CHAPTER 9

Occupational Health

Massachusetts workers drive our economy, from the cutting edge sectors of biotechnology and health care to the traditional jobs in fishing and construction that give our Commonwealth much of its character. While work is fundamental to well being, working conditions can also negatively affect health. This is most obvious in jobs such as construction where many dangers are well recognized, but exposure to chemicals, chronic wear and tear, and stress at work can also take a toll.

Each year, thousands of people in Massachusetts are injured or become ill as a result of health and safety hazards in the workplace. These work-related health problems result in substantial human and economic costs, not only for workers, their families and employers but also for society at large. They also add to the burden on our health care system. Occupational injuries and illnesses are in large part preventable. Workplace hazards should not be simply accepted as part of the job. There is extensive evidence that with effort, occupational risks can be reduced or eliminated.

Successful approaches to making workplaces safer and healthier begin with collecting and analyzing the data necessary to understand the problems. The MDPH Occupational Health Surveillance Program (OHSP) uses multiple public health data sources to document where and how workers in Massachusetts are getting sick or hurt on the job.[1]

Occupational injuries and illnesses are in large part preventable. Workplace hazards should not be simply accepted as part of the job.

OHSP uses data to target prevention activities and works with a wide range of government and community partners to address identified workplace health and safety problems. Activities include interventions in individual worksites, educational outreach to workers, employers, and health care providers, recommendations for changes in equipment design, and development of public policies to reduce workplace risks. Many stakeholders – employers, unions, the medical community, advocacy organizations and government – have critical roles to play in promoting the health and safety of working people in the Commonwealth. Information provided by OHSP helps guide these efforts.

Fatal Injuries at Work

Each week, one to two workers are fatally injured on the job in Massachusetts. OHSP not only collects and analyzes data on these tragic deaths but also conducts in-depth investigations of select incidents to learn more about why these deaths occur. This information is used to develop recommendations to prevent similar deaths in the future. Findings as well as prevention recommendations are disseminated widely to those in positions to make jobs safer.

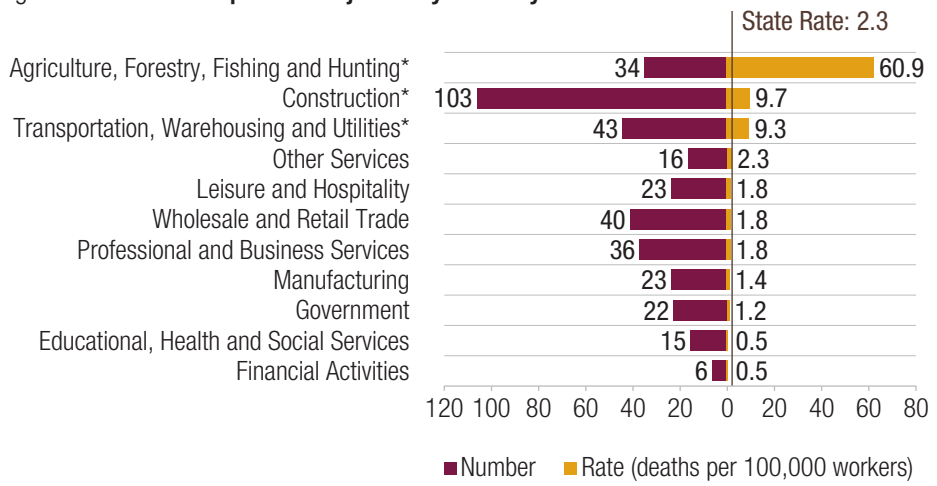
In recent years (2000-2007), the number and rate of workers killed on the job in Massachusetts has fluctuated over time, with no consistent upward or downward trend. The overall fatality rate is about half the US rate, which is partly explained by differences in industry makeup. A smaller proportion of Massachusetts workers are employed in higher risk industries such as agriculture and mining compared to other parts of the US.[2]

The fatal occupational injury rate for fishermen in Massachusetts during 2000-2007 was more than 80 times the overall rate for the state.

Commercial fishing stands out as an exceptionally high risk job in Massachusetts. Twenty-nine of the 535 workers fatally injured during 2000-2007 were employed in the fishing industry, and Massachusetts ranked second following only Alaska in the number of commercial fishing deaths during this period (Figure 9.1). The commercial fishing industry is vital to the economies of some Massachusetts port towns, and Massachusetts can learn from success in Alaska where efforts to expand safety training programs and increase adherence to safety standards have reduced the fishing fatality rate by nearly 50 percent.[3]

Construction workers – who build our homes and schools and repair our roads – are also at high risk. During 2000-2007, more workers were killed in construction than in any other industry, and the fatality rate for construction was more than four times higher than the overall state rate (Figure 9.1). The nature and organization of work in the construction industry especially in residential construction (e.g., transient worksite, small company size) make it challenging to reach workers for education and intervention. Innovative efforts are needed to reach employers and workers as well as the homeowners who contract with them.

Figure 9.1 **Fatal Occupational Injuries by Industry Sector**



Source: MDPH Census of Fatal Occupational Injuries, 2003-2007.
*Rate statistically different from the overall state rate ($p<0.05$).

Falls from heights such as from ladders and roofs account for more work-related deaths in Massachusetts than any other type of event. During 2000-2007, almost one-fifth (19%) of all fatal occupational injuries were falls from heights (Figure 9.2). Most of these falls (69%) occurred in construction. OHSP disseminates fall prevention materials in multiple languages to workers and employers in the construction industry. OHSP has also convened a task force to identify and collaborate on strategies to reduce falls in residential construction. Members include stakeholders from industry, labor, community organizations, researchers and government agencies.

Roadway motor vehicle incidents and workplace homicides also stand out as common causes of fatal occupational injuries. During 2000-2007, 22 of the 49 workers killed in vehicle crashes were truck drivers, and truck driving claimed more lives than any other single occupation. Forty-nine workers were victims of workplace homicide. Robbery was the leading motive for these violent deaths.

Approximately one in five workers fatally injured at work was born outside of the US. During 2000 – 2007, the fatality rate for foreign born workers was higher than the rate for workers born in the US.

