CHAPTER 5
Injury and Violence Prevention

Injury and Violence Prevention

This chapter provides information about injury and violence issues and prevention in the Commonwealth of Massachusetts and related trends, disparities and resources.

This chapter addresses the following topics:

- Unintentional Injury
- Occupational Injury
- Suicide
- Violence
- Selected Resources, Services and Programs

Chapter Data Highlights

- Massachusetts has the lowest rate of unintentional child injury deaths in the US
- In 2015, half of teens continued to play in a sporting event after reporting concussion symptoms
- From 2006 to 2014, death by falls for older adults increased 41%
- Motor vehicle traffic injuries are the leading cause of death for people 15 to 24
- From 2009-2013, Hispanic workers were 1.7 times as likely to be hospitalized for work-related injuries as White non-Hispanic workers
- Nearly 25% of drivers still don't wear seat belts
- In 2014, suicide was the second leading cause of death among teens and young adults
- In 2014, men died by suicide 3.6 times more often than women
- The homicide rate among Black non-Hispanic males is 30 times higher than that for White non-Hispanic males
- Nearly one in three women and one in five men in Massachusetts reported experiencing rape, physical violence and/or stalking by an intimate partner during their lifetimes

Overview

Injuries are the leading cause of death for people aged one to 44 and are the third leading cause of death for all ages combined. Injuries, both unintentional and intentional (self-inflicted or violent) result in more deaths of children and youth than all other causes combined. Unintentional injuries can be fatal or non-fatal and result from a variety of causes including motor vehicle crashes, drowning, fires, poisonings, suffocation and falls. Occupational injuries occur during the course of paid employment and can results from unintentional or intentional actions. Self-inflicted injury can include completed suicides as well as non-fatal attempts or other non-suicidal self-inflicted injury. Violence, too, can be fatal or nonfatal: it can also be interpersonal or collective. Interpersonal violence is often categorized by the intended victim (youth violence, child maltreatment, domestic/intimate partner violence), the form of the violence (sexual violence, gun violence) or the context in which it occurs (community violence, gang violence). Collective violence can occur on a large scale due to conflicts between groups or countries (such as war) but can also include other less explicit forms of violence (such as repression and neglect). Unequal access to power and resources (such as wealth), along with social inequality, can lead to collective violence.

The patterns of unintentional injury, suicide and self-inflicted injury, and violence vary from one another and are all influenced by social determinants of health as well as demographics such as race, gender identity, sexual orientation, age, and disability status.

Unintentional Injury

Unintentional injuries are the leading cause of death among Massachusetts residents ages one to 44 and the third leading cause of death among all ages. In 2014, more than 670,000 non-fatal unintentional injuries were treated at an acute care hospital. Each year, unintentional injury deaths in Massachusetts generate lifetime costs of $3 billion, and non-fatal injuries generate a cost of $9.5 billion including $3.5 billion in medical care alone.

Unintentional injuries occur across the entire lifespan and affect every race and ethnicity, geographic area, and gender. But certain populations are at greater risk for different injury causes. For example, between 2010 and 2014, the leading cause of unintentional injury death among young children (aged 1-4 and 10-14) was drowning; for adults over the age of 65, the leading cause was falls. With few exceptions, males have higher rates of unintentional injury deaths and non-fatal injuries than females. Racial and ethnic disparities exist, for example, in motor vehicle injuries among young drivers, unintentional injuries to children under age six, and for concussive symptoms related to sports activity in middle and high schools.

Childhood Injuries

Children are at increased risk for certain injury causes such as falls, sports-related injuries, and drownings as their motor skills, brain, and executive functioning capabilities are still developing. While death is the most tragic injury outcome, deaths account for a very small percentage of the overall burden of injury among children. In 2014, there were more than 140,000 non-fatal unintentional injuries to children under 18 years of age treated in a Massachusetts acute care hospital or emergency department.

Trends/Disparities

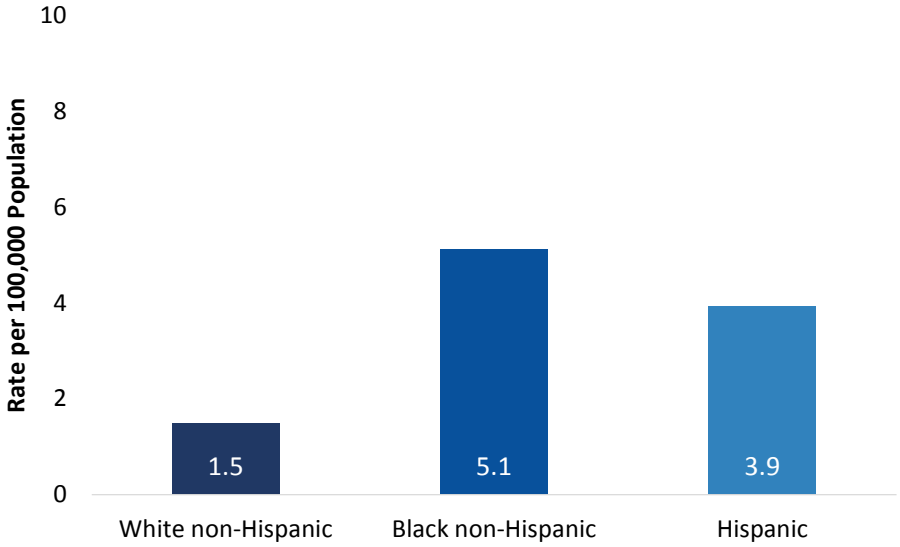
Massachusetts has had the lowest rate of unintentional child injury deaths in the US for nearly a decade[203], and the rate of unintentional injury deaths of Massachusetts children under 18 also has been declining. Despite this achievement, unintentional injuries continue to be a leading cause of death among Massachusetts children ages one to 14.

The unintentional injury death rate among Massachusetts children under 18 years of age declined significantly between 2000 and 2015 (2000: 6.1 per 100,000 population; 2015: 2.0 per 100,000 population).[204] The largest decline occurred between 2005 and 2012 with an average decrease of 11.9% per year.[205]

The leading causes of death among children vary by age group and race/ethnicity. Among Massachusetts children under 18 years of age, children ages one to four had the highest rate of unintentional injury deaths. Drowning was the leading cause of death (37%) for this age group. Infants under one year of age commonly drown in wading pools and bathtubs, while children ages one to four years most often drown in backyard swimming pools. As shown in **Figure 5.1**, Black non-Hispanic and Hispanic children under six years of age had higher rates of injury deaths than White non-Hispanic children.

Figure 5.1

Five-Year Average Annual Unintentional Injury Death Rate among Children Under 6, By Race/Ethnicity, Massachusetts, 2011-2015



SOURCE: WISQARS (WEB-BASED INJURY STATISTICS QUERY AND REPORTING SYSTEM), VITAL STATISTICS SYSTEM, NATIONAL CENTER FOR INJURY PREVENTION AND CONTROL, CENTERS FOR DISEASE CONTROL AND PREVENTION

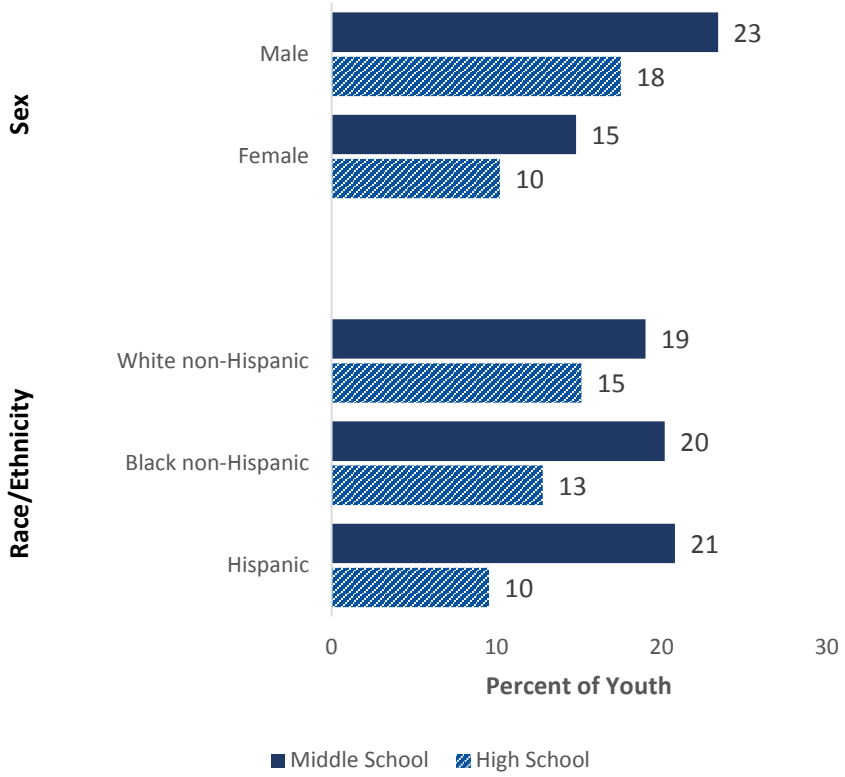
The leading causes of non-fatal injury among children also vary by age group, sex and, race/ethnicity. Among non-fatal unintentional injuries in 2014, falling was the leading cause of injury among children five or younger.[206] Males in this age group account for a slightly higher percentage of unintentional injuries than females (males, 57% of injury-related emergency department visits, 55% of injury-related hospitalizations, and 57% of injury deaths).[207,208,209]

For children ten to 17 years of age, the leading cause of non-fatal unintentional injury was being struck-by or against an object**.**[210,211,212] Of these injuries, 56% were sports-related, of which 22% were associated with a concussion/traumatic brain injury (TBI).[213,214,215]

The percentage of middle and high school students who continued to play after reporting symptoms of a concussion while engaged in sports was 50% in 2015.[216] As shown in **Figure 5.2**, disparities by sex and race/ethnicity exist among students who reported having symptoms of a sports-related concussion during the last 12 months.[217] In particular, reporting of such symptoms was higher among males.

Figure 5.2

Percentage of Middle School and High School Sports Players who Reported Having Symptoms* of a Sports-Related Concussion, by Sex and Race/Ethnicity, Massachusetts, 2015



NOTE: *SYMPTOMS INCLUDE BEING "KNOCKED OUT," MEMORY PROBLEMS, DOUBLE OR BLURRY VISION, HEADACHES, "PRESSURE" IN THE HEAD, NAUSEA OR VOMITING. [B.] STATISTICAL SIGNIFICANCE IS SET AT THE 95% CONFIDENCE LEVEL.

Older Adult Falls

Fall injuries are a serious and increasing health problem among Massachusetts adults aged 65 and older. Falls are the leading cause of unintentional injury death for men and women 65 and older in Massachusetts. In 2014, there were 528 deaths and 71,078 non-fatal injuries treated within Massachusetts acute care hospitals among adults 65 and older due to falls.

