



Data Brief

Injuries Among Massachusetts Residents, 2014

Massachusetts Department of Public Health

April 2018

Injuries are a Major Public Health Problem in Massachusetts

Injuries are the *third* leading cause of death among Massachusetts residents and the *leading* cause of death among Massachusetts residents ages 1 to 44. In 2014, 3,689 Massachusetts residents died as a result of unintentional, self-inflicted or assault-related injuries (50.9 per 100,000¹). In addition, there were 72,581 hospital stays (958.4 per 100,000) and 682,370 emergency department (ED) visits (10,276.0 per 100,000) among MA residents associated with nonfatal injuries (Figure 1). These figures do not include injuries which were only treated at home or in a physician's office.

What do we mean by “injury”?

Injuries are bodily harm – fatal or nonfatal - that can be caused by fires, car crashes, drowning, sharp objects, guns, poisoning, being struck by something, tripping on the sidewalk, pedestrian injuries and more. Injuries may be unintentional (sometimes referred to as “accidental”), self-related harm or assault-related.

Report Contents

This report describes injuries to MA residents in 2014 that resulted in death or required treatment at a MA acute care hospital. Sections include:

- **Leading Causes of Injury Death and Hospital Stays**
- **Fatal and Nonfatal Injury Rates**
- **Injury Rates by Sex**
- **Injury Prevention in Massachusetts**
- **Injury Prevention Resources**
- **Data Sources and Notes**

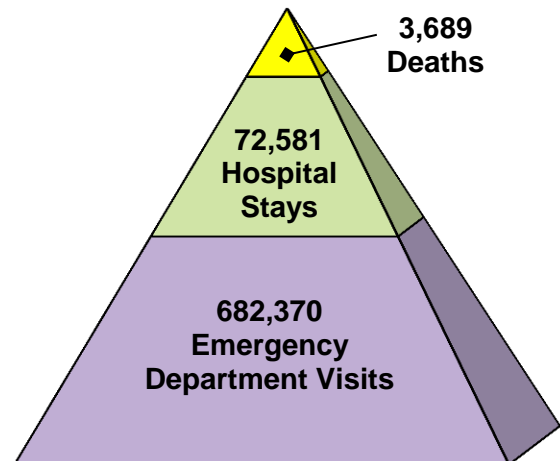


Figure 1. Total Burden of Injuries, MA Residents, 2014²

Key Findings

Among MA residents in 2014:

- There were a total of 3,689 injury deaths and 72,581 hospital stays and 682,370 ED visits for nonfatal injuries.
- Unintentional injuries accounted for 78% of injury deaths and 74% of injury-related hospital stays.
- The leading causes of unintentional injury death were poisoning/overdoses (50%), falls (22%) and motor vehicle traffic-related injuries (13%).
- Drug overdoses accounted for 1,473 deaths, 8,597 hospital stays and 15,520 ED visits (when all intents are combined).
- Among adults ages 65+, there were 528 unintentional fall deaths, and 22,315 hospital stays and 48,753 ED visits for nonfatal fall injuries.

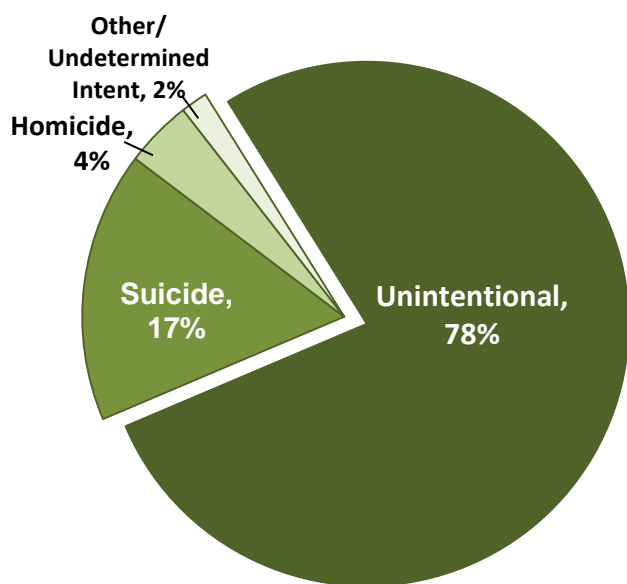
1. All rates are age-adjusted rates per 100,000 MA residents unless otherwise specified.