Government agencies can face many barriers to obtaining information from the employers and co-workers of immigrants who die on the job. OHSP has partnered with community organizations that work with newcomer communities to learn more about the incidents and the victims. These collaborations have enabled OHSP not only to collect better information but also to provide information back to the affected communities about the causes of these deaths and ways to prevent them in the future. Community partners have used OHSP reports to educate their members and mobilize action to reduce workplace health and safety risks. These

Floor Sanders Killed When Floor Finishing Product Catches Fire

Within a 10 month period (Sept. 2004-July 2005), three Vietnamese floor finishers were fatally injured in two separate incidents when a highly flammable sealer they were using caught fire. OHSP investigated these incidents and joined with the State Fire Marshal to issue a Fire Safety Alert (available in English and Vietnamese) that was disseminated to floor finishers, fire departments, insurers, and product distributors throughout the state. OHSP has also participated in a community-initiated floor finishing task force which is working to prohibit the use and sale of highly flammable floor finishing products in Massachusetts.

Figure 9.2 **Fatal Occupational Injuries by Event (Cause)**

Event/Exposure	Number of Fatalities	Percent
Transportation Incident	166	31.0
Roadway motor vehicle	49	9.2
Worker struck by vehicle	44	8.2
Water vehicle	35	6.5
Off road motor vehicle	20	3.7
Aircraft	17	3.2
Fall	117	21.9
Fall from height	102	19.1
Fall on same level	14	2.6
Contact with Object or Equipment	91	17.0
Struck by object	55	10.3
Caught in/compressed by object/equipment	36	6.7
Assault or Violent Act	90	16.8
Homicide	49	9.2
Suicide/self-inflicted injury	39	7.3
Exposure to Harmful Substance or Environment	43	8.0
Contact with electric current	20	3.7
Other exposure to harmful substances	16	3.0
Oxygen deficiency (includes drowning)	7	1.3
Fire or Explosion	27	5.1
Total	535	100.0

Source: MDPH Census of Fatal Occupational Injuries, 2000-2007.

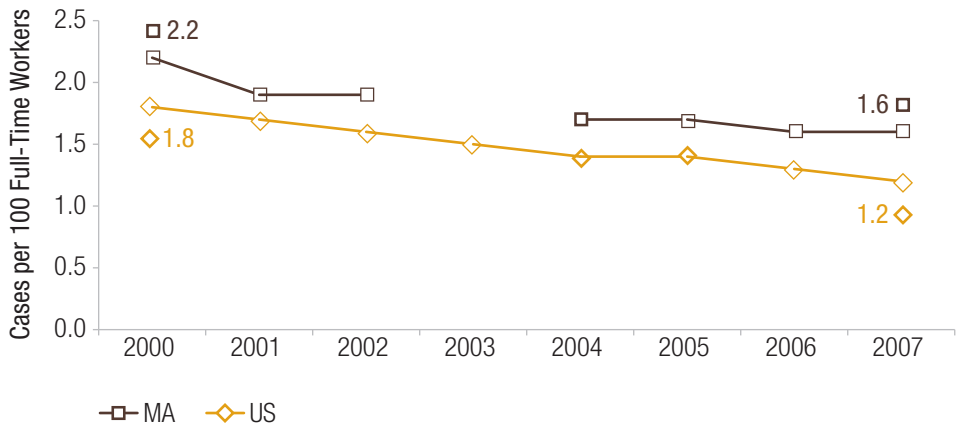
organizations reach employees and employers with potentially life-saving information through informal communication networks as well as the ethnic media including radio, cable television, web sites, and newspapers in Portuguese, Spanish, and Vietnamese.

Nonfatal Injuries and Illnesses

Each year in Massachusetts, 1 out of every 25 full-time workers in the private sector – almost 90,000 workers – sustains a nonfatal injury or illness at work that requires more than first aid. Over 40% of these injuries and illnesses are serious enough to result in lost work time. While the rate of lost time injury and illness in Massachusetts declined from 2000-2007, it remained consistently higher than the rate for the nation (Figure 9.3).

Workers employed in transportation and warehousing are at highest risk for injury, with more than four out of every 100 full-time workers experiencing a work-related injury or illness resulting in lost work time

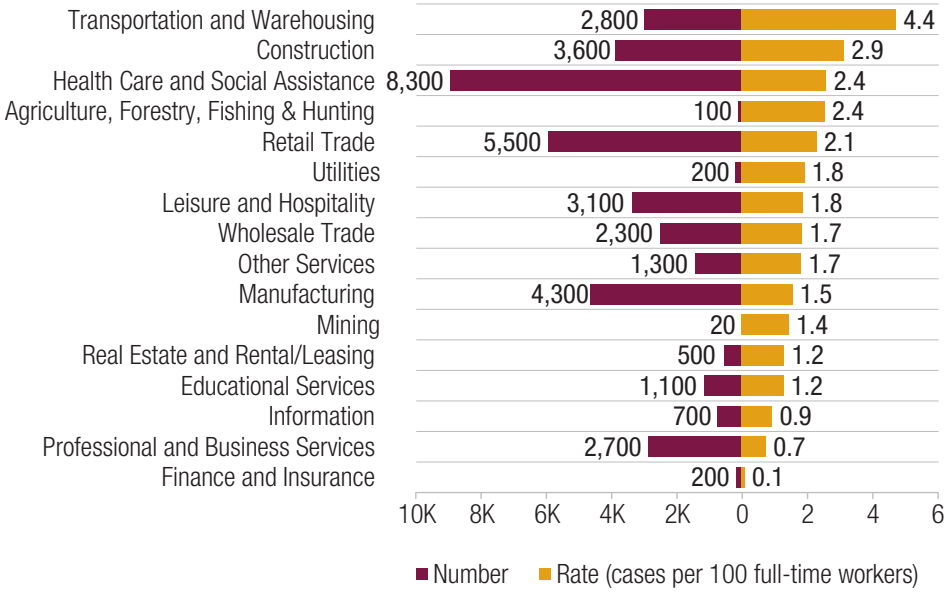
Figure 9.3 **Nonfatal Occupational Injuries and Illnesses Resulting in Lost Workdays**



Source: US Dept. of Labor Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses.
*The MA rate decreased over time but was significantly higher than the US rate ($p<0.05$).

in 2007. Construction workers also have a high lost time injury rate. However, the largest number of lost work time injuries and illnesses – more than 8,300 cases in 2007 – occur among Massachusetts health care workers (Figure 9.4).

Figure 9.4 **Nonfatal Occupational Injuries and Illnesses Resulting in Lost Workdays, by Industry Sector, MA**



Source: US Dept. of Labor Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses, 2007.

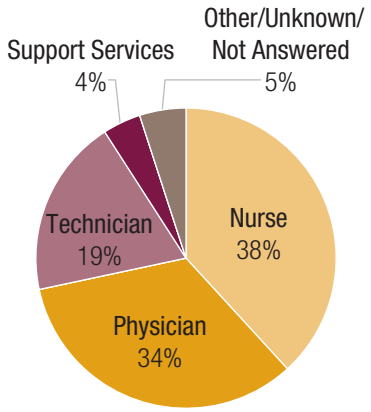
The statewide rate of injuries and illnesses resulting in lost workdays is **1.6**.