Older adults are at increased risk for a fall-related injury due to common characteristics of aging, such as decreased strength, poor balance, impaired vision, osteoporosis, dementia, multiple medications, and illnesses. [218,219] Falls among

older adults can further impact physical function and mental well-being by producing feelings of social isolation, depression, and helplessness. In addition, prior falls and safety concerns may reduce the willingness of older adults to stay active in their community. Lifetime estimated costs of unintentional fall injuries (fatal and non-fatal) to Massachusetts residents 65 years or older in 2014 is estimated at $1.9 billion.[220]

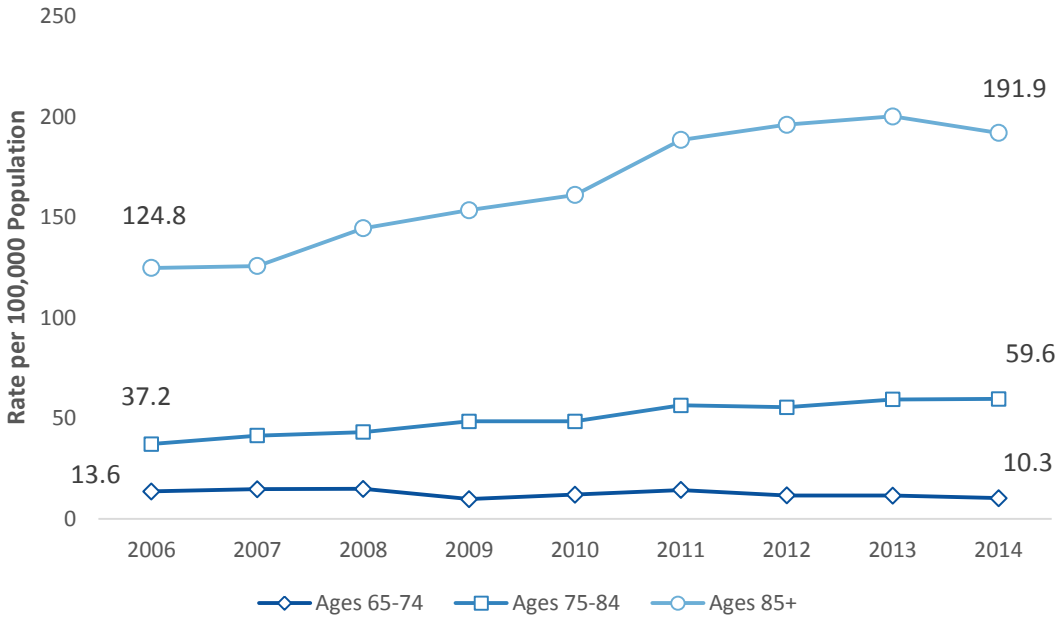
Trends/Disparities

From 2006 to 2014, the age-specific rate of fall-related deaths for Massachusetts adults 65 and older increased 41% (2006: 35.3 per 100,000 population; 2014: 49.7 per 100,000 population).

As shown in the **Figure 5.3**, fall-related death rates during this time period increased 60.2% among those 75-84 and 53.8% among adults 85 years or older. Persons ages 85 and older had the highest rates of fatal and non-fatal fall injuries. The fall death rate for this age group in 2014 was 18.6 times the rate for those aged 65-74. Of fall-related deaths among older adults in 2014, 56% included a TBI.

Figure 5.3

Age-Specific Rate of Fall-Related Deaths by Age Group, Ages 65 and Older, Massachusetts, 2006-2014



In 2014, more than 70,000 adults 65 years or older were treated at an acute care hospital for fall-related injuries.[221,222,223] Approximately, seven out of ten (71%) fall-related hospitalizations among adults 65 years of age or older required additional care upon discharge through a skilled nursing facility or rehabilitation facility.[224]

Men have higher rates of fall-related deaths than women (2014: 62.7 per 100,000 population versus 41.5 per 100,000 population), but women have higher rates for non-fatal hospital stays and emergency department visits.[225,226,227] White non-Hispanic residents had the highest rates of fall deaths (51 per 100,000 population), fall-related hospital stays, and emergency department visits.[228,229,230] Asian and Pacific Islander residents had the second highest rate of fall deaths (44.4 per 100,000 population) but the lowest rates of fall-related hospital stays and emergency department visits.[231,232,233]

Older adults were more likely to report falls and fall-related injuries in the past 12 months if they also reported poor mental health and depression, diabetes, disability, coronary artery disease, chronic obstructive pulmonary disease (COPD), heart attack, or stroke.

Motor-Vehicle Injuries

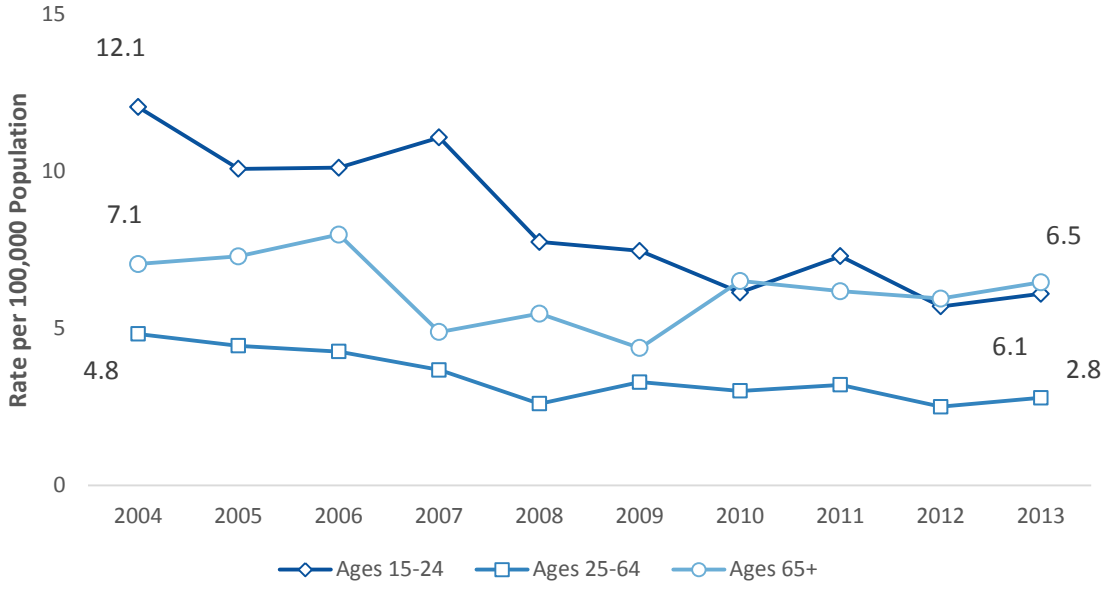
Motor vehicle traffic-related injuries include injuries to vehicle occupants, motorcyclists, pedestrians, and bicyclists struck by a motor vehicle. Some populations are at higher risk of motor vehicle injuries.[234] For example, between 2010 and 2014, motor vehicle traffic injuries were the leading cause of death for Massachusetts residents 15 to 24 years of age. Pedestrians have a lower rate of death and non-fatal injury than motor vehicle occupants, but are vulnerable to more severe injuries. Motor vehicle traffic-related non-fatal injury rates are higher among Black non-Hispanic and Hispanic residents than White non-Hispanic residents and among males relative to females.

Trends/Disparities

Between 2004 and 2013, the age-adjusted rate of motor vehicle traffic-related occupant deaths declined by 38%. During that period, motor vehicle traffic-related occupant death rates decreased by 49% among persons 15-24 years of age and by 42% among adults 25-64 years of age **(Figure 5.4)**. From 2004 to 2009, motor vehicle traffic-related occupant death rates were highest among young people 15-24 years of age. Over the same time period (2004 to 2013), hospitalizations for non-fatal unintentional motor vehicle traffic occupant injuries declined 42% for the total population and 65% among persons 15-24 years of age.[235,236,]

Figure 5.4

Traffic-Related Motor Vehicle Occupant Death Rates by Age Group, Massachusetts, 2004-2013

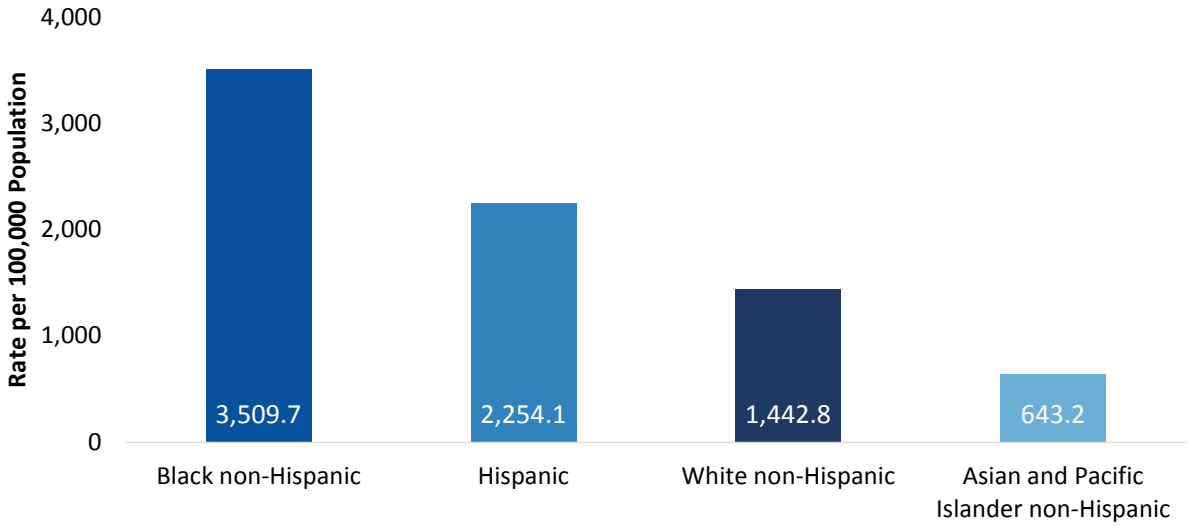


Young people (15-24 years of age) who live in urban areas are at increased risk of non-fatal motor vehicle traffic-related injuries. In 2015, nearly two thirds (64%) of non-fatal motor vehicle crash injuries to this age group occurred in urban areas and 35% occurred in suburban areas.[237,238,239] As shown in **Figure 5.5**, in 2015 youth and young adults (ages 15-24) who were Black non-Hispanic had non-fatal motor vehicle crash injury rates that were 2.4 times greater that of White

non-Hispanics (3,509.7 per 100,000 population versus 1,442.8 per 100,000 population, respectively) and 1.6 times greater than that for Hispanics in this age group (2,254.1 per 100,000 population). This rate for Hispanic young people was 1.6 times that for White non-Hispanics (2,254.1 per 100,000 population versus 1,442.8 per 100,000 population).[240]

Figure 5.5

Rate of Non-Fatal Motor Vehicle Injuries among Persons 15-24 Years of Age, by Race/Ethnicity, Massachusetts, Federal Fiscal Year 2015



SOURCE: CHIA, MA INPATIENT HOSPITAL DISCHARGE DATABASE, AND MA OUTPATIENT EMERGENCY DEPARTMENT DISCHARGE DATABASE

NOTE: *DATA ARE FOR FEDERAL FISCAL YEAR 2015 (OCTOBER 1, 2014 - SEPTEMBER 30, 2015).

Several factors shape risk of motor vehicle traffic-related injury, including night-time driving, driving inexperience, distractions such as texting or talking on the phone, and substance use. Several important examples are listed below:

- Observational surveys indicate that among Massachusetts drivers, cell phone use averaged 7% in 2016, but disparities exist by age.[241] Compared to all other age groups, drivers 16-19 years of age had the highest prevalence of combined cell phone use (9.3%), with 6% using handheld cell phones and 3.3% using their cell phone to text when driving.
- Seat belt use reduces the number *and* severity of motor vehicle injuries.[242] In 2016, observed seatbelt use in Massachusetts was 78%, among the lowest seatbelt use rates in the US.
- Approximately one-third of motor vehicle crash deaths in Massachusetts involve a driver who had been drinking. Although the total number of motor vehicle-occupant deaths in the state has decreased by 43% in the past decade, the percentage of motor vehicle deaths from an alcohol-impaired driver has remained fairly consistent over this time period (2001: 38%; 2010: 36%).

