

Fatal Injuries at Work

Massachusetts Fatality Update, 2014-2015

Occupational Health Surveillance Program
Massachusetts Department of Public Health

October 2018

Data at a Glance

Fatal injuries at work are all the more tragic because they are largely preventable. Information about where and how they occur is essential to develop effective prevention programs.

How many workers died from injuries between 2014 and 2015¹?

- 125

What were the leading causes?

- Falls to a lower level (N=21)
- Roadway crashes (N=18)
- Suicides (N=16)
- Workers being struck by a vehicle (N=12)
- Homicides (N=10)

Who was at highest risk? (ordered by rate of injury)

- Fishermen and agricultural workers
- Transportation and material moving occupations
- Construction workers
- Installation, maintenance, and repair workers

Fatal Injuries by County, 2014-2015 ²	
Middlesex	31
Suffolk	21
Worcester	14
Bristol	11
Hampden	10
Plymouth	9
Norfolk	9
Barnstable	8
Essex	7
Hampshire	2
Nantucket	2
Unknown	1

Rate of Fatal Occupational Injury by Year²

Deaths per 100,000 full-time workers³

2011: 2.2

2012: 2.4

2013: 1.0

2014: 1.8

2015: 2.2

Tracking Work-related Fatal Injuries

The Occupational Health Surveillance Program (OHSP) in the Massachusetts Department of Public Health collects information on all fatal occupational injuries as part of the national Census of Fatal Occupational Injuries (CFOI), conducted in cooperation with the U.S. Bureau of Labor Statistics (BLS). Death certificates, records from the Occupational Safety and Health Administration (OSHA), news stories, police reports and other data sources are used to identify these deaths. These source documents are primarily collected by the Fatality Assessment and Control Evaluation (FACE) project, which conducts in-depth investigations of select fatal occupational injuries with support from the National Institute for Occupational Safety and Health (NIOSH). The purpose of the FACE project is to develop a detailed understanding of how fatal injuries occur and to develop recommendations to prevent similar incidents in the future. These recommendations are disseminated to relevant industries, labor organizations, equipment manufacturers, and others in positions to take action to prevent work-related injuries.

This update provides an overview of fatal injuries at work that occurred in Massachusetts during 2014-2015 and includes details collected by both the FACE and CFOI projects. Included are deaths traditionally linked to the work environment such as falls, electrocutions, and exposure to toxic chemicals. They also include workplace homicides and suicides as well as motor vehicle-related fatalities that occurred during travel on the job. Deaths from occupational illnesses and heart attacks at work are excluded.

Overview of Fatal Injuries at Work in 2014-2015

- ◆ In Massachusetts, 125 individuals were fatally injured at work during 2014-2015: 55 deaths in 2014, and 70 deaths in 2015. This included 117 men and eight women. The fatal occupational injury rate for the period was 2.0 deaths per 100,000 full-time workers: 1.8 and 2.2 for 2014 and 2015, respectively. These rates are similar to rates based on comparable data from recent years.^{2,3}
- ◆ The workers ranged in age from 21 to 85 years, with an average age of 47 and a median age of 47. The fatalities resulted in a total of 3,485 potential life years lost, an average of 28 potential life years lost per victim.² Potential life lost is the difference between the worker's age and 75 years.
- ◆ A total of 105 (84%) of the workers were White non-Hispanic; six were Black or African-American non-Hispanic; six were Hispanic; four were Asian non-Hispanic; and four were other races. The fatality rate (deaths per 100,000 full-time workers) for each of these demographic groups was:
White non-Hispanic: 2.1
Black non-Hispanic: 1.6
Hispanic: 1.2
Asian non-Hispanic: 0.9^{2,3}
- ◆ Twenty-five workers (20%) were born outside of the U.S. Foreign-born victims worked in a range of industries: the leading sectors were construction (6), accommodation and food services (4), administrative/support and waste management/remediation services (3), manufacturing (3), and other services (3). Countries of birth with the largest number of workers fatally injured in MA were Cape Verde and El Salvador (three each). The rate of fatal injury among foreign-born workers was 2.0 per 100,000 workers and the rate among U.S.-born workers was 2.0 per 100,000 workers.²
- ◆ Thirteen workers were self-employed.⁴ The fatal injury rate among self-employed workers was 3.8 per 100,000 workers, higher than the rate of 1.9 among wage/salary earners.^{2,3}

- ◆ The largest number of fatal injuries occurred in Middlesex County (31), followed by Suffolk (21), Worcester (14), Bristol (11), Hampden (10), Plymouth and Norfolk (9 each), Barnstable (8), and Essex (7).²
- ◆ Nationwide, 9,657 workers died as a result of fatal occupational injuries in 2014-2015. The fatal occupational injury rate was 3.4 per 100,000 full-time workers.⁵ The lower fatality rate in Massachusetts (2.0 per 100,000) is due partly to the fact that proportionately fewer workers in Massachusetts were employed in high-risk industries such as mining, heavy manufacturing, or farming. Massachusetts also had lower overall rates of fatal highway transportation incidents during this period, which contributed substantially to the national occupational fatality burden.