The large number of injured workers in health care results partly from the fact that health care is the largest industry in the state, employing close to 15% of the workforce, but it is also due to the nature of the work. In fact, in 2007, the rate of lost time injuries and illnesses for health care workers

(2.4 injuries per 100 full-time workers) was higher than the rates for most other industries and higher than the rate for the health care industry in the nation as a whole (1.4). The rates for workers employed in hospitals (3.0) and nursing homes (3.9), specifically, were higher than the rates reported for workers employed in construction (2.9) and manufacturing (1.5). Close to 40% of the injuries and illnesses among Massachusetts health care workers were musculoskeletal disorders.

The survey providing these nonfatal injury and illness statistics is based on a sample of occupational illness and injury logs maintained by employers. This survey provides valuable information but has a number of well-recognized limitations. It excludes public sector workers, the self-employed, and household workers, who together comprise close to 21% of the workforce. Occupational illnesses, which can take many years to develop and may not become evident until long after an individual has left the job, are not well documented in the survey, and there is evidence that even many injuries are never reported. Therefore, OHSP uses a variety of additional health data sources, including emergency department records, workers' compensation claims, and physician reports as well as data from interviews and investigations to provide a more complete picture of the occupational health status of the Massachusetts population.

Figure 9.5 **Sharps Injuries Among Hospital Workers by Occupation**



Source: MDPH Sharps Injury Surveillance System, 2002-2007.

Sharps Injuries Among Hospital Workers

Health care workers are vulnerable to infectious disease resulting from injuries with contaminated needles and other sharp devices. These sharps injuries are frequent events with rare but serious health outcomes (e.g., HIV, Hepatitis B, and Hepatitis C).

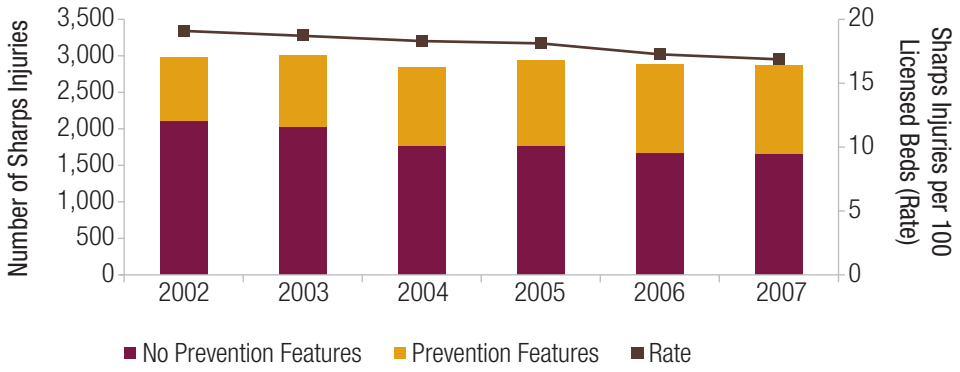
Since 2001, hospitals licensed by MDPH have been required by state and federal law[4,5] to use sharps with engineered sharps injury protections (SESIPs).

Hospitals are also required to maintain logs of sharps injuries among workers and submit data from these logs annually to OHSP, which maintains the Massachusetts Sharps Injury Surveillance System. Since 2002, the Sharps Injury Surveillance System has collected data each year from 99 MDPH licensed hospitals.

More than 3,000 sharps injuries among hospital workers are reported to MDPH annually. Nurses are most frequently injured, followed by doctors and technicians. Non-clinical staff (e.g., housekeepers and central supply staff included in support services) are also at risk (Figure 9.5).

Since the Massachusetts Needlestick Prevention Act was passed in 2001, the rate of sharps injuries has gradually decreased by an average of 4.8 % annually (Figure 9.6).

Figure 9.6 **Number and Rate of Sharps Injuries Among Hospital Workers**

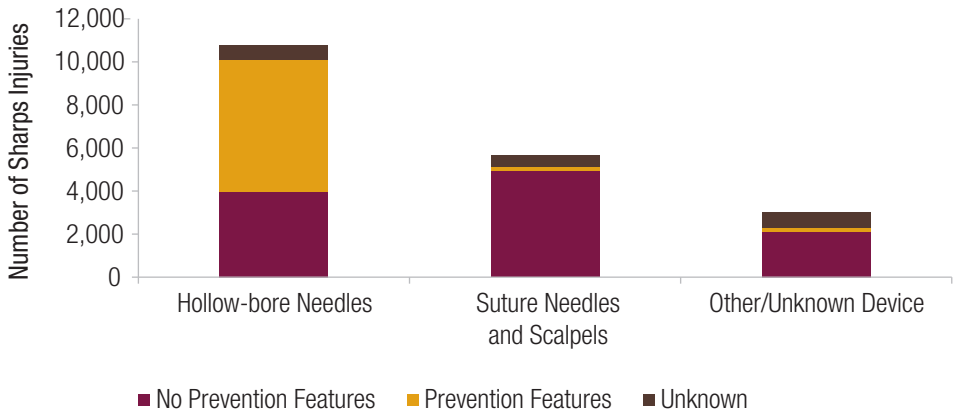


Source: MDPH Sharps Injury Surveillance System, 2002–2007.
*Statistically significant decrease in rate over time ($p < 0.05$).

Though data indicate an increased use of devices with sharps injury prevention features, there continue to be a substantial number of injuries with devices lacking such features, particularly with hollow bore hypodermic needles, for which alternatives are available (Figure 9.7).

Though fewer in number, injuries are also caused by devices with injury prevention features. This raises important questions about specific instruments used and staff training in the use of these newer devices.

Figure 9.7 **Sharps Injuries among Hospital Workers by Device and Presence of Engineered Sharps Injury Prevention Features**



Source: MDPH Sharps Injury Surveillance System, 2002–2007.

OHSP surveillance findings about patterns of sharps injuries provide a framework for hospitals to improve their prevention and evaluation efforts.[6] OHSP also provides technical assistance to hospitals to develop sharps injury prevention programs. These include strategies to increase the use of devices with sharps injury prevention features, training and recommendations for safer work practices, and improving post-exposure follow-up

of workers who have experienced a sharps injury. OHSP also facilitates exchange of this information among hospitals and hospital workers.

