

# FATAL INJURIES AT WORK

## MASSACHUSETTS FATALITY UPDATE, 2002

Occupational Health Surveillance Program Massachusetts Department of Public Health March, 2005

Every year, men and women in a wide variety of jobs and industries throughout Massachusetts die as a result of traumatic injuries at work. These deaths are all the more tragic because they are largely preventable. Information about where and how they occur is essential in order to develop effective prevention programs. In Massachusetts, the Occupational Health Surveillance Program (OHSP) in the Massachusetts Department of Public Health (MDPH) collects information on fatal occupational injuries as part of the national Census of Fatal Occupational Injuries (CFOI), conducted in cooperation with the Bureau of Labor Statistics (BLS), U.S. Department of Labor.

OHSP also conducts in-depth work site investigations of targeted fatal occupational injuries as part of the national Fatality Assessment Control and Evaluation (FACE) project, sponsored by 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 identify effective countermeasures to prevent similar incidents in the future. Excerpts from selected FACE investigations are highlighted in this report.

This update provides an overview of fatal injuries at work that occurred in Massachusetts during 2002. These include fatalities traditionally linked to the work environment such as falls, electrocutions and exposure to toxic chemicals. They also include homicides and suicides at work and motor vehicle-related fatalities that occurred during travel on the job. Deaths caused by occupational illnesses are not included in this fatality update.

### OVERVIEW OF FATAL INJURIES AT WORK IN 2002

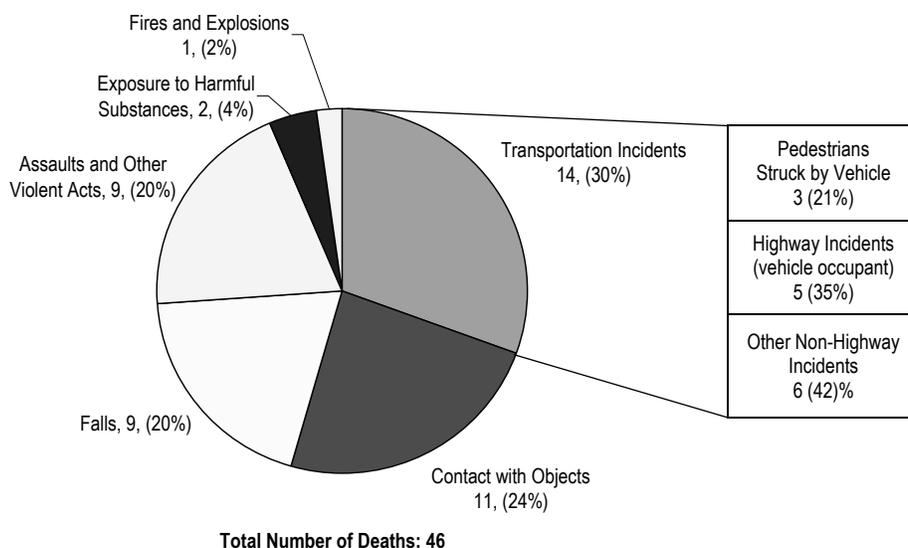
- In 2002, 42 men and four women suffered fatal injuries at work in Massachusetts. The overall rate of fatal occupational injury for *all* workers was 1.4 per 100,000 workers.<sup>1</sup>
- The average age at death was 43.2 years. Twenty-three (50%) victims were younger than 39 years of age. The 46 fatalities resulted in an average of 31.7 years of potential life lost (years before the victim reached age 75) for each death, for a total of 1,461 years of potential life lost.
- Thirty-six (78%) victims were white non-Hispanic. The overall rate of fatal occupational injury for white non-Hispanic workers was 1.2 per 100,000 workers.
- Five victims (11%) were Hispanic workers, four of whom were foreign born. The victims were employed in a variety of industries, including construction, manufacturing, transportation, and retail. The overall rate of fatal occupational injury for Hispanic workers was 2.5 per 100,000 workers.
- Fourteen victims were foreign-born. In addition to the four foreign-born Hispanic workers fatally injured, five victims were born in Brazil. Four of the fatally injured Brazilians were employed in the construction industry.
- Of the 46 workers fatally injured, 38 (83%) were wage and salary workers, and seven (15%) were self-employed.<sup>2</sup> Over half of the victims (26) were employed in establishments with ten or fewer workers.

<sup>1</sup> Rate calculations exclude cases 15 years of age and younger.

<sup>2</sup> Information about employment status was not available for one case.