Tow Truck Operator Fatally Injured When Struck by a Box Truck While Assisting a Motorist

A 22-year-old male tow truck operator employed by a motor vehicle service center was fatally injured while assisting a motorist with a flat tire on a highway. The worker positioned his flatbed tow truck on the highway shoulder in front of the car. While standing near the tow truck's driver side controls, the worker was struck by a passing box truck. The company had a safety and health program and provided all employees with four weeks of on-the-job training with experienced employees.

To prevent similar incidents, Massachusetts FACE recommended that employers should:

- Consider the option of wireless controls for tow truck beds and winches;
- Ensure that employees use portable emergency warning devices to help alert approaching motorists of the stopped emergency vehicles ahead; and
- Provide Traffic Incident Management (TIM) training to all tow operators.

Motorist experiencing vehicle problems while driving should:

- Continue driving, if it is safe to do so, until a location is reached where the vehicle can be moved completely off of the roadway and away from traffic.

Drivers of larger vehicles should:

- Consider taking additional measures to warn motorists behind them when adhering to Move Over laws. Measures could include tapping the break pedal to flash the brake lights and activating hazard lights. This will help alert motorists behind them, when those motorists may not yet be able to see the hazard.

Massachusetts FACE Report 15MA007

Types of Events Causing Worker Deaths

Table 1. Number and Percent of Fatal Injuries at Work by Event/Exposure, Massachusetts, 2014-2015, N=125

Event/Exposure	Number of Fatalities	Percent
Transportation incident	43	34%
Roadway collision or noncollision (rollover)	18	14%
Worker struck by vehicle	12	10%
Aircraft crash	6	5%
Nonroadway incident involving motorized land vehicle	3	2%
Water vehicle incident	3	2%
Fall, slip, or trip	28	22%
Fall to lower level	21	17%
Fall on same level	6	5%
Violence and other injury by person or animal	26	21%
Suicide or self-inflicted injury	16	13%
Homicide or other violent act leading to death	10	8%
Contact with object or equipment	14	11%
Struck by powered vehicle—non transport	5	4%
Struck by falling object or equipment, not vehicle	4	3%
Caught in running equipment or machinery	3	2%
Exposure to harmful substance or environment	10	8%
Unintentional overdose, drugs or alcohol	8	6%
Fire or explosion	4	35%
Total	125	100%

Source: Occupational Health Surveillance Program, MA FACE and CFOI, 2014-2015.

NOTE: Sub-categories may not add up to the bolded category totals: sub-categories with < 3 fatalities are not shown. Percentages may not add to 100% due to rounding.

- ◆ Falling to a lower level was the leading single cause of fatal injury at work in 2014-2015, resulting in 21 deaths. Fifteen of these were in the construction industry sector. Five workers died in falls from ladders. Ten of the falls to a lower level were from heights of 20 feet or less; the overall range was seven to 150 feet.²
- ◆ Roadway motor vehicle collisions and rollovers contributed to the fatal injuries of 18 workers. Twelve additional deaths involved vehicles hitting pedestrians who were working in roadways, work zones, parking lots, or other work locations.
- ◆ Workplace suicide accounted for 16 deaths. Workplace suicide occurred in small and large companies and in a wide range of industries. All of the workers were male.
- ◆ Ten workers were victims of homicide in 2014-2015. These included three restaurant cooks, two barbers, a landscaper, a machinist, a store clerk, a surgeon, and a taxi driver. Two of the homicides were motivated by robbery.²

Fatal Injuries at Work by Industry

Number and Rate of Fatal Injuries at Work by Industry Sector, Massachusetts, 2014-2015, N=125

Industry	Number of Fatalities	Fatality Rate (per 100,000 full-time workers)
Educational & Health Services	7	0.6
Government **	8	0.9
Manufacturing	7	1.1
Wholesale & Retail Trade	9	1.3
Leisure & Hospitality	7	1.5
Professional & Business Services	15	1.7
Other Services	13	5.0
Transportation, Warehousing & Utilities	13	7.4
Construction	32	8.1
Agriculture, Forestry, Fishing & Hunting	8	24.8

Note: Data not presented for industry divisions with fewer than five fatalities (N = 6 deaths).