Work-Related Lung Diseases

According to recent findings from the Massachusetts BRFSS, 40% of adults with asthma report that their asthma was either caused or made worse by exposures at work.

Breathing in dusts and fumes at work can damage the lungs, causing diseases such as silicosis, asbestosis, lung cancer, and "popcorn lung" caused by the chemicals used in flavorings. Workplace exposures can also cause asthma or aggravate asthma symptoms. According to recent findings from the Massachusetts BRFSS, 40% of adults with asthma report that their asthma was either caused or made worse by exposures at work.[7] (For more information on asthma, see Chapter 7).

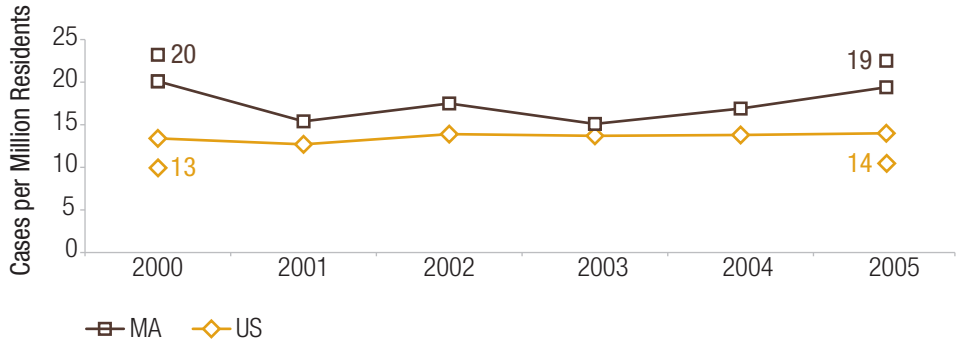
Work-related asthma is a reportable condition in Massachusetts, and OHSP tracks cases reported to MDPH by health care providers and hospitals.[8] These cases provide important information about industries and occupations where workers are at risk, as well as hazards that need to be corrected.

For example, individuals with work-related asthma interviewed by OHSP commonly report that their asthma symptoms are associated with the use of cleaning products. Other states have also identified a link between asthma and the use of cleaning products in the workplace.[9,10] OHSP has participated in national efforts to ensure than cleaning products certified as "green" do not include ingredients known to cause asthma. State and city agencies and schools are being encouraged to use these safer products. OHSP has also worked to reduce exposures to other substances known to cause asthma such as latex in gloves and isocyanates in auto body spray paint.

Pneumoconioses are a group of lung diseases caused by inhalation of mineral dusts (primarily silica and asbestos), nearly always in occupational settings where processes such as sandblasting, shipfitting, and asbestos remediation take place. In 2006, there were nearly 900 hospitalizations of individuals with pneumoconiosis. More than 90% of these were hospitalizations for asbestosis, a lung disease caused by exposure to asbestos. Asbestos is also the only well established risk factor for mesothelioma, a rare but highly fatal cancer of the lining of the lung and abdomen. During 2000-2005, an average of 94 cases of mesothelioma were reported to MDPH each year, and the rate of mesothelioma in Massachusetts consistently exceeded that for the nation (Figure 9.8).[11]

Because asbestosis and mesothelioma take many years to develop, cases diagnosed today are due to asbestos exposures in the past. High rates of mesothelioma and asbestosis in Massachusetts are in large part a legacy of our shipbuilding industry. Workers who were employed in construction and certain manufacturing industries, such as textile manufacturing, are also at risk. While use of asbestos has declined significantly in recent years, the Occupational Safety and Health Administration (OSHA) estimates

Figure 9.8 **Incidence Rates of Malignant Mesothelioma**



Sources: MDPH Cancer Registry, National Cancer Institute Surveillance Epidemiology and End Results (SEER) Program and the North American Association of Central Cancer Registries.
* The MA rate was significantly higher than the US rate ($p<0.05$).

that 1.3 million workers in the US continue to be exposed to asbestos at work. A particular concern is exposure to in-place asbestos in buildings, including schools.[12]

Continued surveillance of mesothelioma is important not only to document the burden of disease and evaluate the impact of prevention efforts over time, but also to identify previously unrecognized settings in which workers and community members may be at risk. The continuing tragedy of asbestos-related disease is also an important reminder of the need for precautions in introducing new materials and chemicals into the workplace.

Work-Related Injuries to Teens

While employment can provide many benefits for youth, working teens also face workplace health and safety risks.

Although teen employment has declined from its peak in 1999, young workers continue to be a vital part of the Massachusetts workforce. In 2007, an estimated 25% of 15-17 year-olds in Massachusetts were employed on average at any given time, largely in part-time jobs in retail and service industries.[13] While employment can provide many benefits for youth, working teens also face workplace health and safety risks.

Tragically, nine Massachusetts teens have been fatally injured at work since 2000. Nationally, young workers have higher rates of nonfatal occupational injury per hours worked than adults.[14] This is explained in part by the types of jobs they do; many jobs in which teens are employed have higher than average injury rates for workers of all ages. Other factors – inexperience, lack of safety training, and developmental factors, both physical and psychosocial – may also increase risks for young workers.[15]

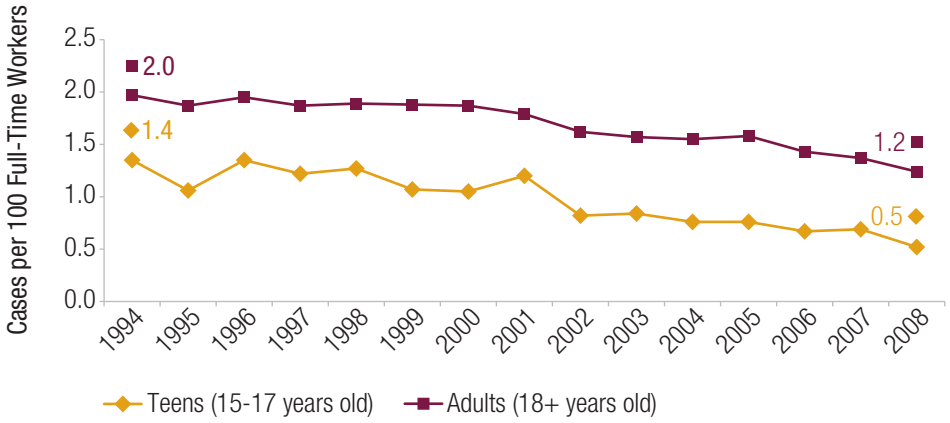
When a MDPH study of childhood injuries in the late 1980s found that a substantial percentage of injuries to 14-17 year-olds were work-related, MDPH took action.[16] In 1993, public health regulations were passed