## EVENTS RESULTING IN FATAL INJURIES

**Figure 1. Fatal Injuries at Work by Event/Exposure, Massachusetts 2002**



Source: Massachusetts Census of Fatal Occupational Injuries

**Transportation-related incidents** accounted for 14 (30%) deaths. These incidents involved workers in a wide variety of industries including construction, agriculture, services, and retail as well as the transportation industry. Five workers were vehicle occupants who were fatally injured in motor vehicle crashes, overturns, and collisions on highways and other roads. Three victims were pedestrians struck by vehicles in off-road locations including a construction site, a driveway, and a parking garage.<sup>3</sup> Six workers were fatally injured in other non-highway incidents, three involving fishing vessels, and one a helicopter crash. In two incidents, both on residential housing sites, workers were killed when the machines that they were operating overturned, pinning them to the ground.<sup>3</sup>

**Contact with objects or equipment** claimed the lives of 11 (24%) workers. Five of the victims were struck by falling objects. Five workers were caught in or compressed by equipment or objects.

### Massachusetts Machine Operator Dies After Becoming Caught in Shirt Pressing Machine Massachusetts FACE Report 02MA002

A 44-year-old female machine operator was fatally injured when she became caught in the shirt pressing machine she was operating. While a shirt was in the machine's pressing area, the victim reached down into an opening in the loading table and became stuck. The machine cycled, releasing the shirt from the pressing area, striking and crushing the victim's right arm, neck and chest. Personnel from the local fire department used Jaws of Life to free the victim. The victim had been employed with the company for 19 years. The only training session provided by the equipment manufacturer had been held when the machine was delivered to the employer, eight years prior to the incident.

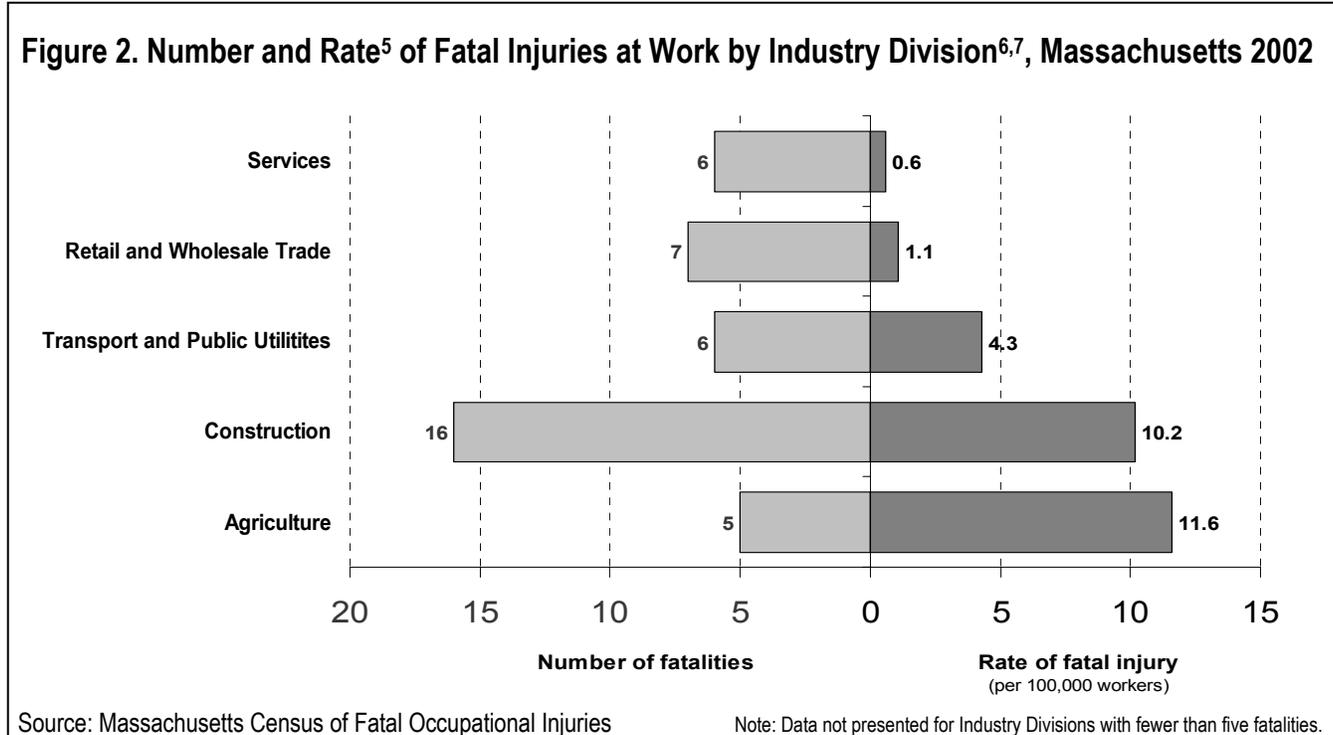
In order to prevent similar incidents, Massachusetts FACE recommended that employers should: 1) ensure that accessible and exposed mechanical hazards of a shirt pressing machine are guarded; 2) ensure that shirt pressing machines are equipped with emergency stops; 3) periodically perform equipment hazard analyses to ensure equipment is safe to operate; 4) train equipment operators and employees on all aspects of the equipment, including functions that don't pertain to daily operation; and 5) develop, implement, and enforce a comprehensive safety and health program that includes, but is not limited to, hazard recognition, safety training, and protocols to safely complete tasks. FACE also recommended that shirt pressing machine manufacturers should: 1) design machines so moving parts are not exposed and accessible and emergency stops are linked to the pneumatic system; and 2) explore the possibility of reducing the force used to transfer the shirt (buck) to and from the loading table and pressing area.

