A data report from the New York City Health Department

NYC Health

NYC Vital Signs

New York City Department of Health and Mental Hygiene February 2011 Volume 10, No. 1

Fatal Injuries among Construction Workers

Falls are the leading preventable cause

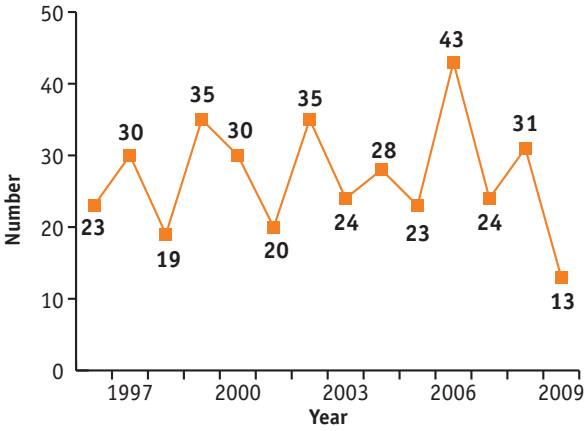
Preventing occupational injuries and death among construction workers is an important public health concern. Construction workers are at risk for work-related death because they often work at heights and with heavy equipment and materials. The dynamic nature of building construction and demolition, including frequent changes in work activities, equipment, environment, and workforce, further increases injury risks.

In New York City, construction workers represent only around 6% of the labor force, but account for almost 30% of all work-related fatalities. The safety of the public and workers on constructions sites, including buildings, bridges, highways, and tunnels, is regulated by federal, state, and local agencies. In 2006, prompted by a series of suspended[1] scaffold-related fatalities, the Mayor's Office spearheaded an interagency initiative to increase safety at construction sites. Since then, the Department of Buildings has implemented many new measures, including increased targeted inspections, training, and educational campaigns on fall prevention, but more can be done. This report examines trends in fatal injuries and risk factors among workers at all construction sites in New York City. Recommendations aimed at further increasing safety in the construction industry can be found on page 4.

[1] Suspended Scaffold – one or more platforms suspended by ropes or other means from an overhead structure.

Between 1996 and 2009, 378 preventable deaths occurred among New York City construction workers

Number of fatally injured construction workers, New York City, 1996-2009



- From 1996 to 2009[2], a total of 378 fatal occupational injuries were identified among New York City construction workers.
- The number of workers with fatal injuries fluctuated from year to year, ranging from 13 deaths in 2009 to 43 deaths in 2006. There is no evidence of a significant increasing or decreasing trend in fatalities.
- An average of 27 construction workers are killed on the job each year in New York City.

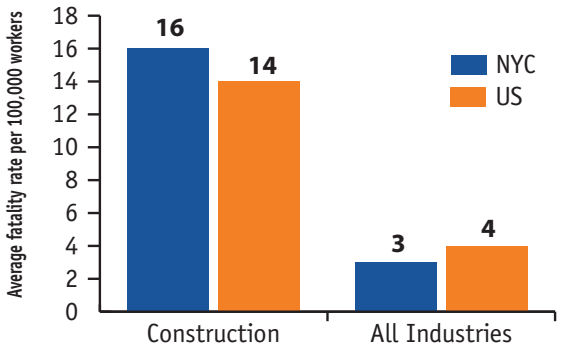
[2] Data for 2009 are preliminary.

Data for this report are from New York City and federal sources. The number of New York City construction workers killed on the job between 1996 and 2009 was obtained from the U.S. Department of Labor, Bureau of Labor Statistics (BLS), *Census of Fatal Occupational Injuries*. BLS provided estimates of the number of New York City and US construction workers and total labor force between 1996 and 2009 (personal communication). Death certificates were obtained from the New York City Department of Health and Mental Hygiene Office of Vital Statistics for the construction workers killed on the job between 1996 and 2006. These deaths were further examined by reviewing the matching case files from the New York City Office of the Chief Medical Examiner, and inspection reports from the United States Occupational Safety and Health Administration. The estimates of the number of New York City workers in construction by demographic characteristics and occupation were obtained from the 2006 report *New York City Construction Labor Market* by the Fiscal Policy Institute.