Teens Killed Operating Forklifts
Since 2000, two teens have been fatally injured while operating forklifts, a task prohibited by child labor laws. In response, MDPH developed a bilingual forklift sticker. Hundreds of thousands of these warning labels have been disseminated nationally by MDPH and federal partners.

requiring hospitals to report work-related injuries to persons under age 18.[8] Since that time, OHSP has tracked work-related injuries to teens under age 18 using emergency department data and workers' compensation records to identify cases. OHSP conducts follow-up interviews with injured teens, and works with multiple government agencies and community partners to address identified health and safety problems and promote safe work for youths. Findings were used by community partners in advocating for changes to strengthen Massachusetts child labor laws, passed by the legislature in 2006.[17]

While there is evidence of success, more remains to be done. Between 1994 and 2008, the occupational injury rate for teens (based on workers' compensation lost wage claims) declined by 61% compared to a 37% decline in the rate for adult workers (Figure 9.9). However, each year close to 1,000 Massachusetts teens continue to seek emergency department treatment for work-related injuries and more than 250 workers' compensation claims are filed for injuries resulting in five or more lost workdays.

Figure 9.9 **Rates of Nonfatal Work-Related Injuries to Teens and Adults**

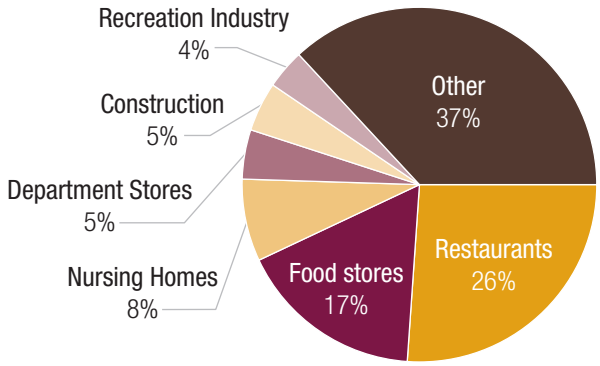


Source: Massachusetts Department of Industrial Accidents Workers' Compensation Claims, MDPH Teens at Work Injury Surveillance System.
*Statistical significance for each trend line and between trend lines is $p<0.001$.

Injuries occur most frequently among teens employed in restaurants, food stores and nursing homes (Figure 9.10). Interviews with injured teens highlight lack of health and safety training, inadequate supervision and lack of compliance with child labor laws as continuing problems that need to be addressed. Often injuries to teens are considered "not serious" but 18% of those interviewed anticipate long term consequences as a result of their injuries (Figure 9.11).

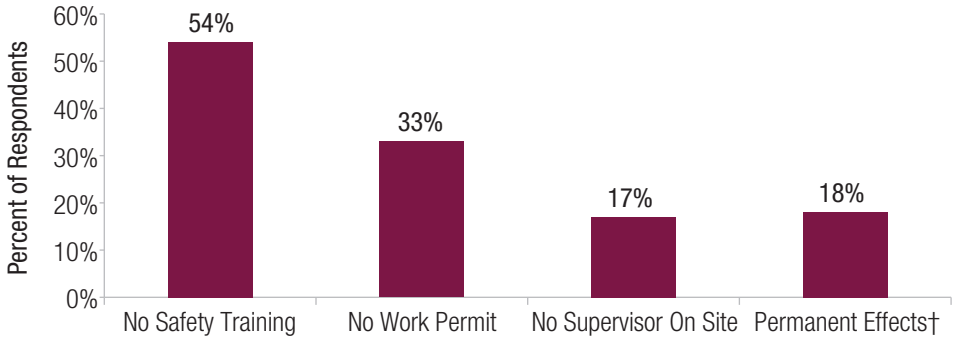
No agency in Massachusetts has the sole responsibility for protecting young workers. The Massachusetts Youth Employment Safety (YES) Team, under MDPH leadership, brings together state and federal agencies concerned with youth employment to coordinate efforts to protect

Figure 9.10 **Work-Related Injuries to Teens Under Age 18 by Industry Sector**



Source: Massachusetts Department of Industrial Accidents Workers' Compensation Claims, MDPH Teens at Work Injury Surveillance System, 2002-2007.

Figure 9.11 **Interviews with Massachusetts Teens Injured at Work**



Source: MDPH Teens at Work Injury Surveillance System, 2001–2005.

What Injured Teens Have to Say

"A co-worker and I were lifting a patient to help her sit up in bed. We were using proper body form, but there weren't enough people helping. I strained my back and fell. They said, "You're ok," and made me work the rest of the shift. I had been lifting the patient using a draw sheet. I pulled my lower back and strained my ligaments."
— 17-year-old nursing home employee

and promote the health and safety of young workers.[18] OHSP has collaborated with the Office of the Attorney General and the Department of Elementary and Secondary Education to produce and disseminate information about child labor laws and health and safety for teens, parents and employers. OHSP has helped develop and deliver three-hour basic health and safety training for working youths. MDPH has also provided support for a peer-run youth health and safety leadership academy for teens that focuses on workplace violence and other workplace health and safety issues, including how to speak up about safety concerns. New efforts are underway to integrate health and safety training in workforce development programs for youths.

Occupational Health Disparities

As with most other health problems, the burden of work-related injuries and illnesses is not borne equally by all Massachusetts residents. Low-income, immigrant, and racial and ethnic minority workers are at higher risk. This is due in large part to the fact that they are more likely to be

Fatal Injuries among Brazilian Workers in Massachusetts

Brazilians are the most populous newcomer group in Massachusetts post 1990; almost one out of every five immigrants entering Massachusetts is from Brazil.[19,20] From 1991, when MDPH first began tracking fatal occupational injuries, through 1999, the death of one worker born in Brazil was recorded. From 2000-2007, 17 workers born in Brazil were fatally injured at work in Massachusetts. All were male and 12 worked in construction. Falls to lower levels accounted for six of the Brazilian construction worker deaths. Brazilians, who speak Portuguese, do not usually identify as Hispanic, and most deaths of Brazilian born-workers are not included in the Hispanic fatality count.[21]

employed in higher risk jobs (Figure 9.12). Discrimination and economic insecurity that make workers hesitant to speak up about workplace hazards may also contribute to these disparities.

