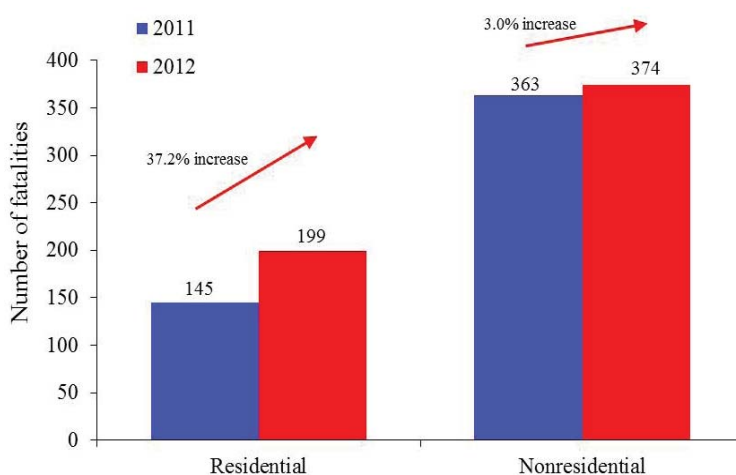
8. Annual % change in the number of fatalities in construction, self-employed vs. wage-and-salary workers, 2011-2012



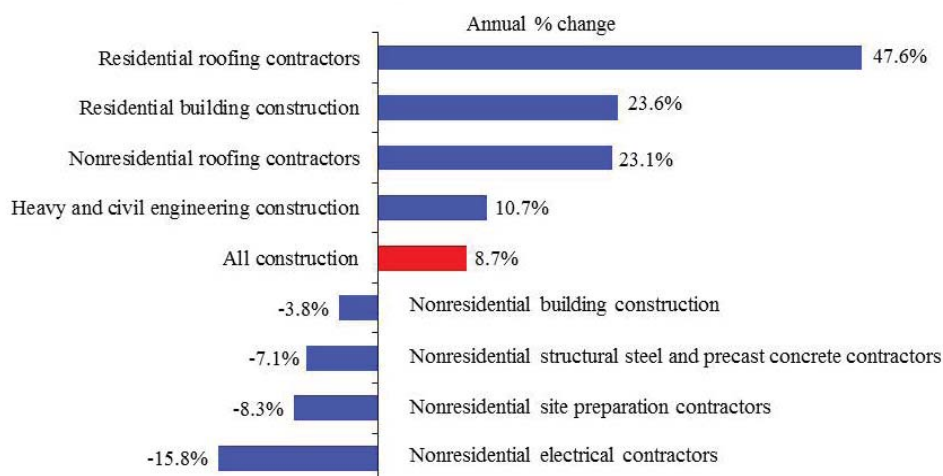
Source: Charts 7, 8 - U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries. Numbers are from the online CFOI database.

Fatality numbers varied between residential and nonresidential construction.¹ Between 2011 and 2012, the number of fatalities in residential subsectors increased by 37.2% compared to just a 3.0% increase in nonresidential subsectors (Chart 9). Despite the lower heights typically associated with residential construction, the annual change in fatalities among residential roofing contractors was more than double the increase in their nonresidential counterparts (47.6% vs. 23.1%; Chart 10). Conversely, a decrease in fatalities was found in nonresidential building and nonresidential specialty trade contractors in 2012.

9. Number of fatalities in construction, residential vs. nonresidential subsectors, 2011-2012



10. Annual % change in the number of fatalities, selected construction subsectors, 2011-2012



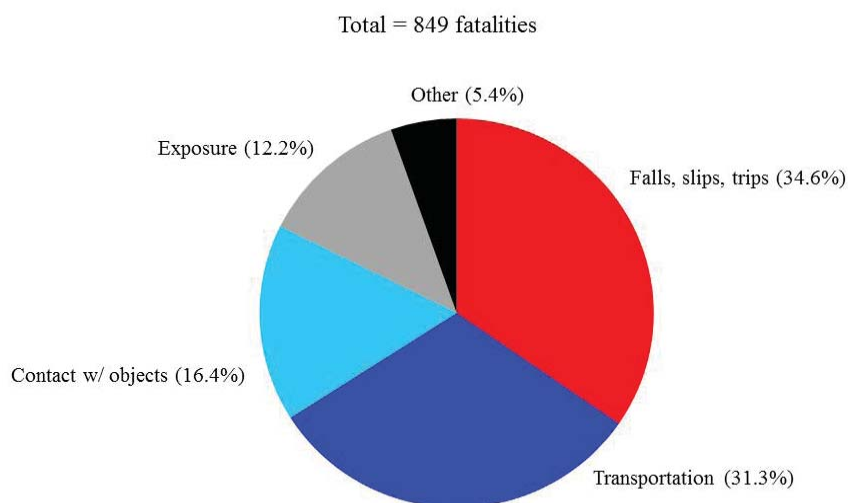
¹ Residential construction includes residential building construction and residential specialty trade contractors. Nonresidential construction includes nonresidential building construction and nonresidential specialty trade contractors.

