Fatalities from Contact with Electricity in Construction

Electrocution is one of the leading causes of death in construction (*see* page 43). From 1992 to 2010, a total of 2,432 construction workers died from electrocution at job sites, accounting for nearly half of the overall work-related electrocution deaths (5,104) in the United States.[1] Nevertheless, the rate of electrocution deaths in construction dropped from 2.1 per 100,000 *full-time equivalent workers* (FTEs, *see* Glossary) in 1992 to 0.9 per 100,000 FTEs in 2007, about a 57% decrease before the economic downturn (chart 45a). In 2010, the number of electrocution fatalities fell to the lowest level in decades, but the rate of electrocution deaths remained similar to 2007.

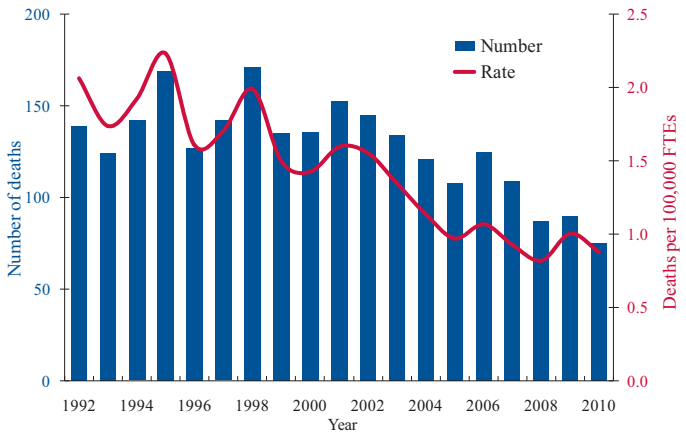
Despite the declining trend, construction workers still experience a high risk of death from contact with electricity. Between 2008 and 2010, electrocution deaths still accounted for 9.3% (252 deaths) of the total fatal injuries in construction.[1] Of the 252 deaths, 69 were electricians and 41 were construction laborers (chart 45b). While the number of deaths among electrical power-line installers was smaller (17 deaths), this occupation had a higher death rate than any other occupation in construction. Assuming the fatality rate remains the same as in 2003-2007, the probability of an electrocution death is about 1.6% (16.1 deaths per 1,000 FTEs) for electrical power-line installers if they work in construction for 45 years (chart 45c). The high lifetime risk of electrocution is not only for electrical workers, but also among non-electrical workers such as helpers, ironworkers, roofers, and heating, air conditioning, and refrigeration mechanics. The risk of electrocution for construction workers is extraordinarily elevated, considering that a lifetime risk of one death in 1,000 workers is a high risk level (*see* page 42).

The causes of electrocutions vary for electrical and non-electrical construction workers. Between 2008 and 2010, the main cause of electrocution deaths among electrical workers was contact with "live" (energized) electrical equipment and wiring (57.5%; chart 45d). This suggests that many electrocution deaths could have been avoided if the electrical circuits and equipment were de-energized, locked out, or tagged out before a worker began working on them.

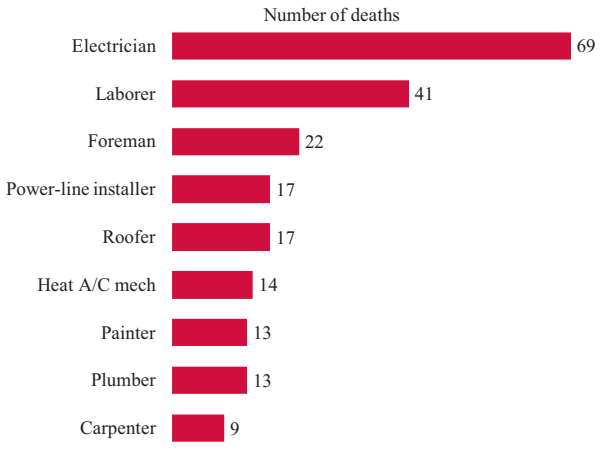
For non-electrical workers, the main cause of electrocution deaths was contact with overhead power-lines, accounting for 58.2% of these deaths. About one-fifth (20.8%) of overhead power-line electrocution deaths were due to direct contact of the worker's body with the live power-line or lighting equipment. The remaining deaths occurred when non-electrical workers contacted objects or machinery – especially ladders, poles, and cranes – which were in direct contact with a power-line.[1] Working too close to energized electrical equipment and wiring, lack of ground fault circuit interrupters, and contact with objects energized by power sources other than overhead power-lines were also causes of electrocutions among non-electrical workers.

Overall, contact with overhead power-lines was the main cause of electrocution deaths from 2008 to 2010, causing a total of 119 deaths (47% of the overall electrocution deaths), or about 40 deaths per year. Construction laborers shared the largest proportion of such fatalities (23%), even exceeding electrical workers (19%; chart 45e).