Figure 9.12 **Leading Occupations in Massachusetts**

WHITE
Secretaries
Managers & admin.
Supervisors in retail sales
Registered nurses
Salespersons

BLACK
Nursing aides
Janitors & cleaners
Registered nurses
Cashiers
Maids

HISPANIC
Nursing aides
Janitors & cleaners
Grounds maintenance
Maids
Truck drivers

ASIAN
Computer engineers
Medical scientists
Waiters & waitresses
Physicians
Cashiers

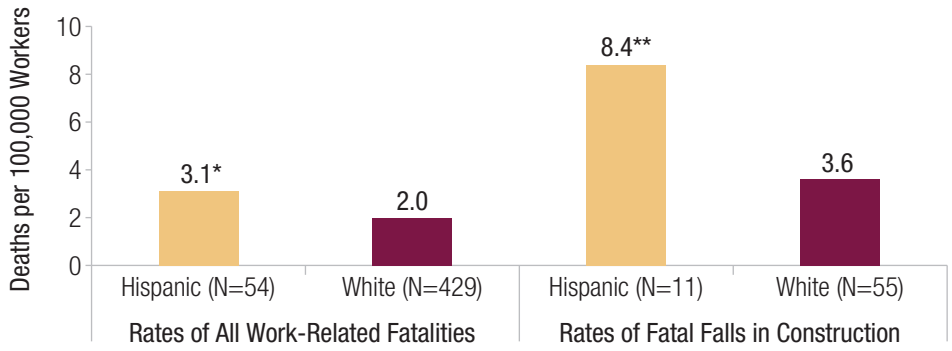
Source: US Department of Labor, Bureau of Labor Statistics, Current Population Survey, 2005-2007.

Traditional sources of information about work-related injuries and illnesses, the Survey of Occupational Injuries and Illnesses and workers' compensation records, do not include information about race and ethnicity or country of origin. They are also thought to miss many injuries affecting immigrants and other vulnerable workers. In response, OHSP has developed other approaches to document occupational health disparities.

Occupational fatality data collected by OHSP reveal that Hispanic workers in Massachusetts are more likely to be fatally injured at work than their White counterparts. During 2000-2007, Hispanic workers had a higher risk of being killed on the job (Figure 9.13). This disparity in rates was evident even *within a high risk* occupation: the rate of fatal falls among Hispanic construction workers was twice that for White workers.

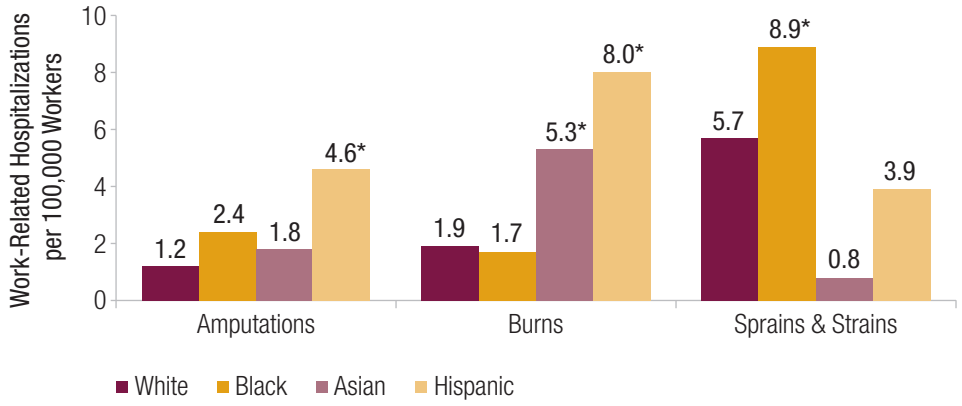
Hospitalization data also reveal the disparate impact of work-related injuries on communities of color. During 1996-2000, Hispanic workers were at high risk of being hospitalized for work-related injuries – particularly burns and amputations – compared to White workers. Asian workers were at high risk of hospitalization for work-related burns. Black workers were at high risk of hospitalization for strains and sprains that occurred at work (Figure 9.14).[22] Even among working teens, Hispanic youth are more likely to sustain injuries treated in emergency departments than White teens who work (4.5 vs. 3.0 ED visits per 100 full time workers in 2003-05).[23]

Figure 9.13 **Fatal Occupational Injuries, Hispanic and White Workers**



Source: MDPH Census of Fatal Occupational Injuries, 2000–2007.
*Rate significantly higher than rate for Whites ($p<0.05$).
**Rate borderline significantly higher than rate for Whites ($p<0.05$).

Figure 9.14 **Hospitalization Rates for Select Work-Related Injuries**

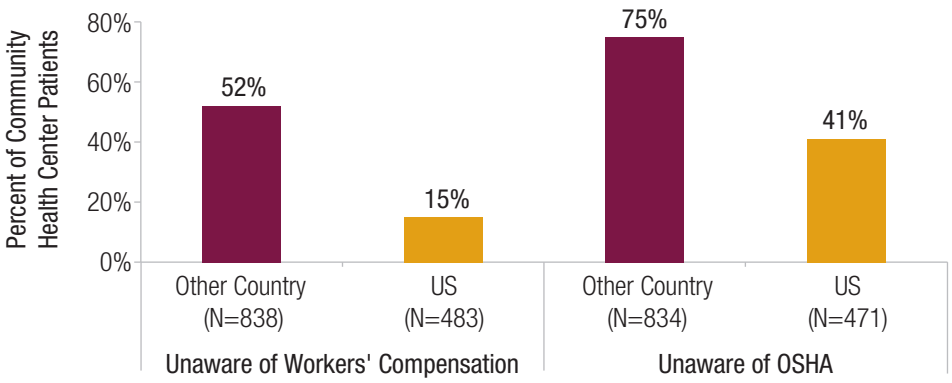


Source: Massachusetts Division of Health Care Policy and Finance, Hospital Discharge Database, 1996–2000.
*Injury rate is significantly greater than rate for Whites ($p<0.05$).

Low-income, immigrant, and racial and ethnic minority workers are less likely to have access to health and safety resources. To learn more about the occupational health experience of these workers, OHSP conducted a survey of more than 1,400 patients at five community health centers. The survey was conducted in six different languages. More than 21% of those interviewed reported experiencing a work-related health problem during the previous year. Fifty-two percent of patients born in other countries had never heard of workers' compensation compared to 15% of those born in the US (Figure 9.15). A striking 75% of foreign-born patients had *never* heard of the US Occupational Safety and Health Administration (OSHA) compared to 41% of those born in the US.