Source: Charts 9, 10 - U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries. Numbers are from the online CFOI database.

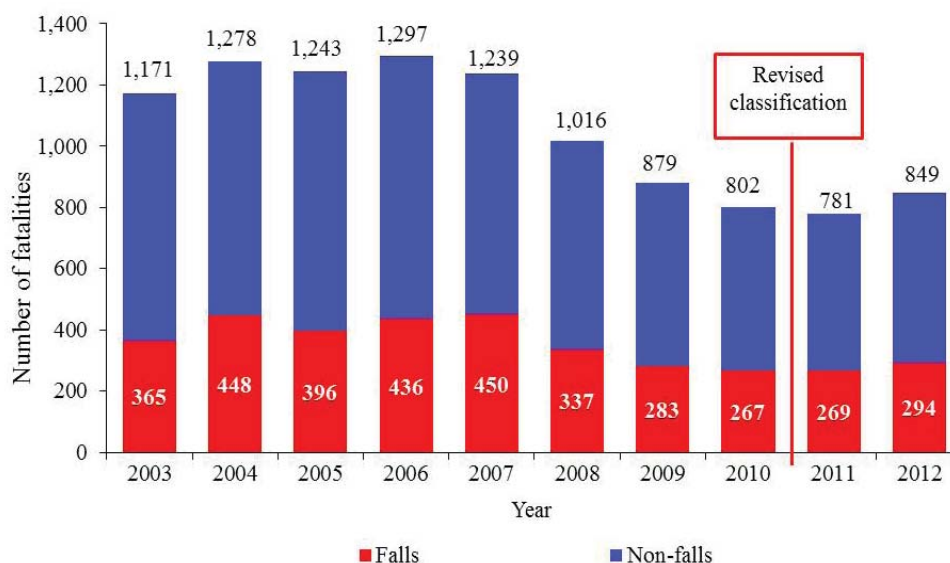
SECTION 3: Fall Fatalities in Construction

Fall injuries were the leading cause of fatalities in 2012 (Chart 11). In fact, the proportion of construction fatalities resulting from falls has remained high since 2003, and the number of fall fatalities increased from 269 in 2011 to 294 in 2012 (Chart 12).

11. Distribution of fatalities in construction, by event, 2012



12. Number of fatalities in construction, falls and non-falls, 2003-2012



Note: Chart 12 - In 2011, the CFOI switched to the Occupational Injury and Illness Classification System version 2.01, which categorizes slips, trips, and falls together. In previous years, slips and trips were categorized elsewhere.

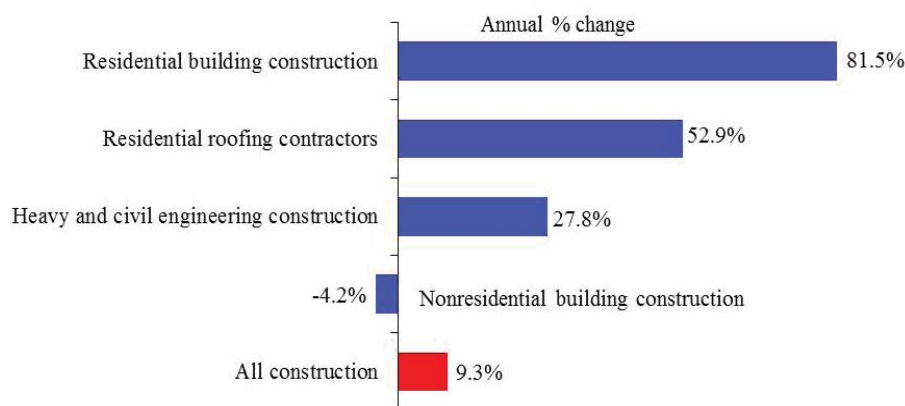
Source: Charts 11, 12 - U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries. Numbers are from the online CFOI database.

While the number of fall fatalities in overall construction increased 9.3% between 2011 and 2012, the number jumped by nearly 82% in residential building construction — from 27 to 49 deaths (Chart 13). Fall fatalities in residential roofing increased by 53% between the two years. In contrast, the number of fatal falls in nonresidential building construction decreased 4% over this period.