Occupational Injury

Occupational injuries are injuries that occur during the course of paid employment. They include acute traumatic injuries such as fractures, burns and amputations as well as musculoskeletal disorders due to overexertion and chronic wear and tear. Suicides and homicides that occur in the workplace are also included. Occupational injuries are common and costly, exacting a toll not only on the affected workers and their families but on employers and society at large as well. Nationally, occupational injuries have been estimated to cost $186 billion annually.

The risk of fatal occupational injury increases with age, while younger workers are at higher risk of non-fatal injury. Low wage immigrant and minority workers are at higher risk of both fatal and non-fatal injury, largely because they are more likely to be employed in high risk jobs.[243] Other factors also contribute to this disparity in risk including language and cultural barriers, discrimination or fear of discrimination and economic insecurity that can make workers hesitant to speak up about hazards, less health and safety training, and limited access to occupational health and safety resources.

Occupational injuries are preventable. Under state and federal laws, employers have a responsibility to provide all employees a place of employment that is free from recognized hazards that may cause death or serious physical harm and to comply with all relevant safety and health standards. [244,245]

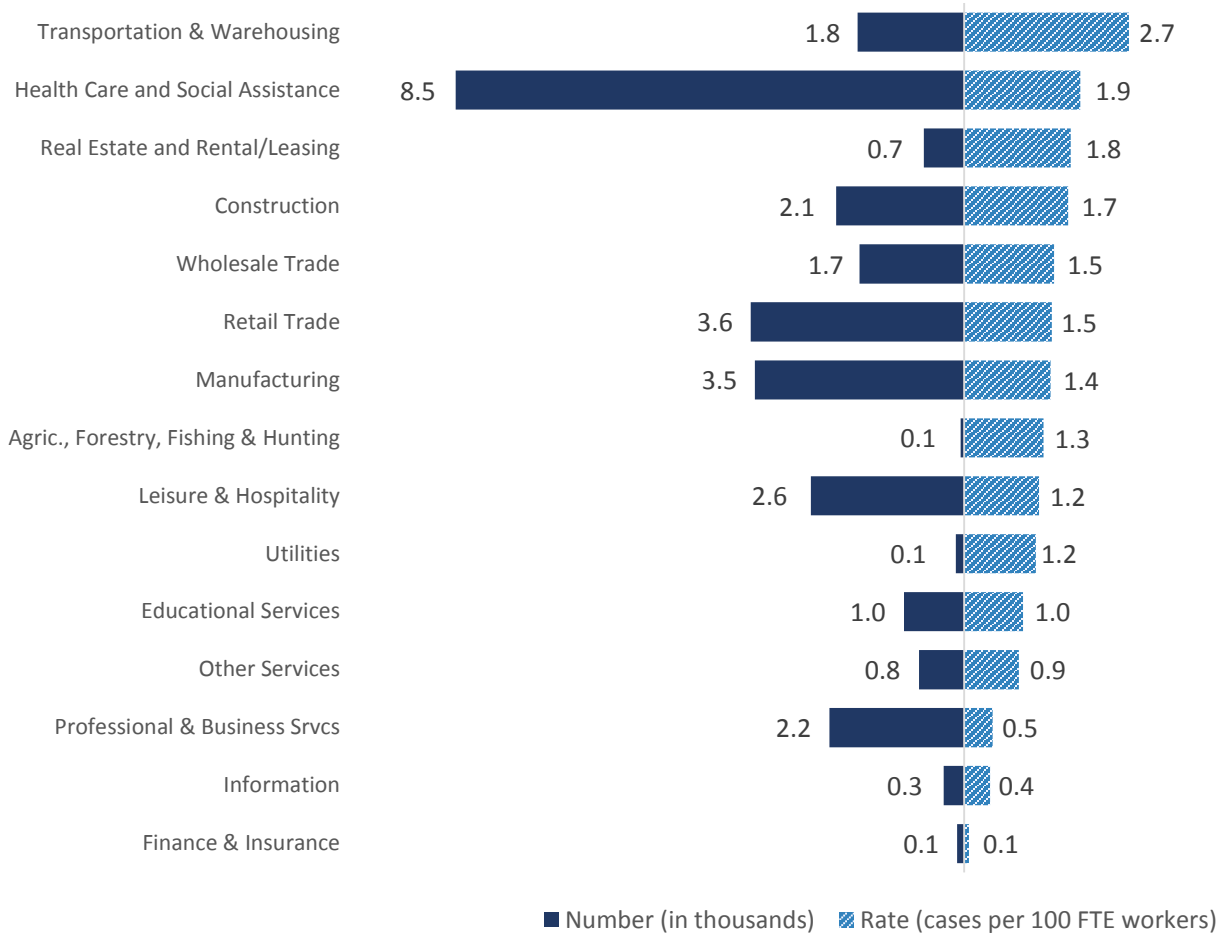
Trends/Disparities

According to employer reports, in 2015 one out of every 37 full-time workers in the private sector in Massachusetts, or approximately 65,300 workers, sustained a non-fatal injury at work that required more than first aid. Approximately 45% of these injuries were serious enough that the workers missed at least one day of work. While the rate of these more serious injuries in Massachusetts declined from 2006 to 2015, it remained consistently higher than the rate for the nation as a whole.[246]

In 2015, workers employed in transportation and warehousing were at highest risk for non-fatal occupational injury, with almost three out of every 100 full-time workers experiencing an injury resulting in one or more days of lost work. The health care and social assistance sector generated the highest number of workplace injuries in 2015, with approximately 8,500 employees experiencing injuries resulting in lost time. The injury rate for the health care and social assistance sector in Massachusetts (1.9 per 100 workers) was also high compared to injury rates for other industries in Massachusetts and exceeded the national rate for the sector (1.4 per 100 workers).[247] Musculoskeletal injuries are one of the most common injuries experienced by health care workers, many of which occur in the course of lifting or moving patients. In 2010, an estimated 1,000 Massachusetts hospital workers suffered musculoskeletal injuries associated with patient handling.

Figure 5.6

Number and Rate of Non-Fatal Occupational Injuries and Illnesses Resulting in Lost Workdays, by Industry Sector, Massachusetts, 2015



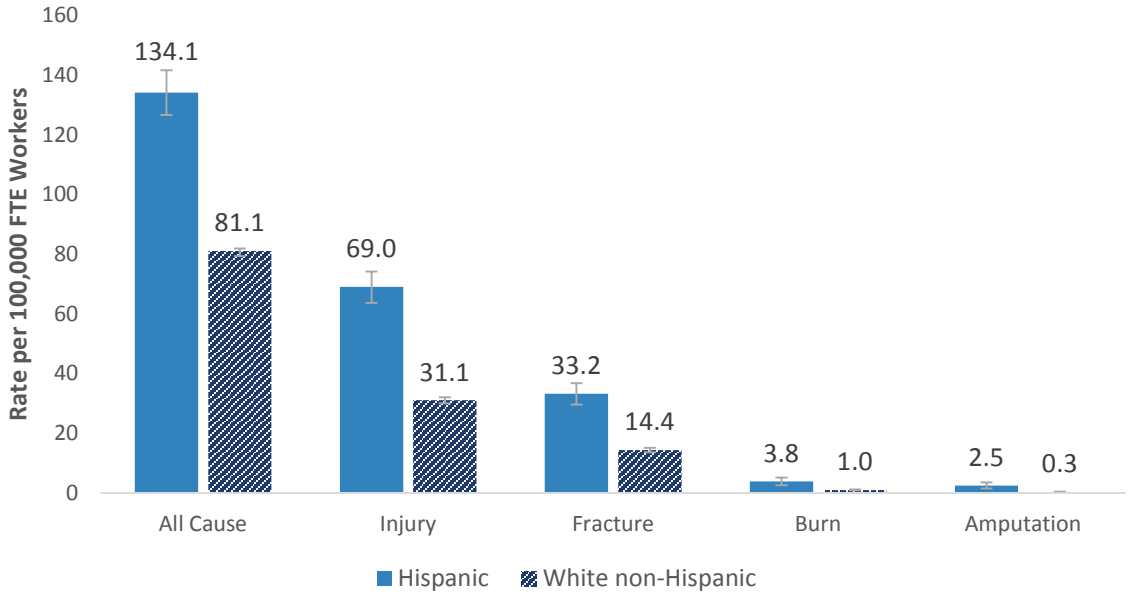
SOURCE: US DEPARTMENT OF LABOR, BUREAU OF LABOR STATISTICS, SURVEY OF OCCUPATIONAL INJURIES AND ILLNESSES (SOII)

NOTES: THE MINING INDUSTRY REPORTED 20 CASES IN 2015.THESE CASES WERE EXCLUDED FROM THE FIGURE BECAUSE OF LOW NUMBER

The statewide rate is 1.6 non-fatal occupational injuries and illnesses resulting in lost workdays per 100 full time workers. From 2009 to 2013, Hispanic workers had significantly higher rates of hospitalization for work-related conditions, including many serious injuries such as amputations, burns, and fractures compared to their White, non-Hispanic counterparts.

Figure 5.7

Rate of Hospitalization for Select Work-Related Injuries, Hispanics and White, Non-Hispanics, Residents Ages 16-64, Massachusetts, 2009-2013



NUMERATOR SOURCE: CHIA HOSPITAL DISCHARGE DATASET CALENDAR YEAR 2009-2013; DENOMINATOR SOURCE: ESTIMATED FROM THE AMERICAN COMMUNITY SURVEY 5-YEAR FILE 2009-2013.

NOTE: 5-YEAR AVERAGE ANNUAL RATE IS EXPRESSED PER 100,000 FULL TIME EQUIVALENT WORKERS.

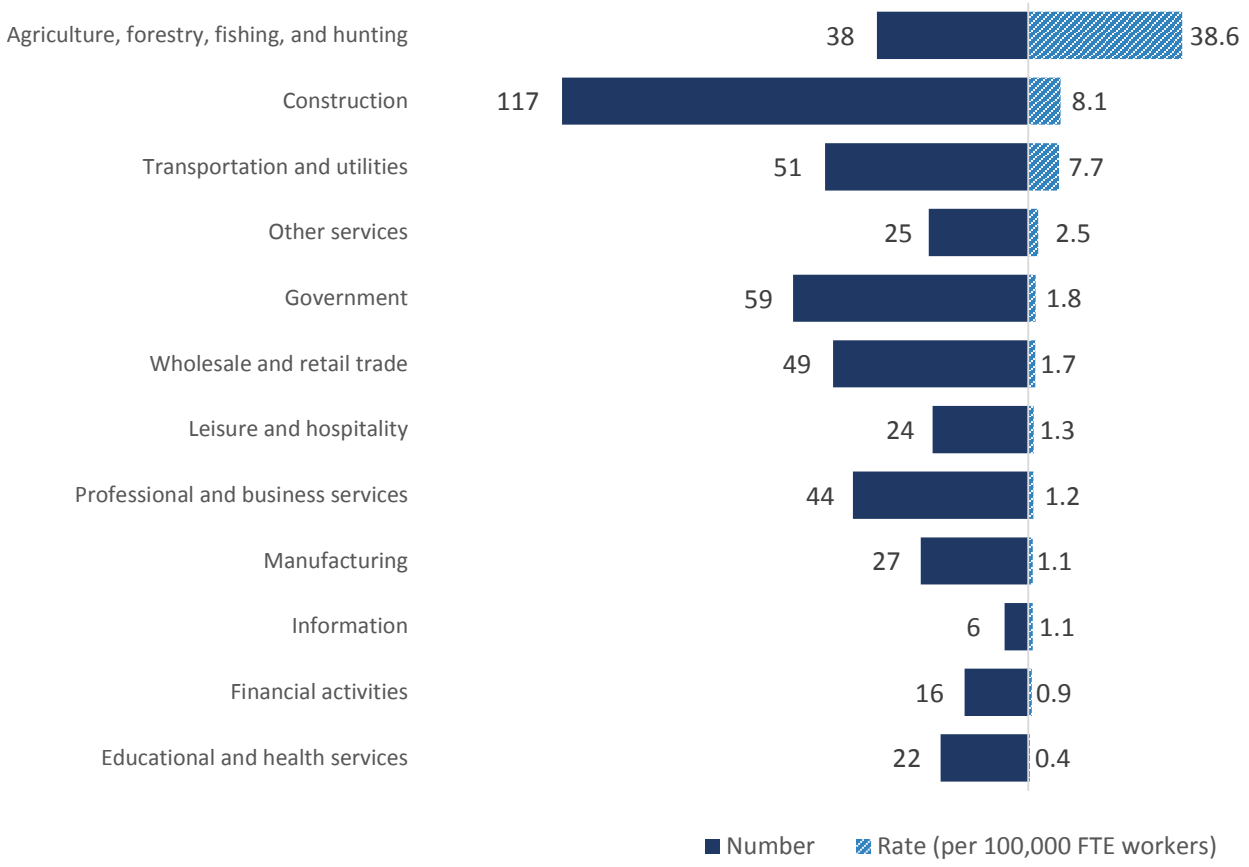
Young workers are also at elevated risk of occupational injury. From 2010 to 2014, teen workers aged 15-17 (1.8 per 100 full-time workers) and young adults 18 to 24 (2.6 per 100 full-time workers) experienced higher rates of emergency department visits for work-related injuries than workers 25 to 64 years of age (1.3 per 100 full-time workers). The rate for young adults was more than twice that for older workers.

