



# Violent Deaths in Massachusetts: Surveillance Update 2007

Massachusetts Department of Public Health  
Bureau of Health Information, Statistics, Research, and Evaluation  
Injury Surveillance Program  
Massachusetts Violent Death Reporting System



# Violent Deaths in Massachusetts: Surveillance Update 2007

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For other Department of Public Health data, register for MassCHIP, the Department's free internet-accessible data warehouse: <http://masschip.state.ma.us/>

For more information on violence and injury prevention, visit the following websites of the MDPH Division of Violence and Injury Prevention:

[www.mass.gov/dph/injury](http://www.mass.gov/dph/injury)

[www.mass.gov/dph/violence](http://www.mass.gov/dph/violence)

## MAVDRS Advisory Group Members

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We would like to acknowledge and thank those who participate in our Advisory Group. Members contribute their expertise, knowledge, and invaluable experience. The membership changes and therefore this list may include current members, past members, and those who have asked to participate in future meetings. Some recently added members may not be included here, although we would like to acknowledge their commitment. Similarly, some members may have been unable to continue their participation, thus are thanked for their past contributions.

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# **Violent Deaths in Massachusetts, 2007**

## **Injury Surveillance Program, Massachusetts Department of Public Health**

### **Executive Summary**

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#### **Case Definition**

For inclusion in the Massachusetts Violent Death Reporting System (MAVDRS), a violent death is generally defined as a death which resulted from the intentional use of physical force or power against oneself, another person, or persons. MAVDRS includes violent deaths resulting from suicide, homicide, legal intervention (excluding execution), those of undetermined intent, and all firearm-related deaths, regardless of intent. Final inclusion in the system is determined by ICD-10 code. All participating NVDRS states use the same data inclusion standards and variable definitions established by the CDC.

#### **Occurrent Deaths**

MAVDRS collects data on all violent deaths occurring in Massachusetts. In 2007, there were 45 victims who died in Massachusetts that were residents of other states or countries. There were 13 victims who were injured in another state or country, but were brought to Massachusetts where they later died. These two groups are included in the MAVDRS database as they are occurrent deaths (deaths occurring in Massachusetts). However, there were 40 Massachusetts residents who died from a violent death in another state and are not included in the MAVDRS database, but may be captured by another NVDRS-funded state. Some of those victims may have been injured in Massachusetts, but were brought to a neighboring state due to the closer proximity of a hospital, where they later died.

### **Summary of Findings**

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#### **Overview of Violent Deaths**

In 2007, 802 violent deaths occurred in Massachusetts as a result of 776 separate incidents. Ninety-seven percent of incidents consisted of only one death (N=753). The remaining 23 incidents involved more than one violent death in multiple victim incidents (multiple homicides or suicides) or combined homicide/suicide incidents.

On average, 15 violent deaths a week occurred in the Commonwealth. The rate of violent death for all intents (suicide, homicide, undetermined, accidental firearm, and legal intervention) was 12.4/100,000. Suicides (N=513, 8.0/100,000) were almost three times more frequent than homicides (N=182, 2.8/100,000). The age groups with the highest violent death rate were ages 25-34 and 35-44 year olds (16.4/100,000 and 16.7/100,000 respectively). Among race/ethnicity groups, Black, non-Hispanics had the highest rate overall (24.4/100,000) compared to the range of 4.9 to 14.4/100,000 for all other groups. Of the 802 violent deaths in 2007, 64% (N=513) were suicides, 23% (N=182) were homicides, and 13% (N=102) were deaths of undetermined intent.

#### **Suicides**

In 2007, there were 513 suicides or approximately ten suicides per week. The suicide rate for males (12.8/100,000) was more than three and a half times higher than that of females (3.4/100,000). Among all age groups, suicide rates were highest among the age group of 35-44 year olds (11.8 /100,000), which is a change from 2006 when the highest rate was among 45-54 year olds (12.5/100,000).

The most common suicide method was hanging/strangulation/suffocation which accounted for 43% (N=219) of all suicides. The most common circumstance among suicides was having a current mental health problem, which includes victims who have been diagnosed by a health professional as having a psychiatric condition and victims who were prescribed antidepressants or other psychiatric medication.

#### **Homicides**

In 2007, there were 182 homicides or approximately 3.5 homicides per week. Youth, ages 15-24, had the highest homicide number (N=69) and rate (7.6/100,000), which was almost three times higher than the statewide rate of 2.8/100,000. The weapon used in approximately 62% (N=112) of homicides were firearms. There were 49 homicides that were precipitated by an argument, abuse, or conflict and 37 homicides were noted to have been intimate partner violence-related.

## **Deaths of Undetermined Intent**

An important change occurred in 2005 affecting the number of deaths of undetermined intent in Massachusetts. Most injury deaths are referred to the Commonwealth of Massachusetts Office of the Chief Medical Examiner (OCME) for determination of cause and intent. In May 2005, a change in the OCME policy affected the assignment of manner/intent of many poisoning (drug overdose) deaths. Up to that point, poisoning deaths, where there was no explicit evidence that the case was a suicide or homicide, were assigned a manner of "could not be determined." With the new policy, these deaths are assigned a manner of accident/unintentional. This change caused the number of undetermined deaths in 2005 to be substantially less than in previous years. The current policy is similar to how these deaths are classified in other states. Because of this, caution should be used when comparing 2007 data to previous years' data.

To demonstrate, in 2004, there were 1,243 total violent deaths, with 50% (N=625) classified as undetermined intent. Of those undetermined intent deaths, 90% (N=560) were due to poisoning/drug overdoses. In 2005, there were a total of 741 violent deaths and only 12% (N=88) were of undetermined intent. In 2007, there were a total of 802 violent deaths, including 13% (N=102) that were deaths of undetermined intent. Of these 102 deaths, 54% (N=55) were due to poisonings/drug overdoses.<sup>1</sup>

## **Legal Intervention Deaths**

In 2007, there were three legal intervention deaths included in the Massachusetts Violent Death Reporting System.

## **Unintentional Firearm Deaths**

Massachusetts had two unintentional firearm deaths in 2007 based on ICD-10 coding.

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<sup>1</sup> For more information regarding unintentional poisonings, please see the Massachusetts Department of Public Health's *Injuries to Massachusetts Residents, 2007* from the Department's Injury Surveillance Program. You can obtain a copy of this report by contacting Beth Hume at (617) 624-5648 or via email at [beth.hume@state.ma.us](mailto:beth.hume@state.ma.us). The report is also available electronically at: [http://www.mass.gov/Eeohhs2/docs/dph/injury\\_surveillance/injury\\_report\\_06.pdf](http://www.mass.gov/Eeohhs2/docs/dph/injury_surveillance/injury_report_06.pdf)

## INTRODUCTION

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Violent death represents a serious but preventable public health problem. The U.S. Centers for Disease Control and Prevention (CDC) introduced the National Violent Death Reporting System (NVDRS) in 2001 in order to improve the surveillance of violent deaths nationwide.<sup>1</sup> A violent death results from the intentional use of physical force or power against oneself, another person, or a group or community. Violent deaths include suicides, homicides, deaths due to legal intervention (excluding executions), deaths of undetermined intent, and firearm-related deaths, regardless of intent. Violent deaths are classified as undetermined when the Medical Examiner does not have enough information to make a determination of how the individual died: whether a death was unintentional, was deliberately self-inflicted, or was caused by an assault. While not enough is known about these deaths to definitively establish intent, they are included in NVDRS because useful information regarding the circumstances of the death may be available.

Currently operating in 17 states, NVDRS is a state-based surveillance system that compiles information on violent deaths in order to provide a detailed picture of how and why they occur. In Massachusetts, the Violent Death Reporting System is part of the Injury Surveillance Program within the Massachusetts Department of Public Health (MDPH). NVDRS utilizes multiple data sources, including death certificates, medical examiner files, and law enforcement records in creating its data records. The NVDRS is an incident-based surveillance system, enabling identification of multiple deaths from the same incident, as well as linking suspects associated with the incident. Decisions about whether two or more deaths belong to the same incident are determined by the timing of the injuries, rather than the timing of the deaths, and are based on a 24 hour rule and source documents indicating a clear link between the deaths.

Detailed information from multiple sources enhances the ability of researchers, prevention specialists and policymakers to develop a better understanding of when, where, why and how violent deaths occur, as well as who is at risk. Information about the circumstances associated with violent death is a particularly unique and important feature of NVDRS, since it may help in identifying specific risk factors precipitating violence. The goal of NVDRS is to provide the information needed to reduce and to prevent violent death.

## OBJECTIVES

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With approximately 50,000 suicides and homicides taking place in the United States each year, the need for a national violent death surveillance system emerged as a significant public health issue in the late 1990s. Until recently, there was no comprehensive, incident-based public health surveillance system to collect information on these deaths and apply it to prevention efforts. With funding from the CDC, the Massachusetts Department of Public Health began collecting detailed information on violent deaths as part of NVDRS in 2003. This report summarizes results from the fifth year of data collection in Massachusetts.

## METHODS

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### Descriptive Statistics

In this report, information on violent deaths is summarized by counts, percentages, and rates. Simple counts represent the most basic measure of violent deaths and are important for quantifying the problem, while percentages offer a way of showing distributions in the underlying population relative to a factor of interest, such as age or gender. Rates add an additional level of detail by taking account of the size of the underlying population and facilitating comparisons between groups. Crude rates are presented throughout this report, unless otherwise noted, and are useful for developing community-level prevention strategies. Age-adjusted rates are provided in Appendix B to facilitate comparisons between communities or states which may have a widely disparate age distribution in the population. Death rates are expressed as the number of deaths per 100,000 population. Refer to the Technical Notes section of Appendix A for detailed information on population estimates used for calculating rates. Rates were calculated for specific demographic groups (i.e., age, gender, marital status, race/ethnicity, and level of education), as well as by county and city level. More extensive analysis of MAVDRS variables will be conducted as additional data years become available.

### Case Identification, Definition, and Data Sources

Violent death cases in the MAVDRS database are identified by the manner of death on death certificates. A record is created in the MAVDRS database for any death categorized as suicide, homicide, could not be determined, or accidental firearm-related. However, for the analysis of violent deaths in this report, a case

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<sup>1</sup> Additional information on NVDRS can be found at <http://www.cdc.gov/ncipc/profiles/nvdrs/facts.htm>.

definition is determined by the ICD-10 code for the underlying cause of death, which includes suicides, homicides, deaths of undetermined intent, unintentional firearm-related deaths, as well as deaths due to legal intervention (excluding legal executions). The ICD-10 codes used for case inclusion in this report can be found in the Technical Notes section of Appendix A.

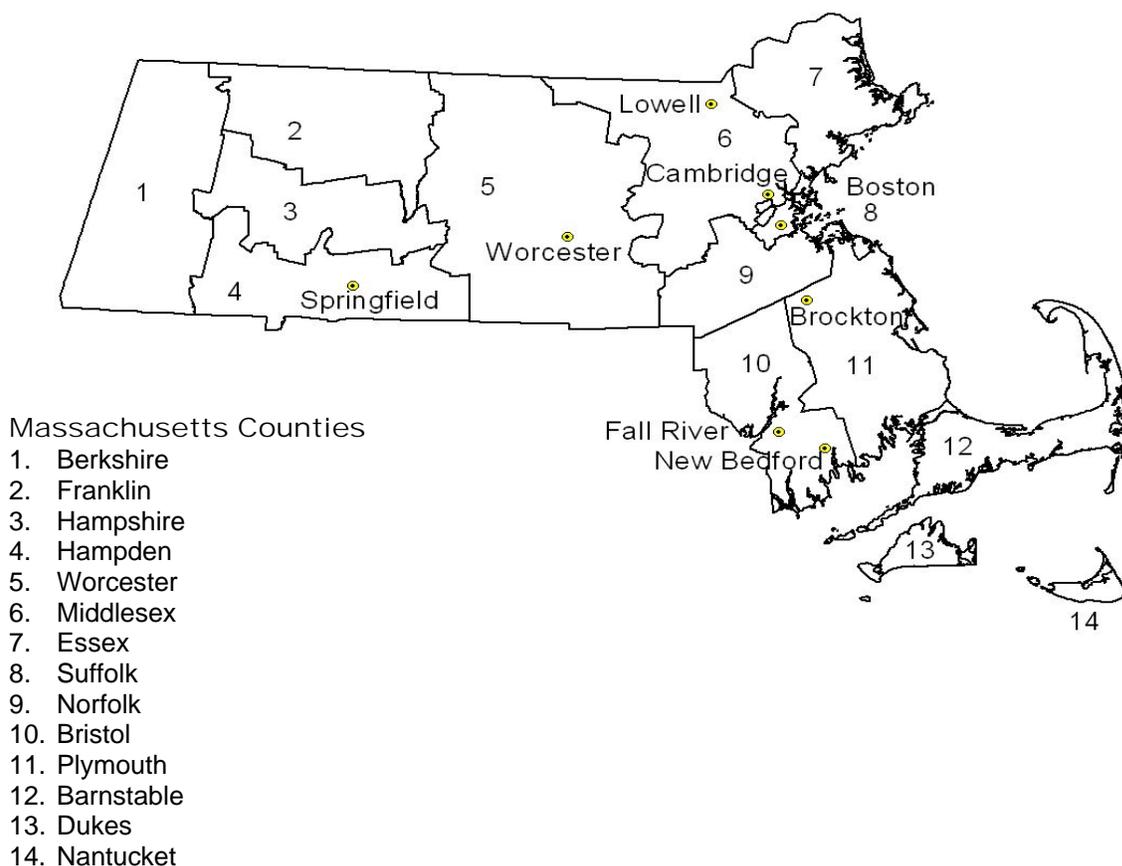
For each record, additional information is subsequently added from law enforcement and medical examiner sources. Law enforcement documents include police reports and ballistic reports from the Boston Police Department and the MA State Police Department. In addition, information from Supplemental Homicide Reports (SHR) and National Incident Based Reporting System (NIBRS) are obtained from the MA State Police Crime Reporting Unit (CRU). The Office of the Chief Medical Examiner provides autopsy reports, toxicology results, hospital records, and Emergency Medical Services (EMS) records. Additional supplemental sources are included where appropriate.

Over 270 data elements may be collected for each incident in the database, including information on the following when applicable: the incident, the victim and suspect, toxicology, weapon(s), circumstances associated with the relationship between suspect and victim. The ICD-10 (International Classification of Diseases, Tenth Revision) coded death file maintained by MAVDRS is used to establish the final database for all cases meeting the MAVDRS case definition.

MAVDRS collects detailed information regarding the location of where the fatal injury occurred: the place (such as home, street, etc), the street address, city, county, and state. MAVDRS also collects data on place of death (such as emergency room, home, etc), but not the city where the actual death occurred. *For purposes of this report, all tables, figures, and bullets that mentions any location or place of death, refers to the location where the fatal injury occurred.*

## LOCATION OF COUNTIES AND MAJOR CITIES IN MASSACHUSETTS

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## Section 1: Overview of Violent Deaths in Massachusetts

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### Data Highlights for 2007<sup>1</sup>:

- Violent deaths claimed the lives of 15 victims a week, on average, in Massachusetts in 2007 (N= 802).
- Of the 802 violent deaths, 64% were suicides (N=513), 23% were homicides (N=182), and 13% (N=102) were deaths of undetermined intent.

### Compared to 2006:

- The total number of violent deaths increased by 9% from 2006 (N=739) to 2007 (N=802).
- The number of suicides increased by 13% from 2006 to 2007 (from N=455 in 2006 to N=513 in 2007.)
- The number of undetermined deaths increased by 20% from 2006 (N=85) to 2007 (N=102).
- The number of homicides decreased by 6% from 2006 to 2007 (from N=194 in 2006 to N=182 in 2007).

### Compared to the U.S.<sup>2</sup>:

- The Massachusetts age-adjusted rates for all violent deaths in 2007 (12.1/100,000) were lower than the U.S. age-adjusted rates for 2006 (19.3/100,000).
- The Massachusetts age-adjusted suicide rate in 2007 was 7.6/100,000 compared to 11.0/100,000 for the U.S. in 2006.
- The Massachusetts age-adjusted rate for homicide in 2007 was 2.9/100,000, half that of the U.S. age-adjusted rate of 6.2/100,000 for homicides in 2006.
- The Massachusetts age-adjusted rate for deaths of undetermined intent in 2007 was 1.4/100,000 and the U.S. age-adjusted rate was 1.7/100,000 in 2006.

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<sup>1</sup> The classification change at the Office of the Chief Medical Examiner (OCME) in 2005 affected the number of undetermined intent deaths in Massachusetts; they were substantially less than in previous years. In 2007, the number of deaths of undetermined intent was 102, only 13% of the total. Comparatively, in 2004, the number of deaths of undetermined intent was 625 (50% of the total violent deaths).

<sup>2</sup> US age-adjusted data not available for 2007 (12/11/09) at the time of this report and 2006 U.S. numbers were used.

## 2007 MAVDRS INCIDENTS AND VICTIMS

Table 1.1: Type of Incidents and Victims: Number and Percent, MA 2007				
Intent	Incidents		Victims	
	N	%	N	%
<b>Suicides</b>				
Single victim suicide	500	64.4	500	62.3
<b>Homicides</b>				
Single victim homicide	149	19.2	149	18.6
Multiple victim homicide	8	1.0	17	2.1
<b>Undetermined intent deaths</b>				
Single victim undetermined intent death	99	12.8	99	12.3
Multiple victim undetermined intent death	1	0.1	2	0.2
<b>Unintentional firearm death</b>				
Single victim unintentional firearm death	2	0.3	2	0.2
<b>Legal intervention</b>				
Single victim legal intervention death	3	0.4	3	0.4
<b>Combined intent</b>				
Homicide/suicide	13	1.7	28	3.5
Undetermined intent/homicide	1	0.1	2	0.2
<b>Total</b>	<b>776</b>	<b>100.0</b>	<b>802</b>	<b>100.0</b>

In 2007, a total of 776 incidents in the MAVDRS database accounted for 802 violent deaths.

- 97% of incidents consisted of only one death (N=753).
- Twenty-three incidents resulted in the death of more than one person (e.g. homicide/suicide, multiple victim homicide, etc.) for a total of 49 victims.
- Multiple victim incidents included the following:
  - eight multiple victim homicides (one or more persons kills two or more people in the same incident)
  - thirteen incidents where one person killed one or more people then killed him/herself in the same incident (homicide/suicide incident)
- There were two unintentional firearm deaths.
- There were three legal intervention deaths.

## DEMOGRAPHICS OF VIOLENT DEATHS

<b>Table 1.2: Violent Deaths by Intent and Demographics: Number, Percent, and Rate, MA 2007</b>			
	<b>N</b>	<b>Percent</b>	<b>Rate per 100,000<sup>1</sup></b>
<b>Intent</b>			
Suicide	513	64.0	8.0
Homicide	182	22.7	2.8
Undetermined	102	12.7	1.6
Unintentional firearm	2	0.2	--
Legal intervention	3	0.4	--
<b>Sex</b>			
Male	593	73.9	18.9
Female	209	26.1	6.3
<b>Race/Ethnicity</b>			
White, non-Hispanic	598	74.6	11.5
Black, non-Hispanic	98	12.2	24.4
Asian, non-Hispanic	16	2.0	4.9
Hispanic	76	9.5	14.4
Other/mixed <sup>2</sup>	14	1.7	--
<b>Age Group</b>			
0-14	25	3.1	2.1
15-24	130	16.2	14.2
25-34	136	17.0	16.4
35-44	163	20.3	16.7
45-54	157	19.6	15.9
55-64	105	13.1	14.4
65-74	43	5.4	10.4
75-84	24	3.0	7.9
85+	18	2.2	12.9
Unknown	1	0.1	--
<b>Total</b>	<b>802</b>	<b>100.0</b>	<b>12.4</b>

### **ADDITIONAL FINDINGS FOR 2007:**

- The youngest victim was one month old and the oldest was 94 years old. The mean age of all victims was 42.0 and the median age was 41.0.
- Eleven victims of a violent death were homeless.
- Twelve victims were fatally injured while in custody, such as jail, state institution, foster care or injured prior to arrest.<sup>3</sup>
- There were 69 war veterans<sup>4</sup> who died a violent death.
- Twelve victims died of a violent death at their place of work.