**The Government category includes fatalities sustained by public sector workers regardless of industry.

Source: Massachusetts Census of Fatal Occupational Injuries and FACE project.

- ◆ The Agriculture, Forestry, Fishing & Hunting industry sector had the highest occupational fatality rate in 2014-2015 (eight deaths; 24.8 per 100,000 full-time workers). Five fishermen and three agricultural workers were fatally injured. These included two farmers who were killed in separate incidents while attempting to start disabled tractors.²
- ◆ Construction continued to be a dangerous industry, with the second highest fatality rate (8.1 per 100,000 workers) and 32 deaths.² Fifteen died from a fall to a lower level. These included nine workers killed from tipping or collapsing aerial lifts, scaffolds, or structures and five construction workers killed in motor vehicle crashes while driving for work.
- ◆ The Transportation, Warehousing & Utilities sector had 13 deaths, for the third highest rate of 7.4 deaths per 100,000 full-time workers. Eight of these workers died in transportation incidents.
- ◆ Of the 13 workers in the Other Services sector, seven (54%) were in automotive repair or services.
- ◆ Six of the victims (40%) who worked in the Professional & Business Services sector worked in landscaping. Three were killed when struck by parts of trees they were removing.

OSHA Enforcement and Penalties

The Occupational Safety and Health Administration (OSHA) investigated 42 (34%) of the fatal work-related injuries identified by the MA CFOI and FACE projects that occurred in 2014-2015.⁶ Of the remaining 83 fatal incidents, 23 involved workers who fall outside of OSHA jurisdiction such as public sector employees, sole proprietors or the self-employed, and commercial fishers. Fifty-three additional deaths were events not routinely addressed by OSHA such as suicides, homicides, roadway motor vehicle collisions, or plane crashes.⁷

OSHA levied fines for violations of health and safety standards against 25 of the employers they investigated in response to these fatal incidents. The agency assessed a total of \$680,330 in

initial penalties for violations identified in these fatality investigations, with the lowest fine assessed at \$2,000 and the highest at \$168,000.

Municipal Foreman Killed When Struck by a Backhoe Loader Outrigger While in an Excavation

A 48-year-old male general foreman employed by a local municipal water department was fatally injured while repairing a water line break. The worker was inside an excavated hole located in a roadway with three other co-workers. A backhoe loader was positioned near the trench with its outriggers extended and bucket attachment resting inside the dump section of a dump truck. The backhoe loader was unintentionally pulled forward when the dump truck was driven forward. As the backhoe loader was pulled forward, the outrigger on the right side struck the worker and dragged him out of the excavated hole. The department did not have a safety and health program, but employees were provided basic training and with personal protective equipment (PPE), including hearing and eye protection and high visibility safety apparel.

To prevent similar incidents, Massachusetts FACE recommended that employers should:

- Ensure that when excavating equipment is not being used that the equipment is moved away from the excavation edge and all attachments are lowered to the ground before workers enter the excavation;
- Ensure equipment operators perform a walk around to warn workers on foot that the equipment will be moved and to identify potential obstacles;
- Consider closing roadways when the work area is located in a roadway, there is limited space for the work area, and multiple large pieces of equipment are needed to complete tasks;
- Develop, implement, and enforce a safety and health program that addresses hazard recognition and control and avoidance of unsafe conditions; and
- Provide work environments for employees that, at a minimum, meet all relevant Occupational Safety and Health Administration (OSHA) regulations and industry accepted standards of practice per the Department of Labor Standards policy.

Massachusetts FACE Report 14MA003

Comments

It is important when reporting statistics about fatal occupational injuries to acknowledge the individuals that these numbers represent. Continued efforts are needed to reduce the human as well as economic toll of preventable deaths at work in the Commonwealth. The surveillance findings presented here are intended to guide government, industry, labor, and community organizations in developing and implementing strategies to prevent similar tragedies in the future.

In 2017, NIOSH completed an updated analysis estimating the financial burden of workplace fatalities. It considered lost wages, direct medical costs, lost household productivity, and other costs. The estimated lifetime cost of fatal occupational injuries in Massachusetts for 2003-2010 was over \$645 million, or an average of \$1.17 million per death. Other research has demonstrated the importance and value of investing in prevention, and OSHA has developed tools to help establishments justify and invest in prevention.^{8,9}

Falls in construction continue to be a priority for prevention in Massachusetts and nationwide. The national Campaign to Prevent Falls in Construction (www.stopconstructionfalls.com) is now in its fifth year. New safety handouts, videos, and materials for toolbox talks are available from this site.