From 2008 to 2015, 481 workers were fatally injured at work, amounting to an average of 60 deaths per year or approximately one death each week. [248] Over this period, the average annual fatal occupational injury rate in Massachusetts was 2.0 deaths per 100,000 full-time workers. This rate remained relatively stable over this time period. Massachusetts' fatal occupational injury rate was half the US rate, which is partially attributable to differences in industries concentrated in Massachusetts relative to the nation as a whole. A smaller percentage of Massachusetts workers are employed in higher risk industries.[249,250]

In Massachusetts, the agriculture, forestry, fishing, and hunting sector stands out as an exceptionally high-risk industry sector with 38.6 deaths per 100,000 full-time workers **(Figure 5.6)**. The majority (71%) of the workers killed in this sector were employed in commercial fishing. The construction sector had the highest fatality count, with 117 deaths, and the second highest fatal occupational injury rate (8.1 deaths per 100,000 full-time workers).

Figure 5.8

Number and Rate of Fatal Occupational Injuries by Industry Sector, Massachusetts, 2008-2015



NOTES: NUMERATOR SOURCE: OCCUPATIONAL HEALTH SURVEILLANCE PROGRAM, MA FACE AND CFOI, DENOMINATOR SOURCE: BLS CURRENT POPULATION SURVEY WORKFORCE ESTIMATES

From 2008 to 2015, falls from heights such as from ladders and roofs were the most common fatal events with the majority occurring in the construction sector. Falls have consistently been the leading fatal event in Massachusetts, accounting for approximately one-quarter (24%) of all fatal occupational injuries.

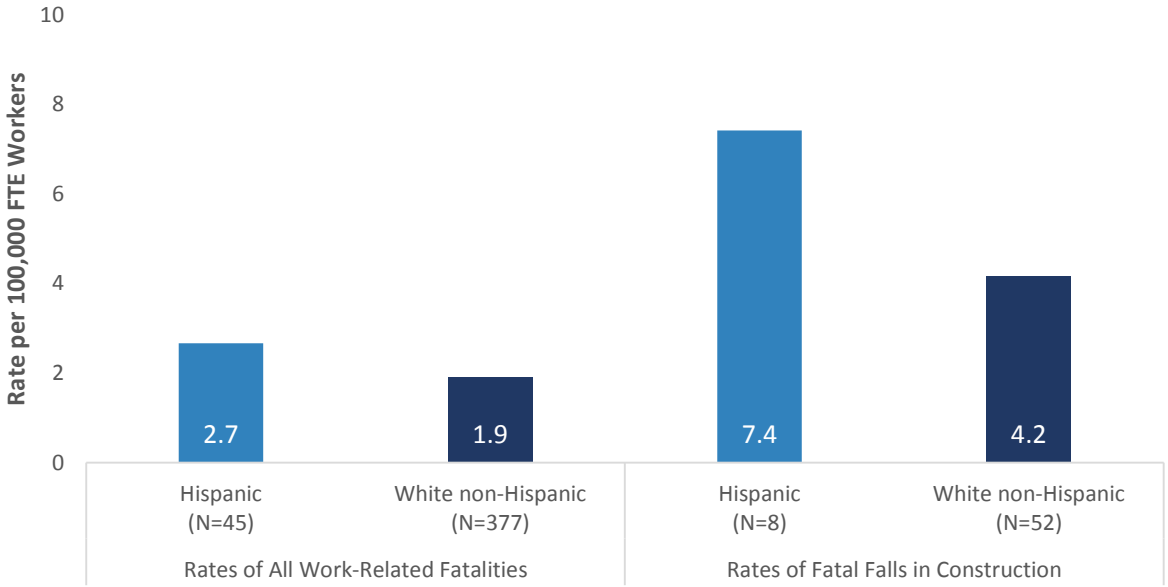
In recent years, the number of suicides at work has increased, consistent with the overall increase in suicides in Massachusetts. After falls, suicides (15%) have become the second leading fatal occupational injury, followed by motor vehicle crashes (12%). Suicides are discussed in a later section in this chapter.

Hispanic workers had an overall higher risk of being killed on the job in Massachusetts. In the construction industry, a high-risk sector for all workers, the rate of fatal falls among Hispanic construction workers (7.4 per 100,000 full-time workers) was 1.8 times that for White non-Hispanic workers (4.2 per 100,000 full-time workers). Not only are Hispanic workers more likely to be employed in high risk industries, they are also more likely to be working in jobs within industries such as construction in which hazards are less likely to be controlled.[251]

Approximately one in five workers fatally injured at work in Massachusetts was born outside of the US, and the fatality rate among foreign-born workers was higher than the rate for US-born workers.[252,253] The fatality rate for workers 65 years of age or older was more than three times higher than the rate for workers under 35 years of age.

Figure 5.9

Rates of Fatal Occupational Injuries, Hispanic and White non-Hispanic Workers, Massachusetts, 2008-2015



NOTE: NUMERATOR SOURCE: OCCUPATIONAL HEALTH SURVEILLANCE PROGRAM, MA FACE AND CFOI, 2008-2015
DENOMINATOR SOURCE: BLS CURRENT POPULATION SURVEY WORKFORCE ESTIMATES, 2008-2015.
NOTE: RATE SIGNIFICANTLY HIGHER THAN RATE FOR WHITE NON-HISPANIC

Suicide

Suicide is the 10th leading cause of death in the US.[254] In 2014, suicide was the second leading cause of death in individuals 15-29 years of age nationally,[255] and the second leading cause of death in individuals 15-24 years of age in the Commonwealth[256]. In the same year, the Commonwealth ranked the third lowest in suicide incidence among the 50 states and the District of Columbia. The age-adjusted suicide rate in Massachusetts was also below the average for the total US population in 2014 (MA: 9.0 per 100,000 population; US: 12.9 per 100,000 population).[257]

> "In order to reduce the number of suicides we must increase the knowledge and understanding of suicide warning signs, risk and protective factors through a public health perspective."
>
> Key Informant Interviewee

There are multiple factors that contribute to an individual's risk for suicidal ideation. These risk factors may include a history of mental illness, alcohol and/or drug abuse, and feeling alone.

There are several social determinants of health that contribute to suicidal ideation. Economic and housing instability can add tremendous stress, increasing the risk of depression, anxiety, substance abuse, and suicidal thoughts and behavior.[258] The built environment can also shape risk of suicidal thoughts and behavior. Access to safe, shared spaces

and common areas for people to interact, such as parks, community gardens, and community centers, is linked with decreased feelings of isolation and improved mental health and wellbeing.[259] Exposure to violence in the home and community increases the risk of poor mental health, depression, and suicidality.[260]

Trends/Disparities

In 2014, Massachusetts recorded 608 suicides, which is two times higher than the number of motor vehicle traffic-related deaths and 4 times higher than homicide deaths. Suicide rates in Massachusetts have increased an average of 3.1% per year between 2004 and 2014, nearly twice the average annual increase across the US since 2004 (1.8% increase per year).[261] From 2004 to 2014, the total increase in the suicide rate was 32.4% (2004: 6.8 per 100,000 population; 2014: 9.0 per 100,000 population).

Groups at high risk of suicide in Massachusetts include middle-age White males, LGBTQ youth, and individuals with mental health issues. White non-Hispanic males accounted for more than 75% of suicides in 2015.[262] While more males die from suicide than females, females are more likely than males to have suicidal thoughts and to attempt suicide.[263]

In 2014, the majority of suicides were among individuals 45-64 years of age (44%), reflecting a 4.1% average annual increase in the suicide rate for this age group from 2004 to 2014.

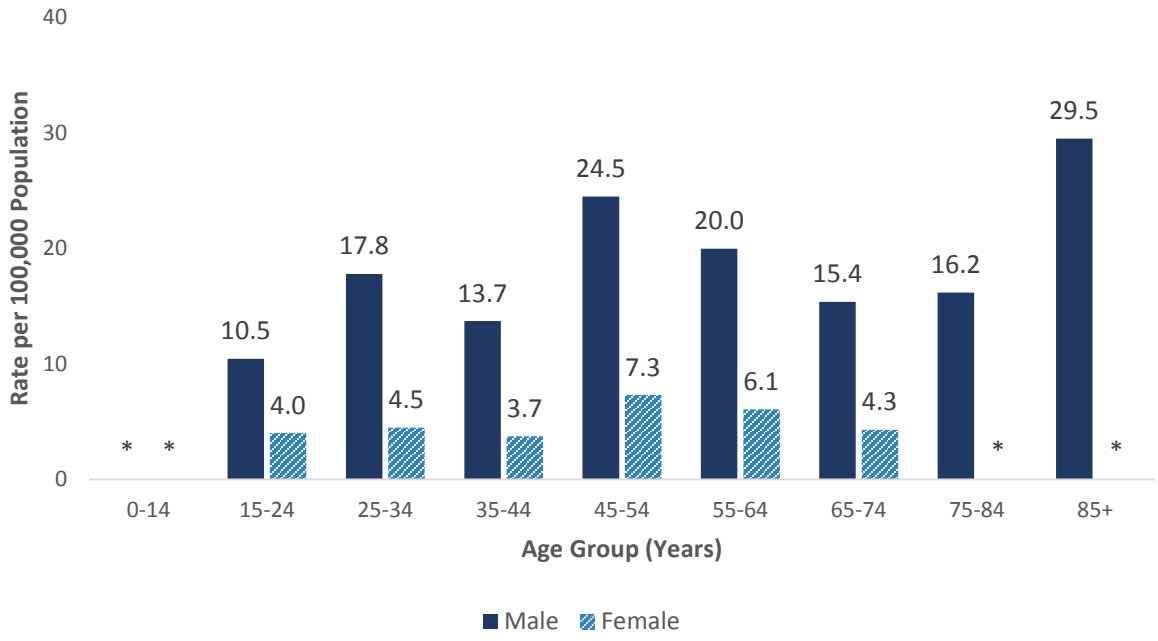
The majority of suicides in Massachusetts (77%) occur among men. In 2014, the suicide rate for men was 3.6 times higher than that for women (Males: 14.3 per 100,000 population; Females: 4.0 per 100,000 population). However, while there was an increase in the suicide rate for both sexes from 2004 to 2014, there was a sharper increase for women (48% increase) relative to males (29% increase). The highest male suicide rate was among individuals 85 years of age or older (29.5 per 100,000 population). Among women, the highest suicide rate was among individuals 45-54 years of age (7.3 per 100,000 population).While the suicide rate remains higher for men than women, the suicide attempt rate was 1.7 times higher among women than men (women: 120 per 100,000 population; men: 70 per 100,000 population).