2. The MA Department of Public Health has modified its injury definitions to align more closely with national standards. Data from this report therefore should not be compared with previous injury reports. See notes on page 6 for complete injury definitions.



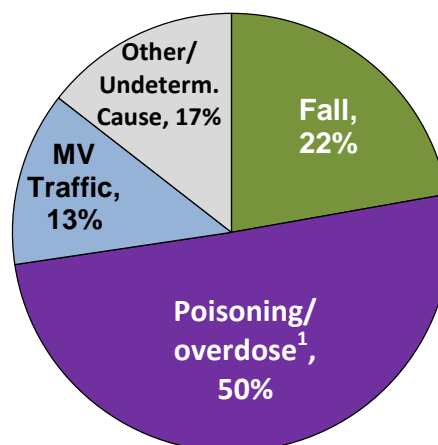
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Leading Causes of Injury Death



Injury Deaths by Intent
(n = 3,689)

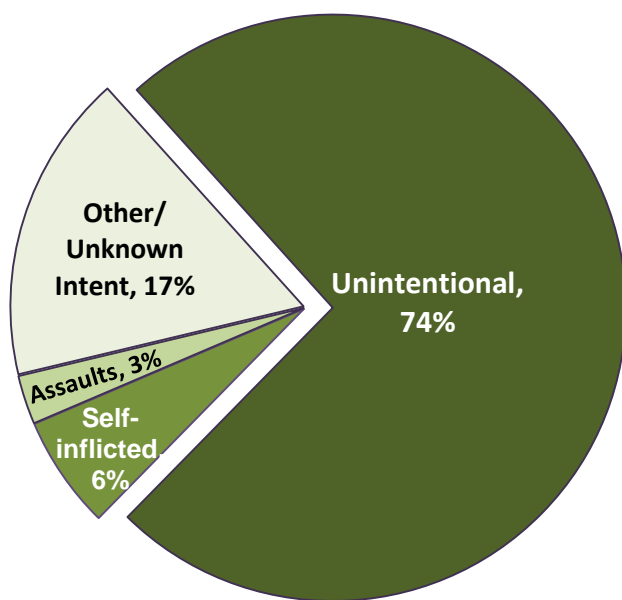
- Of the 3,689 injury deaths of MA residents in 2014, 78% were due to unintentional injuries.



Unintentional Injury Deaths by Cause
(n = 2,859)

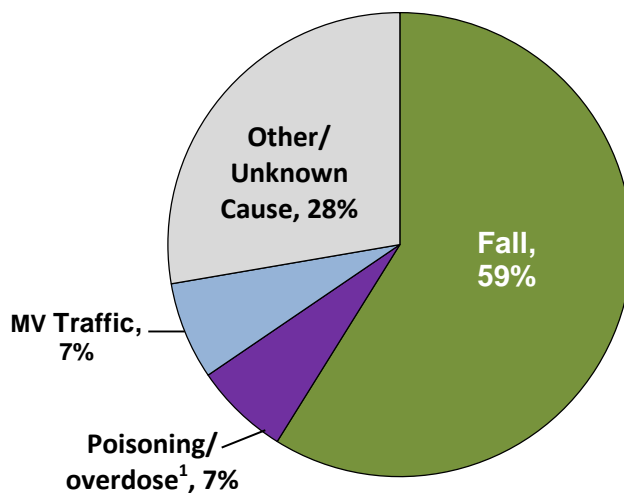
- The leading causes of the 2,859 unintentional injury deaths among MA residents in 2014 were poisoning/overdoses¹ (50%), falls (22%) and motor vehicle (MV) traffic-related injuries (13%).

Leading Causes of Injury-related Hospital Stays



Injury-related Hospital Stays by Intent
(n = 72,581)

- Unintentional injuries accounted for three out of four (74%) of the 72,581 injury-related hospital stays of MA residents in 2014.