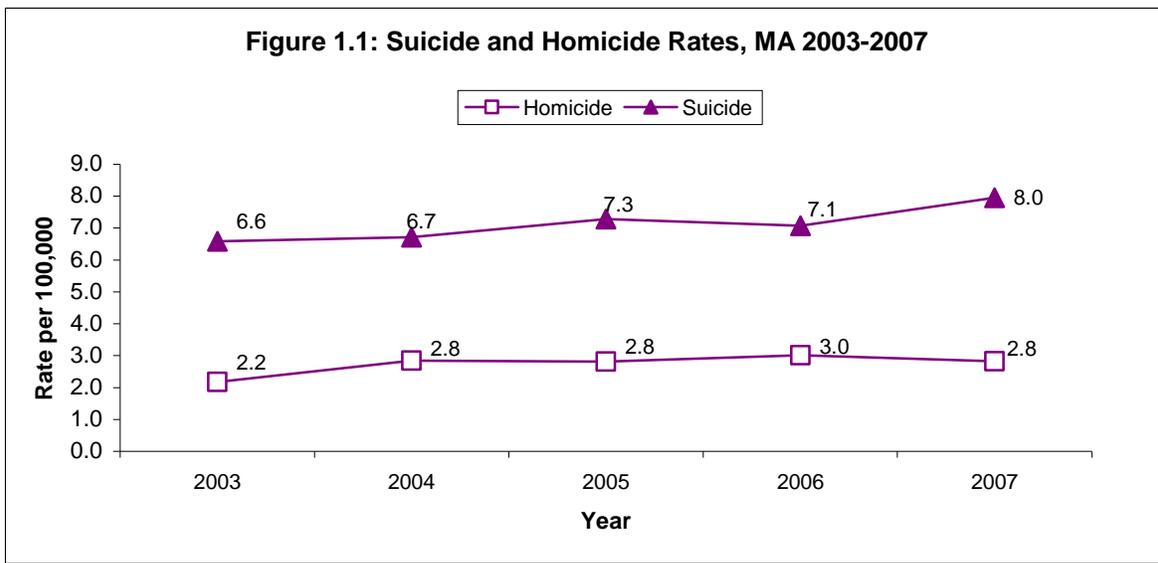
<sup>1</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

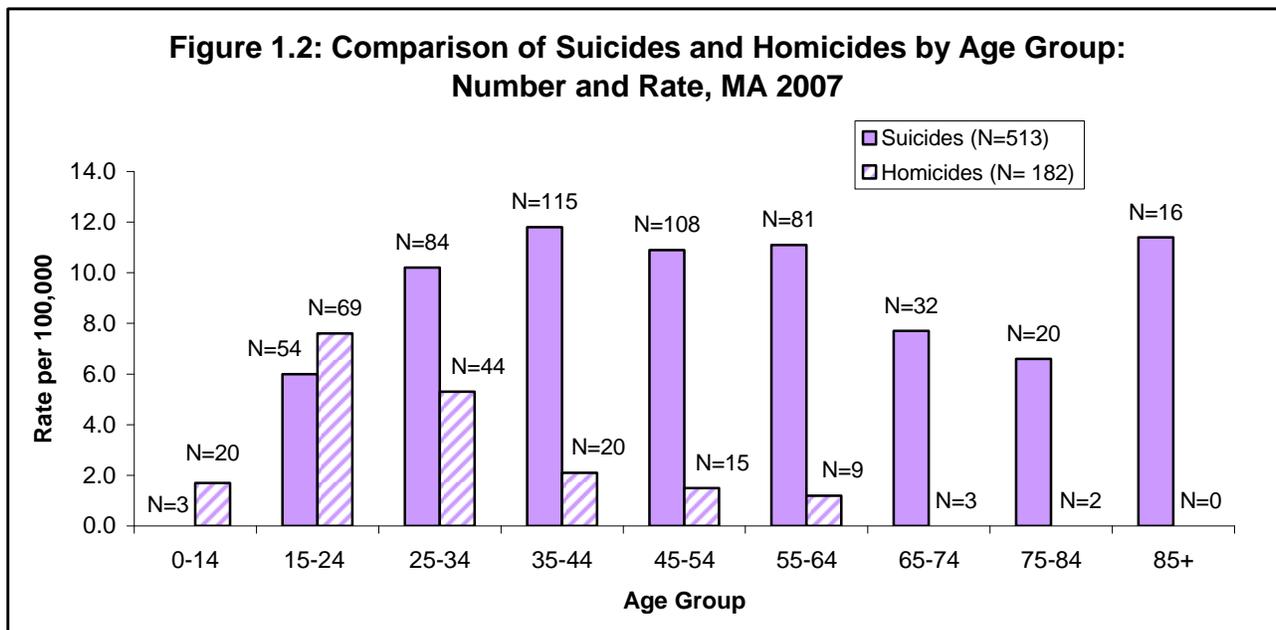
<sup>3</sup> This 'in custody' variable is different than the question that asks the place where the victim was injured, which could be "jail, prison, detention facility." (Place of suicides can be found on page 19 (Table 2.7) and place of homicides are on page 32 (Table 3.7).

<sup>4</sup> This report only includes information where the deceased was a U.S. veteran and the war in which they served was specified.

## COMPARISON BETWEEN SUICIDES AND HOMICIDES<sup>1</sup>



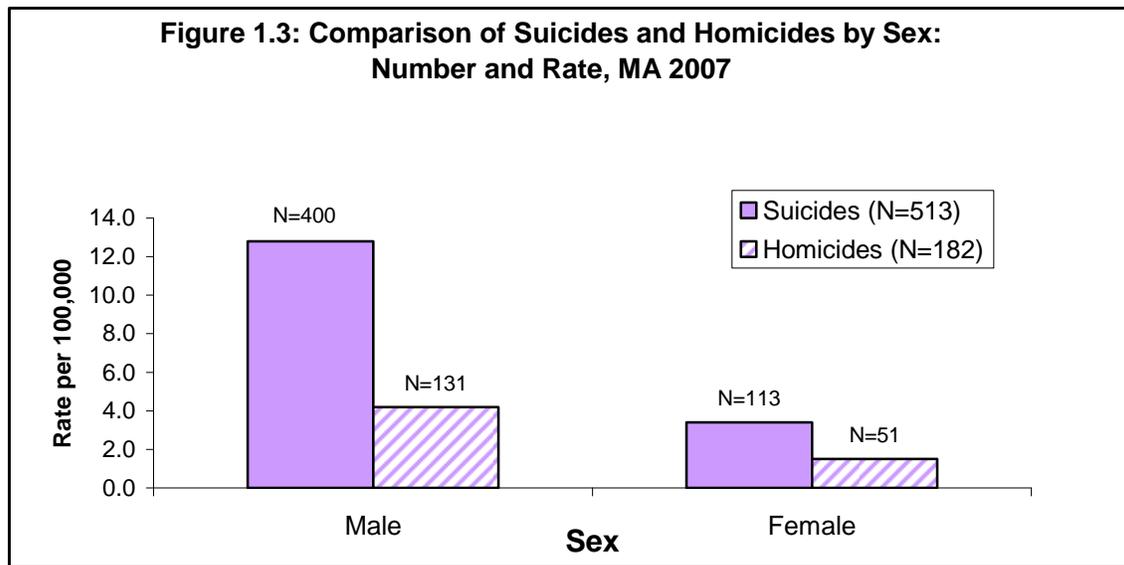
- Over the past five years, rates of suicide have been, on average, 2.6 times higher than rates of homicide.



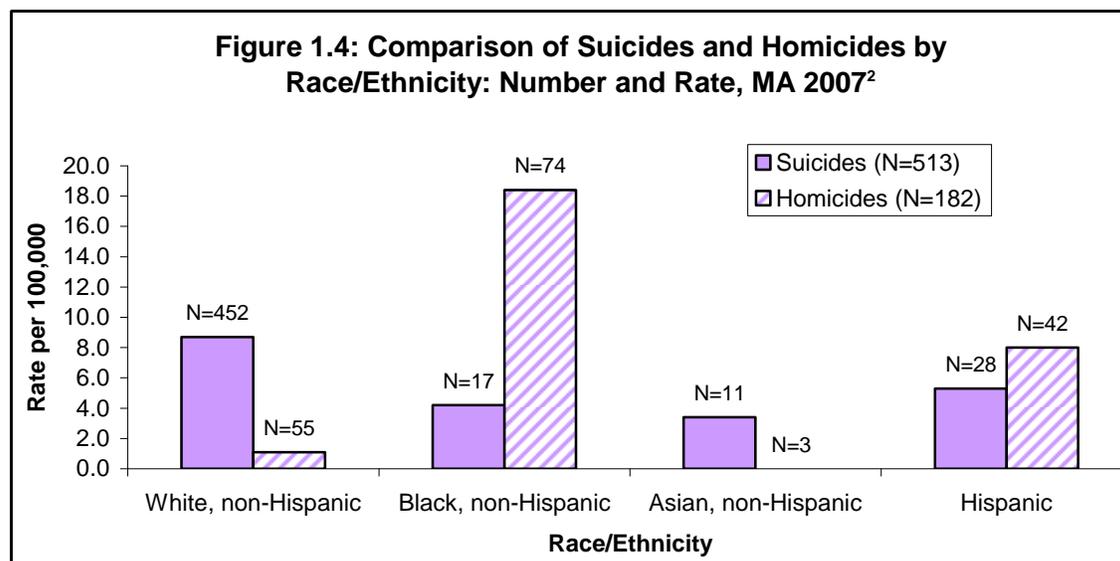
- Fifteen to twenty-four year olds had the highest rate of homicide (7.6/100,000) of any age group and one of the lowest rates of suicide (6.0/100,000).
- The largest number of homicides occurred among youth and adults ages 15-34; 62% (N=112) of the total number of homicides were in this age group.
- For all age groups age 25 and over, the rate of suicides was greater than the rate of homicides.
- The largest difference in rates of homicides and suicides was among the 55-64 year olds, among whom the rate of suicides was nine times higher than the rate of homicides.

<sup>1</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.

## COMPARISON BETWEEN SUICIDES AND HOMICIDES<sup>1</sup>



- For males, suicide rates (12.8/100,000) were three times higher than homicide rates (4.2/100,000).
- For females, suicide rates (3.4/100,000) were 2.3 times higher than homicide rates (1.5/100,000).



- Black, non-Hispanics and Hispanics had higher rates of homicide than suicide; whereas, White, non-Hispanics had higher rates of suicide than homicide.
- Among White, non-Hispanics, the suicide rate (8.7/100,000) was 7.9 times higher than the homicide rate (1.1/100,000).
- Among Black, non-Hispanics, the homicide rate (18.4/100,000) was 4.4 times higher than the suicide rate (4.2/100,000).
- Among Hispanics, the homicide rate (8.0/100,000) was 1.5 times higher than the suicide rate (5.3/100,000).

<sup>1</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.

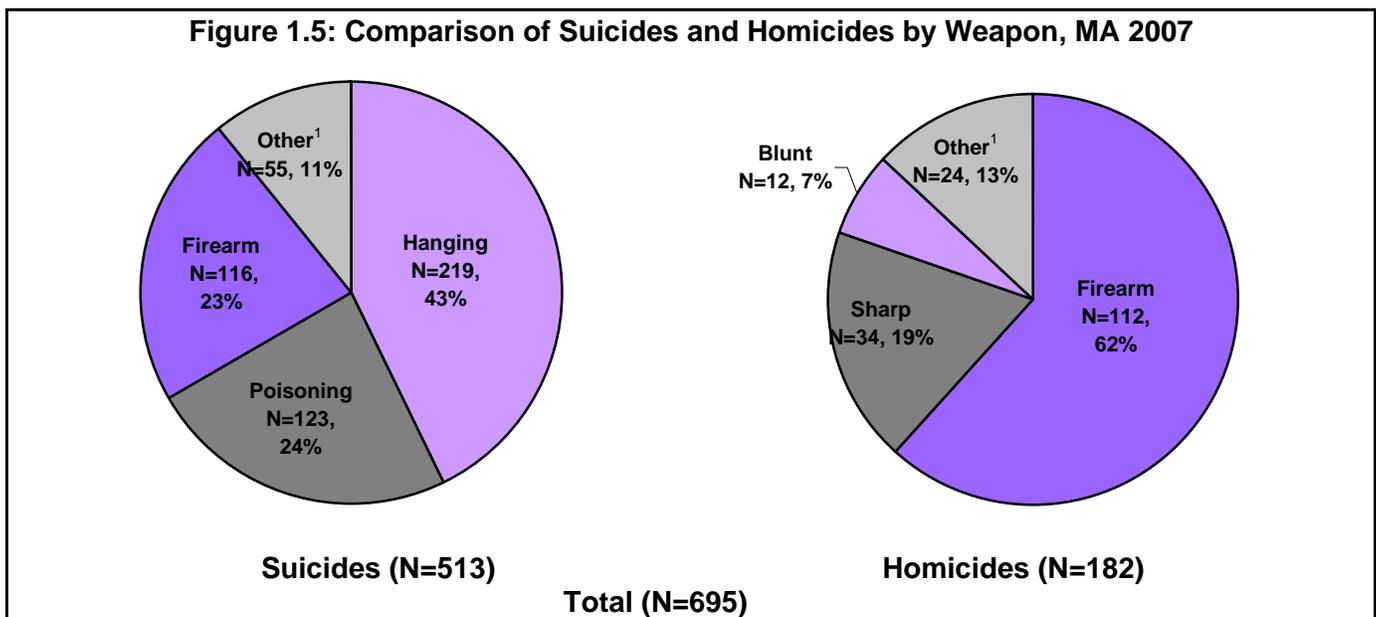
<sup>2</sup> There were 5 victims whose race was "other" or "mixed." Rates for other/mixed race were not calculated due to lack of denominator information.

## METHODS OF SUICIDES AND HOMICIDES

MAVDRS collects information on the cause or weapon used to inflict the fatal injury. A weapon can be a firearm (e.g. handgun, shotgun), a sharp instrument (e.g. knife), a blunt instrument (e.g. baseball bat), fire/burns, transport vehicles (e.g. train), falls, etc. It may also refer to the method of death, for example, “hanging/strangulation/suffocation” is defined as a weapon by NVDRS. This includes when someone hangs himself/herself, or when a person is manually strangled. NVDRS combines these asphyxiation-type deaths under one weapon called “hanging/strangulation/suffocation.” In this report, this weapon is referred to as “hanging.”

Another method/weapon is called “poisoning” and it typically refers to drug overdoses, including alcohol, street drugs, prescription drugs, or a combination of these. A poisoning can also be a gas, such as carbon monoxide or other toxic substances, such as ethylene glycol (anti-freeze).

In cases where more than one weapon type was used (including multiple poisons), only the first weapon type was selected for the analysis in this report.



- Firearms were used in 62% of homicides and in 23% of suicides.
- “Other” weapon in *suicides* include: drowning, fall/jump, motor vehicle, other transport vehicles, fire/burn, and other not specified.
- “Other” weapon in *homicides* include: fire/burn, motor vehicle, personal weapons (hands, feet), and unknown.

## Section 2: Suicides in Massachusetts

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### Data Highlights for 2007:

- An average of ten suicides occurred per week in 2007; more than one each day (N=513).
- The highest suicide rate overall was among White, non-Hispanic males (N=344, 13.8/100,000).
- White, non-Hispanics had the highest suicide rate (8.7/100,000). Asian, non-Hispanics had the lowest suicide rate (3.4/100,000).
- The suicide rate for males (12.8/100,000) was almost four times higher than the rate for females (3.4/100,000).
- Approximately 73% of suicides occurred in a home or its surrounding area (yard, driveway, and porch).

### Compared to 2006:

- Suicides increased by 13% in 2007 (N= 513) compared to 2006 (N=455). The rate increased from 7.1 to 8.0/100,000.
- For males, suicides increased by 24% from 2006 to 2007 (N=322 in 2006 and N=400 in 2007).
- For females, suicides decreased by 15% from N=133 in 2006 to N=113 in 2007.
- The rate of suicides increased the most among Hispanic males from 3.9/100,000 in 2006 to 9.9/100,000 in 2007. The rate was more than 2.5 times higher.

### Compared to the U.S.:<sup>1</sup>

- The age-adjusted suicide rate for males was lower in Massachusetts in 2007 than the U.S. average in 2006. The U.S. age-adjusted rate for male suicides in 2006 was 18.0/100,000. and 12.5/100,000 in Massachusetts in 2007.
- The age-adjusted suicide rate for females was lower in Massachusetts in 2007 than the 2006 U.S. average. In 2006, the U.S. age-adjusted rate for female suicides was 4.5/100,000 and in 2007 in Massachusetts, it was 3.2/100,000.
- In 2007, Massachusetts had a lower age-adjusted rate of firearm suicides (1.7/100,000) compared to the U.S. age-adjusted rate (5.5/100,000) in 2006.
- In 2007, Massachusetts had a slightly higher age-adjusted rate of hanging suicides (2.6/100,000) than the age-adjusted rate for the U.S. in 2006 (2.5/100,000).

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<sup>1</sup> US age-adjusted data not available for 2007 (4/12/10) at the time of this report and 2006 U.S. numbers were used.

## SUICIDE DEMOGRAPHICS

Table 2.1: Suicides by Demographics: Number, Percent, and Rate, MA 2007			
	N	Percent	Rate per 100,000 <sup>1</sup>
<b>Sex</b>			
Male	400	78.0	12.8
Female	113	22.0	3.4
<b>Race/Ethnicity</b>			
White, non-Hispanic	452	88.1	8.7
Black, non-Hispanic	17	3.3	4.2
Asian, non-Hispanic	11	2.1	3.4
Hispanic	28	5.5	5.3
Other/mixed <sup>2</sup>	5	1.0	--
<b>Age Group</b>			
0-14	3	0.6	--
15-24	54	10.5	6.0
25-34	84	16.4	10.2
35-44	115	22.4	11.8
45-54	108	21.1	10.9
55-64	81	15.8	11.1
65-74	32	6.2	7.7
75-84	20	3.9	6.6
85+	16	3.1	11.4
<b>Total</b>	<b>513</b>	<b>100.0</b>	<b>8.0</b>

### **ADDITIONAL FINDINGS FOR 2007:**

- The youngest suicide victim was 13 years old and the oldest was 94 years old.
- Forty-three percent of suicides were of persons aged 35-54. The mean age was 45.6 and the median age was 45.
- Fifty-four war veterans<sup>3</sup> completed suicide, which accounted for 78% of the total violent deaths among war veterans (N=69).
- Suicides in 2007 also included:
  - five victims that were homeless.
  - seven victims that were in custody, such as jail, state institution, or foster care.<sup>4</sup>
  - seven victims that died at their workplace.