For 2010 to 2014, the average annual age-adjusted suicide rate was highest among White non-Hispanic males (15.3 per 100,000 population) and White non-Hispanic females (4.6 per 100,000 population) compared to Black non-Hispanic, Hispanic, and Asian/Pacific Islander males and females **(Figure 5.11)**.

The circumstances associated with suicide deaths in 2014 varied by age group. A current mental health issue (60%), history of treatment for mental illness (49%), and current treatment for mental illness (44%) were most prevalent among those between 45 and 64 compared to the other age groups. The prevalence of alcohol and/or substance abuse problems (33%), history of suicide attempts (22%), and intimate partner problems (20%) was highest among persons aged 25-44 compared to thse in other age groups.

Figure 5.10

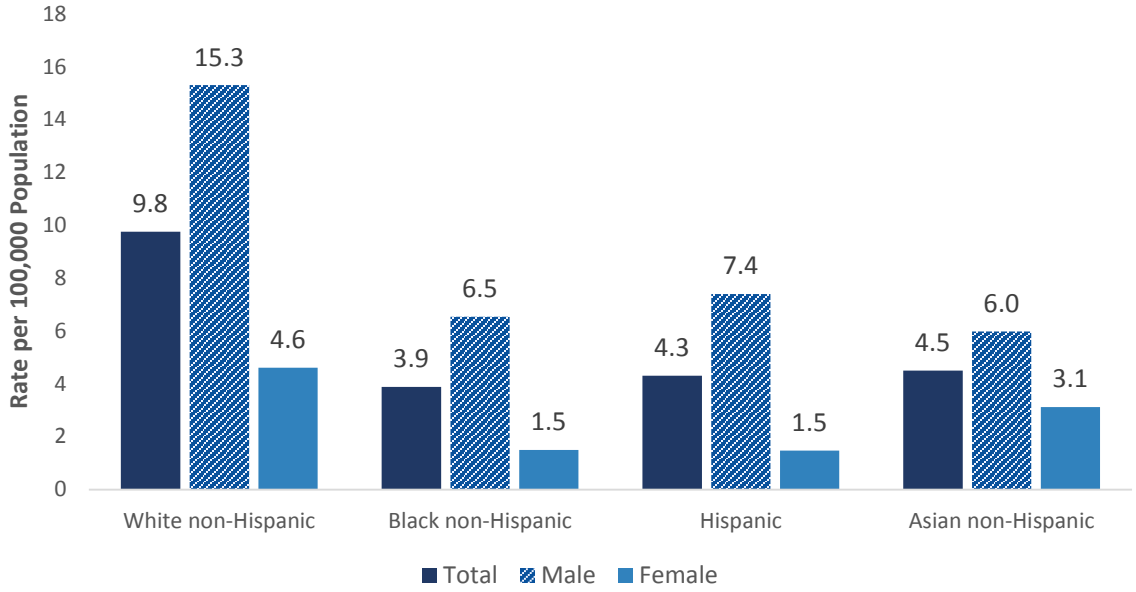
Suicide Rates by Sex and Age Group, Massachusetts, 2014 (N=608)



NOTE: * DENOTES INSUFFICIENT SAMPLE SIZE TO CALCULATE RATE

Figure 5.11

Average Annual Suicide Rates, by Sex and Race/Ethnicity, Massachusetts, 2010-2014 (N=3,006)



Violence

Violence is a serious public health issue in Massachusetts and in the US. On average, every week in 2014 in Massachusetts, three people died by homicide, more than 37 individuals spent time in the hospital, and more than 440 individuals visited an emergency department because of an injury from an assault.

Preventing violence is an essential aspect to achieving health equity. Due to historical and present-day social and economic inequalities, communities with lower socioeconomic status, communities of color, LGBTQ communities, people with disabilities, and other vulnerable populations such as young women, children, and the elderly, are at increased risk for experiencing violence across the lifespan.

Violence can be prevented through a public health approach even though this issue is often seen as a criminal justice matter. For example, violence can be avoided after modifying factors that lower the risk for someone to commit a violent act. Also, both short and long term effects of violence can be prevented or reduced through the care of the survivors.

Homicide and Assault

Homicide is the third leading cause of death for Massachusetts residents 15-24 years of age and the sixth leading cause of death for those 25-44 years of age. In 2014, there were 147 homicides in Massachusetts. In 2013, there were 2,106 non-fatal assault-related hospital stays and 24,511 non-fatal assault-related emergency department visits.

Homicides and assault-related injuries resulting in a non-fatal injury are an important public health problem for which evidence-based prevention strategies exist.

Trends/Disparities

Homicides in Massachusetts decreased from 175 to 155 between 2004 and 2013 (from 2.8 to 2.3 per 100,000 population). Homicide victimization rates fell 48% among young people ages 15-24 during this time period. The total number of hospital stays for non-fatal assault-related injuries increased from 2,075 in 2004 to a high of 2,531 in 2010, then decreased to 2,106 in 2013.

Rates of homicide and non-fatal assault-related injuries differ by gender, age group, race/ethnicity, and geographic area. Homicide and non-fatal assault-related injuries disproportionately affect Black non-Hispanic males 15-24 years of age and older. Similar to homicide victimization rates, youth and young adults from 15-24 years of age had the highest hospital stay rates for assault-related injuries, but were also the only age group in which rates decreased significantly, a 32% decline over this period. Adults ages 25-64 had the second highest hospital stay rates for assault-related injuries. Hospital stay rates were lowest in children ages 0-14 and adults ages 65+ and remained fairly stable over this time period.[264]

Figure 5.12

Homicide Victimization among Massachusetts Residents by Age Group, Federal Fiscal Year, 2004-2013*

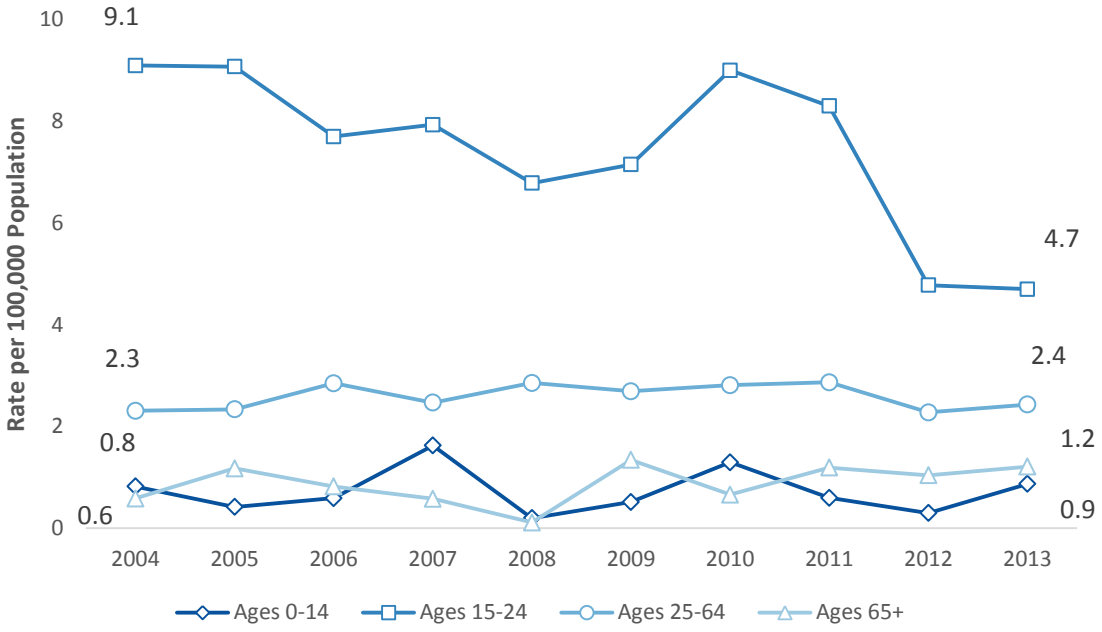
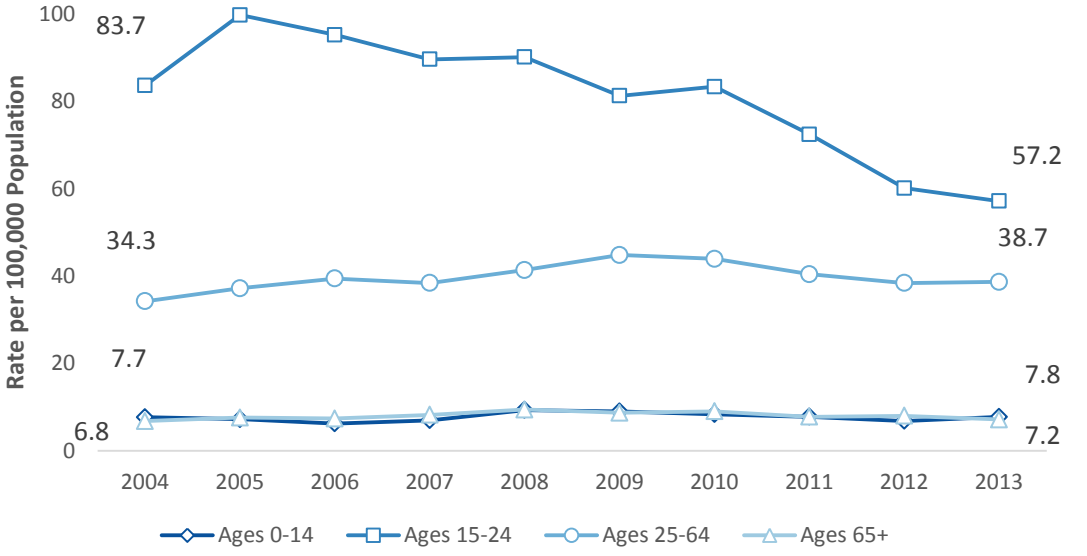


Figure 5.13

Hospital Stay Rates for Assault-Related Injuries by Age Group, Massachusetts, Federal Fiscal Year, 2004-2013*



*SOURCE FOR BOTH 5.12 AND 5.13: CHIA, MA INPATIENT HOSPITAL DISCHARGE, OUTPATIENT OBSERVATION STAY DATABASES

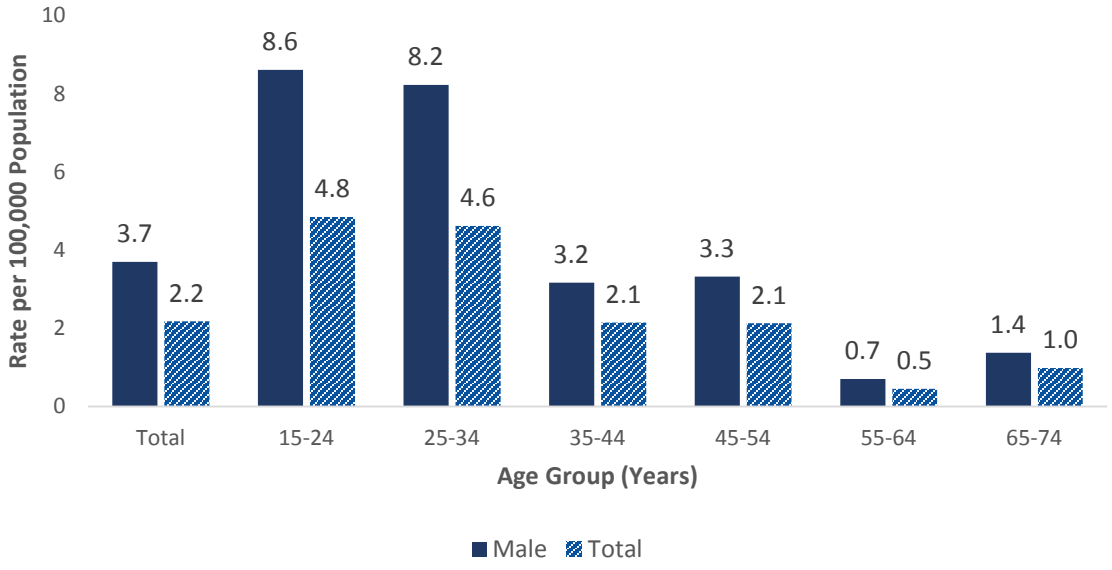
In 2014, homicide victimization rates among males were 5.3 times higher than among females (3.7 per 100,000 population versus 0.7 per 100,000 population). For the total population, the highest homicide victimization rate by age group was among persons 15-24 (4.8 per 100,000 population) and 25-34 year olds (4.6 per 100,000 population). The homicide victimization rate for both these age groups was twice the overall statewide rate of 2.2 per 100,000 population.