<sup>3</sup> Data provided by the Massachusetts FACE program.

The broad category of **falls** includes both falls on the same level and falls to lower levels. In 2002, all of the fatal falls were falls to lower levels, which was the single leading fatal event. Seven of the nine fatal falls occurred in the construction industry, including two falls each from ladders, scaffolds, and roofs. The heights of the fatal falls ranged from 15 to 30 feet.<sup>4</sup>

**Assaults and other violent acts** accounted for nine (20%) of the work-related deaths; five were homicides and four were suicides. The five homicides included a police officer killed in the line of duty and two workers killed during the course of robberies.<sup>3</sup> Four of the five homicides involved the use of sharp objects.

## FINDINGS BY INDUSTRY



The **Agriculture** industry had five (11%) fatalities and the highest occupational fatality rate (11.6 deaths per 100,000 workers) for 2002. The rate was seven times higher than that of the overall fatality rate for the state. Three of the five fatally injured workers were landscapers, one of whom fell, one was hit by a branch and one was killed when the equipment he was operating overturned.<sup>3</sup>

The **Construction** industry had the highest fatality count with 16 (35%) deaths and the second highest occupational fatality rate (10.2 deaths per 100,000 workers). Seven construction workers died as a result of falls to lower levels and three as a result of being struck by falling objects.<sup>3</sup>

The **Transportation and Public Utilities** industry had six (13%) deaths with a fatality rate of 4.3 deaths per 100,000 workers. Four of the six workers were fatally injured in transportation related incidents.

The **Trade** industry had seven (15%) deaths and a rate of 1.1 deaths per 100,000 workers.<sup>8</sup> Three workers died as a result of assaults with sharp objects and two as a result of motor vehicle crashes.<sup>3</sup>

<sup>4</sup> Height information was not available for one fatal fall.  
<sup>5</sup> To maintain consistency with denominator data, fatalities among self employed workers were excluded in calculating rates, except in Agriculture.  
<sup>6</sup> Standard Industrial Classification Manual, 1987 edition, Office of Management and Budget.  
<sup>7</sup> To maintain consistency with the denominator data, fatalities in the Forestry and Fishing industries were included in the Service industry division.  
<sup>8</sup> Excludes the self-employed, family workers and private household workers.

The **Manufacturing** industry claimed the lives of four workers and two **Government** employees sustained fatal injuries in 2002—a police officer and a firefighter both killed in the line of duty.

## OSHA COVERAGE, INVESTIGATIONS AND PENALTIES

Of the 46 fatal injuries at work in 2002, ten deaths occurred in industries or circumstances that are outside Occupational Safety and Health Administration (OSHA) jurisdiction; these included fatalities among commercial fishers, public sector employees, and self-employed individuals. An additional 15 fatalities involved circumstances not routinely addressed by OSHA such as homicides, suicides, airplane crashes, and motor vehicle-related deaths. In total, 25 (54%) of the fatal injuries at work in Massachusetts during 2002 occurred in industries or from circumstances or causes that are not addressed by OSHA.

OSHA investigated 21 fatal occupational injuries that occurred in 2002.<sup>9</sup> Fines for violations of OSHA standards related to these fatalities were issued against 20 employers in separate incidents. The agency assessed a total of \$211,032 in penalties as a result of its fatality investigations, with the lowest fine assessed at \$1,400 and the highest at \$33,000.

## COMMENTS

It is important when reporting summary information about fatal occupational injuries to acknowledge the individuals that these numbers represent. These deaths were tragic incidents that were in large part preventable. Surveillance findings are intended to guide government, industry, labor, and community organizations in developing strategies to prevent similar tragedies in the future.

**Nationwide**, a total of 5,524 workers died as a result of fatal occupational injuries in 2002. The national fatal occupational injury rate was 4.0 deaths per 100,000 workers<sup>10</sup>. This rate is substantially higher than the rate of 1.4 deaths per 100,000 workers for Massachusetts. The lower fatal occupational injury rate in Massachusetts is, in part, explained by the industrial make-up of Massachusetts compared to that of the nation. Massachusetts also has comparatively low rates of fatal motor vehicle crashes and homicides in general. These two types of fatal injuries contributed substantially to the national occupational fatality burden. While the fatality rate is lower in Massachusetts, continued efforts are needed to reduce the human and economic toll of preventable deaths at work in the Commonwealth. Findings in this update highlight several specific issues to be addressed.