Construction fatality rates are higher in New York City than nationwide

- The average fatality rate among New York City construction workers between 1996 and 2009 was higher than the national average, even though the average fatality rate for all New York City industries was slightly lower than the national average.
- On average, the fatality rate for the New York City construction industry was more than five times higher than the fatality rate for all New York City industries, and four times higher than that for all industries nationwide.

Comparing New York City and the United States average fatality rates for construction and all industries, 1996-2009



New York City construction fatalities vary by age, education, race and country of birth

- The average age of the fatally injured workers was 41 years. Thirty-two percent of the construction workers who died were between 46 and 65, an age group that represented just 25% of all New York City construction workers.
- Construction workers with the lowest levels of education were most likely to be fatally injured. Almost 80% of workers who died had a high school education or less, and only 3% had a college degree, (compared to their representation in the population of construction workers of 65% and 20%, respectively). Education level among workers who died may be indicative of job duties, with the more educated workers performing less hazardous jobs such as managers, engineers and inspectors.
- Whites and Hispanics bore the largest burden of injury deaths among New York City construction workers (42% and 35%, respectively), roughly corresponding to their representation among all New York City construction workers (37% and 33%, respectively).
- Almost two thirds (65%) of fatally injured construction workers were foreign-born, as might be expected by their representation in the population of construction workers (64%).
- More than half (57%) of the fatally injured workers were not members of labor unions. A similar proportion (about 60%) of all New York City construction workers may also be non-union.[4]

Fatally Injured New York City Construction Workers, 1996–2006 (Total = 307)[3]

Characteristic	Percent
Age	
18-30	23%
31-45	44%
46-65	32%
Older than 65	2%
Education	
High School or Less	79%
Some College	10%
College Degree	3%
Unknown	9%
Race	
White	42%
Hispanic	35%
Black	14%
Other or unknown	9%
Country of Birth	
Foreign-born	65%
U.S.-born	33%
Unknown	2%
Union membership[4] (Total = 223)	
Union	44%
Non-Union	57%

** Due to rounding, percentages might not add to 100.*

[3] Totals in this and following sections may not correspond to CFOI totals on page 1, since death certificates and detailed data were not available for all CFOI cases.

[4] Because data collection protocols have differed between 1996 and 2006, data on union membership may be less reliable than other estimates; almost 30% of the cases had no data on union membership.

Most fatal injuries among New York City construction workers are caused by falls from scaffolds, roofs and ladders

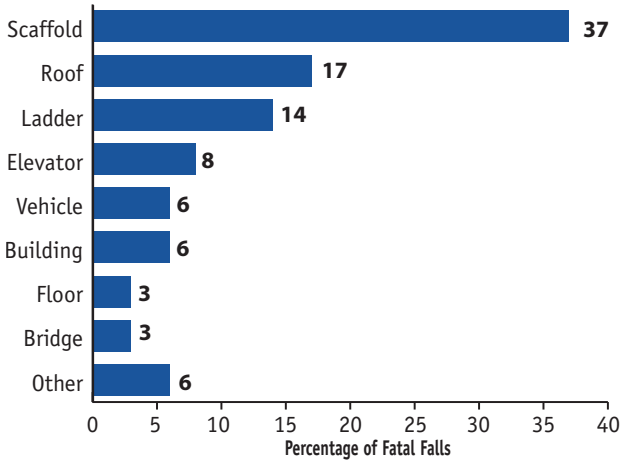
- From 1996 to 2006, nearly six in ten fatal injuries among construction workers were due to falls (57%). Other common causes of injury deaths included being struck, crushed or caught between an object or equipment (25%).
- Most fatal falls were from scaffolds (37%), followed by falls from roofs (17%) and ladders (14%). Two common types of scaffolds are *supported*[5] and *suspended*. Nearly one third of scaffold-related deaths (31%) occurred from suspended scaffolds.
- Distance estimates were available for 70% of all fatal falls. Deadly heights ranged from as little as seven feet to 190 feet. Almost one quarter (24%) of deaths involved falling distances of 7 to 20 feet (about one to two stories).