Unintentional Injury Hospital Stays by Cause²
(n = 53,721)

- Falls accounted for 59% of hospital stays for unintentional injury in 2014. Of these 31,624 fall-related hospital stays, over two-thirds (71%) involved MA adults ages 65 and older. (Data on page 3.)

1. Unintentional poisoning/overdoses only. Does not include intentional poisoning/overdoses or those of undetermined intent.

2. Percentages may not total 100% due to rounding.



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Fatal and Nonfatal Injury Overview

Among MA residents in 2014,

- There were a total of 3,689 injury deaths, as well as 72,581 hospital stays and 682,370 ED visits for nonfatal injuries.
- Drug overdoses accounted for 1,473 deaths, 8,597 hospital stays and 15,520 ED visits (when all intents are combined).
- Among adults ages 65+, there were 528 unintentional fall deaths, and 22,315 hospital stays and 48,753 ED visits for nonfatal fall injuries.
- Over one in five injury deaths (22%) and one in ten injury-related hospital stays (11%) involved a traumatic brain injury.



Table 1. Fatal and Nonfatal Injuries among MA Residents, 2014

	Deaths		Nonfatal Hospital Stays		Nonfatal ED Visits	
	All rates are age-adjusted per 100,000 MA residents					
	Number	Rate	Number	Rate	Number	Rate
TOTAL INJURIES	3,689	50.9	72,581	958.4	682,370	10,276.0
Selected Injuries (regardless of intent; categories may overlap with those below)						
Traumatic Brain Injury	796	10.4	8,151	107.5	67,147	1,003.2
Primary poisoning/overdose	1,597	23.4	8,191	117.9	18,694	285.6
Drug overdose ¹	1,473	21.7	8,597	123.6	15,520	235.6
Firearms	225	3.1	283	4.3	411	6.1
Unintentional	2,859	39.4	53,721	695.2	624,257	9,381.6
Fall-related	635	7.6	31,624	392.3	185,371	2,705.3
Falls among persons 65+	528	49.4	22,315	2,122.9	48,753	4,723.1
Motor vehicle traffic-related	368	5.2	3,656	51.2	70,408	1,048.6
Motor vehicle occupant ³	231	3.2	2,402	33.5	63,044	939.3
Motorcyclist	47	0.7	510	7.3	2,111	30.9
Pedestrian ⁴	96	1.3	625	8.7	3,804	56.5
Pedal Cyclist ⁴	12	0.2 ²	602	8.5	8,174	128.2
Drowning/submersion	34	0.4	29	0.5	129	2.1
Fire/burn	34	0.5	632	9.0	8,377	128.4
Suicide/self-inflicted	616	8.5	4,522	66.5	6,885	104.9
Homicide/assault	153	2.3	1,957	29.4	23,223	350.4

1. Any diagnosis or E-code of "poisoning by drugs or medicinals". Selection criteria are broader than that used for primary poisoning/overdoses.
2. Rates based on counts of less than 20 may be unstable.
3. Includes drivers, passengers and unspecified persons.
4. Due to traffic and non-traffic related incidents.



Injuries Among Massachusetts Residents, 2014

Injury Rates by Sex

- Men have higher injury rates than women for most types of injuries. Among MA residents in 2014, death rates among men compared to women were:
 - 140% higher for unintentional injury deaths (56.3 vs. 23.8 per 100,000)
 - Nearly 3x higher for suicide (13.8 vs. 3.6 per 100,000); and
 - More than 3x higher for homicide (3.7 vs. 0.8 per 100,000).
- 94% of motorcyclist deaths and 88% of firearm deaths were men (data not shown).
- Of MA residents ages 65+, men had higher death rates from falls, but women had higher rates of nonfatal fall injuries (for hospital stays and ED visits).
- In contrast with suicide, women had higher rates of nonfatal self-inflicted injuries than men (for hospital stays and ED visits).