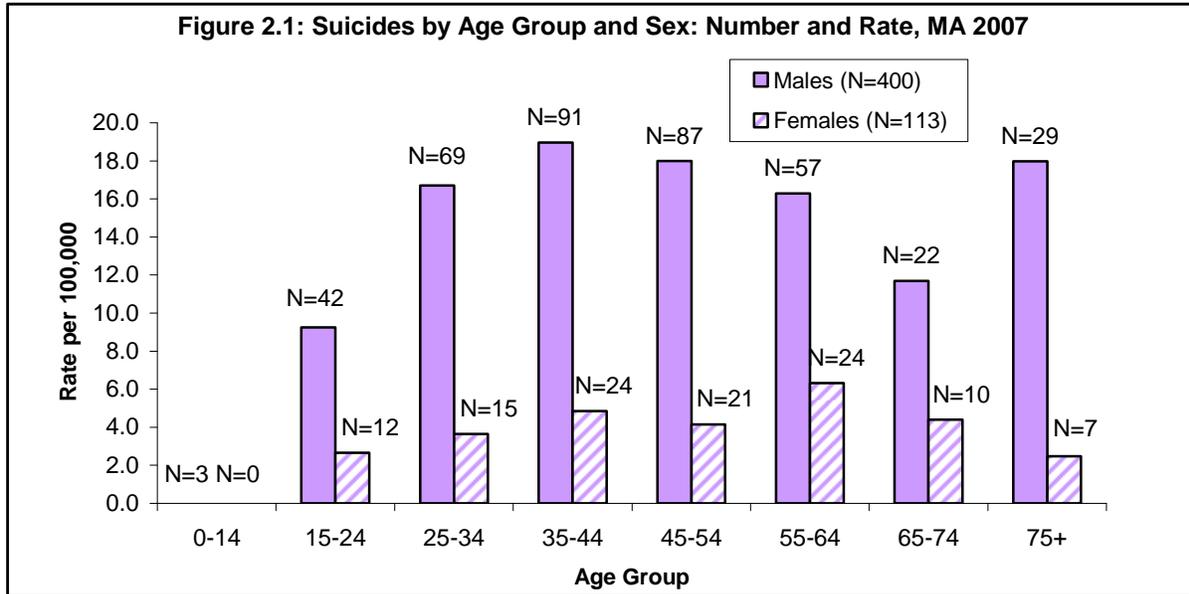
<sup>1</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

<sup>3</sup> This report only includes information where the deceased was a U.S. veteran *and* the war in which they served was specified.

<sup>4</sup> Suicides occurring "in custody" include those mentioned on page 19 (Table 2.7: Places where suicides occur) in addition to those who are involuntarily committed to a psychiatric facility, in a foster home, and those who were injured prior to being arrested.

## SUICIDE DEMOGRAPHICS



- Among persons age 15-24, the suicide rate was 6.0/100,000 (N=54), which was lower than the statewide rate of 8.0/100,000. Among males, the age group of 35-44, 45-54, and 75 and over had the highest suicide rates (19.0/100,000, 18.0/100,000, and 18.0/100,000 respectively).
- Among females, ages 55-64 had the highest suicide rates (6.3/100,000).
- Overall, male rates of suicide were almost four times higher than female rates.

**Table 2.2: Suicides by Race/Ethnicity and Sex: Number, Percent, and Rate, MA 2007<sup>1</sup>**

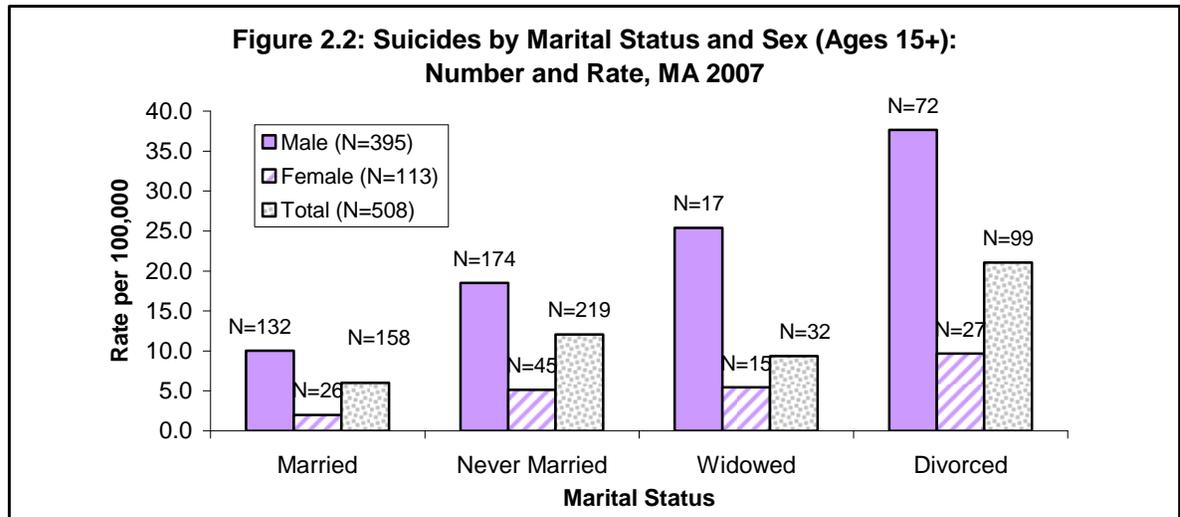
	Female			Male		
	N	Percent	Rate per 100,000	N	Percent	Rate per 100,000
White, non-Hispanic	108	95.6	4.0	344	86.0	13.8
Black, non-Hispanic	1	0.9	--	16	4.0	8.2
Asian, non-Hispanic	2	1.8	--	9	2.3	5.6
Hispanic	2	1.8	--	26	6.5	9.9
Other/mixed <sup>2</sup>	0	0	0	5	1.3	--
<b>Total</b>	<b>113</b>	<b>100.0</b>	<b>3.4</b>	<b>400</b>	<b>100.0</b>	<b>12.8</b>

- White, non-Hispanics had the highest rates for males (13.8/100,000).
- There were 513 suicides; approximately 67% were White, non-Hispanic males and 21% were White, non-Hispanic females. The Massachusetts population is comprised of 39% White, non-Hispanic males and 42% White, non-Hispanic females in 2007.
- Among males, Asian, non-Hispanics had the lowest suicide rate (5.6/100,000).

<sup>1</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

## SUICIDE DEMOGRAPHICS



- In 2007, male suicide rates were always higher than female suicide rates, regardless of marital status.
- Suicide rates were highest among divorced victims for both males (37.7/100,000) and females (9.7/100,000) and were lowest among married victims for both males (10.0/100,000) and females (2.0/100,000).

**Table 2.3: Suicides (Ages 25+) by Level of Education and Sex:  
Number, Percent, and Total Rate, MA 2007**

Years of Education	Female		Male		Total		Rate per 100,000 <sup>1</sup>
	N	%	N	%	N	%	
0-8	3	3.0	7	2.0	10	2.2	4.5
9-11	1	1.0	32	9.0	33	7.2	14.6
12	51	50.5	201	56.6	252	55.3	19.4
13-16	36	35.6	84	23.7	120	26.3	6.2
17+	9	8.9	29	8.2	38	8.3	5.6
<b>Total<sup>2</sup></b>	<b>101</b>	<b>100.0</b>	<b>355</b>	<b>100.0</b>	<b>456</b>	<b>100.0</b>	<b>10.5</b>

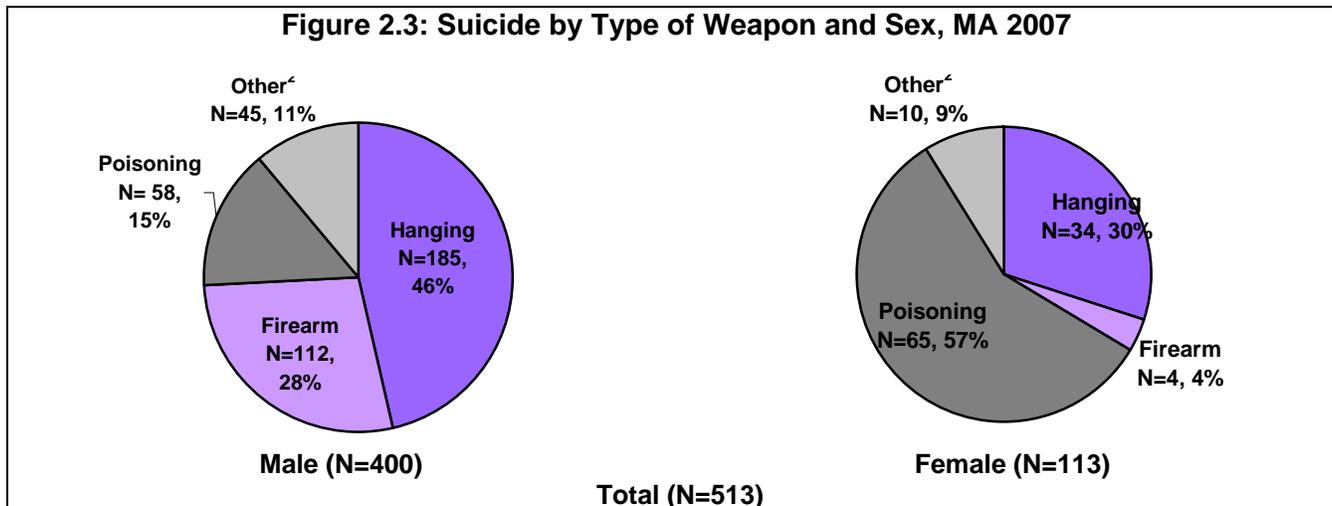
- The highest suicide rate was among victims with 12 years of education.
- Approximately 65% of suicide victims age 25 and older had 12 or less years of education, while approximately 40% of the Massachusetts population age 25 and older has had 12 years of education or less.

<sup>1</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates.

<sup>2</sup> There was 1 victim whose data element for level of education was unknown.

## METHODS OF SUICIDES<sup>1</sup>

**Figure 2.3: Suicide by Type of Weapon and Sex, MA 2007**



- In cases where more than one weapon type was used (including multiple poisons), only the first weapon type was selected for the analysis in this report.
- In this report, “hanging/strangulation/suffocation” is simply referred to as “hanging.” This was the most common suicide method, accounting for 43% of suicides.
- Among females, poisoning/drug overdose was the most common method (57%), followed by hanging (30%).
- For males, hanging was the most common method (46%). The second most common method involved the use of a firearm (28%), followed by poisoning/drug overdose (15%).
- Of suicide poisoning deaths, 50% (N=61) were due to the ingestion of more than one poison/drug. Of the total suicide deaths by poisoning/drug overdose (N=123):
  - 76% (N=93) were due to the ingestion of one or more substances including street/recreation drugs, alcohol, pharmaceutical prescriptions, and over-the counter medications.
  - 20% (N=24) were due to carbon monoxide poisoning or other gas, or vapor.
  - 5% (N=6) were due to another poison, which includes substances such as anti-freeze.

**Table 2.4: Suicide Method by Age Group: Number and Percent, MA 2007**

Weapon	Age Group										Total	
	0-14		15-24		25-44		45-64		65+			
	N	%	N	%	N	%	N	%	N	%	N	%
Firearm	0	0.0	10	18.5	40	20.1	43	22.8	23	33.8	116	22.6
Poisoning	0	0.0	9	16.7	39	19.6	55	29.1	20	29.4	123	24.0
Hanging	3	100.0	26	48.1	101	50.8	70	37.0	19	27.9	219	42.7
Other <sup>2</sup>	0	0.0	9	16.7	19	9.5	21	11.1	6	8.8	55	10.7
<b>Total</b>	<b>3</b>	<b>100.0</b>	<b>54</b>	<b>100.0</b>	<b>199</b>	<b>100.0</b>	<b>189</b>	<b>100.0</b>	<b>68</b>	<b>100.0</b>	<b>513</b>	<b>100.0</b>

- Hanging was the most common method of suicide through age 64.
- Firearms was the most common method of suicide among persons ages 65 and over.
- Weapons in the “other” category are as follows: drowning, fall/jump, motor vehicle, other transport vehicle (e.g. train), fire/burns, and other specified weapons.

<sup>1</sup> In cases where more than one weapon type was used (including multiple poisons), only the first weapon type was selected for the analysis in this report.

<sup>2</sup> See Appendix A for a complete list of weapons.

## LOCALITY OF SUICIDES

<b>Table 2.5: Suicides by County of Injury: Number, Percent, and Rate, MA 2007</b>			
<b>County</b>	<b>N</b>	<b>Percent<sup>1</sup></b>	<b>Rate per 100,000<sup>2</sup></b>
<b>Population: 1,000,000+</b>			
Middlesex	87	18.1	5.9
<b>Population: 500,000 – 1,000,000</b>			
Worcester	73	15.2	9.3
Essex	59	12.3	8.0
Bristol	43	9.0	7.9
Suffolk	46	9.6	6.5
Norfolk	41	8.5	6.3
<b>Population: 100,000 – 500,000</b>			
Berkshire	17	3.5	13.1
Barnstable	28	5.8	12.6
Plymouth	38	7.9	7.8
Hampshire	12	2.5	7.8
Hampden	27	5.6	5.9
<b>Population: &lt;100,000</b>			
Franklin	6	1.3	8.4
Nantucket	3	0.6	--
Dukes	0	0.0	0.0
<b>Other</b>			
Outside MA <sup>2</sup>	30	--	--
Unknown <sup>2</sup>	3	--	--
<b>Total known MA county</b>	<b>480</b>	<b>100.0</b>	<b>--</b>
<b>Total</b>	<b>513</b>	<b>--</b>	<b>8.0</b>

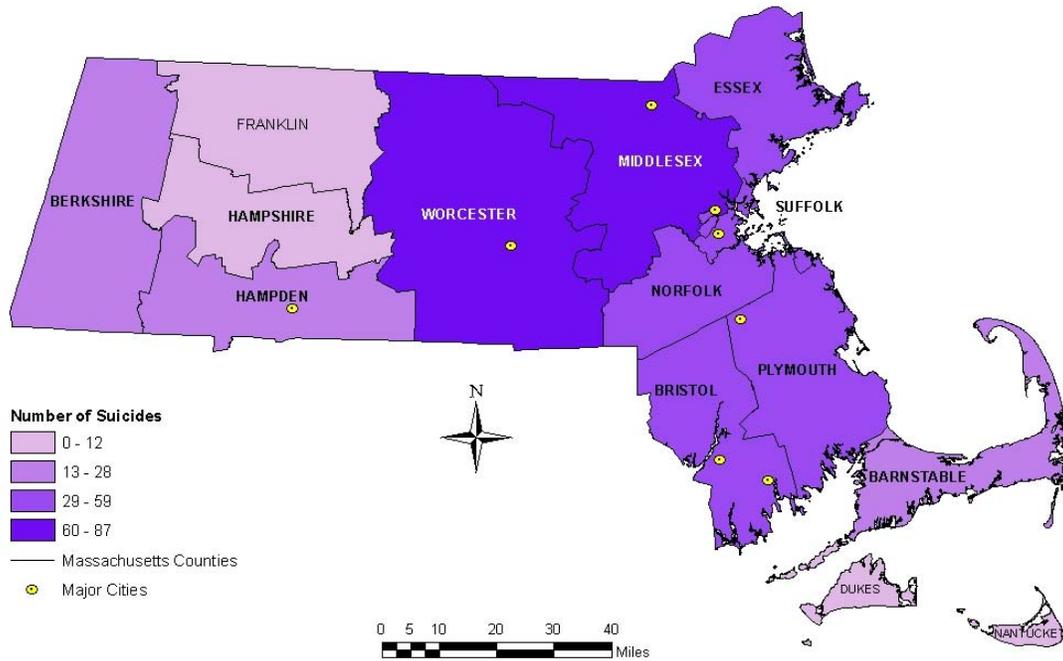
- Middlesex, Worcester, and Essex Counties had the highest number of suicides (N=87, 73, and 59 respectively). These three counties accounted for 43% of total suicides and 46% of the Massachusetts population.
- Among counties with a population of 500,000-1,000,000, Worcester had the highest number and rate (N=73, 9.3/100,000).
- Among counties with a population of 100,000-500,000, Plymouth had the highest number (N=38, 7.8/100,000) but Berkshire had the highest rate (13.1/100,000, N=17). These counties (Berkshire, Barnstable, Plymouth, Hampshire, Hampden) accounted for 24% of suicide occurrences and 23% percent of the Massachusetts population.
- Numbers of suicides for some counties are low, therefore rates may be unstable. Caution should be exercised in interpretation of these rates.

<sup>1</sup> Percent is based on known Massachusetts county of injury (N=480). Rate was not calculated on unknown county of injury nor out of state injuries.

<sup>2</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. Rates may be much higher among counties with a small population. See Appendix B for age-adjusted rates.

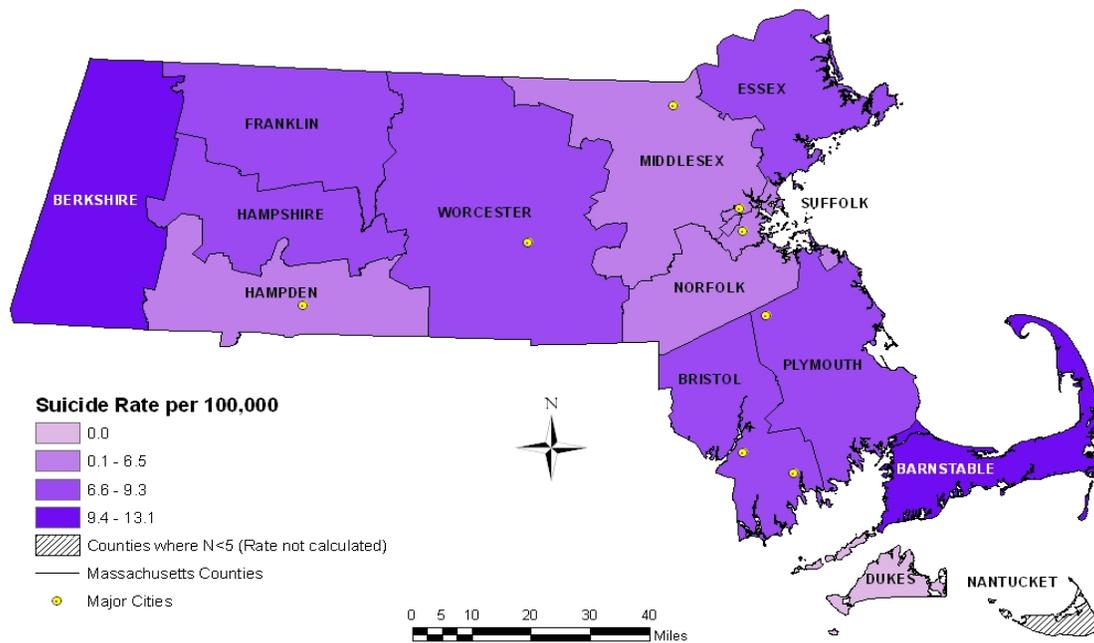
**LOCALITY OF SUICIDES**

**Figure 2.4: Suicides by County: Number, MA 2007**



Data Sources: Massachusetts Violent Death Reporting System (MAVDRS), MA Department of Public Health, Massachusetts Executive Office of Environmental Affairs, MassGIS

**Figure 2.5: Suicides by County: Rate, MA 2007**



Data Sources: Massachusetts Violent Death Reporting System (MAVDRS), MA Department of Public Health, Massachusetts Executive Office of Environmental Affairs, MassGIS

**LOCALITY OF SUICIDES**

<b>Table 2.6: Suicides by City/Town of Injury: Number, Percent, and Rate, MA 2007</b>			
	<b>N</b>	<b>Percent<sup>1</sup></b>	<b>Rate per 100,000<sup>2</sup></b>
<b>Group 1: Cities/Towns over 175,000 population:</b>			
Boston	40	8.4	6.7
<b>Total Group 1</b>	<b>40</b>	<b>8.4</b>	<b>6.7</b>
<b>Group 2: Cities/Towns 75,000-175,000 population:</b>			
Worcester	18	3.8	10.3
Lynn	8	1.7	9.2
Cambridge	9	1.9	8.9
Quincy	8	1.7	8.7
New Bedford	8	1.7	8.7
Brockton	8	1.7	8.6
Fall River	6	1.3	6.6
Lowell	6	1.3	5.8
Springfield	8	1.7	5.3
Newton	0	0.0	0.0
<b>Total Group 2</b>	<b>79</b>	<b>16.5</b>	<b>7.4</b>
<b>Group 3: Cities/Towns 50,000-75,000 population:</b>			
Malden	9	1.9	16.2
Plymouth	7	1.5	12.7
Medford	7	1.5	12.6
Taunton	6	1.3	10.8
Lawrence	5	1.0	7.1
Somerville	5	1.0	6.7
Brookline	4	0.8	--
Waltham	3	0.6	--
Revere	3	0.6	--
Framingham	3	0.6	--
Peabody	2	0.4	--
Weymouth	2	0.4	--
Haverhill	2	0.4	--
Chicopee	1	0.2	--
<b>Total Group 3</b>	<b>59</b>	<b>12.3</b>	<b>7.2</b>
<b>Group 4: Cities/Towns with &lt; 50,000 population</b>			
<b>Total Group 4</b>	<b>301</b>	<b>62.8</b>	<b>7.6</b>
<b>Other</b>			
Outside MA	30	--	--
Unknown city/town	4	--	--
<b>Total known MA city/town</b>	<b>479</b>	<b>100.0</b>	<b>--</b>
<b>Total</b>	<b>513</b>	<b>--</b>	<b>8.0</b>

- The total suicide rate for cities with a population of 75,000-175,000 (7.4/100,000) was similar to the rate of Boston, which has a population over 175,000 (6.7/100,000).
- Among cities with a population of 75,000-175,000, Worcester had the highest number (N=18) and the highest rate (10.3/100,000) of suicide.
- Among cities with a population of 50,000-75,000, Malden had the highest number and rate of suicide (N=9, 16.2/100,000).