In 2015, there was an increase in work-related motor vehicle-related fatalities in Massachusetts. Both the number of roadway crashes and the number of pedestrian deaths increased. Of those vehicle occupants who were killed in crashes, only one in four was using a seat belt.

Many jobs require individuals or groups of employees to drive from site to site: landscapers, home health aides, sales representatives, food delivery drivers, service and maintenance contractors, and police officers are some examples. Driving is an essential function of these jobs. Surveillance findings support that it is not just truck drivers who are dying in crashes. In 2015, only one of the 13 crashes involved a tractor trailer. Five workers were killed in crashes involving vans. Two workers were driving box trucks that they owned, one as a construction contractor and one as an independent inter-post office mail driver. NIOSH and OSHA continue to develop resources that can help keep workers safe on the road.⁹ OHSP has developed a safety alert with resources to help employers keep their employees safe. Preventing distracted driving and ensuring the use of seat belts are two ways to help reduce the number of crashes and deaths.

The OHSP safety alert is available from
www.mass.gov/eohhs/docs/dph/occupational-health/face-facts/face-fact-sheet-distracted-driving.pdf

CONTACT / MATERIAL REQUEST INFORMATION

For detailed tables of fatal occupational injuries and previous fatality update reports as well as educational materials (FACE Facts and Safety Alerts), please contact the Massachusetts Department of Public Health, Occupational Health Surveillance Program, 250 Washington Street, 4th Floor, Boston, MA 02108-4619. Reports are available online at www.mass.gov/dph/face or by calling 1-800-338-5223.

OTHER HEALTH AND SAFETY RESOURCES IN MASSACHUSETTS

Massachusetts Department of Labor Standards – Offers free consultation services to help private sector employers improve their safety and health programs and train employees.
www.mass.gov/lwd/labor-standards/on-site-consultation-program

Massachusetts Department of Industrial Accidents – Has grants available for providing workplace health and safety training to employers and/or employees in companies covered by the Massachusetts Workers' Compensation Insurance Law. www.mass.gov/the-dias-workplace-safety-training-grant

ACKNOWLEDGEMENTS

This project is a joint effort of several state and federal agencies. For their assistance in providing data and advice, we thank: OSHA Region I and area office staff; staff of the Registry of Vital Records and Statistics; local and state police departments; and clerks of cities and towns. We also appreciate the contributions of the Department of Labor Standards and the Department of Industrial Accidents in the Executive Office of Labor and Workforce Development; the Office of the Chief Medical Examiner; the U.S. Coast Guard; the National Transportation Safety Board (NTSB); the Boston Regional Office of the U.S. Bureau of Labor Statistics; and the National Institute for Occupational Safety and Health (NIOSH).

Please report work-related fatalities immediately to the MDPH Toll-Free Occupational Fatality Hotline

1-800-338-5223
Fax 617-624-5696

When reporting a fatality, include the following information:

- Your name, organization, address, and phone number
- Victim's name, occupation, and employer
- Brief description of the incident, including date and time

The Occupational Health Surveillance Program would like to thank all agencies and people that contribute to our efforts to prevent work-related deaths by reporting fatalities and providing information during our fatality investigations.

¹ Work-related fatalities in 2014-2015 identified by MA CFI and FACE projects. These data may not match data published by BLS.

² Data provided by the FACE project, MDPH.

³ All rates in this report are computed using full-time equivalent workers (FTE) in the denominator, which take into account the number of hours worked. This employment data comes from the Current Population Survey conducted by the Census Bureau for BLS. One FTE = 2,000 hours worked annually. All of the rates described in this report, aside from the overall state and national rates, are based on small numbers of deaths and should be interpreted with caution. Rates generated for this report are not directly comparable to rates published by BLS.

⁴ Self-employed workers include persons who own/operate unincorporated businesses and also paid and unpaid family workers.

⁵ U.S. Department of Labor, Bureau of Labor Statistics, Census of Fatal Occupational Injuries, 2014/2015. <http://www.bls.gov/iif/oshcfi1.htm>

⁶ OSHA investigated four illness deaths excluded from this report and collected information for at least 21 other acute illness deaths that occurred at a worksite in Massachusetts during the period. OHSP has included in this report two injury deaths that were precipitated by a medical event.

⁷ OSHA did respond to five fatal incidents that normally fall outside of its scope: this included two homicides and three events where the worker was the company owner or self-employed.