Table 2. Injuries to MA Residents by Sex, 2014

	Deaths		Nonfatal Hospital Stays		Nonfatal ED Visits	
	All rates are age-adjusted per 100,000 MA residents					
	Males (n=2,510)	Females (n=1,179)	Males (n=34,354)	Females (n=38,224)	Males (n=360,823)	Females (n=321,536)
TOTAL INJURIES	74.8	29.0	1,020.7	884.4	11,232.1	9,305.7
Selected Injuries (regardless of intent; categories may overlap with those below)						
Traumatic Brain Injury	15.8	5.9	133.3	83.7	1,080.5	920.1
Primary poisoning/overdose	33.9	13.3	117.0	119.0	317.5	254.7
Drug overdose ³	31.2	12.6	121.8	125.7	260.2	211.7
Firearms	5.7	0.8	8.0	0.6	10.9	1.4
Unintentional	56.3	23.8	728.7	648.4	10,205.1	8,540.6
Fall-related	9.7	6.2	358.5	408.8	2,630.9	2,746.2
Falls among persons 65+	62.3	41.3	1,752.1	2,355.5	4,010.2	5,235.7
Motor vehicle traffic-related	7.8	2.7	63.9	38.8	1,003.2	1,094.7
Motor vehicle occupant ⁴	4.8	1.8	37.0	29.9	849.2	1,028.6
Motorcyclist	1.3	--- ²	13.2	1.6	54.0	8.5
Pedestrian ⁵	1.9	0.8	10.3	7.1	65.9	47.6
Pedal Cyclist ⁵	0.3 ¹	--- ²	13.4	3.9	194.1	63.1
Drowning/submersion	0.6	0.3 ¹	0.8	--- ²	2.7	1.6
Fire/burn	0.6 ¹	0.4 ¹	10.8	7.3	133.3	123.6
Suicide/self-inflicted	13.8	3.6	60.3	72.8	86.6	123.5
Homicide/assault	3.7	0.8	45.6	13.5	425.2	278.0

1. Rate is based on a count of less than 20 and may be unstable.

2. Rates are not calculated on less than 5 deaths or 11 nonfatal injuries.

3. Any diagnosis or E-code of "poisoning by drugs or medicinals". Selection criteria are broader than that used for primary poisoning/overdoses.

4. Includes drivers, passengers and unspecified persons.

5. Due to traffic and non-traffic related incidents.



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Injury Prevention in Massachusetts

While we have made tremendous progress in the field of injury prevention over the past several decades, this report highlights that there is still work to be done. Injuries are largely preventable events. The public health approach to preventing injury is similar to that for preventing disease. Injuries are not simply “acts of fate”. The Massachusetts Department of Public Health’s (MDPH) Division of Violence and Injury Prevention works closely with our internal partners, other state agencies and external institutions and organizations to advance practices and policies that both protect Massachusetts residents from injury and reduce injury severity. One approach to violence and injury prevention utilizes a framework sometimes referred to as “the four E’s” of injury prevention. These include:

- *Environmental Design and Engineering*: Adoption of safer products and environmental designs can greatly reduce one’s risk of injury.
- *Enactment and Enforcement of Policies*: Laws, regulations and institutional policies can promote safe behaviors or responses and prevent injury.
- *Education*: Educating the public and professionals can change behaviors and reduce injuries.
- *Emergency Medical Services*: Ensuring a high quality trauma management system so that individuals who are injured are transported to facilities with the most appropriate care in order to reduce deaths and improve outcomes after an injury.

The data described in this bulletin provides useful information for identifying the reasons people are injured and the populations where the greatest burden of injury lies in Massachusetts. Through a concerted effort, we can use this data to inform strategies to advance the latest best practices and policies for injury prevention in Massachusetts and to improve the quality and length of life for many citizens each year.

Massachusetts Injury Prevention Activities

Through its collaborations with internal and external partners, the MDPH Injury Prevention and Control Program promotes unintentional injury prevention policies and programs in a number of key areas, some of which are described below. The current MDPH Strategic Plan for the Prevention of Unintentional Injury can be found at: <http://www.mass.gov/eohhs/docs/dph/injury-surveillance/strategic-plan-2012-2016.pdf>.