<sup>1</sup> Percent is based on known Massachusetts city of injury (N=479). Rate was not calculated on unknown city of injury nor out of state injuries.

<sup>2</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates.

## PLACE OF SUICIDES

<b>Table 2.7: Places Where Suicides Occur: Number and Percent, MA 2007</b>		
	<b>N</b>	<b>%<sup>1</sup></b>
<b>Buildings and surroundings:</b>		
House, apartment, including driveway, porch, yard	356	73.1
Hotel/motel	13	2.7
Jail, prison, detention facility <sup>2</sup>	5	1.0
Other commercial establishment	4	0.8
Office building	3	0.6
Hospital, medical facility or nursing home	3	0.6
Supervised residential facility	1	0.2
<b>Transportation utilities:</b>		
Motor vehicle (excl. school and public transportation)	15	3.1
Street/road, sidewalk, alley	7	1.4
Parking lot/public parking garage	7	1.4
Railroad track	7	1.4
Public transportation or station	3	0.6
Highway	3	0.6
<b>Outdoor and recreational areas:</b>		
Natural area	38	7.8
Park, playground, public use area	27	5.5
<b>Educational facilities:</b>		
College/University	3	0.6
Elementary school, middle school (including residential school)	1	0.2
Unspecified School	1	0.2
<b>Other:</b>		
Other	14	2.9
<b>Total Known Place of Suicide Occurrence</b>	<b>487</b>	<b>100.0</b>
<b>Unknown place of Suicide</b>	<b>26</b>	<b>--</b>
<b>Total Suicides</b>	<b>513</b>	<b>--</b>

Of the 487 suicides where location of injury was reported:

- The majority (73%) of suicides occurred in a house, apartment, or its surroundings (yard, porch, driveway).
- About 13% of suicides occurred in an outdoor/recreational area, such as woods or rivers, parks, and public use areas.
- Five suicides occurred in a jail, prison or detention facility.<sup>2</sup>
- Fifteen suicides occurred in a motor vehicle and five of those were due to carbon monoxide poisoning.

<sup>1</sup> Percent is based on number of suicides with known place where suicide occurred (N=487).

<sup>2</sup> Suicides occurring in jail are not necessarily the same suicide victims who were injured "in custody." The "in custody" variable mentioned on pages 7 and 12 includes those victims who are involuntarily committed to a psychiatric facility, in a foster home, and those who were injured prior to being arrested.

## SUICIDE CIRCUMSTANCES

The circumstances of a suicide can help in getting a better understanding what was occurring in the decedent's life prior to the death. NVDRS allows for the endorsement of more than one circumstance for a suicide victim. It is important to note that some circumstances are more likely to be known and/or noted than others. The following table percentages are circumstances noted out of all suicides (N=513). See Appendix A for more information on circumstances.

<b>Table 2.8: Circumstances of Suicides: Number and Percent, MA 2007</b>		
	<b>N</b>	<b>%</b>
<b>Total number of suicide victims</b>	<b>513</b>	<b>100</b>
<b>Total victims with reported circumstances</b>	<b>457</b>	<b>--</b>
<b>Health Characteristics</b>		
Current mental health problem	259	50.5
Prior mental health treatment	200	39.0
Current treatment for mental illness	173	33.7
Alcohol problem/other substance problem	138	26.9
History of suicide attempts	111	21.6
Physical health problem <sup>1</sup>	24	4.7
<b>Relationship Characteristics</b>		
Intimate partner problem	118	23.0
Other relationship problem	31	6.0
Other death of friend or family in past five years	24	4.7
Perpetrator of interpersonal violence past month	21	4.1
<b>Life Stressors</b>		
Financial problem	54	10.5
Job problem	37	7.2
Recent criminal legal problem	36	7.0
Other legal problems	9	1.8
<b>Event Characteristics</b>		
Current depressed mood	118	23.0
Person left a suicide note	162	31.6
Disclosed intent to commit suicide	96	18.7
Crisis in past two weeks	62	12.1

Of the 513 suicides:

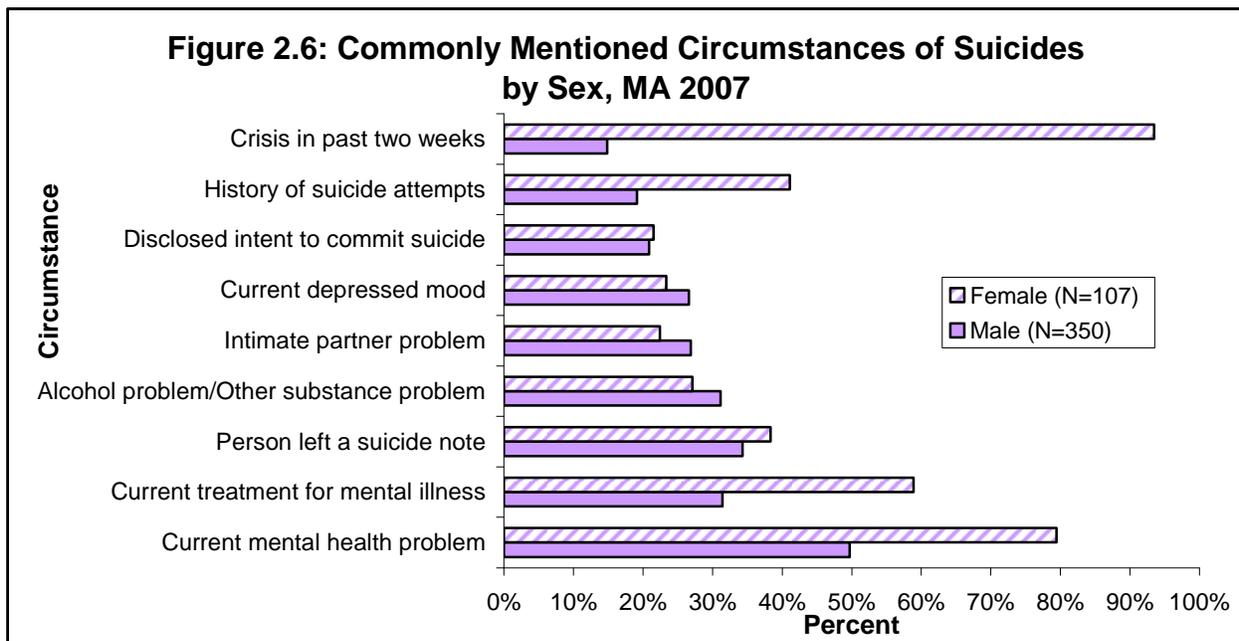
- Approximately 50% were reported to have a current mental health problem. This is a broad category and includes victims who have been diagnosed by a health professional as having a psychiatric condition and victims who were prescribed antidepressants or other psychiatric medication.
- Thirty-two percent left a suicide note.
- Twenty-three percent were reported as being depressed by a family member or other witness. This does not necessarily indicate that there was a clinical diagnosis of depression or treatment for this condition.
- Twenty-three percent were reported to be having problems with a current or former intimate partner including divorce, jealousy, or argument.
- Nineteen percent disclosed their intent to complete suicide to another person.

<sup>1</sup> From 2003 to 2005, MAVDRS coded "Physical health problem" if there was a serious physical health problem present, regardless if it contributed directly to the suicide or not. In 2006, we began to code this variable only if there was evidence that the problem directly contributed to the suicide or if the problem was debilitating, including situations where the victim was terminally ill, bed-ridden, oxygen dependent, or receiving daily care by a third party.

## CIRCUMSTANCES

Table 2.9: Top Eight Most Commonly Mentioned Suicide Circumstances by Age Group, MA 2007				
Circumstance	Age Group and Rank			
	15 to 24	25 to 44	45 to 64	65 and over
Current mental health problem	1	1	1	1
Prior mental health treatment	2	2	2	3
Alcohol /Other substance problem	8	3	4	--
Current treatment for mental illness	6	4	3	4
Person left a suicide note	3	5	5	2
Disclosed intent to commit suicide	--	--	--	6
Current depressed mood	5	7	7	4
History of suicide attempts	--	8	6	7
Intimate partner problem	3	5	8	--
Physical health problem <sup>1</sup>	--	--	--	8
Crisis in past two weeks	7	--	--	--

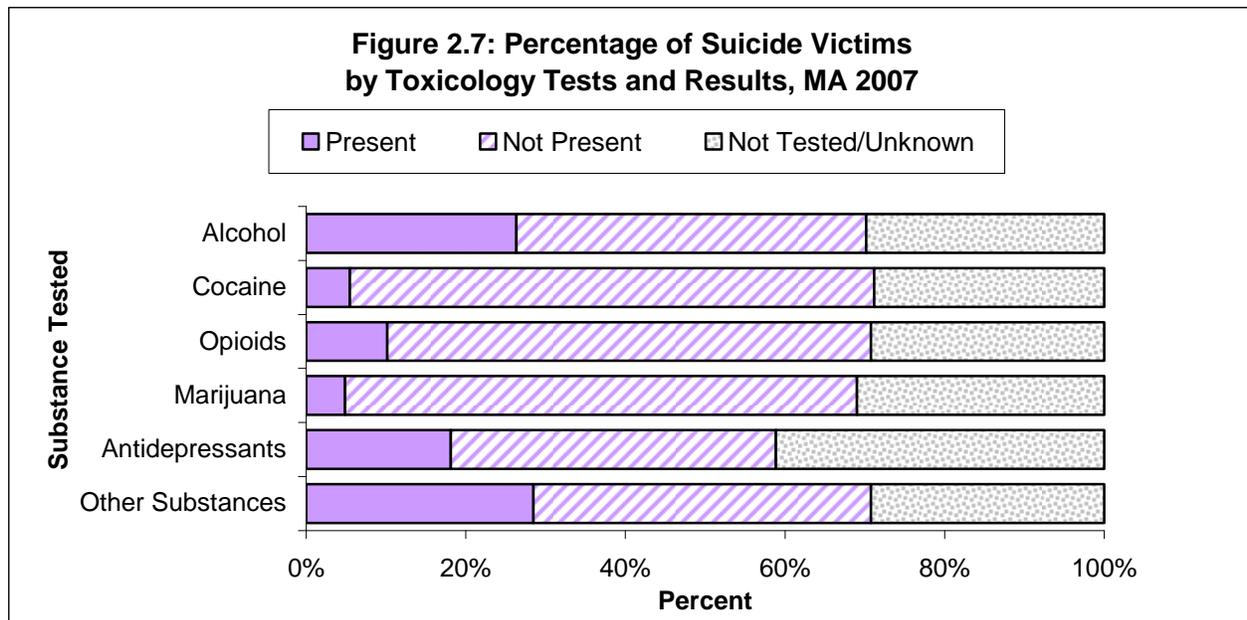
- Numerical rank (1-8) was determined by frequency of mention. Circumstances with the same frequencies were both given the higher rank number.
- For all ages, current mental health problem was the most frequently noted circumstance, which is a broad category and includes victims who have been diagnosed by a health professional as having a psychiatric condition and victims who were prescribed antidepressants or other psychiatric medication.



- Information about suicide circumstances was available for 89% (N=457) of all suicides; 88% of males (N=350) and 95% of females (N= 107).
- Females were more likely than males to have a history of suicide attempts, a current mental health problem, and/or treatment for a mental health disorder noted.
- A larger percentage of males were reported to have an intimate partner problem, a current depressed mood, and alcohol or substance problems compared to females.

<sup>1</sup> From 2003 to 2005, MAVDRS coded "Physical health problem" if there was a serious physical health problem present, regardless if it contributed directly to the suicide or not. In 2006, we began to code this variable only if there was evidence that the problem directly contributed to the suicide or if the problem was debilitating, including situations where the victim was terminally ill, bed-ridden, oxygen dependent, or receiving daily care by a third party.

## TOXICOLOGY OF SUICIDE VICTIMS



- Of the 513 suicide victims in Massachusetts in 2007, 360 (70%) were tested for blood alcohol concentration, 365 (71%) were tested for cocaine, 363 (70%) were tested for opioids, and 354 (69%) were tested for marijuana. The above figure demonstrates the percentage of victims who tested positive and negative for those substances, as well as not tested for those substances or had an unknown result.

**Table 2.11: Blood Alcohol Concentration of Suicide Victims that Tested Positive by Age Group: Number and Percent, MA 2007<sup>1</sup>**

	Age Group								Total	
	< 21		21-44		45-64		65+			
BAC % <sup>1</sup>	N	%	N	%	N	%	N	%	N	%
0.010 – 0.040 <sup>2</sup>	0	0.0	15	22.1	10	19.6	8	72.7	33	24.3
0.041 - 0.079	<5	--	6	8.8	6	11.8	<5	--	15	11.0
0.08 and over	<5	--	46	67.6	32	62.7	<5	--	84	61.8
Unknown <sup>3</sup>	0	0.0	<5	--	<5	--	0	0.0	<5	--
<b>Total</b>	<b>6</b>	<b>100.0</b>	<b>68</b>	<b>100.0</b>	<b>51</b>	<b>100.0</b>	<b>11</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>

- The above table only refers to those victims who were tested for Blood Alcohol Concentration and tested positive (N=136). Seventy percent (N=360) of suicide victims were tested for Blood Alcohol Concentration (BAC) and 37.8% of those tested had a positive BAC.
- Victims with a BAC in the 0.010 - 0.040 range comprise 24% of the total. These results must be interpreted with caution due to uncertainty of the cause of the result.<sup>2</sup>
- Among suicide victims where BAC was tested and results were positive, all six victims less than age 21 had a BAC 0.041 and over. Seventy-six percent of victims ages 21-44 had a BAC 0.041 or above. Among victims ages 45-64, 75% had a BAC 0.041 and above, and among victims aged 65 and over, 27% had a BAC 0.041 or above.
- Sixty-two percent (N=84) of all suicide victims who tested positive for alcohol had a BAC of 0.08 or over, which is over the legal limit for operating a motor vehicle in Massachusetts.

<sup>1</sup> Caution should be used when interpreting BAC due to variation in time among ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.

<sup>2</sup> BAC of 0.04% or less could be due to decomposition, rather than ingestion of alcohol.

<sup>3</sup> Unknown numbers are those where the victim was tested, but the results were not available at the time of abstraction.

## Section 3: Homicides in Massachusetts

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### Data Highlights for 2007:

- Homicides claimed an average of 3.5 lives per week (N=182) in 2007.
- Black, non-Hispanics had the highest homicide rate (18.4/100,000) compared to all other races, which ranged from 1.1 – 8.0/100,000.
- Black, non-Hispanic males had a homicide rate of 32.4/100,000.
- The homicide rate of males (4.2/100,000) was almost three times higher than the rate of females (1.5/100,000).
- In 2007, over half of homicides (62%) in Massachusetts involved firearms. The total number of homicides by firearms was 112, the same as 2006.

### Compared to 2006:

- Homicides decreased overall by a count of 12 (6%) from 2006 to 2007 (N=194 in 2006 and N=182 in 2007).
- The homicide rate for males decreased from 5.0 to 4.2/100,000 but increased for females from 1.2 to 1.5/100,000 from 2006 to 2007.

### Compared to the U.S.:

- Massachusetts had a lower age-adjusted homicide rate in 2007 (2.9/100,000) than the 2006 U.S. age-adjusted rate for homicides (6.2/100,000).
- In 2007, Massachusetts had an age-adjusted homicide rate for males (4.1/100,000) that was more than two times lower than that of the 2006 U.S. age-adjusted rate (9.8/100,000).
- The Massachusetts age-adjusted rate for female homicides in 2007 (1.6/100,000) was lower than that of the 2006 U.S. age-adjusted rate for female homicides (2.6/100,000).
- Massachusetts had an age-adjusted rate for Black, non-Hispanic males in 2007 (27.6/100,000) that was lower to the 2006 U.S. age-adjusted rate (39.1/100,000).

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<sup>1</sup> US age-adjusted data not available for 2007 (4/12/10) at the time of this report and 2006 U.S. numbers were used.

## DEMOGRAPHICS OF HOMICIDE VICTIMS

Table 3.1: Homicides by Demographics: Number, Percent, and Rate, MA 2007			
	N	Percent	Rate per 100,000 <sup>1</sup>
<b>Sex</b>			
Male	131	72.0	4.2
Female	51	28.0	1.5
<b>Race/Ethnicity</b>			
White, non-Hispanic	55	30.2	1.1
Black, non-Hispanic	74	40.7	18.4
Asian, non-Hispanic	3	1.6	--
Hispanic	42	23.1	8.0
Other/mixed <sup>2</sup>	8	4.4	--
<b>Age Group</b>			
0-14	20	11.0	1.7
15-24	69	37.9	7.6
25-34	44	24.2	5.3
35-44	20	11.0	2.1
45-54	15	8.2	1.5
55-64	9	4.9	1.2
65-74	3	1.6	--
75-84	2	1.1	--
85+	0	0	--
<b>Total</b>	<b>182</b>	<b>100.0</b>	<b>2.8</b>

### ADDITIONAL FINDINGS FOR 2007

- The youngest homicide victim was one month old and the oldest was 79 years old. The mean age for homicide victims was 28.7 and the median age was 25 years old.
- Forty-nine percent of all homicide victims were age 24 or younger and almost three-quarters were age 34 or younger.
- Five war veterans<sup>3</sup> were victims of a homicide.
- Homicides in 2007 included:
  - three victims that were homeless.
  - four victims that were injured at their workplace.
  - one victim that died in custody, such as jail, state institution, or foster care.<sup>4</sup>
- Black, non-Hispanics accounted for approximately 41% of homicide victims, but make up only 6% of the Massachusetts population. Hispanics accounted for about 23% of homicide victims and make up only 8% of the Massachusetts population.