[5] *Supported Scaffold*—one or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts or non-motorized prefabricated frames.

Causes of Fatal Injuries among New York City Construction Workers, 1996–2006 (Total = 307)

Cause of Fatal Injury	Percent
Fall	57%
Contact with objects and equipment (struck, crushed, caught between)	25%
Electrocution	4%
Homicide	4%
Suicide	4%
Fire/explosion	2%
Other	4%

Fatal Falls among New York City Construction Workers by Location, 1996–2006 (Total = 175)



Laborer and iron worker are the two deadliest occupations in the New York City construction industry

- Nearly half of fatally injured construction workers (45%) were laborers, though laborers represented about one quarter (26%) of all New York City construction workers. Laborers may be particularly vulnerable because many perform a range of unskilled tasks and some may lack training and apprenticeship programs.
- Iron workers were also overrepresented among fatally injured construction workers. Their percentage among the fatally injured was four times higher than among the overall population of New York City construction workers (8% vs. 2%, respectively).
- Similarly, the representation of elevator mechanics, roofers, and masons among fatally injured workers was about twice as high as among all New York City construction workers.

Occupations of Fatally Injured New York City Construction Workers, 1996–2006(Total = 307)

Occupation	Percent
Laborers *	45%
Iron workers *	8%
Carpenters	7%
Foreman supervisors	6%
Elevator mechanics *	4%
Roofers *	4%
Masons *	4%
Plumber & Steamfitters	3%
Electricians	3%
Painters	3%
Other	14%

* Top five occupations with disproportionately high burden of fatal injuries. Due to rounding, percentages might not add to 100.

Recommendations

Construction employers are responsible for worker safety.

- **Implement a fall protection program at any site where workers could fall six feet or more, including: regular site inspections of fall hazards; proper use and maintenance of scaffolds, guardrail systems, personal fall arrest systems; safety training in languages understood by workers; and up-to-date safety certifications.**
- **Hold managers and workers accountable for hazard control. For example, performance evaluations should include safety indicators, and disciplinary action should be taken when needed.**

Construction workers should participate in safety training and use fall protection.

- **It is against the law to require someone to perform a task they are not trained to do. Attend site-specific health and safety trainings, as well as 10-hour construction safety course if required. Call 311 for a list of approved classes.**
- **Many types of fall protection are available, including personal fall arrest systems, guardrails, covers, safety net systems, controlled access zones and safety monitors. Check all fall protection equipment before each use, and use it properly.**
- **Immediately report site hazards to your employer—or report anonymously by calling 311.**

Entities that hire construction firms should set high standards for job safety.

- **Construction contracts should include specifications for worker protection and fall prevention.**
- **Safety measures should be coordinated on sites with multiple employers.**

Federal, state and local policies and laws can increase construction safety. Since 2008, New York City Department of Buildings:

- Implemented more than 25 new safety laws, including mandated training for tower crane workers, increased standpipe inspections and a smoking ban on construction sites;
- Adopted the first revision of the City's construction codes in 40 years, which expanded safety requirements during the construction process;
- Created the Scaffold Safety Team, Stalled Sites Unit and Concrete Unit for targeted inspections;
- Launched a citywide, multi-lingual campaign to encourage workers to use personal fall arrest systems properly.

United States Occupational Safety and Health Administration (OSHA):

- Requires worker training, and enforces workplace safety standards focusing on leading causes of fatalities—falls, contact with objects and equipment, and electrocutions;
- Modernized its crane and derricks standards.

Call 311 for more information about occupational hazards. Report unsafe conditions at construction sites to OSHA at 1-800-321-OSHA(6742) or by calling 311 .To learn more about New York City Department of Buildings construction safety initiatives see: **http://www.nyc.gov/html/dob/html/construction_safety/construction_safety.shtml**

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