Falls among Older Adults

MDPH strategies to prevent falls among older adults include supporting prevention infrastructure and stakeholders through the MA Falls Prevention Coalition and the MA Prevention and Wellness Trust Fund initiative; promoting community-based programs to improve strength and balance; promoting fall risk assessments by primary care providers; developing and disseminating educational materials; convening the MA Commission on Falls Prevention to draft policy and programming recommendations; and improving Massachusetts data on fall injuries.

Drug Overdoses

A growing number of drug overdoses in MA are caused by opioid-related drugs. In February 2015, Governor Baker established an Opioid Addiction Working Group to gather information from communities and develop a statewide strategy to combat opioid addiction. DPH strategies to prevent opioid overdoses include funding community prevention coalitions, the Parent Power educational campaign, expanding the availability of Naloxone (to reverse opioid overdoses) and requiring prescribers to use the Prescription Monitoring Program for initial opioid prescriptions. DPH also helps fund the Regional Center for Poison Control and Prevention, which, in addition to treatment assistance, provides education and outreach to prevent poisoning and overdoses.



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Massachusetts Injury Prevention Activities (cont.)

Motor Vehicle Crashes

Occupant protection is a priority area of the MDPH's Strategic Plan for Unintentional Injury Prevention. Specific strategies include supporting prevention infrastructure and stakeholders through the Traffic Safety Coalition of Massachusetts, a coalition of transportation safety advocates from across the state; disseminating relevant state data, research findings and evidence-based strategies to prevention partners; participating in the implementation of the MA Strategic Highway Safety Plan (SHSP); and developing a Model Safe Transportation Policy for MDPH-funded youth-serving organizations.

Child Drowning

The Massachusetts State Child Fatality Review Team considers drowning prevention a key focus area of preventable deaths. As a result of drowning fatality reviews by this team, MDPH promotes a range of specific prevention strategies to the public and key stakeholders, including continuous supervision of children while in or near water, swimming lessons for all children, child-proof barriers for all backyard pools, use of personal flotation devices by children in boats, and learning CPR and other steps to take in the event of a possible or near-drowning.

Youth Sports Concussions

Massachusetts has been a leader in the implementation of "Return to Play" (sports concussion) legislation, by developing regulations; providing model policies, concussion history and medical clearance forms; offering technical assistance to middle and high schools; and conducting numerous trainings for a range of stakeholders throughout the Commonwealth. MDPH is also collecting sports concussion data from schools and evaluating school policies on sports concussion.

Suicide Prevention

The Suicide Prevention Program offers a wide range of trainings for behavioral health professionals, caregivers and people who work with "at risk" populations. The program offers presentations to groups and community members to raise awareness of suicide as a public health issue. The program funds prevention activities for dozens of community-based providers, state agencies and regional coalitions. For information about trainings and prevention programs see: www.mass.gov/suicide-prevention-program.

Youth Violence Prevention

MDPH funds three youth violence prevention initiatives, which all use a positive youth development approach. **Safe Spaces for LGBTQ Youth** supports community-based programs that conduct violence and suicide prevention activities focusing on the needs of gay, lesbian, bisexual and transgender youth. **Primary Violence Prevention Programs** conduct primary prevention activities with youth who are at high risk of violence, but not necessarily engaged in violence yet. **Youth at Risk Programs** conduct secondary prevention activities with the highest risk youth, who may have engaged in violence. All three initiatives use a range of strategies to engage, support, educate and provide opportunities for "at risk" youth.



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Resources

For further information about injury prevention efforts in Massachusetts or injury data, see:

Injury Prevention and Control Program (IPCP)

Massachusetts Department of Public Health

www.mass.gov/dph/injury

Injury Surveillance Program (ISP)

Massachusetts Department of Public Health

www.mass.gov/injury-surveillance-program

Fall Prevention Resources

National Center for Injury Prevention and Control

Centers for Disease Control and Prevention

www.cdc.gov/homeandrecreationalafety/falls

Center for Healthy Aging

National Council on Aging

www.ncoa.org/healthy-aging/falls-prevention



National Council on Aging

Motor Vehicle Safety Resources

National Highway Traffic Safety Administration

www.nhtsa.gov/

Safe Kids

www.safekids.org

Motor Vehicle Safety

Centers for Disease Control and Prevention

www.cdc.gov/motorvehiclesafety



Suicide Prevention Resources

National Suicide Prevention Lifeline: 1-800-273-TALK (8255); Veterans, press 1

MA Samaritans Helpline: 1-877-870-HOPE (4673)