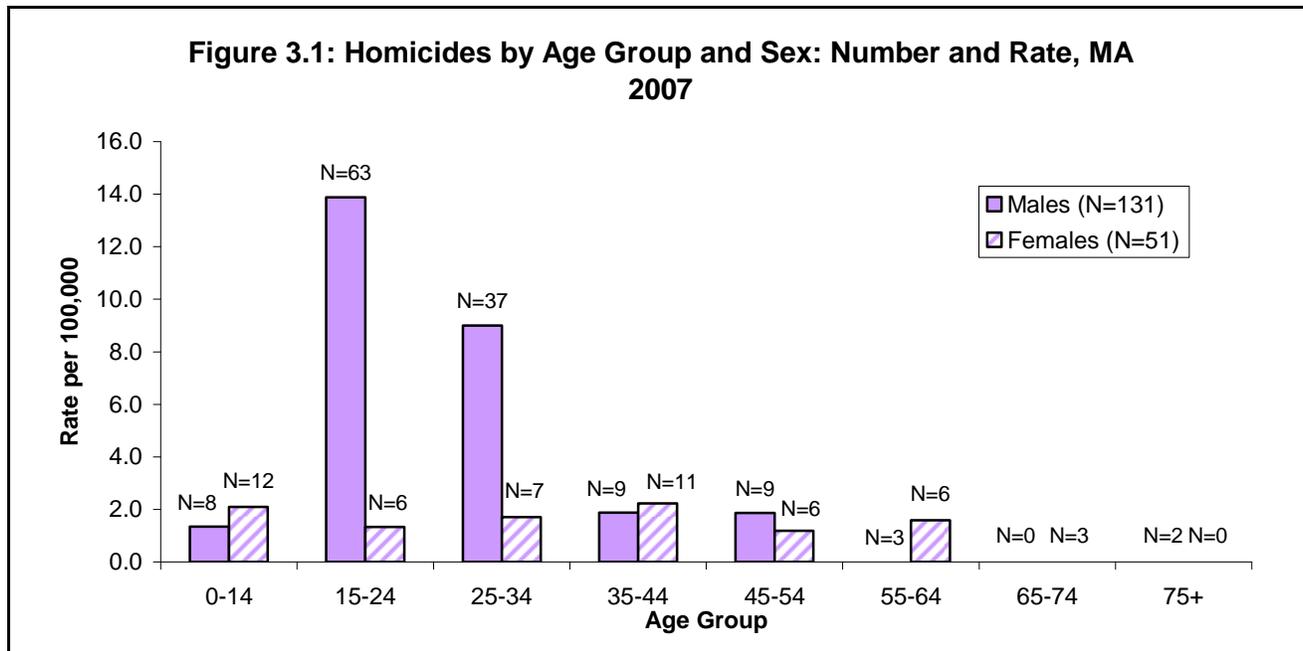
<sup>1</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

<sup>3</sup> This report only includes information where the deceased was a U.S. veteran **and** the war in which they served was specified.

<sup>4</sup> This 'in custody' variable differs from the variable, 'place where homicide occurred' on page 32 (Table 3.8) if there were any homicides occurring in jail in 2007.

## DEMOGRAPHICS OF HOMICIDE VICTIMS



- The highest homicide rate by age group was among 15-24 year olds (7.6/100,000, N=69).
- The homicide rate for ages 15-19 was 5.1/100,000 (N=23), which was almost two times higher than the statewide rate of 2.8/100,000.
- The homicide rate for ages 20-24 was 10.2/100,000 (N=46), which was three and a half times higher than the statewide rate of 2.8/100,000.
- Males age 15-24 had the highest homicide rate (13.9/100,000, N=63), which was five times higher than the statewide rate of 2.8/100,000.
- Males age 25-34 years (9.0/100,000, N=37) had the second highest homicide rate.
- For females, there was less variability in rates across age groups, with rates ranging from 0.0 to 2.2/100,000 across all age groups.

**Table 3.2: Homicides by Race/Ethnicity and Sex: Number, Percent, and Rate, MA 2007**

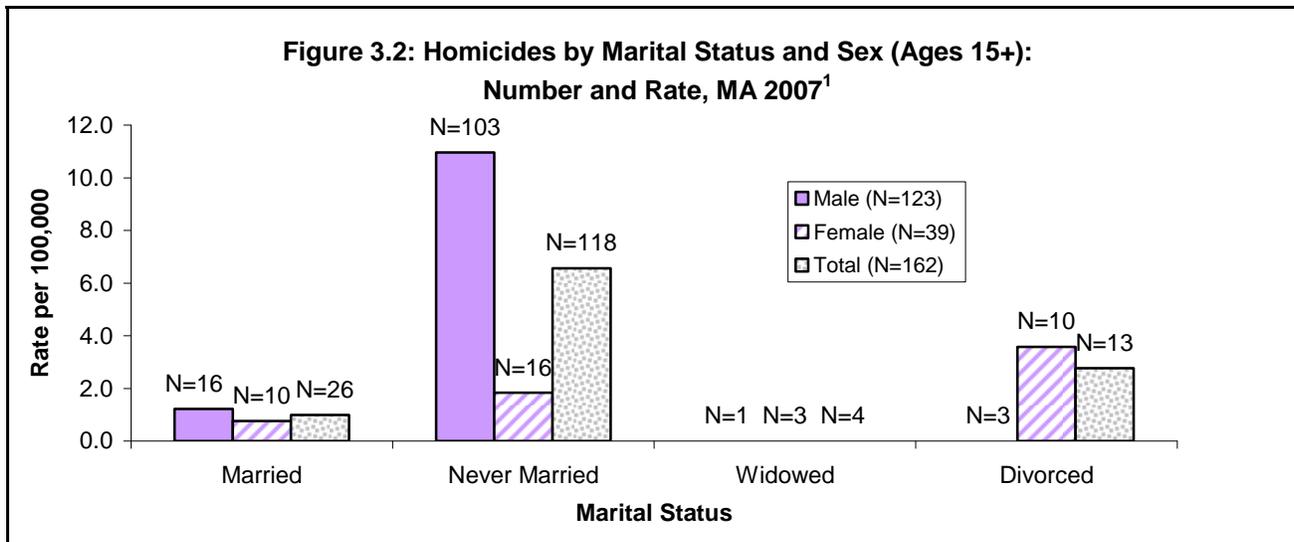
	Female			Male		
	N	%	Rate per 100,000 <sup>1</sup>	N	%	Rate per 100,000 <sup>1</sup>
White, non-Hispanic	26	51.0	1.0	29	22.1	1.2
Black, non-Hispanic	11	21.6	5.3	63	48.1	32.4
Asian, non-Hispanic	1	2.0	--	2	1.5	--
Hispanic	11	21.6	4.2	31	23.7	11.8
Other/mixed <sup>2</sup>	2	3.9	--	6	4.6	--
<b>Total</b>	<b>51</b>	<b>100.0</b>	<b>1.5</b>	<b>131</b>	<b>100.0</b>	<b>4.2</b>

- Black, non-Hispanics had the highest homicide rate for males (32.4/100,000) and females (5.3/100,000).

<sup>1</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for crude and/or age-adjusted rates.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

## DEMOGRAPHICS OF HOMICIDE VICTIMS



- Homicide rates for males were higher than rates for females for married and never married males. Rates for widowed and divorced males were not calculated due to small numbers.
- Among males, homicide rates were highest among those who were never married (11.0/100,000, N=103).
- Among females, homicide rates were highest among those who were divorced (3.6/100,000, N=10).
- Males who were never married had a homicide rate six times higher than the rate of females who were never married.

**Table 3.3: Homicides (Ages 25+) by Level of Education and Sex:  
Number, Percent, and Total Rate, MA 2007**

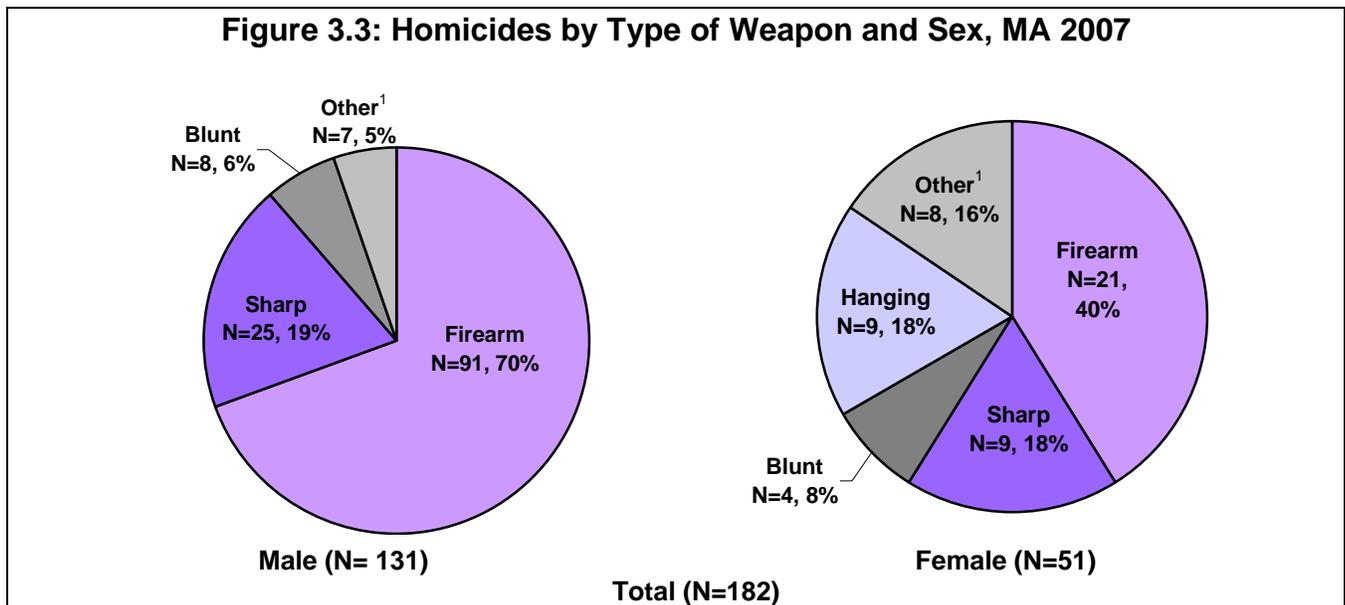
Years of Education	Female		Male		Total		
	N	%	N	%	N	%	Rate per 100,000 <sup>1</sup>
0-8	2	6.0	5	8.3	7	7.5	3.2
9-11	6	18.2	9	15.0	15	16.1	6.6
12	16	48.5	35	58.3	51	54.8	3.9
13-16	8	24.2	10	16.7	18	19.4	0.9
17+	0	0	1	1.7	1	1.1	--
Unknown	1	3.0	0	0	1	1.1	--
<b>Total<sup>2</sup></b>	<b>33</b>	<b>100.0</b>	<b>60</b>	<b>100.0</b>	<b>93</b>	<b>100.0</b>	<b>2.1</b>

- Among homicide victims ages 25 and older, the highest homicide rate was among victims with 9-11 years of education (6.6 /100,000).

<sup>1</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for crude and/or age-adjusted rates.

<sup>2</sup> There was one victim whose level of education was unknown.

## METHODS OF HOMICIDES



- Firearms were the leading method of homicide and accounted for 62% of the total homicides (N=112), followed by sharp instruments, such as knives (19%, N=34).<sup>1</sup>
- Firearms were the most commonly used weapon for male homicide deaths, and accounted for 70% of male homicides (N=91), followed by sharp instruments (19%, N=25), and blunt instruments (6%, N=8).
- Among females, firearms were the most commonly used weapon and accounted for 40% of female homicides (N=21), followed by sharp instruments and hanging/strangulation/suffocation (18%, N=9). "Hanging/strangulation/suffocation" deaths are asphyxiation deaths. For purposes of this report, these deaths are referred to as "hanging." In homicide cases, this most frequently refers to manual strangulation.
- There were eight homicide victims that had more than one weapon contribute to their death (These eight are included in the analysis above.) In cases where more than one *weapon type* was used, only the first weapon type was selected for the analysis in this report.
  - three victims died as a result of a combination of a sharp instrument and a blunt instrument.
  - one victim died from a personal weapon combined with shaking.
  - one victim died from a blunt instrument combined with shaking.
  - one victim died from a combination of a blunt instrument and personal weapons (hands, feet).<sup>1</sup>
  - one victim died from a sharp instrument combined with hanging/strangulation/suffocation.
  - one victim died from a combination of three weapons: hanging, fire/burn, and blunt instrument.

<sup>1</sup>"Other" weapons include "personal weapons" which are from bodily assaults (such as hands and feet), hanging (such as strangulation), fire/burns, falls, neglect, and other weapons. See Appendix A for a complete list of weapon variables.

## METHODS OF HOMICIDES

**Table 3.4: Homicide Weapons by Age Group: Number and Percent, MA 2007**

Weapon	Age Group										Total	
	0-14		15-24		25-44		45-64		65+			
	N	%	N	%	N	%	N	%	N	%	N	%
Firearm	6	30.0	54	78.3	42	65.6	9	37.5	1	20.0	112	61.5
Sharp	0	0.0	9	13.0	16	25.0	7	29.2	2	40.0	34	18.7
Other <sup>1</sup>	14	70.0	6	8.7	6	9.4	8	33.3	2	40.0	36	26.4
<b>Total</b>	<b>20</b>	<b>100.0</b>	<b>69</b>	<b>100.0</b>	<b>64</b>	<b>100.0</b>	<b>24</b>	<b>100.0</b>	<b>5</b>	<b>100.0</b>	<b>182</b>	<b>100.0</b>

- Firearms were the most common weapon of homicide for the age groups of 0-14 (30%), 15-24 years old (78%), 25-44 year olds (66%), and 45-64 year olds (38%). Sharp instruments were the second most common method among 15-24 year olds, 25-44 year olds and 45-64 year olds (13%, 25%, 29% respectively).
- Weapons in the “other” category include blunt instruments, fire/burns, motor vehicle, personal weapons (hands, feet), and unknown weapons.

**Table 3.5: Type of Firearm Used in Homicides: Number and Percent, MA 2007**

	N
<b>Firearms Used In Homicides</b>	<b>119</b>
Firearms with unknown firearm type	20
Firearms with known firearm type	99
<b>Firearms with known firearm type</b>	<b>99</b>
Handgun	92
<i>Semi-automatic pistol</i>	32
<i>Revolver</i>	11
<i>Unknown handgun type</i>	49
Rifle	1
Shotgun	5
Other gun	1

Table 3.5 includes the total number of firearms used in homicide incidents. Multiple firearms might be used in one incident, or one firearm may be used in an incident where multiple persons were killed.

- Among a total of 119 firearms associated with homicide incidents, 99 (83%) had information about the type of firearm used.
- Handguns were the most firearm type of firearm used in homicides. Handguns were used in 93% of homicides where firearm information was known. Fifty-three percent of these handguns were of unknown type.

<sup>1</sup> “Other” weapon includes personal weapons (which are from bodily assaults, such as hands and feet), hanging (such as strangulation), fire/burns, falls, neglect, and other weapons. See Appendix A for a complete list of weapon variables.

## LOCALITY OF HOMICIDES

<b>Table 3.6: Homicides by County of Injury: Number, Percent, and Rate, MA 2007</b>			
<b>County</b>	<b>N</b>	<b>Percent<sup>1</sup></b>	<b>Rate per 100,000<sup>2</sup></b>
<b>Population: 1,000,000+</b>			
Middlesex	15	8.5	1.0
<b>Population: 500,000 – 1,000,000</b>			
Suffolk	69	39.2	9.7
Essex	15	8.5	2.0
Worcester	17	9.7	2.2
Norfolk	8	4.5	1.2
Bristol	6	3.4	1.1
<b>Population: 100,000 – 500,000</b>			
Hampden	27	15.3	5.9
Plymouth	14	8.0	2.9
Barnstable	2	1.1	--
Berkshire	1	0.6	--
Hampshire	0	0	0.0
<b>Population: &lt;100,000</b>			
Franklin	2	1.1	--
Dukes	0	0	0.0
Nantucket	0	0	0.0
<b>Other</b>			
Outside MA <sup>1</sup>	2	--	--
Unknown <sup>1</sup>	4	--	--
<b>Total known MA county</b>	<b>176</b>	<b>100.0</b>	<b>--</b>
<b>Total</b>	<b>182</b>	<b>--</b>	<b>2.8</b>

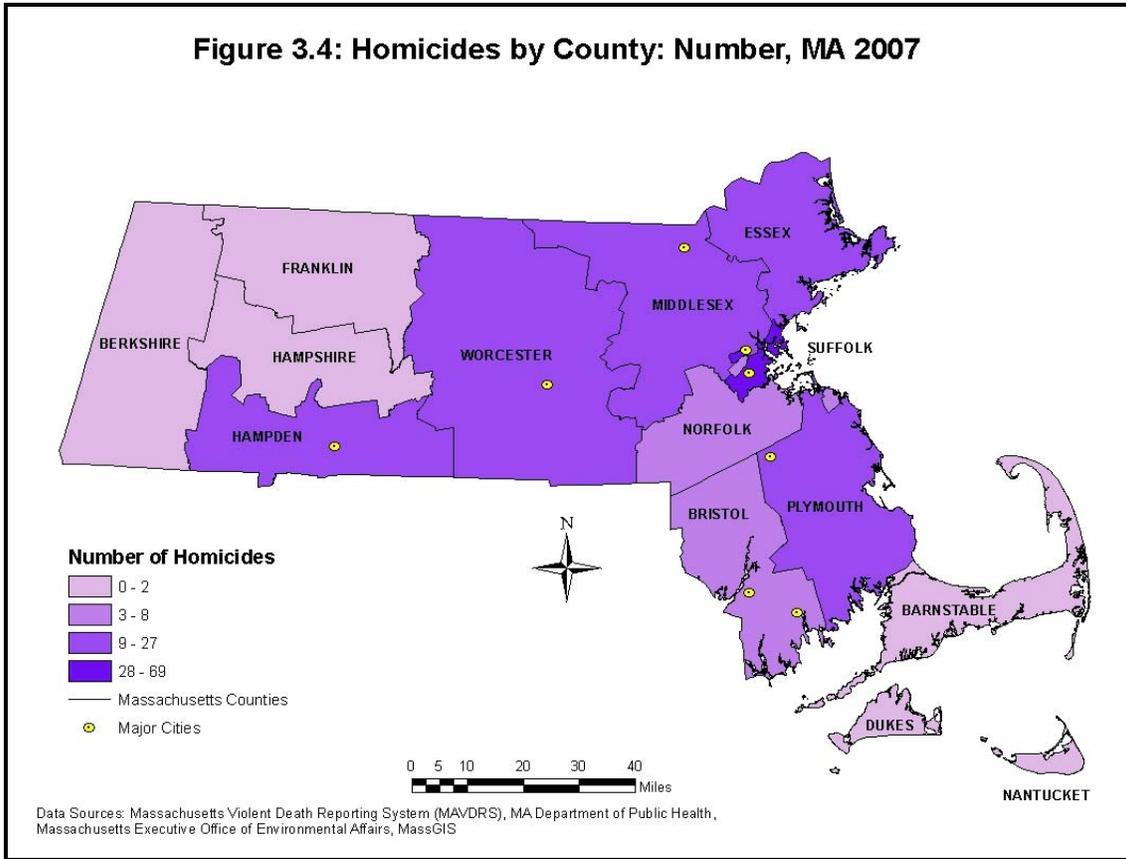
- Among all counties, Suffolk County had the highest homicide number and rate (N=69, 9.7/100,000) and accounted for 39% of deaths, followed by Hampden County (N=27, 5.9/100,000) accounting for 15% of deaths.
- Among counties with a population of 500,000-1,000,000, Suffolk County, which includes Boston, had the highest number and rate. While 53% of the Massachusetts population lives in these counties (Suffolk, Essex, Worcester, Norfolk, and Bristol), 63% of all homicides occurred here.
- Among counties with a population of 100,000-500,000, Hampden County, which includes Springfield, had the highest number and rate (N=27, 5.9/100,000).