In 2013, rates of non-fatal assault-related hospital stays (50.4 per 100,000 population) for males were 3.8 times higher than among females (13.3 per 100,000 population). Male rates of non-fatal assault-related emergency department visits were 1.6 times higher than female rates (455.1 per 100,000 population versus 290.6 per 100,000 population). Non-fatal assault-related hospital stay rates were highest among Black non-Hispanic residents (103.4 per 100,000 population), followed by Hispanic residents (51.8 per 100,000 population) and White, non-Hispanics (19.9 per 100,000 population).

The highest male homicide victimization rates by age group were among 15-24 year olds (8.6 per 100,000 population) and 25-34 year olds (8.2 per 100,000 population). The rates for both of these age groups were over twice the male statewide rate of 3.7 per 100,000 population and 3.5 times higher than the overall statewide rate of 2.2 per 100,000 population.

Figure 5.14

Homicide Victimization Rates, Males Compared to Massachusetts Totals, 2014

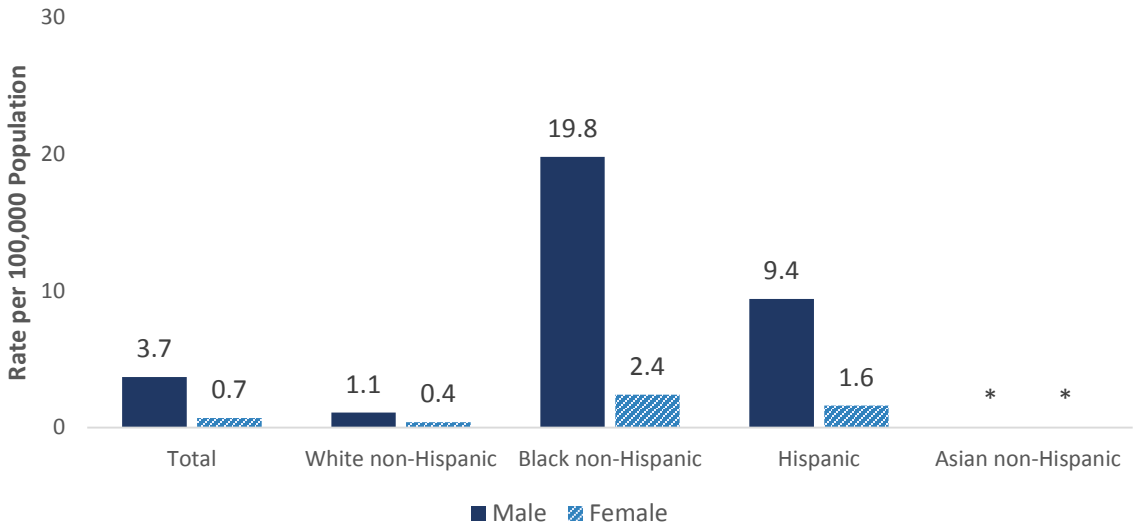


NOTE: RATES WERE NOT CALCULATED FOR FEMALE VICTIMS BY AGE GROUP DUE TO SMALL NUMBERS.

Black non-Hispanic residents had the highest homicide victimization rate among males (19.8 per 100,000 population). White non-Hispanic residents had the lowest homicide victimization rate for both men and women (1.1 per 100,000 population and 0.4 per 100,000 population, respectively). The homicide victimization rate among Black non-Hispanic men was 18 times higher than the rate for White non-Hispanic males.

Figure 5.15

Homicide Victimization Rates, by Race/Ethnicity and Sex, Massachusetts, 2014



NOTE: *RATES WERE NOT CALCULATED FOR ASIAN NON-HISPANIC VICTIMS DUE TO SMALL NUMBERS.

Across the Commonwealth in 2014, firearms were the most commonly used weapon in homicides (59%). Sixty-two percent of male homicide and 42% of female homicides were due to firearms. Handguns were the most frequent type of firearm used (96%) among firearm deaths where type of firearm was known.

> "There are distinct communities where violence is happening. These communities need to be targeted for programs and interventions."
>
> Key Informant Interviewee

In 2014, 43% of homicides occurred in Suffolk County, which had the highest number of homicides as well as the highest rate (8.0 per 100,000 population). This rate was 3.6 times higher than the state rate of 2.2 per 100,000 population. The cities with the highest rate of homicide were Brockton (11.6 per 100,000 population), Springfield (9.1 per 100,000 population) and Boston (8.4 per 100,000 population).

In 2014, 82% of homicide victims (n=120) had at least one circumstance known that was relevant to their homicide. The most frequently noted circumstance for males was precipitation by another crime (25%, n=30) which includes crimes such as robbery, burglary and drug trade. The most frequently noted circumstance for females was intimate partner violence-related (38%, n=10).

Youth Violence

In 2014, homicide was the third leading cause of death in the Commonwealth for young people 10 to 24 years of age[265]. Young survivors of violence often suffer physical, mental, and/or emotional health problems that carry on into adulthood.

Adverse Childhood Experiences (ACES) are associated with a variety of behavioral risk factors and chronic illnesses in adulthood.[266] Furthermore, youth who live in areas with high risk of violence are at elevated risk for trauma, which can have devastating effects on a child's physiology, emotions, ability to think, learn, and concentrate, impulse control, self-image, and relationships with others.[267]

A prominent theme among focus group participants[268] was concern for the effects of childhood trauma. One participant stated, *"We need to do more to recognize adverse childhood experiences as a health priority."* Another reflected the concerns of many by pointing out: *"Childhood trauma is not as in your face as the opioid epidemic, but it's still so harmful because the consequences are long-lasting and affect adult health."*

Trends/Disparities

From 2004 to 2013, homicide rates were highest among youth and young adults 15-24 years of age. In 2014, 48 Massachusetts residents 15-24 years old were victims of homicide, making homicide the third leading cause of death among this age group. Homicide rates have decreased by 48% among youth and young adults 15-24 years old. Homicide rates among Black non-Hispanic residents ages 15 to 24 also declined from 2006 to 2013 (2006: 116.8 per 100,000 population; 2013: 38.1 per 100,000 population).

> "We are treating the symptoms and results of trauma, but we are not treating the causes of trauma."
>
> Key Informant Interviewee

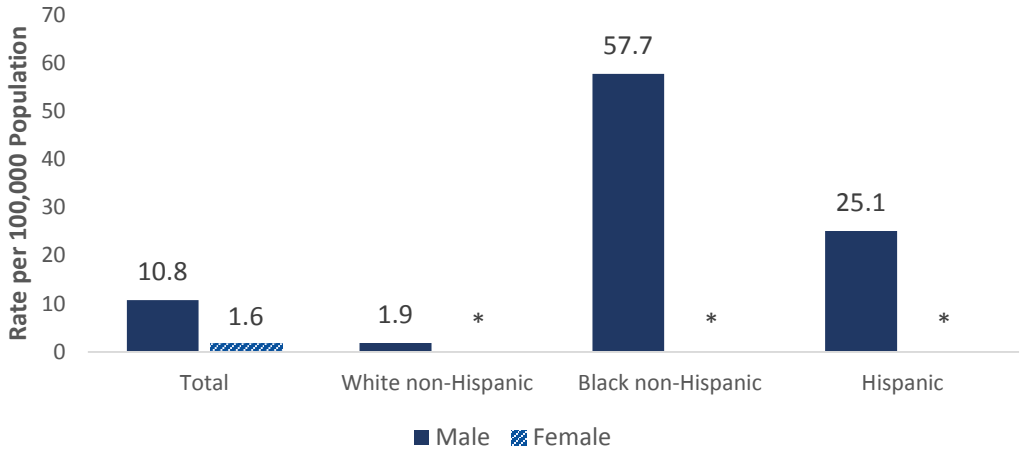
Despite these declines, homicide disparities by age and race/ethnicity persist. Youth and young adults ages 15-24 and Black non-Hispanic youth and young adults continue to experience the highest homicide and firearm-related deaths relative to other age and racial/ethnic groups.

Among youth and young adults ages 15-24, the homicide rate among Black non-Hispanic males (57.7 per 100,000 population) was 30 times higher than that for White non-Hispanic males (1.9 per 100,000 population). Among this same age group, the homicide rate among Hispanic males was almost 13 times higher than the homicide rate for White non-Hispanic males (25.1 per 100,000 population versus 1.9 per 100,000 population, respectively).

With the exception of incidents involving dating violence, males are far more likely than females to be killed in incidents of peer-to-peer youth violence. Across all racial/ethnic groups among the MA population 15 to 24 years of age, females were less likely to die in a homicide than their male counterparts.

Figure 5.16

Homicide Rates, by Race/Ethnicity and Sex, Ages 15-24, Massachusetts, 2010-2014



NOTE: * RATES WERE NOT CALCULATED FOR FEMALES BY AGE GROUP DUE TO SMALL NUMBERS.