The elimination of racial and ethnic health disparities is a public health priority both in Massachusetts and the nation. As surveillance findings indicate, working conditions contribute to these disparities. OHSP

Figure 9.15 **Patients Unaware of Workers' Compensation or OSHA, by Place of Origin**



Source: MDPH Occupational Health Survey of Massachusetts Community Health Centers, 2002–2003.

collaborates with a variety of community partners to translate data into action to address the occupational health needs of vulnerable workers and newcomer communities.

OHSP provides crucial data and technical assistance to a number of groups working to prevent hazards faced by vulnerable workers: the Massachusetts Floor Finishing Safety Task Force; the Lawrence Latino Safety Partnership, a community-university collaboration that develops methods to reduce falls and silica exposure among Latino construction workers; and the Access to Compensation Working Group that seeks to improve access to workers' compensation benefits for injured immigrant workers. OHSP has also helped facilitate safety training for Brazilian construction workers and outreach to Brazilian immigrants employed in the granite counter top industry.

In collaboration with these networks, OHSP has developed and translated user-friendly materials on fall prevention, fire prevention, and workers' compensation for the immigrant communities most affected. OHSP has also worked with the MDPH health communications office to develop and post Spanish and Portuguese podcasts on health and safety in construction. OHSP continues to work closely with several community health centers to increase identification and documentation of work-related injuries and illnesses affecting their patients, and to improve patients' access to occupational health services.

Promoting and Protecting Employee Health

The worksite is increasingly recognized as a setting for promoting healthy activities and behaviors. The MDPH Working on Wellness Initiative is helping employers to develop wellness programs that emphasize institutional changes that promote a culture of health (See Chapter 2 – Community Assets).

OHSP is collaborating with the Working on Wellness Initiative to encourage employers to address occupational health and safety risks in their worksite wellness programs.

Questions about occupational health policies and practices were included in the comprehensive Massachusetts Worksite Health Improvement Survey in 2008. Nearly 40% of the worksites that responded reported having a health and safety committee; however, more than 20% reported having neither a committee nor a designated individual responsible for worksite safety and health.[24] Both management leadership and worker involvement are considered crucial to developing safer worksites.[25] Steps taken by employers to create safer work environments can increase employees' participation in health promotion efforts.[26]

Academic partners at the University of Massachusetts Lowell and the Harvard School of Public Health are working with MDPH to develop integrated approaches to worksite wellness that both promote and protect worker health.

Summary

Work matters. It is necessary to consider the impact of work on health in the overall effort to protect the health of the public and reduce preventable human suffering and costs. Data to guide action and partnerships among public health programs and with community partners are essential to address the full range of health needs of an increasingly diverse and mobile workforce.[27]

Policy Perspective: Public Policy and Demographic Change in Massachusetts

David Wegman, MD, MSC
Professor Emeritus, UMASS Lowell,
Department of Work Environment

Marcy Goldstein-Gelb, MS
Executive Director,
Massachusetts Coalition for Occupational Safety and Health

We are fortunate in Massachusetts to have the Occupational Health Surveillance Program dedicated to measuring and interpreting essential information on occupational injury, disease and risks. The Program has been instrumental in gathering data and disseminating accessible and informative analyses that are well used by communities. Investigating the factors contributing to recent floor finishing fatalities, surveying injured teens to identify commonalities, and culling through thousands of injury and illness reports from public sector employees provide examples of what makes OHSP a key partner for communities seeking to ground their education and policy development efforts in real data.

Exciting opportunities exist now to build on this very strong foundation and fill important gaps in information that could greatly benefit workers across the entire range of employment in the Commonwealth from healthcare, education, construction and manufacturing to retail, and service.

First, we must continue including information about "work" when other health data are collected in Massachusetts, whether through vital statistics, surveys or electronic health records. Collection of data about individuals' workplaces and jobs can improve our understanding of the hazards workers face and, in turn, our ability to take action to reduce health and safety risks.

Second, we have to collaborate across the Department's programs to integrate occupational health with the day-to-day practice of public health. Some examples include influenza and the impact on health care workers, cardiovascular disease and the role of workplace stress, and the contribution of workplace factors to adult asthma.

Third, we need to work with the Commonwealth's economic growth leaders to anticipate and address potential risks associated with the

development and adoption of new technologies and materials and promote safe, healthful, environmentally conscious jobs. An example is the emerging field of nanotechnology. Because the health and environmental effects are not sufficiently understood, we have to assume that some nanomaterials have the potential to impact worker health. OHSP should collaborate with the Department of Workforce Development among others to identify where use or manufacture of nanomaterials occurs, track the health of that workforce, and provide the new entities with the latest health and safety research on nanotechnology.

Fourth, we need to strengthen and build upon the Department's partnerships with community groups representing high risk groups such as teens and immigrants to engage them actively in identifying priority community needs and collaborating on data collection and dissemination strategies.

Fifth, we must utilize OHSP's expertise in implementing the data collection and analysis component of the Governor's new executive order establishing health and safety committees across state agencies.

Finally, we must consider the full breadth of the workforce. Rapid change in the nature and stability of jobs, the growth of the service and information economy, the need to improve health and safety protections for public sector workers, the aging worker demographic, and the growing ethnic and cultural richness and diversity of the workforce, are all key developments for the protection of worker health.

FIGURE NOTES

Figure 9.1: Information about industry was unavailable for 1 occupational fatality. The Government sector includes occupational fatalities sustained by public sector workers regardless of industry. Data not presented for two industry sectors with fewer than 5 fatalities (Mining and Information). Rates calculated using MA employment estimates from the Current Population Survey, Bureau of Labor Statistics, US Dept. of Labor.

Figure 9.2: Not included in the figure were event/exposure sub-categories with <3 fatal injuries, and 1 fatality resulting from a bodily motion.

Figure 9.3: Only private sector employers were sampled. In 2003, the survey was not conducted in Massachusetts (data missing).

Figure 9.4: Only private sector employers were sampled.

Figure 9.5: N=19,485.

Figure 9.6: The number of sharps injuries from devices with unknown sharps injury protection features, which comprised <14% each year, are included in the calculation of rates but not included in the figure (annual counts).

Figure 9.7: Hollow-bore needles include but are not limited to hypodermic needles/syringes, winged steel needles, vacuum tube collections holder/needle, and IV stylets.

Figure 9.8: US rate for 2000-01 estimated from 13 Surveillance Epidemiology and End Results (SEER) Program cancer registries. US rate for 2002-05 estimated from 42 North American Association of Central Cancer Registries. Rates age-adjusted to the 2000 standard population.

Figure 9.9: Rates calculated using MA employment estimates from the Current Population Survey, Bureau of Labor Statistics, US Dept. of Labor.