<sup>1</sup> Percent is based on known Massachusetts county of injury (N=176). Rate was not calculated on unknown county of injury nor out of state injuries. Out of state homicides are those homicide incidents that occurred in another state, but the victim was transported to Massachusetts where they died.

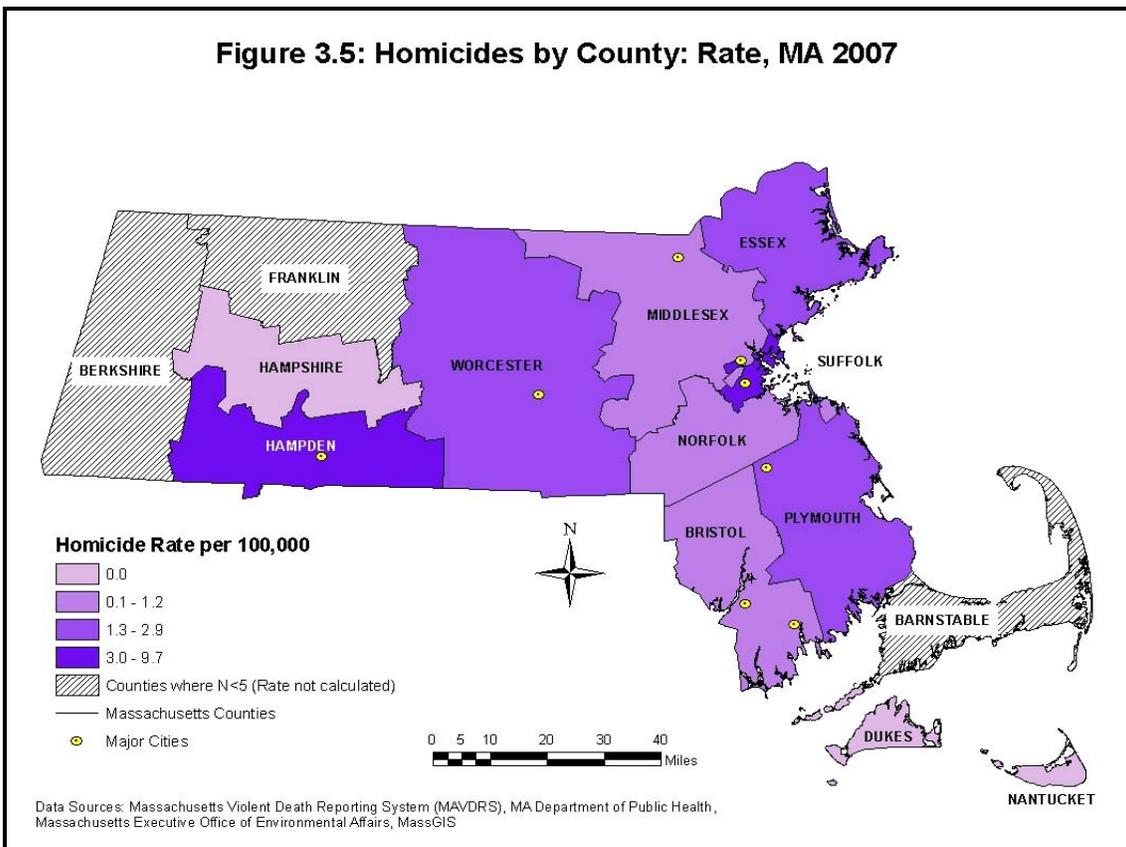
<sup>2</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. Rates may be much higher among counties with small a population. See Appendix B for age-adjusted rates.

**LOCALITY OF HOMICIDES**

**Figure 3.4: Homicides by County: Number, MA 2007**



**Figure 3.5: Homicides by County: Rate, MA 2007**



## LOCALITY OF HOMICIDES

<b>Table 3.7: Homicides by City/Town: Number, Percent, and Rate, MA 2007</b>			
	<b>N</b>	<b>Percent<sup>1</sup></b>	<b>Rate per 100,000<sup>2</sup></b>
<b>Group 1: Cities/Towns over 175,000 population:</b>			
Boston	63	35.8	10.5
<b>Total Group 1</b>	<b>63</b>	<b>35.8</b>	<b>10.5</b>
<b>Group 2: Cities/Towns 75,000-175,000 population:</b>			
Springfield	21	11.9	14.0
Brockton	11	6.3	11.8
Lynn	5	2.8	5.7
Worcester	7	4.0	4.0
Lowell	3	1.7	--
Fall River	2	1.1	--
New Bedford	1	0.6	--
Quincy	0	0.0	0.0
Cambridge	0	0.0	0.0
Newton	0	0.0	0.0
<b>Total Group 2</b>	<b>50</b>	<b>28.4</b>	<b>4.7</b>
<b>Group 3: Cities/Towns 50,000-75,000 population:</b>			
Lawrence	4	2.3	--
Revere	3	1.7	--
Haverhill	2	1.1	--
Somerville	2	1.1	--
Weymouth	2	1.1	--
Medford	2	1.1	--
Taunton	1	0.6	--
Malden	1	0.6	--
Chicopee	0	0.0	0.0
Waltham	0	0.0	0.0
Plymouth	0	0.0	0.0
Peabody	0	0.0	0.0
Framingham	0	0.0	0.0
Brookline	0	0.0	0.0
<b>Total Group 3</b>	<b>17</b>	<b>9.7</b>	<b>2.1</b>
<b>Group 4: Cities/Towns with &lt; 50,000 population</b>			
<b>Total Group 4</b>	<b>46</b>	<b>26.1</b>	<b>1.2</b>
<b>Other</b>			
Outside MA	2	--	--
Unknown City/Town	4	--	--
<b>Total known MA city</b>	<b>176</b>	<b>100.0</b>	<b>--</b>
<b>Total Homicides</b>	<b>182</b>	<b>--</b>	<b>2.8</b>

- Boston had the highest number of homicides (N=63) and but the third highest rate (10.5/100,000). Springfield had the second highest number (N=21) and the highest rate (14.0/100,000). Brockton had one the second highest rates of homicide (11.8/100,000, N=11). These three cities account for 54% of all homicide victims, but account for only 13% of the total population of Massachusetts.

<sup>1</sup> Percent is based on known Massachusetts city of injury (N=176). Rate was not calculated on unknown city of injury nor out of state injuries.

<sup>2</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates.

## PLACE OF HOMICIDES

<b>Table 3.8: Places Where Homicides Occur: Number and Percent, MA 2007</b>		
<b>Location of injury</b>	<b>N</b>	<b>%<sup>1</sup></b>
<b>Buildings and surroundings:</b>		
House, apartment, including driveway, porch, yard	85	47.7
Office building	1	0.6
<b>Transportation utilities:</b>		
Street/road, sidewalk, alley	47	26.4
Motor vehicle (excluding school bus and public transportation)	10	5.6
Parking lot/public parking garage	10	5.6
Public transportation or station	1	0.6
<b>Outdoor:</b>		
Natural area	5	2.8
Park, playground, public use area	2	1.1
<b>Retail and entertainment:</b>		
Bar, nightclub	4	2.2
Other commercial establishment	2	1.1
<b>Educational Facilities:</b>		
High school	2	1.1
<b>Other:</b>		
Other	9	5.1
<b>Total Known Place of Homicide</b>	<b>178</b>	<b>100.0</b>
<b>Unknown</b>	<b>4</b>	<b>--</b>
<b>Total Homicides</b>	<b>182</b>	<b>--</b>

Of the 178 homicides where location of injury information was reported:

- Almost one-half (48%) of homicides occurred in a residence (N=85).
- Approximately twenty-six percent of homicides occurred outside, on a street (26%).
- Six percent of homicides occurred in a motor vehicle (N=10).
- Six percent of homicides occurred in a parking lot/public parking garage (N=10).

<sup>1</sup> Percentages are based on the total number of cases for which location was known (N=178).

## HOMICIDE CIRCUMSTANCES

The circumstances of a homicide can help in getting a better understanding of the events preceding the death. NVDRS allows for the endorsement of more than one circumstance for a homicide victim. It is important to note that some circumstances are more likely to be known and/or noted than others. The following table percentages are circumstances noted out of all homicides (N=182). See Appendix A for more information on circumstances.

Table 3.9 : Circumstances of Homicide: Number and Percent, MA 2007 <sup>1</sup>		
	N	%
<b>Total Number of Homicides</b>	<b>182</b>	<b>--</b>
<b>Total number of victims with reported circumstances</b>	<b>121</b>	<b>--</b>
Argument/abuse/conflict <sup>2</sup>	49	26.9
Intimate partner violence related	37	20.3
Precipitated by another crime	18	9.9
■ Precipitating crime was in progress at time of homicide	16	8.8
Gang related	10	5.5
Drug involvement	8	4.4
Suspect in homicide was mentally ill	6	3.3
Brawl (mutual physical fight)	5	2.7

Of the 182 homicides:

- Almost 27% were precipitated by an argument, abuse, or conflict. This excludes those circumstances that can be counted in intimate partner-related, gang-related, drug-related, or argument over money/property/drugs.
- Twenty percent were noted to have involved intimate partner violence.
- Four percent were reported to be drug-related.
- Approximately 10% were noted to be precipitated by another crime, i.e. the homicide occurred as a result of another felony. Those crimes include robbery, drug trade, burglary, arson, and assault.
- There were no deaths of police officers on duty or hate crime fatalities reported in 2007.

<sup>1</sup> Circumstances were not included for counts less than five.

<sup>2</sup> "Argument/abuse/conflict" excludes those circumstances that can be counted in intimate partner-related, gang-related, drug-related, or argument over money/property/drugs.

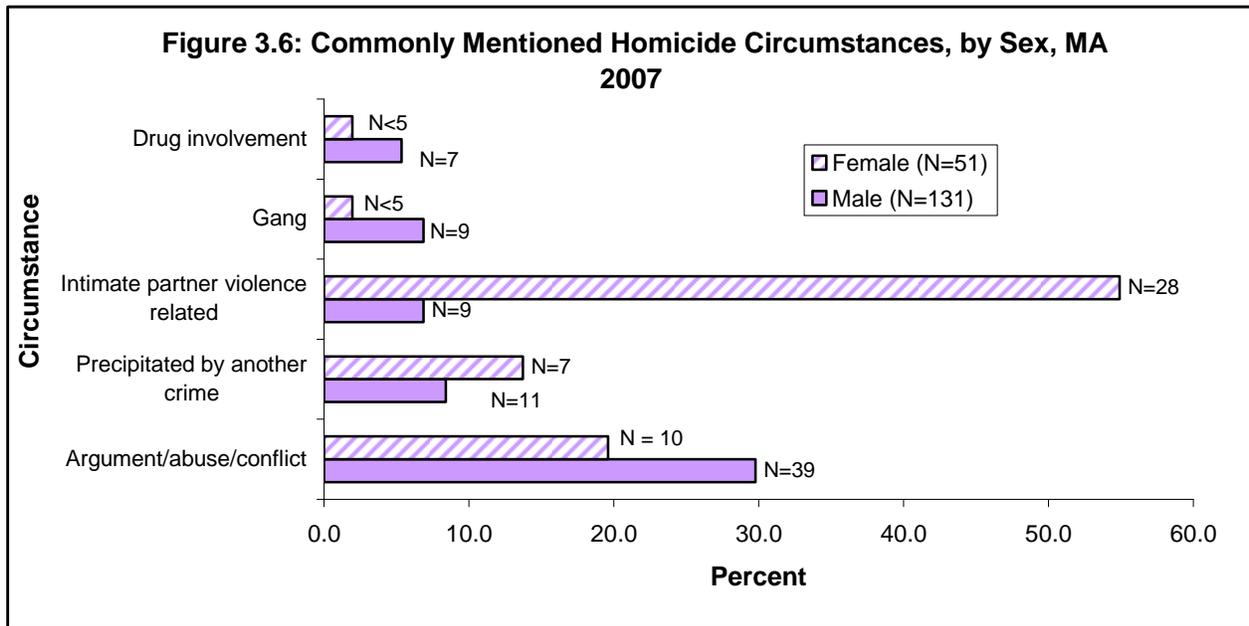
## HOMICIDE CIRCUMSTANCES

Table 3.10: Homicide Circumstances by Age Group: Number and Percent, MA 2007		
	N	%
<b>Age 15 to 24</b>		
<b>Total number of victims</b>	<b>69</b>	--
Argument/abuse/conflict <sup>1</sup>	22	31.9
Gang-related	8	11.6
Precipitated by another crime	6	8.7
Intimate partner violence related	6	8.7
<b>Age 25 to 44</b>		
<b>Total number of victims</b>	<b>64</b>	--
Argument/abuse/conflict <sup>1</sup>	17	26.6
Intimate partner violence related	16	25.0
<b>Age 45 to 64</b>		
<b>Total number of victims</b>	<b>24</b>	--
Argument/abuse/conflict <sup>1</sup>	7	29.2
Precipitated by another crime	7	29.2
▪ Precipitating crime was in progress at time of homicide	7	29.2
Intimate partner violence related	7	29.2

- Of the 182 homicide victims circumstance information was known for 121 victims of homicide (67%). There were 20 victims in the 0-14 age group and five in the 65+ age group, which is not shown on the above table due to small numbers.
- The most frequently noted circumstance among homicides of victims ages 15-24 was argument, followed by homicides that were gang-related.
- Among victims ages 25-44 argument and intimate partner-related circumstances were the most often noted.
- The most frequently noted circumstances among homicide victims ages 45-64 was argument; precipitated by another crime, and intimate partner violence-related.

<sup>1</sup> "Argument/abuse/conflict" excludes those circumstances that can be counted in intimate partner-related, gang-related, drug-related, or argument over money/property/drugs.

## HOMICIDE CIRCUMSTANCES



- There were 131 male (72%) and 51 female homicide victims (28%) for a total of 182 homicides.
- Of the 182 homicides, 60% of males (N=79) and 82% of females (N=42) had at least one circumstance known or noted. The total number of homicides with at least one circumstances present was 121 (67%).
- The most frequently noted circumstance for males was argument (N=39).
- For females, the most frequently noted circumstance was intimate partner violence-related (N=28).

## SUSPECT INFORMATION

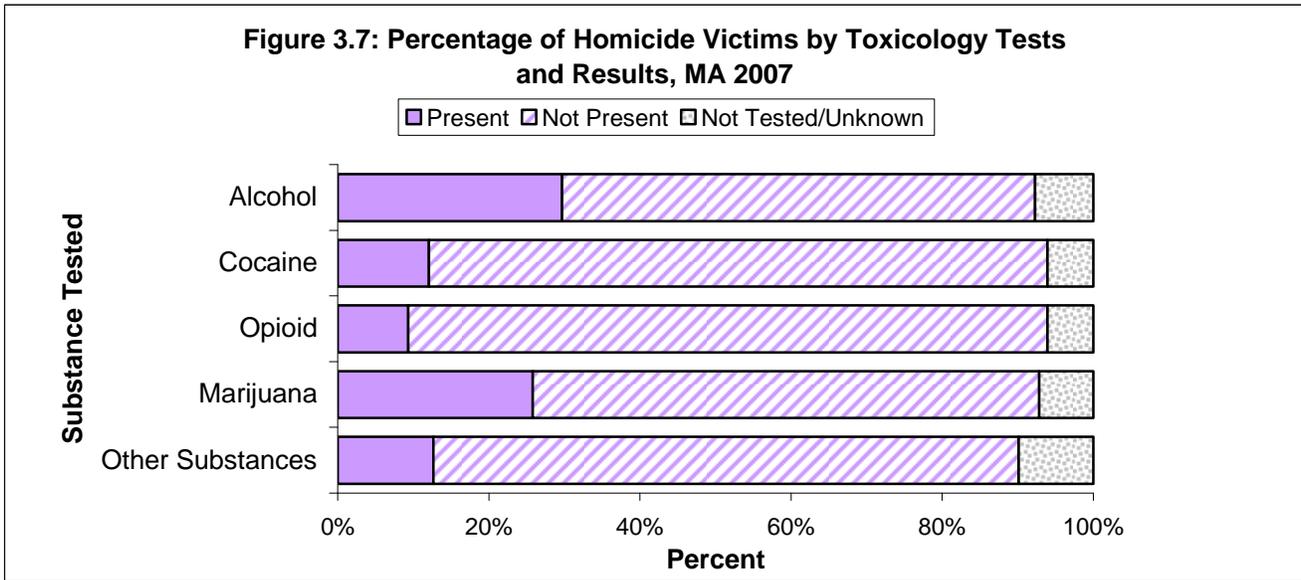
A suspect, as defined in this report, is a person(s) identified as such in a police report. Suspect information may be quite limited containing only sex, or approximate age, for example. A suspect may or may not be the person eventually arrested, tried, and convicted for the homicide. A suspect may also be one who kills one or more other people and then himself/herself. These data are often based on preliminary statements prior to completion of an investigation and adjudication.

**Table 3.11: Suspects of Homicides:  
Number and Percent, MA 2007**

	<b>N</b>	<b>Percent</b>
<b>Total Homicides</b>	<b>182</b>	<b>100.0</b>
With suspect information	136	74.7
With <b>no</b> suspect information	46	25.3
<b>Sex</b>		
<b>Total suspects</b>	<b>193</b>	<b>100.0</b>
Male	167	86.5
Female	13	6.7
Unknown Sex	13	6.7
<b>Age Group</b>		
<b>Total suspects</b>	<b>193</b>	<b>100.0</b>
Known Age	150	77.7
Unknown Age	43	22.3
<b>Suspects with Known Age</b>	<b>150</b>	<b>100.0</b>
0-14	2	1.3
15-24	87	58.0
25-34	31	20.7
35-44	17	11.3
45-54	6	4.0
55 and over	7	4.7

- **Homicide victims:** Of the 182 victims of homicide, 75% (N=136) had one or more suspects associated with that homicide.
- **Homicide incidents:** Most incidents with suspect information had only one suspect associated with it (N=90). Thirty-six incidents had more than one suspect.
- Among the 150 identified suspects with known age, most (58%) were between the ages of 15-24 years, followed by age group 25-34 (21%). These two age groups account for 79% of suspects with information.

- There were 91 victims of homicides where the relationship between the victim to the primary suspect was known. In the majority of these cases (84%), the victim and suspect were known to each other (e.g. family member, intimate partner, friend, acquaintance, etc.). Of these identified suspects:
  - 32% (N= 26) of suspects were a current or former intimate partner of the victim.
  - 19% (N=17) of suspects were a family member or caregiver of the victim.
  - 36% (N=33) of suspects were someone else known to the victim.