> "We're seeing emerging issues or increasing challenges related to cyber-bullying."
>
> Key Informant Interviewee

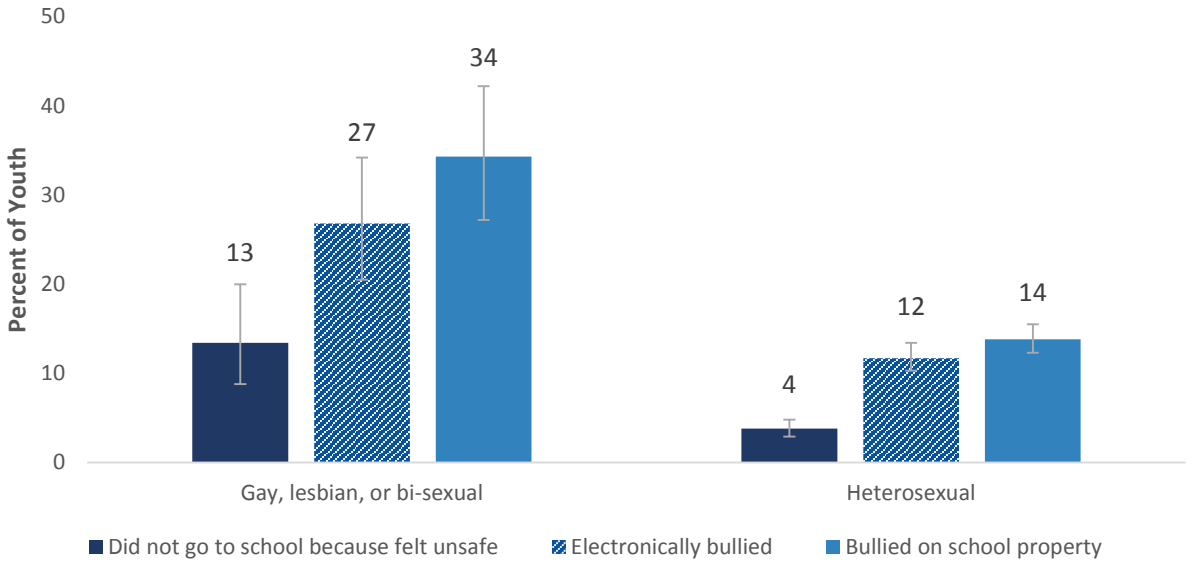
From Federal Fiscal Year 2004 to 2013, young adults, ages 15-24 were the only age group that experienced a significant decrease in rates of assault-related hospital stays. However, during this same time period, young adults ages 15-24 had the highest hospital stay rates for assault-related injuries of any age group. Among youth and young adults ages 15-24, Black non-Hispanic males were 31 times more likely to be treated for a non-fatal firearm related assault than White non-Hispanic males in Fiscal Year 2014 (224.0 per 100,000 population versus 7.3 per 100,000 population).

In Fiscal Year 2014, Black non-Hispanic males ages 15 to 24 (1,799 per 100,000 population) were 2.6 times more likely to be treated for a non-fatal assault-related injury than White non-Hispanic males of the same age group (680 per 100,000 population). Hispanic males 15-24 (1,366 per 100,000 population) were twice as likely as White non-Hispanic males of the same age group (680 per 100,000 population) to be treated for non-fatal assault-related injury.

In 2015, gay, lesbian, and bisexual high school students were three times more likely than heterosexual or cis-gender students to miss at least one day of school because they felt unsafe at or on the way to/from school (13% versus 4%) and also more than 2 times more likely to have been bullied on school property in the past year (34% versus 14%).

Figure 5.17

Bullying Victimization in the Past 30 Days and the Effect of Fear for Personal Safety on School Attendance in the Past 30 Days among Massachusetts High School Youth by Sexual Orientation, 2015



Sexual Violence/Child Sexual Abuse

Sexual violence leads to many long-lasting physical and mental health effects. Sexual victimization has been associated with subsequent negative health outcomes such as acute and chronic gynecologic injuries and symptoms; sexually transmitted infections, including HIV; rape-induced pregnancy; cervical cancer; pre-term or lower birth-weight infants; and high-risk health behaviors, such as substance use and high-risk sex practices.[269]

Trends/Disparities

In Massachusetts, between 2011 and 2015, the prevalence of adults reporting sexual violence at some point in their lives showed no statistically significant changes, ranging from 10.7% to 12.8% overall and between 4.6% and 5.5% for men and between 15.7% and 20.1% for women.[270]

> "People with disabilities are more vulnerable to sexual/intimate partner violence and other types of violence."
>
> Key Informant Interviewee

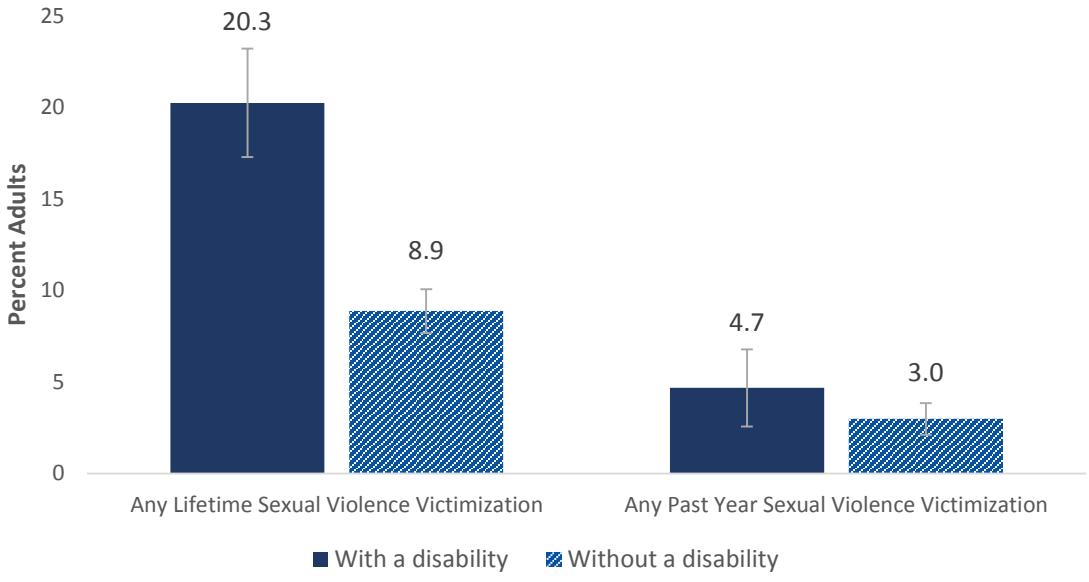
The number of suspected cases of child sexual abuse reported to the Massachusetts Department of Children and Families (DCF) has followed a similar pattern with no statistically significant change over the past five years of available data.[271,272,273,274,275] The same pattern holds true for unwanted contact among Massachusetts high school students. The Youth Health Survey shows that between 2011-2015 the number of high school students reporting having experienced sexual contact against their will has remained fairly consistent. In 2011, 9% of high school students reported experiencing sexual violence, compared to 6% in 2013 and 7% in 2015.[276]

Massachusetts adults with disabilities reported a statistically significantly higher prevalence of lifetime sexual violence victimization (20%) than adults without a disability (9%).

Both males and females with disabilities are at a heightened risk for lifetime experiences of sexual violence and for experiencing such victimization within the past year. The prevalence of lifetime reported sexual violence victimization was 3.5 times higher among men with disabilities compared to those without disabilities (13.9% versus 3.7%). Similarly, the reported prevalence among women with disabilities was more than twice as high as that of women without disabilities (26.6% versus 12.4%).[277]

Figure 5.18

Lifetime and Past Year Sexual Violence Victimization Experiences among Massachusetts Adults, Ages 18 and Older, by Disability Status, 2012-2015



From July 1, 2013 through June 30, 2016, the Massachusetts Disabled Persons Protection Commission (DPPC) received 2,213 reports of sexual abuse, of which 749 fell within DPPC's jurisdiction and were investigated. Notably, statistics such as these do not represent the true scope of the problem, as research demonstrates that the majority of victims of sexual violence do not report their experiences to authorities.[278]

Youth who have disabilities are also at increased risk of sexual violence. In Massachusetts, youth with disabilities reported experiencing sexual violence at more than three times the rate of youth without disabilities (15% versus 4%, respectively), a difference that was statistically significant.[279]

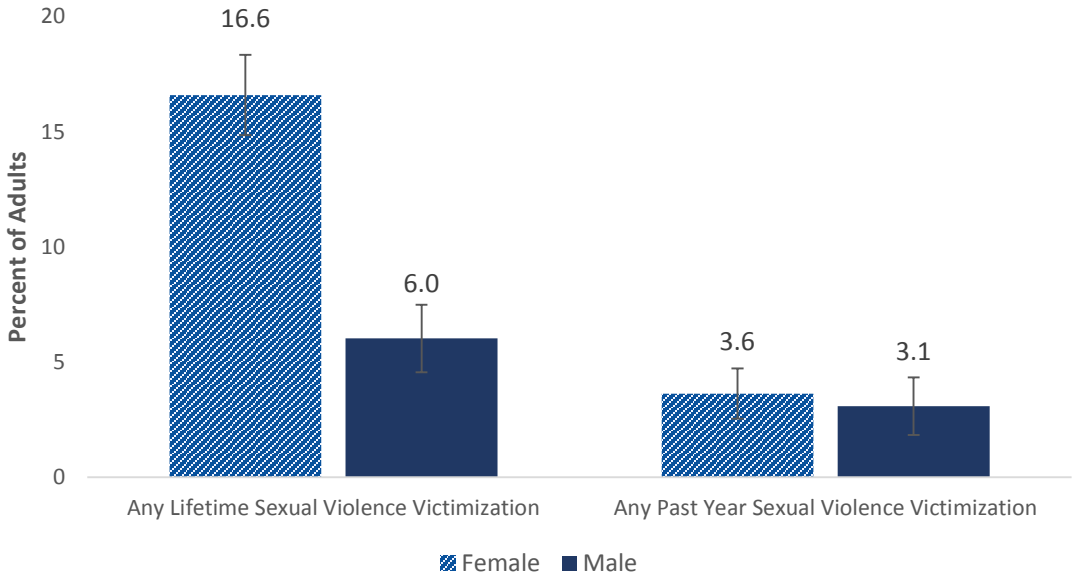
In Massachusetts, adult women and teenage girls face higher risk of experiencing sexual violence than adult and teenage men. The percentages of adult women experiencing some form of sexual violence were almost three times higher than the percentage of adult men (17% of females versus 6% of males). Massachusetts high school females reported experiencing any form of sexual violence at some point in their lives at almost three times the rate of high school males (11% versus 3%, respectively).

In Massachusetts, White non-Hispanic high school youth (6%) were statistically significantly less likely to report ever having experienced sexual violence when compared to Black non-Hispanic high school youth (10%), Hispanic high school youth (11%), and high school youth of other non-Hispanic races (8%).

For Massachusetts high school students who reported sexual violence during the 2011 to 2015 period, the most commonly reported perpetrator was a dating partner. For high school students overall, and for female high school students, this category of perpetrator was statistically significantly more commonly reported than any other category.

Figure 5.19

Lifetime and Past Year Sexual Violence Victimization Experiences among Massachusetts Adults, Ages 18 and Older, by Gender, 2012-2015



A statistically significantly higher percentage of Massachusetts adults who identify as gay, lesbian, bisexual, or other sexual orientation reported experiencing sexual violence in their lifetimes, compared to adults who identified as heterosexual (29% versus 11%). The percentage of gay, lesbian, or bisexual high school youth who reported ever having experienced sexual violence was five times higher than that among youth who identified as heterosexual (30% versus 6%). The high rates of sexual violence against LGBTQ youth and adults illuminate the importance of making an effort to include LGBTQ experiences in discussions and resources relating to sexual violence.

Similarly, survivors in rural regions of the Commonwealth reported rapes to area rape crisis centers at a rate twice as high as the state rate (67 versus 33 per 100,000 population, respectively). The rural towns of Athol, Florida, Montague, Monroe, Plainfield, Warwick and Wendell had more than 3 times as many registered sex offenders as the state average; an additional 14 rural towns have twice as many registered sex offenders as the state average. One focus group participant stated, *"In rural areas, there is more isolation and less anonymity and as a result, sexual violence is often left untreated."*

Domestic and Dating Violence

Domestic violence (DV), also known as Intimate Partner Violence (IPV), can have a desctructive effect, not only on victims but also on family members, bystanders, and perpetrators. Survivors of domestic violence experience a wide range of negative health outcomes beyond the injuries caused by the violence itself.

Domestic violence is costly not only to survivors, but also the health care system, employers, and society as a whole. Other direct costs to society include mental health treatment and increased volume for the criminal justice and the correctional systems.

Domestic violence disproportionately affects women, gay, lesbian, bisexual, and transgender individuals, and people with disabilities.