45a. Number and rate of electrocution deaths in construction, 1992-2010

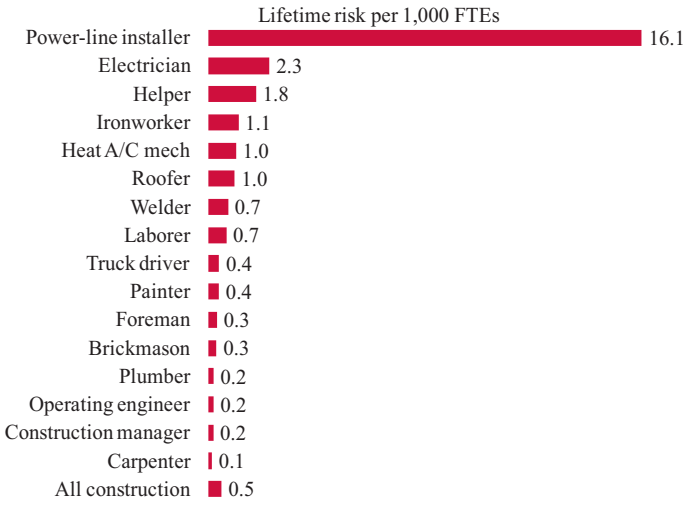


45b. Number of electrocution deaths in construction, selected construction occupations, 2008-2010 total

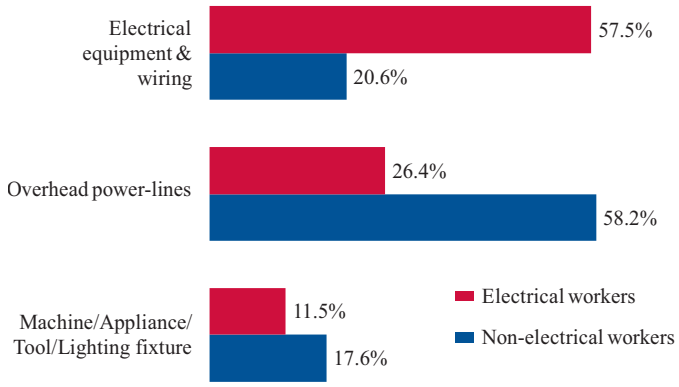


1.All numbers on this page were estimated from the Census of Fatal Occupational Injuries. This research was conducted with restricted access to Bureau of Labor Statistics (BLS) data. The views expressed here do not necessarily reflect the views of the BLS.

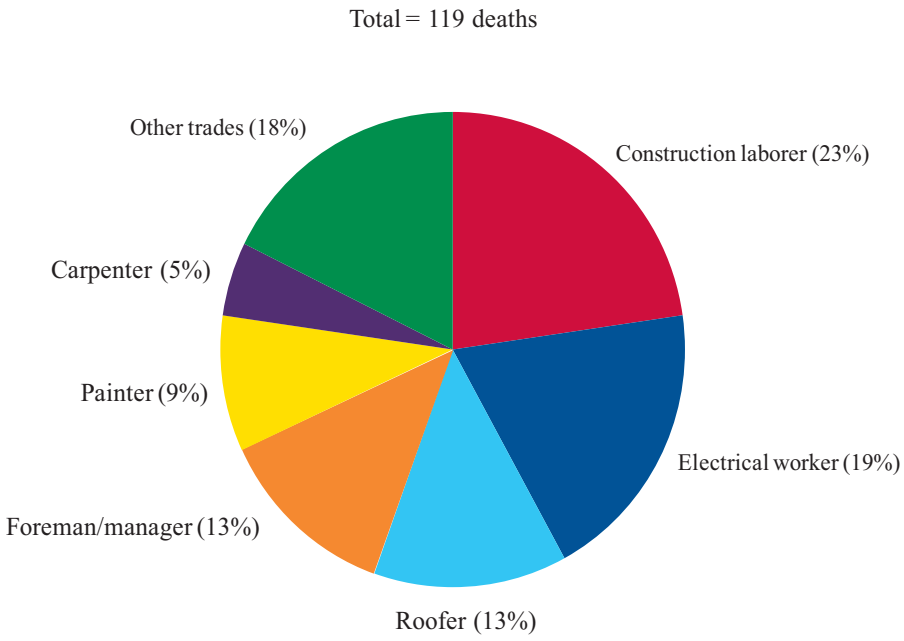
45c. Lifetime risk of electrocution deaths in construction, selected construction occupations



45d. Major causes of electrocution deaths in construction, electrical workers vs. non-electrical workers, 2008-2010 total



45e. Overhead power-line electrocution deaths, by construction occupation, 2008-2010 total



Note: All charts - Data cover all employment.
Chart 45d - There were 87 electrocution deaths among electrical workers and 165 electrocution deaths among non-electrical workers between 2008 and 2010.
Chart 45e - Percentages may not add to 100% due to rounding.

Source: All charts - Fatality numbers were estimated from the Census of Fatal Occupational Injuries. This research was conducted with restricted access to Bureau of Labor Statistics (BLS) data. The views expressed here do not necessarily reflect the views of the BLS. Numbers of FTEs were obtained from the Current Population Survey. Calculations by CPWR Data Center.