### **Massachusetts Temporary Laborer Dies After Being Struck by a Turning Device at a Concrete Product Manufacturing Facility, Massachusetts FACE Report 02MA016**

A 30-year-old Hispanic male employed as a temporary worker was fatally injured at a concrete casting facility. The victim had been hired as a laborer to help with the manufacturing of concrete products. While assisting with the removal of a 1,000-gallon concrete septic system tank from its form, the boom section of the turning device used for this task slipped off of the forklift tines that had been supporting the turning device. The boom struck the victim in the head and back, causing fatal injuries. The victim was one of four temporary workers assigned to the concrete manufacturing facility and had been working there for a year. The victim's first language was Spanish and the first language of the person he typically worked with, a fulltime permanent employee of the concrete manufacturing facility, was English. The company did not have a written safety and health program, and the only training provided was on-the-job.

In order to prevent similar incidents, Massachusetts FACE recommended that employers should: 1) develop a locking mechanism to ensure that concrete casting turning devices used with forklifts are securely attached to the tines; 2) provide barrier guards to ensure that all employees are safe from possible hazards while completing tasks; 3) establish written procedures for rotating concrete castings; 4) consider using an overhead crane system for rotating concrete castings; 5) ensure that workers employed through temporary agencies are provided site and task specific safety and health training; and 6) ensure that workers who are part of a multilingual workforce comprehend safety training for their assigned tasks.

<sup>9</sup> OSHA also conducted three investigations of occupational deaths due to apparent cardiovascular disease which initially appeared to be work related in 2002.

For the 11<sup>th</sup> consecutive year, the **construction industry** in Massachusetts has both high numbers and high rates of fatal occupational injuries, and close to half of the deaths in this industry continue to be due to falls. Comprehensive work-site fall prevention programs, including the use of fall protection systems, can reduce the risk of fall injuries in construction. The Occupational Safety and Health Administration has established standards for fall prevention in construction workplaces (Subpart M, Fall Protection, 29 CFR 126.500 1926.503). Employers should develop and implement fall protection programs that meet these OSHA requirements. Innovative efforts are needed to reach both employers and workers in small construction businesses. In Massachusetts, the FACE Project is continuing educational outreach to residential contractors by disseminating fall prevention brochures in multiple languages. These brochures are available on our web site at <http://www.mass.gov/dph/bhsre/ohsp/scaffold.htm>. Also, the regional OSHA office currently has a local emphasis program on fall protection. For information about OSHA Region 1 Fall Protection Local Emphasis Program, contact Robert Hooper or Geoffrey McKinstry at 617-565-9860.

The high occupational fatality rate for **Hispanic workers** should be interpreted with caution because it is based on small numbers. However, the rate is consistent with previous findings for Massachusetts and with findings for the nation as a whole. Potential contributing factors include: the disproportionate concentration of Hispanic workers in high risk jobs; language and communication barriers at work; inexperience and lack of information about health; safety and legal rights on the job among Hispanic workers; and limited job options that may make individuals hesitant to speak up. There is growing recognition of the need to identify and address the factors that place Hispanic workers at high risk. Both the Occupational Safety and Health Administration (<http://www.osha.gov/as/opa/spanish/index.html>) and the National Institute for Occupational Safety and Health (<http://www.cdc.gov/spanish/niosh>) now have Spanish language websites. The Occupational Health Surveillance Program is working to document the occupational health experience of immigrant workers and to collaborate with community organizations to disseminate educational materials on health and safety in multiple languages. OHSP has also recently released a guide describing workers rights and benefits under the workers' compensation system in Massachusetts available in English, Portuguese, and Spanish at <http://www.mass.gov/dph/bhsre/ohsp/ohsp.htm>.

For more detailed tables of fatal occupational injuries in 2002 or copies of full-length FACE reports in Massachusetts, please contact the Massachusetts Department of Public Health, Occupational Health Surveillance Program, 250 Washington Street, 6<sup>th</sup> Floor, Boston, MA 02108-4619. These reports may also be obtained by calling 1-800-338-5223.

## **ACKNOWLEDGEMENTS**

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<sup>10</sup> U.S. Department of Labor, Bureau of Labor Statistics, Census of Fatal Occupational Injuries, 2002.

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

**1-800-338-5223**

or

**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 in preventing work-related deaths by reporting fatalities and providing information during our fatality investigations.**

**PLEASE NOTE OUR NEW ADDRESS INFORMATION**  
Occupational Health Surveillance Program  
Massachusetts Department of Public Health  
250 Washington Street, 6th Floor  
Boston, MA 02108-4619