Women who experience domestic violence exhibit a wide range of negative health outcomes beyond the injuries caused by the violence itself. They are twice as likely to experience depression and almost twice as likely as their non-victimized peers to have an alcohol use disorder. They are 1.5 times as likely to contract sexually transmitted infections, including HIV, syphilis, chlamydia, and gonorrhea. They are also 16% more likely to have low-birth weight pregnancies.

Additional health outcomes that have been linked to domestic violence include, but are not limited to, chronic pain, migraines and/or headaches, immune system compromised by stress, stroke, TBI, cardiovascular and respiratory conditions, hypertension, heart disease, asthma, heart attack, cervical cancer, and physical and emotional scars.[280] Women who experience domestic violence are more likely than their peers to be murdered.

Trends/Disparities

Nearly one in three women and one in five men in Massachusetts has experienced physical violence, rape, and/or stalking by an intimate partner during her/his lifetime.[281] The Youth Risk Behavior Survey indicates that in 2015 6.7% of Massachusetts high school students reported being a victim of physical dating violence in the past year.[282]

Between 2003 and 2012, Jane Doe Inc., the federally recognized Massachusetts coalition of domestic violence and sexual assault service providers, identified at least 266 homicides associated with domestic violence in Massachusetts. In addition, 72 perpetrators of domestic violence died by suicide, and six more were killed by police. During the 10-year period reviewed, domestic violence was the cause of 14% of all homicide deaths in the state.[283] In Fiscal Year 2015, there were 28,158 domestic abuse or "209A" protective order filings in Massachusetts District Courts and the Boston

Municipal Court system. These 209A filings comprised 10.4% of all civil filings in these courts in Fiscal Year 2015.[284] In Fiscal Year 2016, the percent of civil restraining orders in predominantly rural Berkshire and Franklin counties were 62% and 30% higher, respectively, than the Massachusetts state restraining order rate.[285]

One key informant interviewee explained, *"In rural areas of the state people are less likely to report domestic violence because they will likely know someone who's going to get involved in their situations."* One focus goup participant reported a similar point of view, stating, *"There's a lack of domestic violence resources in Western Mass; the need is much higher than we can handle."*

Race/ethnicity is also related both to prevalence and outcomes of domestic violence. Nationally, a higher prevalence of American Indian or Alaskan Native (51.7%), multi-racial (51.3%), and Black non-Hispanic women (41.2%) report intimate partner violence compared to Hispanic (29.7%) and White non-Hispanic (30.5%) women.[286] Black non-Hispanic women in Massachusetts are four times more likely to be murdered by a current or former intimate partner than other women.[287] The risk of being a victim in a homicide perpetrated by an intimate partner is four times higher for Black women, three times higher for Hispanic women, and twice as high for foreign born women when compared to White, non-foreign born women in the Commonwealth.

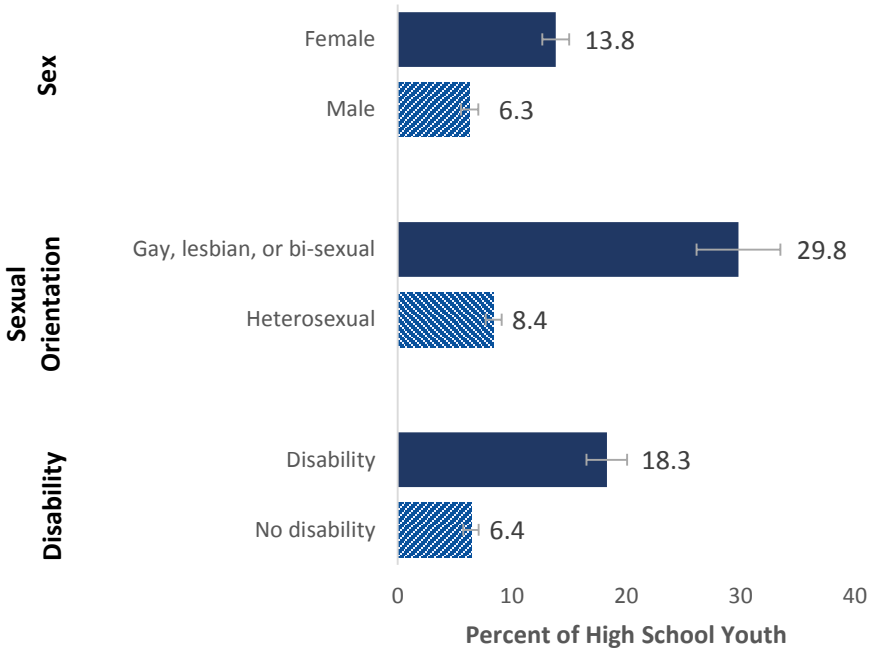
Nationally, Black women have the highest rate of domestic violence, at 4.7 per 100,000 vs 3.9 for white women and 2.8 for Hispanic women for the years 2002-2013.[288] In Massachusetts between 1997-2007, Black women had four times the rate of domestic violence related homicide compared to non-Black women. Hispanic women were three times more likely to be killed by an intimate partner than their non-Hispanic counterparts, and immigrants were twice as likely to be killed by an intimate partner than non-immigrants.[289]

Massachusetts high school girls have been found to be more likely than high school boys to report experiencing dating violence in their lifetimes (14% of girls versus 6% of boys) and in the 12 months leading up to the survey (8% of girls versus 5% of boys).

High school students in the Commonwealth who identify as gay, lesbian, or bi-sexual are almost four times as likely as high school students who identify as heterosexual to report experiencing dating violence in their lifetimes (30% versus 8%). High school students who have a disability are about three times more likely than other high school students to report dating violence in their lifetimes (18% versus 6%).

Figure 5.20

Percentage of Massachusetts High School Youth who Reported Experiencing Physical and/or Sexual Dating Violence in their Lifetime, by Gender, Sexual Orientation, and Disability Status, 2009-2015



Selected Resources, Services, and Programs

Following are selected resources, services and programs that support the health topics discussed in this chapter.

Childhood Unintentional Injury

- The Massachusetts Home Visiting Initiative to support interventions at the individual, family, community, and state levels to reduce injury among children.
- Implementation of "Return to Play" sports concussion legislation by developing regulations, providing model policies, concussion history and medical clearance forms, and technical assistance to middle and high schools, and conducting numerous trainings.
- The Centers for Disease Control and Prevention (CDC) developed HEADS UP[290] Concussion in Youth Sports Initiative, which is used in many school settings across the Commonwealth.

Older Adult Falls

- The Falls Prevention Coalition, a broad-based and active statewide coalition that is charged with recommending best ways to reduce older adult falls and associated health care costs to key state policy makers.
- The Massachusetts Prevention and Wellness Trust Fund (PWTF) that implements evidence-based interventions to reduce preventable health conditions, including older adult falls.
- The Elder Services of Merrimack Valley through their Healthy Living Center of Excellence utilized their competitively awarded Administration for Community Living (ACL) grants to expand and develop evidence-based falls-related programming in community settings.

Motor Vehicle Injuries

- The Traffic Safety Coalition of Massachusetts (TSCM) is a coalition of transportation safety advocates from across the state; MDPH's Injury Prevention and Control Program (IPCP) works with TSCM to support prevention infrastructure.
- The Massachusetts Strategic Highway Safety Plan (SHSP), MDPH's IPCP participates in the planning and implementation of the SHSP through disseminating relevant state data, research findings and evidence-based strategies; and developing a model Safe Driving Policy.
- The *Massachusetts Junior Operator's Graduated Driver's License* law that had significant changes made to it in 2007 imposes mandatory suspensions for violations related to night-time driving, operating under the influence, and operating to endanger.
- The Massachusetts Executive Office of Public Safety's Highway Safety Division's 2017 Impaired Driving Summit that brought together leaders, stakeholders, and experts to elevate the priority of impaired driving, identify needs to address impaired driving and create opportunities for participants to collaborate to address these needs.
- The MDPH Injury Prevention and Control Program is conducting a project to require the adoption of safe transportation policies among youth-oriented programs in an effort to reduce motor vehicle injuries and tramautic brain injury (TBI) among Massachusetts youth 15-24 years of age.

Occupational Injuries

- MDPH is working with hospitals, hospital worker organizations, and researchers to reduce risks associated with patient handling to protect both workers and patients; a MDPH-initiated Hospital Ergonomics Task Force developed a blue print for action and an ongoing stakeholder group is working to implement Task Force recommendations.
- MDPH is chairing the Massachusetts Youth Employment and Safety (YES) Team that coordinates efforts of multiple agencies to protect youth at work.
- MDPH develops multi-lingual materials that are broadly disseminated through worker centers and community organizations to educate low wage immigrant and minority workers about workplace safety.
- MDPH works with federal and other state partners to promote a federal campaign to prevent falls in construction and the safety stand-down for fall prevention, including a series of brochures on preventing falls in residential construction.

Suicide

- The MDPH's Suicide Prevention Program provides funds for the MassMen campaign and a statewide suicide prevention crisis hotline, and funding for 20 community partners to support "postvention" services to schools after a suicide.

Youth Violence

- MDPH's Child and Youth Violence Prevention Unit created three violence prevention grants programs that fund more than 25 community-based organizations to implement intervention programs to prevent violence by addressing its root causes.
- MDPH's Youth at Risk grants focus on the most underserved youth to address shared risk and protective factors that influence gang violence, sexual violence, violence against LGBTQ youth, teen dating violence, bullying, and suicide.

Homicide and Assault

- MDPH tracks gun shots and knife wounds through the Weapon Related Injury Surveillance System (WRISS).
- The Massachusetts Violent Death Reporting System tracks homicides and suicides and provides this information to prevention practitioners to help target their efforts.
- The Safe and Successful Youth Initiative works with "proven risk" youth who are often agency-involved to provide supports and services and reduce the risk of homicide or assault.
- See resources, services, and programs listed in the sections for "Youth Violence", "Sexual Violence/Child Sexual Abuse", and "Domestic and Dating Violence" that also support issues described in the "Homicide and Assault" section.

Sexual Violence/Child Sexual Abuse

- Youth Violence Prevention Services provide trainings on positive youth development, trauma-informed care, suicide prevention and risk identification; and trainings for community-based organizations to help staff of youth-serving organizations recognize and respond to adolescents' experiences of sexual violence.
- A total of 16 comprehensive rape crisis centers are funded by MDPH to deliver sexual assault survivor services, including 24/7 hotline response; 24/7 accompaniment to all hospital emergency departments; individual and group support sessions; legal advocacy and accompaniment to courts and police stations; outreach; and professional and community education.
- The Oversight Unit at the Massachusetts Disabled Persons Protection Commission (DPPC) coordinates with protective service agencies to meet the identified needs of the individual victims of sexual violence.
- Massachusetts Disabled Persons Protection Commission program builds and enhances relationships to improve access to trauma-informed services for sexual assault survivors who have intellectual and developmental disabilities.
- The Massachusetts Child Sexual Abuse Prevention Advisory Group supports youth-serving agencies across the state by conducting an assessment of what policies and procedures these agencies need in order to improve the prevention of child sexual abuse.

Domestic and Dating Violence

- MDPH supports residential and community-based programs across the Commonwealth to provide services to survivors of domestic violence and prioritizes services for populations at highest risk. High risk populations were determined to be rural populations, LGBT, immigrants, Black non-Hispanic women, and people with disabilities.
- MDPH certifies and funds 15 Intimate Partner Abuse Education Programs in Massachusetts to address abusive behavior by intimiate partners. The majority of client are men who are referred to this service by the courts. However, referrals also come from other service agencies, service professionals, and self-referrals, and some women and transgender clients are served each year.

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