- Among the 182 homicide victims, 171 (94%) were tested for cocaine and opioids. Approximately 93% were tested for marijuana (N=169) and 92% tested for alcohol (N=168). The above figure shows the percentages of those victims who had positive or negative results, as well as those not tested or whose results were unknown.
- Over 90% of homicide victims were tested for alcohol, cocaine, marijuana, and/or opioids. The majority of victims were not positive for any of these substances. Thirty-two percent of victims tested for alcohol were positive for alcohol; 12% of these had results of .04 or less, which may be due to decomposition rather than ingestion of alcohol. Approximately 28% of victims who were tested for marijuana had positive results.<sup>1</sup>

**Table 3.12: Blood Alcohol Concentration of Homicide Victims that Tested Positive by Age Group: Number and Percent, MA 2007<sup>1</sup>**

	Age Group								Total	
	< 21		21-44		45-64		65+			
BAC % <sup>2</sup>	N	%	N	%	N	%	N	%	N	%
0.010 - 0.040 <sup>3</sup>	6	60.0%	10	27.0%	<5	--	0	0.0%	18	32.7%
0.041 - 0.079	<5	--	<5	--	<5	--	0	0.0%	7	12.7%
0.08 and over	<5	--	22	59.5%	<5	--	<5	--	28	50.9%
Unknown <sup>4</sup>	0	0	<5	--	<5	--	0	0.0%	<5	--
<b>Total</b>	<b>10</b>	<b>100.0%</b>	<b>37</b>	<b>100.0%</b>	<b>7</b>	<b>100.0%</b>	<b>&lt;5</b>	<b>100.0%</b>	<b>55</b>	<b>100.0%</b>

- Approximately ninety-two percent (N=168) of homicide victims were tested for Blood Alcohol Concentration (BAC) and thirty-three percent (N=55) tested positive.
- Among all homicide victims where BAC tested positive, approximately 64% (N=35) of victims had a BAC of 0.041 and over. Levels over .040 are more likely indicative of alcohol ingestion.

<sup>1</sup> The discussion of toxicology results in the text describes the percent of positive results based on victims tested, while the chart depicts the percent of positive results based on the total number of victims. These percents may not be similar.

<sup>2</sup> Caution should be used when interpreting BAC due to variation in time among ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.

<sup>3</sup> BAC of 0.04% or less could be due to decomposition, rather than ingestion of alcohol.

<sup>4</sup> Unknown numbers are those where the victim was tested, but the results were not available at the time of abstraction.



## Section 4: Deaths of Undetermined Intent in Massachusetts

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### Data Highlights for 2007<sup>1</sup>:

- Deaths of undetermined intent claimed an average of about two lives per week in 2007 (N=102).
- The rate of undetermined intent deaths for males (1.8/100,000) was similar to the rate for females (1.4/100,000).
- Sixty-one percent of deaths of undetermined intent (N=52) were the result of poisonings/drug overdoses.
- Eighty percent of victims of undetermined intent were tested for antidepressants; of these, 49% were positive.

### Compared to 2006:

- The number of undetermined deaths increased by 20% from N=85 in 2006 to N=102 in 2007.

### Compared to the U.S.<sup>2</sup>:

- In 2007, Massachusetts had a slightly lower age-adjusted rate (1.5/100,000) of undetermined intent deaths compared to the 2006 national age-adjusted rate (1.7/100,000).
- The age-adjusted rate for deaths of undetermined intent for males in 2006 was 2.2/100,000 in the U.S. and 1.8/100,000 in Massachusetts in 2007.
- The age-adjusted rate for deaths of undetermined intent for females was 1.2/100,000 in the U.S. in 2006 and 1.3/100,000 in Massachusetts in 2007.

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<sup>1</sup> Please note that an important change occurred in 2005 affecting the number of undetermined deaths in Massachusetts. Most injury deaths are referred to the MA Office of the Chief Medical Examiner (OCME) for determination of cause and intent. In May 2005, a change in the OCME policy affected the assignment of manner/intent of many poisoning deaths. Up to that point, poisoning deaths where there was no explicit evidence that the case was a suicide or homicide were assigned a manner of undetermined. With the new policy, these deaths are assigned a manner of accident/unintentional, like most other states.

<sup>2</sup> US age-adjusted data not available for 2007 (4/12/10) at the time of this report and 2006 U.S. numbers were used.

**DEMOGRAPHICS OF DEATHS OF UNDETERMINED INTENT VICTIMS**

<b>Table 4.1: Deaths of Undetermined Intent by Demographics: Number, Percent, and Rate, MA 2007</b>			
	<b>N</b>	<b>Percent</b>	<b>Rate per 100,000<sup>1</sup></b>
<b>Sex</b>			
Male	57	55.9	1.8
Female	45	44.1	1.4
<b>Race/Ethnicity</b>			
White, non-Hispanic	88	86.3	1.7
Black, non-Hispanic	5	4.9	--
Asian, non-Hispanic	2	2.0	--
Hispanic	6	5.9	1.1
Other/mixed <sup>2</sup>	1	1.0	--
<b>Age Group</b>			
0-14	2	2.0	--
15-24	6	5.9	0.7
25-34	8	7.8	1.0
35-44	26	25.5	2.7
45-54	34	33.3	3.4
55-64	14	13.7	1.9
65-74	7	6.9	1.7
75-84	2	2.0	--
85+	2	2.0	--
Unknown	1	1.0	--
<b>Total</b>	<b>102</b>	<b>100.0</b>	<b>1.6</b>

**ADDITIONAL FINDINGS FOR 2007:**

- The youngest undetermined intent victim was 10 years old and the oldest was 94 years old.
- The mean age for undetermined intent victims was 47.2 and the median age was 47.
- There were three homeless persons whose death was of undetermined intent.
- One victim of undetermined intent died in custody, such as jail, state institution, or foster care.<sup>3</sup>
- There was one death of undetermined intent that occurred at work.
- Nine war veterans<sup>4</sup> deaths were of undetermined intent

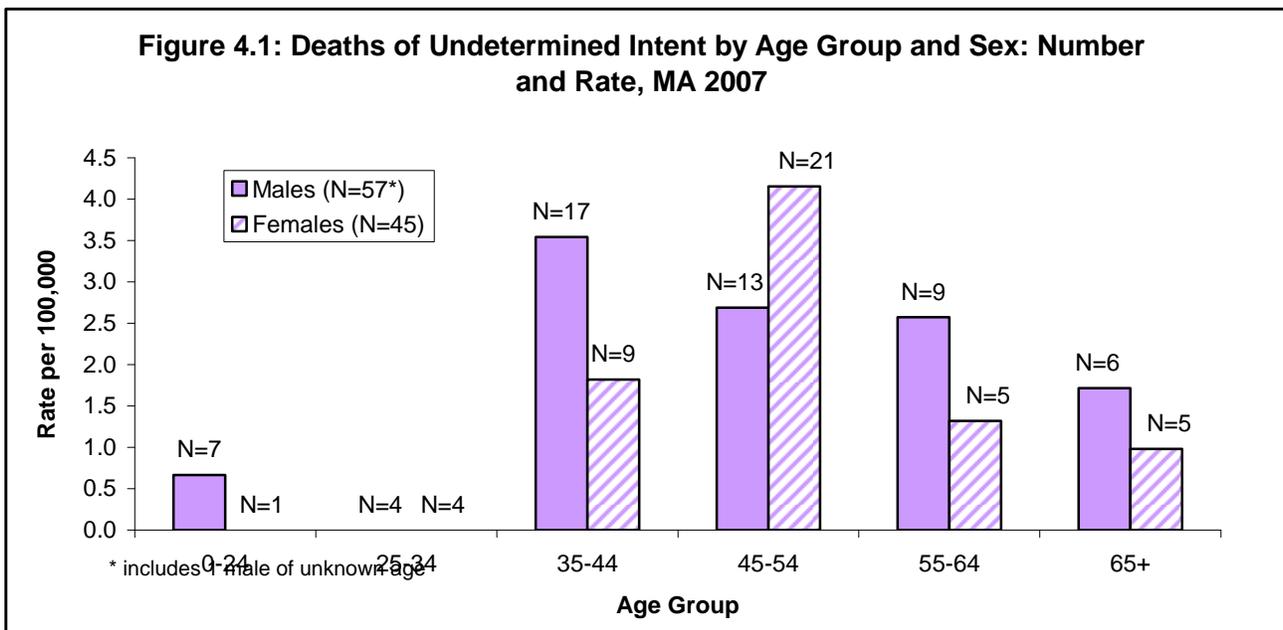
<sup>1</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

<sup>3</sup> The 'in custody' variable differs from the 'place where injury occurred;' however, due to the low number of undetermined deaths, 'place where injury occurred' is not included in this report for undetermined intent deaths.

<sup>4</sup> This report only includes information where the deceased was a U.S. veteran and the war in which they served was specified.

## DEMOGRAPHICS OF DEATHS OF UNDETERMINED INTENT VICTIMS<sup>1</sup>

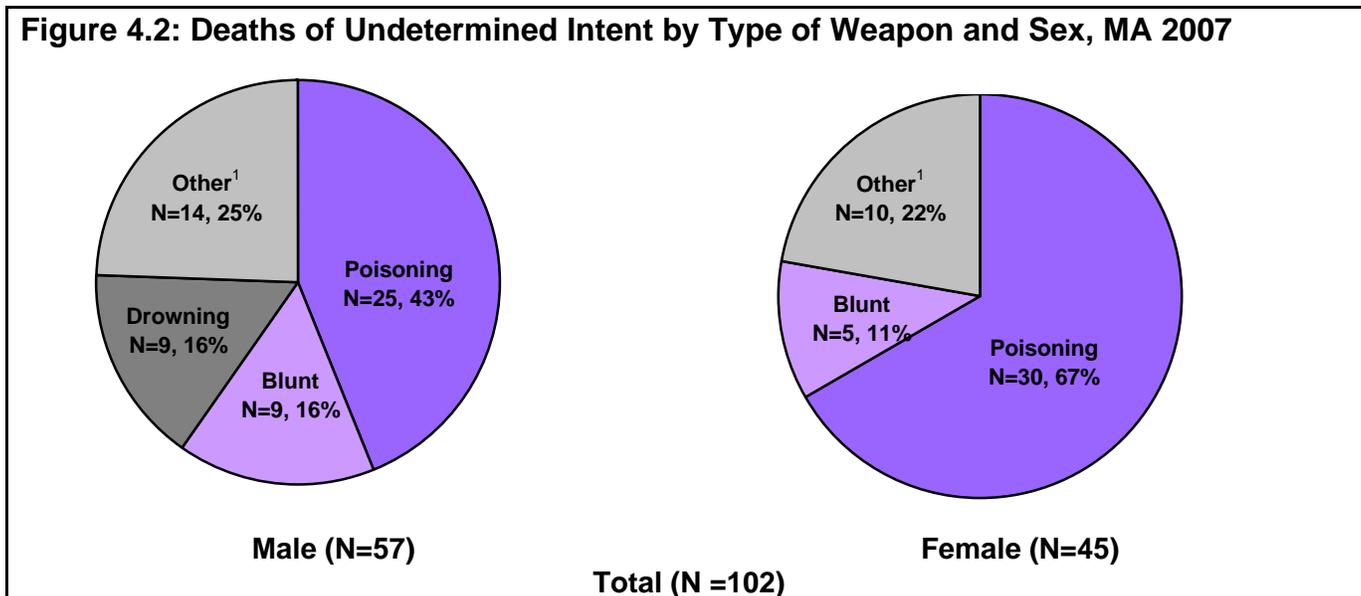


- For deaths of undetermined intent, approximately 68% of males and 78% of females were between the ages of 35 to 64. The MA population is comprised of 42% males ages 35 to 64 and 42% females ages 35 to 64.
- Males aged 35-44 had the highest rate among males (3.5/100,000). Females ages 45-54 had the highest rates among females (4.2/100,000).
- Some of the lowest rates of deaths of undetermined intent were among persons less than 35 years of age.
- While males generally had higher rates than females, sex differences were less pronounced among undetermined intent deaths than for homicide or suicide. The overall rate among males was 1.4 times higher than that of females.

<sup>1</sup> Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Technical Notes in Appendix A for calculating rates. See Appendix B for age-adjusted rates.

## METHOD OF DEATHS OF UNDETERMINED INTENT

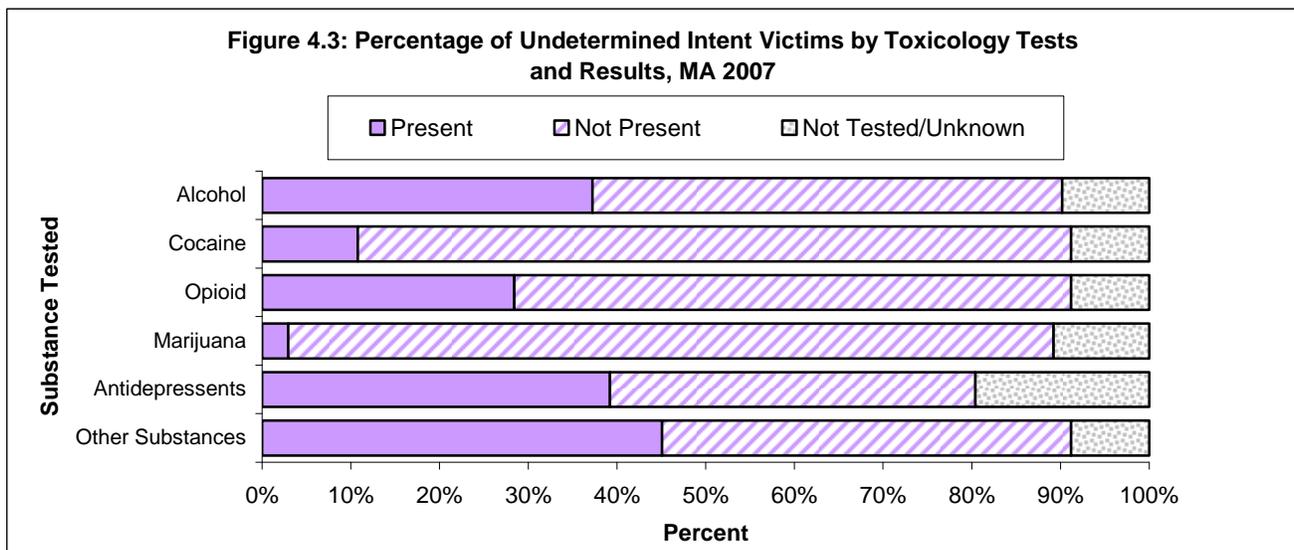
**Figure 4.2: Deaths of Undetermined Intent by Type of Weapon and Sex, MA 2007**



- The above graph shows weapon categories the two leading weapon types by sex (among males, drowning and blunt instrument had the same number). All other weapons were combined into “other,” which includes hanging, falls, other transport vehicle (e.g. train), and unknown weapon.<sup>1</sup>
- In cases where more than one weapon type was used (including multiple poisons), only the first weapon type was selected for the analysis in this report.
- Poisonings/drug overdoses account for a majority (54%) of deaths of undetermined intent in Massachusetts in 2007 (N=55).
- Poisoning/drug overdose was the leading weapon for deaths of undetermined intent for both males (44%, N=25) and females (67%, N=30).
- Of the poisoning deaths, 69% of victims (N=38) ingested more than one poison/drug.
- Of the poisoning/drug overdose deaths (N=55):
  - 93% (N=51) were due to the ingestion of a street/recreation drug, alcohol, pharmaceutical prescription, or over-the-counter medication.
  - 4% (N=2) were due to carbon monoxide poisoning.
  - 2% (N=1) were due to the ingestion of another poison (such as insecticides or helium)
  - 2% (N=1) were due to an unknown poison

<sup>1</sup> Other weapon types are combined into “Other,” which includes sharp instruments, falls, drowning, other transport vehicle (e.g. train), fire or burns, and non-powder guns. See Appendix A for a complete list of weapons.

## TOXICOLOGY OF DEATHS OF UNDETERMINED INTENT VICTIMS



- Of the 102 victims of undetermined intent deaths, approximately 90% were tested for blood alcohol concentration, cocaine, opioids, and marijuana. About 80% were tested for antidepressants.
- Ninety-one percent (N=93) of victims were tested for other substances, such as benzodiazepines, anti-psychotics, over-the-counter drugs, and carboxyhemoglobin (carbon monoxide). Of those, 50% (N= 46) tested positive for an additional substance.<sup>1</sup>
- Almost forty-nine percent (N=40) of victims tested were positive for antidepressants. Approximately 31% of victims tested were positive for opioids. However, it is usually not possible to determine if the opioid was from a street drug, like heroin, or a prescription medication, such as codeine.<sup>1</sup>

**Table 4.2: Blood Alcohol Concentration of Undetermined Intent Victims that Tested Positive by Age Group: Number and Percent, MA 2007<sup>1</sup>**

	Age Group								Total	
	< 21		21-44		45-64		65+			
BAC % <sup>2</sup>	N	%	N	%	N	%	N	%	N	%
0.010 - 0.04 <sup>3</sup>	0	0.0	0	0.0%	<5	--	<5	--	<5	--
0.041 - 0.079	0	0.0	<5	--	0	0.0%	0	0.0%	<5	--
0.08 and over	0	0.0	18	94.7%	11	73.3%	<5	--	32	84.2%
Unknown <sup>4</sup>	0	0.0	0	0.0%	<5	--	0	0.0%	<5	--
<b>Total</b>	<b>0</b>	<b>0.0</b>	<b>19</b>	<b>100.0%</b>	<b>15</b>	<b>100.0%</b>	<b>&lt;5</b>	<b>100.0%</b>	<b>38</b>	<b>100.0%</b>

- Ninety percent (N=92) of undetermined intent victims were tested for Blood Alcohol Concentration (BAC) and 41% (N=38) had a positive BAC.
- Eighty-four percent (N=32) of victims of an undetermined intent death had a BAC of over 0.08 and all were over the age of 21. A BAC of 0.08 is over the legal limit for operating a motor vehicle in Massachusetts.

<sup>1</sup> The discussion of toxicology results in the text describes the percent of positive results based on victims tested, while the chart depicts the percent of positive results based on the total number of victims. These percents may not be similar.

<sup>2</sup> Caution should be used when interpreting BAC due to variation in time among ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.

<sup>3</sup> BAC of 0.04% or less could be due to decomposition, rather than ingestion of alcohol.

<sup>4</sup> Unknown numbers are those where the victim was tested, but the results were not available at the time of abstraction.



## **Appendix A: Technical Notes**

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- **Technical Notes**
- **Annual Estimates of the Population for Counties of Massachusetts, 2007**
- **Data Elements and Sources**
- **Primacy among Data Sources**
- **Circumstances**
- **Glossary**
- **Weapons**

## TECHNICAL NOTES

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### Case Identification

Violent death cases in the MAVDRS database are first identified by reviewing the manner of death field on death certificates maintained by the Massachusetts Department of Public Health's Registry of Vital Records and Statistics (RVRS). A record is created in the MAVDRS database for any death categorized as homicide, suicide, or could not be determined. These deaths represent a preliminary violent death data file. The final data file is determined on the basis of International Classification of Diseases, Tenth Revision (ICD-10) codes for the underlying cause of death field on death certificates.

The ICD-10 codes that identify cases to be included in the NVDRS database are determined by the CDC and are listed below:

<u>Manner of Death</u>	<u>ICD-10 Code</u>	
	<u>Death &lt; 1 Year after the injury</u>	<u>Death &gt;1 year after the injury</u>
■ Intentional Self-Harm	X60-X84	Y87.0
■ Assault	X85-X99, Y00-Y09	Y87.1
■ Undetermined Intent	Y10-Y34	Y87.2, Y89.9
■ Unintentional Firearm	W32-W34	Y86
■ Legal Intervention, excluding executions	Y35.0-Y-35.4, 35.6, Y35.7	Y89.0
■ Terrorism	U01, U03	U02

Before finalizing the database, a death file maintained by the RVRS is generated for all codes meeting the ICD-10 case definition. If discrepancies occur between the ICD-10 code and the manner of death field on the death certificate, i.e., the death certificate manner indicates suicide and the ICD-10 indicates undetermined intent, effort is made to resolve the discrepancy through follow-up with the Office of Vital Records and Statistics and the Office of the Chief Medical Examiner (OCME). Cases are excluded when the ICD-10 code falls outside of the NVDRS ICD-10 case definition. In addition, a case is deleted from the database if an Affidavit and Correction of Death is submitted to Vital Records from the OCME changing the manner from homicide, suicide, or undetermined to natural or accident (unless the accident is firearm-related).