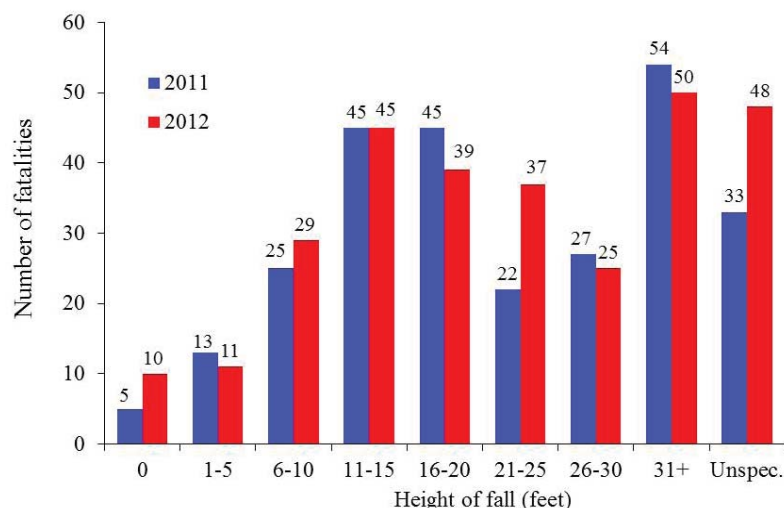
In 2011, the CFOI began coding falls by height of fall. Between 2011 and 2012, the number of fall fatalities increased by 7% for falls from 30 feet or below and dropped by 7% for falls from over 30 feet (Chart 14).

This may reflect the fatality increase in residential construction¹ as heights of more than 30 feet may be less common in these subsectors.

13. Annual % change in the number of fall fatalities, selected construction subsectors, 2011-2012



14. Number of fall fatalities in construction, by height, 2011-2012



¹ Residential construction includes residential building construction and residential specialty trade contractors.

Source: Charts 13, 14 - U.S. Bureau of Labor Statistics, Census of Fatal Occupational Injuries. Numbers are from the online CFOI database.

Conclusion

The number of construction fatalities increased from 2011 to 2012 for the first time since the economic downturn. Falls continue to account for more construction fatalities than any other injury type. To prevent fall injuries among construction workers, CPWR is collaborating with the Occupational Safety and Health Administration and the National Institute for Occupational Safety and Health on a national fall prevention campaign (*see* Related Resources). The largest increases in construction fatalities were found among older workers, self-employed workers, roofing contractors, and workers employed in residential construction.¹ Construction safety and health interventions and prevention strategies should focus on these vulnerable worker groups and subsectors.

Data Sources

- Bureau of Labor Statistics. 2003-2012 Census of Fatal Occupational Injuries. Retrieved from <http://www.bls.gov/iif/>.
- Bureau of Labor Statistics. 2003-2012 Current Employment Statistics. Retrieved from <http://data.bls.gov/>.
- Bureau of Labor Statistics. 2003-2012 Current Population Survey.

Related Resources

- CPWR. 2013. [The Construction Chart Book: The U.S. Construction Industry and Its Workers, 5th Edition](#). Silver Spring, MD: CPWR.
- Dong XS, Choi SD, Borchardt JG, Wang X, & Largay JA. 2013. [Fatal falls from roofs among U.S. construction Workers](#). Journal of Safety Research, 44:17-24.
- Dong XS, Men Y, & Ringen K. 2010. [Work-related injuries among Hispanic construction workers – Evidence from the Medical Expenditure Panel Survey](#). American Journal of Industrial Medicine, 53(6):561-569.
- Dong XS, Wang X, & Daw C. 2012. [Fatal falls among older construction workers](#). Human Factors, 54(3):303-315.
- Dong XS, Wang X, Largay JA, Platner JW, Stafford E, Trahan Cain C, & Choi SD. 2014. [Fatal falls in the U.S. residential construction industry](#). American Journal of Industrial Medicine, [e-pub ahead of print].
- Construction Fatality Map: <http://stopconstructionfalls.com/>.
- Fall Prevention Campaign: <https://www.osha.gov/stopfalls/>.

¹ Residential construction includes residential building construction and residential specialty trade contractors.

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 the Building and Construction Trades Department, AFL-CIO, and serves as the research arm of the BCTD. CPWR has focused on construction safety and health research since 1990. This study on construction fatalities is part of our ongoing surveillance activities on current and changing workplace practices on jobsites that can affect the safety and health of construction workers. This data analysis updates and expands on information found in CPWR's The Construction Chart Book.

This Data Brief is part of a series of publications analyzing construction-related data. The previous data briefs are available on the CPWR website, <http://www.cpwr.com/publications/cpwr-data-briefs>. PDF versions of the data briefs and PowerPoint files of all the charts are available. Click on a chart in PowerPoint to access the data behind the graphic.

Correspondence to Xiuwen Sue Dong at SDong@cpwr.com.

© 2014, CPWR – The Center for Construction Research and Training. All rights reserved.

CPWR is a research arm of the Building and Construction Trades Dept., AFL-CIO, and is uniquely qualified to serve workers, contractors, and the scientific community through its program of applied research. This data brief was produced using funds provided by Cooperative Agreement U60-OH009762 from the National Institute for Occupational Safety and Health (NIOSH). The contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH.

CPWR [●]
THE CENTER FOR CONSTRUCTION
RESEARCH AND TRAINING
8484 Georgia Avenue
Suite 1000
Silver Spring, MD 20910
www.cpwr.com