Suicide Prevention Program

Massachusetts Department of Public Health

www.mass.gov/suicide-prevention-program

Youth Violence Prevention

Division of Violence and Injury Prevention

Massachusetts Department of Public Health

www.mass.gov/dph/dvip

Youth Violence Prevention Strategies

Centers for Disease Control and Prevention

www.cdc.gov/violenceprevention/youthviolence/prevention.html





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Data Sources and Notes

Due to differences in data sources and injury definitions, data in this report should not be compared with the MA Death Report 2014 or reports based on data from the MA Violent Death Reporting System.

Deaths: Registry of Vital Records and Statistics, MA Department of Public Health. Includes MA residents who died in or out-of-state; non-MA residents are excluded. Deaths are compiled and reported by calendar year.

Nonfatal Injuries and Hospital Charges: MA Inpatient Hospital Discharge, Outpatient Observation Stay and Emergency Department Discharge databases, MA Center for Health Information and Analysis. These data are compiled and reported by fiscal year. Data do not include non-MA residents or MA residents who received care out-of-state.

Population: Missouri Census Data Center, Population Estimates by Age. This site provides the most recent population estimates from the U.S. Census Bureau. <https://census.missouri.edu/population-by-age/>

Counts and Rates: Due to confidentiality guidelines, counts and rates based on less than 11 nonfatal injuries are suppressed. Rates based on counts of less than 20 may be unstable and should be interpreted with caution; rates are not calculated on counts of less than 5 deaths. Rates are age-adjusted rates per 100,000 persons unless otherwise noted.

Injury Definitions

Injury Deaths: Injury deaths are defined as those with an ICD-10 code of V01-Y36, Y85-Y87, Y89 or U01-U03 in the underlying cause of death field. Adverse medical/surgical effects and late entry deaths are excluded.¹

Injury-related Hospital Stays: Hospital stays include hospital discharges and observation stays; in-hospital deaths and transfers are excluded. Injury cases are defined as those with an ICD-9-CM code of 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59 or 995.80-995.85 in *any* diagnosis field. Adverse medical/surgical effects are excluded.¹ In contrast with CDC guidelines, the MA injury definition searches all diagnosis fields for these codes, rather than just the principal diagnosis field.

Injury-related Emergency Department (ED) Visits: Injury cases in ED data are defined as those with an ICD-9-CM code of 800-909.2, 909.4, 909.9, 910-994.9, 995.5-995.59 or 995.80-995.85 in the *principal* diagnosis field, (which excludes adverse medical/surgical effects), OR E800-E869, E880-E929, or E950-E999 in *any* external-cause-of-injury (E-code) field.¹ Deaths are excluded.

Injury Cause and Intent: With the exception of drug overdoses, injury deaths are classified according to CDC guidelines using ICD-10 underlying cause of death code² and nonfatal injuries are classified by cause and intent according to CDC external cause groupings using the first valid ICD-9-CM E-code.³

Drug Overdoses: Fatal drug overdoses are defined as those with an ICD-10 code of X40-X449, X60-X649, X85-X859 or Y10-Y149 in the underlying cause of death field. Nonfatal drug overdoses are those with an ICD-9-CM code of 9600-9799 in *any* diagnosis field OR E850.0-E858.9, E950.0-E950.5, E962.0 or E980.0-E980.5 in *any* E-code field.

1. Thomas KE, Johnson RL. *State injury indicator report: Instructions for preparing 2011 data*. Atlanta (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2014.

2. See http://ftp.cdc.gov/pub/Health_Statistics/NCHS/injury/sascodes/icd10_external.xls

3. See http://www.cdc.gov/injury/wisqars/ecode_matrix.html

This publication was supported by grant #1U17/CE002009 from the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.