Figure 9.10: Industry coded using the North American Industry Classification System, 1997. N=1,252.

Figure 9.11: Permanent effects include anticipated permanent pain, limited sensation or loss of movement. N=174.

Figure 9.13: Rates calculated using MA employment estimates from the Current Population Survey, Bureau of Labor Statistics, US Dept. of Labor.

Figure 9.14: Primary payer of workers' compensation used to identify work-related injuries.

Figure 9.15: The federal Occupational Safety and Health Act (legislation which created OSHA) and state Workers' Compensation law provide important rights, benefits, and protections to workers.

ENDNOTES

1 The work of the Occupational Health Surveillance Program is funded largely through Cooperative Agreements with the Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health (NIOSH). Some funding is also provided by the US Department of Labor, Bureau of Labor Statistics. OHSP surveillance reports and educational materials can be found on the OHSP website: www.mass.gov/dph/ohsp.

2 MDPH, Occupational Health Surveillance Program. Fatal Occupational Injuries in Massachusetts, 2000-2007. 2008. Available at: http://www.mass.gov/Eeohhs2/docs/dph/ occupational_health/fatalities_2000_07.pdf.

3 US Department of Health and Human Services. Testimony on Commercial Fishing Vessel Safety before the Committee on Transportation and Infrastructure, Subcommittee on Coast Guard and Maritime Transportation, US House of Representatives, April 25, 2007. Available at: http://www.hhs.gov/asl/testify/2007/04/t20070425e.html. Accessed March 2009.

4 General Laws of Massachusetts, MGL Chapter 111 Section 53D. An Act Relative to Needlestick Injury Prevention.. Available at: http://www.mass.gov/legis/laws/seslaw00/sl000252.htm.

5 Code of Federal Regulations, 29 CFR 1910.1030. OSHA Bloodborne Pathogen Standard. Washington, D.C.: US Printing Office, Office of the Federal Register.

6 MDPH, Occupational Health Surveillance Program. Sharps Injuries among Hospital workers in Massachusetts Hospitals, 2006. Available at: http://www.mass.gov/Eeohhs2/docs/dph/occupational_health/injuries_hospital_2006.pdf.

7 MDPH, Asthma Prevention and Control Program. Burden of Asthma in Massachusetts. April 2009.

8 Code of Massachusetts Regulations. 105 CMR 300. Reportable diseases, surveillance, and isolation and quarantine requirements. Boston, MA: Massachusetts Department of Public Health.

9 Rosenman KD, Reilly MJ, Schill DP, et al. Cleaning products and work-related asthma. *J Occup Environ Med*. 2003;45:556-563.

10 Rosenman KD. Clean as a whistle, but what about that wheeze? *Am J Respir Crit Care Med*. 2007;176:731-732.

11 The annual numbers and rates of hospitalizations for or with pneumoconioses and of mesothelioma incident cases are included in the MDPH annual occupational health indicator reports available on the OHSP website and the Massachusetts Community Health Information Profile (MassCHIP).

12 US Department of Labor, Occupational Safety and Health Administration. Safety and Health Topics: Asbestos. Available at: http://www.osha.gov/SLTC/asbestos/index.html Accessed September 14, 2009.

13 US Department of Labor, Bureau of Labor Statistics and US Census Bureau. Current Population Survey. Washington, DC: US Bureau of Labor Statistics. Available at: http://www.bls.gov/cps/.

14 NIOSH (National Institute for Occupational Safety and Health). NIOSH Safety and Health Topic: Young Worker Safety and Health. Available at: http://www.cdc.gov/niosh/topics/youth. Accessed June 22, 2009.

15 Castillo D, Davis LK, Wegman DH. Special Populations in Occupational Health: Young Workers. In: Frumkin H, Pransky G, eds. *Occupational Medicine: State of*

the Art Reviews: Special Populations. Philadelphia, PA: Hanley and Belfus, Inc. 1999:14:519-536.
16 Brooks DR, Davis LK. Work-related injuries to Massachusetts teens, 1987-1990. *Am J Ind Med*. 1996:29:153-160.
17 General Laws of Massachusetts, Labor and Industries, Work by Women and Children. Chapter 149 Sections 56-105 (child labor laws).
18 See the OHSP January 2009 *Teens at Work* surveillance update for a description of the Massachusetts Youth Employment Safety Team available at http://www.mass.gov/ Eeohhs2/ docs/dph/occupational_health/teen_surveillance_update_09.pdf.
19 Siqueira CE, deLourenço C. Brazilians in Massachusetts: Migration, Identity, and Work. In: Torres A, ed. *Latinos in New England*. Philadelphia, PA: Temple University Press; 2006:187-201.
20 Sum A, Khatiwada I, Tobar P, Ampaw F, Palma S, Leiserson G. The Changing Face of Massachusetts. Boston, MA: Massachusetts Institute for a New Commonwealth and Center for Labor Market Studies of Northeastern University; 2005.
21 MDPH, Occupational Health Surveillance Program. Fatal Work-related Injuries Among Brazilians in Massachusetts, 1999-2007. 2008. Available at: http://www.mass.gov/Eeohhs2/docs/dph/occupational_health/brazilian_fatalities.pdf.
22 MDPH, Occupational Health Surveillance Program. Inpatient Hospitalizations for Work-Related Injuries and Illnesses in Massachusetts, 1996-2000. 2005. Available at: http://www.mass.gov/Eeohhs2/docs/dph/occupational_health/ hospitalization_report_05.pdf.
23 Findings based on OHSP analysis of statewide data on emergency department visits for years 2003-2005. See OHSP January 2009 *Teens at Work* surveillance update available at http://www.mass.gov/ Eeohhs2/docs/dph/occupational_health/teen_surveillance_update_09.pdf.
24 MDPH, Division of Wellness. Creating a Culture of Health: Organizational Approaches to Promoting and Protecting Employee Health: Results from the 2008 Massachusetts Worksite Health Improvement Survey. 2009.
25 Draft Proposed Safety and Health Program Rule: 29 CFR 1900.1. Docket No. S&H-0027. Available at: http://www.osha.gov/SLTC/safetyhealth/nshp.html.
26 Sorensen G, Stoddard AM, LaMontagne AD, et.al. A comprehensive worksite cancer prevention intervention: behavior change results from a randomized controlled trial. *J Public Health Policy*. 2003;24:5-25.
27 Davis L, Souza K. Integrating Occupational Health with Mainstream Public Health in Massachusetts: An Approach to Intervention. *Public Health Reports*. 2009:124(S1):5-14.