### Deaths of Undetermined Intent

An important change occurred in 2005 affecting the number of undetermined deaths in Massachusetts. Most injury deaths are referred to the MA Office of the Chief Medical Examiner (OCME) for determination of cause and intent. In May 2005, a change in the OCME policy affected the assignment of manner/intent of many poisoning deaths. Up to that point, poisoning deaths, where there was no explicit evidence that the case was a suicide or homicide, were assigned a manner of undetermined. With the new policy, these deaths are assigned a manner of accident/unintentional. This change caused the number of undetermined deaths in 2005, and subsequent years, to be substantially less than in previous years.

### Veteran Status

MAVDRS collected veteran status on victims only if they were a war veteran due to the wording of the death certificate used in Massachusetts. The victim was identified as a veteran only if a war was specified under the section on the death certificate that says, "If US war veteran, specify war." In addition, this report includes occurrent deaths only (deaths occurring in Massachusetts) and thus excludes deaths from military-related actions or other causes occurring outside Massachusetts.

### Weapon Analysis

In cases where more than one weapon type was used (e.g. combination of blunt instrument and firearm) only the first weapon type was selected for the analysis in this report, which was the first one listed in the cause of death from the Medical Examiner, even though all weapons mentioned in the cause of death contributed to the death equally. In cases of multiple poisons, only the first poison listed in the cause of death was analyzed in the weapon analysis.

### Calculating Rates

In calculating rates for **race, Hispanic origin, sex, age group, and county**, 2007 population estimates were based on National Center for Health Statistics, Estimates of the July 1, 2000-July 1, 2007, United States resident

population from the Vintage 2007 postcensal series by year, county, age, sex, race, and Hispanic origin, prepared under a collaborative arrangement with the U.S. Census Bureau. Available on the Internet from:  
<http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm>.

**Age-adjusted Rate**

A summary rate was designed to minimize the distortions created by differences in age distribution when comparing rates for populations with different age compositions. Age-adjusted rates are useful when comparing death rates from different populations or in the same population over time. For example, if one wished to compare the 1998 death rates between Barnstable County (Cape Cod) and Hampshire County, the age-adjusted formula would account for the fact that 24% of the Barnstable County residents were 65 years of age or older, whereas only 11% of the Hampshire County residents were in this age group. Similarly, age-adjusted rates would be useful in comparing Massachusetts to another state with a very different age distribution.

Age-adjusted rates are calculated by weighting the age-specific rates for a given year by the age distribution of the Year 2000 U.S. Standard Population. The weighted age-specific rates are then added to produce the adjusted rate for all ages combined.

**Education and marital status** rates were calculated using the U.S. Census Bureau's American Community Survey 2005 -2007 3-Year Estimates found on the internet at:

[http://factfinder.census.gov/servlet/DTTable?\\_bm=y&-context=dt&-ds\\_name=ACS\\_2007\\_3YR\\_G00\\_&-CONTEXT=dt&-mt\\_name=ACS\\_2007\\_3YR\\_G2000\\_C15002&-tree\\_id=3307&-redoLog=true&-geo\\_id=04000US25&-search\\_results=01000US&-format=&-lang=en](http://factfinder.census.gov/servlet/DTTable?_bm=y&-context=dt&-ds_name=ACS_2007_3YR_G00_&-CONTEXT=dt&-mt_name=ACS_2007_3YR_G2000_C15002&-tree_id=3307&-redoLog=true&-geo_id=04000US25&-search_results=01000US&-format=&-lang=en) and  
[http://factfinder.census.gov/servlet/DTTable?\\_bm=y&-context=dt&-ds\\_name=ACS\\_2007\\_3YR\\_G00\\_&-CONTEXT=dt&-mt\\_name=ACS\\_2007\\_3YR\\_G2000\\_B12001&-tree\\_id=3307&-redoLog=false&-geo\\_id=04000US25&-search\\_results=01000US&-format=&-lang=en](http://factfinder.census.gov/servlet/DTTable?_bm=y&-context=dt&-ds_name=ACS_2007_3YR_G00_&-CONTEXT=dt&-mt_name=ACS_2007_3YR_G2000_B12001&-tree_id=3307&-redoLog=false&-geo_id=04000US25&-search_results=01000US&-format=&-lang=en)

**City/town rates** are calculated using 2007 population estimates from the U.S. Census Bureau's *Annual Estimates of the Population for Minor Civil Divisions in Massachusetts, Listed Alphabetically Within County: April 1, 2000 to July 1, 2007* (SUB-EST2007-05-25).

**Data on the U.S. population** was calculated using WISQARS, accessed April 2009. Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC; Data Source: NCHS Vital Statistics System for numbers of deaths, Bureau of Census for population estimates. On the web at:  
[http://webappa.cdc.gov/sasweb/ncipc/mortrate10\\_sy.html](http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html)

**ANNUAL ESTIMATES OF THE POPULATION FOR COUNTIES OF MASSACHUSETTS, 2007**

Annual Estimates of the Population for Counties of Massachusetts, 2007 <sup>1</sup>		
County	2007 Population Estimate	Percent of population
Barnstable	222,175	3.4
Berkshire	129,798	2.0
Bristol	543,024	8.4
Dukes	15,485	0.2
Essex	733,101	11.4
Franklin	71,602	1.1
Hampden	457,908	7.1
Hampshire	153,147	2.4
Middlesex	1,473,416	22.8
Nantucket	10,531	0.2
Norfolk	654,909	10.2
Plymouth	490,258	7.6
Suffolk	713,049	11.1
Worcester	781,352	12.1
<b>Total</b>	<b>6,449,755</b>	<b>100.0</b>

<sup>1</sup> Annual Estimates of the Population for Counties of Massachusetts: April 1, 2000 to July 1, 2007 (CO-EST2007-05-25); Source: Population Division, U.S. Census Bureau; Release Date: July 10, 2008

## DATA ELEMENTS AND SOURCES

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Data sources utilized by MAVDRS include death certificates, medical examiner records, police reports, Supplementary Homicide Reports (SHR), National Incident Based Reporting System (NIBRS) reports, emergency department records, Emergency Medical Services reports (EMS), and the Massachusetts State Police Crime Laboratory. Over 270 data elements may be collected for each incident in the database, including information on: the incident, person or persons (victim and suspect), toxicology, weapon(s), circumstances associated with a homicide or suicide, relationship between a suspect and victim, and relationship between a person and weapon. More information on the NVDRS data elements and coding protocols is available at the NVDRS website: <http://www.cdc.gov/ncipc/pub-res/nvdrs-coding/VS2/default.htm>.

**Death certificates:** Death certificates serve as an important data source for the cause of death, place and date of death, and demographic information on the victim. Also included on the death certificates are fields for injury information, including date, time, location, address of injury, and if the injury occurred at work. It is the only source used for the assignment of the ICD-10 code, as well as the official legal and public document of the death.

**Medical Examiner files:** Medical examiner records include toxicology reports that typically test for alcohol, cocaine, and opioids, as well as other drugs. Records will also have details on wounds and other injury circumstances.

**Police Reports:** Data from law enforcement agencies (city and town police reports) include demographics of victims and suspects, relationships between victims and suspects, weapons, and circumstances, as well as data from SHR and NIBRS.

**SHR/NIBRS:** The SHR and NIBRS are incident-based reports voluntarily submitted by local law enforcement agencies to the Federal Bureau of Investigation as part of an aggregate crime reporting system. Massachusetts cities and towns participate either in NIBRS or SHR, and approximately half of the jurisdictions currently participate in either system. The MAVDRS database includes data elements for SHR but not for NIBRS. In Massachusetts, NIBRS information is entered in police report data fields. For incidents where information is available from both police and NIBRS, information from the police takes precedence.

**Crime Lab (ballistics):** The Massachusetts State Police Crime Lab provides weapon and ballistics information for firearm-related deaths. Details of the Crime Lab report include make and model of the firearm, caliber or gauge, and other ballistics information.

## PRIMACY AMONG DATA SOURCES

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NVDRS has predetermined rules governing data source primacy when multiple sources are available for the same variable. Data sources have been ranked in terms of their likely accuracy for each data element. The source with first primacy is considered most reliable for a given variable and will be the source of choice. Lower primacy sources are used when a higher primacy source is not available. In the case of a victim's sex, for instance, primacy rules establish the death certificate as the preferred data source, OCME records as the second choice, and police records as the third choice.

NVDRS data file: Data from all sources is entered into the MAVDRS database using software and standards provided to participating states by the Centers for Disease Control and Prevention (CDC).

## CIRCUMSTANCES

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The list of circumstances is generated based on the manner of death assigned when the record is created. For instance, if the death certificate says "homicide," then the person abstracting data (referred to as the "Abstractor") would choose "homicide" and only homicide circumstances are available to endorse. For suicides and deaths of undetermined intent, a different list of circumstances is available to endorse. Variables collected for homicides are not the same as those for suicides or deaths of undetermined intent and vice versa. Note that analysis changed in 2007. Circumstances percentages are presented in 2007 using the total number of victims rather than the number of victims where circumstance information was noted.

### **Homicide Circumstances include the following:**

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Precipitated by another crime	Hate crime
Nature of first other crime	Brawl (mutual physical fight)
Nature of second other crime	Terrorist attack
Crime in progress of homicide	Victim was a bystander
Argument over money/property	Victim was a police officer on duty
Jealousy (lovers` triangle)	Victim used weapon
Intimate partner violence-related	Intervener assisting crime victim
Other argument, abuse, conflict	Mercy killing
Drug involvement	Other (includes drive-by shooting, random violence, and mentally ill suspect)
Gang-related	

### **Suicide/Undetermined Circumstances include the following:**

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Current depressed mood	Other relationship problem
Current mental health problem	Job problem
Type of first mental illness diagnosed	School problem
Type of second mental illness diagnosed	Financial problem
Other mental health diagnosis	Suicide of friend or family in past 5 years
Current treatment for mental illness	Other death of friend or family
Ever treated for mental illness	Recent criminal legal problem
Alcohol problem	Other legal problems
Other substance problem	Perpetrator of interpersonal violence
Person left a suicide note	Victim of interpersonal violence
Disclosed intent to commit suicide	Other
History of suicide attempts	
Crisis in the past two weeks	
Physical health problem	
Intimate partner problem	

### **Unintentional Firearm Circumstances include the following:**

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Hunting	Thought gun was unloaded, other
Target shooting	Unintentionally pulled trigger
Self-defensive shooting	Bullet ricochet
Celebratory firing	Gun defect or malfunction
Loading/unloading gun	Fired while holstering/unholstering
Cleaning gun	Dropped gun
Showing gun to others	Fired while operating safety/lock
Playing with gun	Gun mistaken for toy
Thought safety was engaged	Other
Thought unloaded: magazine disengaged	

## GLOSSARY

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**Asphyxiation:** the condition of being deprived of oxygen and synonymous with suffocation.

**Blunt instrument:** a weapon that does not have a sharp or penetrating point, such as a club or a bat.

**Brawl:** three or more persons involved in a mutual, physical fight. The brawl may or may not escalate to involve weapons. This excludes one-sided physical fight (e.g., a group beats a single victim to death) or a fight between only two people.

**Current depressed mood:** identifies victims who were documented as having a current depressed mood by a family member or someone close to the victim. Family may frequently report that a victim “had been depressed lately” but the record does not supply information about whether the person was diagnosed with a depressive disorder. Rather than coding such a victim as suffering from depression (which may or may not be clinically true), this variable captures the available information more appropriately. The depressed mood may be part of a clinical depression or a short-term sadness. Depressed mood should not be inferred by the coder based on the circumstances; rather it must be noted in the record.

**Current Mental Health Problem:** identifies victims who were identified as having a mental health problem. Mental health problems include those disorders and syndromes listed in the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, Fourth Revision) with the exception of alcohol and other substance dependence (as these are captured in separate variables). Diagnoses are: Depression/dysthymia, Bipolar disorder, Schizophrenia, Anxiety disorder, Post-traumatic stress disorder, ADD or hyperactivity disorder, Eating disorder, Obsessive-compulsive disorder, Other (specify in diagnosis text), including mental retardation, autism, personality disorders, Alzheimer’s, etc. “Yes” is indicated if it is mentioned in the OCME or police report that the victim was being treated for a mental health problem even if the nature of the problem is unclear (e.g., “was being treated for various psychiatric problems”). This variable would also be coded as “Yes” if the victim has a prescription for an antidepressant or other psychiatric medication.

**Current Treatment for Mental Health Problem:** identifies victims who were in current treatment for a mental health problem in the last two months. Treatment includes seeing a psychiatrist, psychologist, medical doctor, therapist, or other counselor for a mental health or substance abuse problem; receiving a prescription for an antidepressant or other psychiatric medication; or residing in an inpatient or halfway house facility for mental health problems. Treatment also includes past treatment, unless noted that the problem has been resolved. Mental health problems include those disorders and syndromes listed in the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, Fourth Revision) and alcohol and other substance dependence.

**Drowning:** weapon resulting from submersion in water or other liquid

**Fall:** weapon resulting from a fall, push, or jump from a high place

**Homicide:** death resulting from the intentional use of force or power, threatened or actual, against another person, group, or community

**Incident:** violent death incident can be made up of any of the following:

1. One isolated violent death
2. Two or more homicides, including legal interventions, when the deaths involve at least one person who is a suspect or victim in the first death and a suspect and victim in the second death and the fatal injuries are inflicted less than 24 hours apart
3. Two or more suicides or undetermined manner deaths, when: there is some evidence that the second or subsequent death was planned to coincide with and follow the preceding death and the fatal injuries are inflicted less than 24 hours apart
4. One or more homicides or unintentional firearm deaths combined with one or more suicides when: the suspect in the first death is the person who commits suicide, and the fatal injuries are inflicted less than 24 hours apart
5. Two or more unintentional firearm deaths when the same firearm inflicts two or more fatal injuries and the fatal injuries are inflicted by one shot or burst of shots

**Legal Intervention Death:** death when the decedent was killed by a police officer or other peace officer (persons with specified legal authority to use deadly force), including military police, acting in the line of duty

**Personal weapons:** includes the body, such as fists, feet, or hands used as a weapon

**Poisoning:** weapon including drugs (prescription, street, or alcohol), toxins, chemical substances, or gas (such as carbon monoxide)

**Suffocation:** condition of being deprived of oxygen and synonymous with asphyxiation

**Sharp instrument:** weapons that have a cutting edge or penetrating point, such as a knife, razor, chisel, or broken glass

**Suicide:** death resulting from the intentional use of force against oneself; a preponderance of evidence should indicate that the use of force was intentional

**Terrorism-related death:** homicides or suicides that result from events that are labeled by the Federal Bureau of Investigation (FBI) as acts of terrorism, which is a mechanism of death rather than a manner of death, where the manner of such death is either homicide or suicide. This designation can only be applied when federal authorities define the death as such.

**Unintentional firearm death:** deaths resulting from gunshot wounds inflicted by the victim or another person unintentionally

**Undetermined manner of death:** an event where available information is insufficient to enable a medical or legal authority to make a distinction between accident, self-harm, and assault (from the ICD-10 code definition).

**Veteran Status:** MAVDRS collected veteran status on victims only if they were a war veteran due to the wording of the death certificate used in Massachusetts. The victim was identified as a veteran if a war was specified under the section on the death certificate that says, "If US war veteran, specify war."

**Violent Death:** A death that results from the intentional use of physical force or power, threatened or actual, against oneself, another person, or a group or community. The person using the force or power need only have intended to use force or power; they need not have intended to produce the consequence that actually occurred. "Physical force" should be interpreted broadly to include the use of poisons or drugs. The word "power" includes acts of neglect or omission by one person who has control over another. In addition, MAVDRS captures unintentional firearm deaths.

## WEAPONS

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Weapons, as defined by NVDRS, differ slightly from the typical use of the term (firearm, knife, etc) and can include neglect or a means (drowning, fall) as well.

### The following are the weapon choices for NVDRS:

Firearm	Other transport vehicle, (e.g., trains, planes, boats)
Non-powder gun	Intentional neglect, (e.g., starving a baby)
Sharp instrument	Biological weapons
Blunt instrument	Other
Poisoning	Unknown
Hanging, strangulation, suffocation	
Personal weapons	
Fall	
Explosive	
Drowning	
Fire or burns	
Shaking, (e.g., shaken baby syndrome)	
Motor vehicle, including buses, motorcycles (not vehicular homicides- only when person is deliberately hit with a motor vehicle)	



## Appendix B: Violent Death Age-adjusted Rates

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### Violent Deaths

Table 1: Violent Deaths by Intent and Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

Table 2: Violent Deaths by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

Table 3: Violent Deaths by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

### Suicides

Table 4: Suicides by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

Table 5: Suicides by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

Table 6: Suicides by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

### Homicides

Table 7: Homicides by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

Table 8: Homicides by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

Table 9: Homicides by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

### Deaths of Undetermined Intent

Table 10: Deaths of Undetermined Intent by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

Table 11: Deaths of Undetermined Intent by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

Table 12: Deaths of Undetermined Intent by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2006

## VIOLENT DEATH AGE-ADJUSTED RATES

<b>Table 1. Violent Deaths by Intent and Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2007<sup>1</sup></b>				
	<b>N</b>	<b>Percent</b>	<b>Crude Rate per 100,000</b>	<b>Age-adjusted Rate per 100,000 (95% CI)</b>
<b>Intent</b>				
Suicide	513	64.0	8.0	7.6 (6.9, 8.3)
Homicide	182	22.7	2.8	2.9 (2.5, 3.3)
Undetermined	102	12.7	1.6	1.4 (1.0, 1.9)
Unintentional firearm	2	0.2	--	--
Legal Intervention	3	0.4	--	--
<b>Sex</b>				
Male	593	73.9	19.0	18.5 (17.0, 20.0)
Female	209	26.1	6.3	6.1 (5.3, 6.9)
<b>Race/Ethnicity</b>				
White, non-Hispanic	598	74.6	11.5	10.8 (10.0, 11.7)
Black, non-Hispanic	98	12.2	24.4	22.2 (17.8, 26.6)
Asian, non-Hispanic	16	2	4.9	4.2 (2.1, 6.3)
Hispanic	76	9.5	14.4	13.2 (9.9, 16.5)
Other/mixed <sup>2</sup>	14	1.7	--	--
<b>Age Group</b>				
0-14	25	3.1	2.1	NA
15-24	130	16.2	14.2	NA
25-34	136	17	16.4	NA
35-44	163	20.3	16.7	NA
45-54	157	19.6	15.9	NA
55-64	105	13.1	14.4	NA
65-74	43	5.4	10.4	NA
75-84	24	3	7.9	NA
85+	18	2.2	12.9	NA
Unknown	1	0.1	--	--
<b>Total</b>	<b>802</b>	<b>100.0</b>	<b>12.4</b>	<b>12.1 (11.2, 12.9)</b>

<sup>1</sup> See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

## VIOLENT DEATH AGE-ADJUSTED RATES

**Table 2. Violent Deaths by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2007<sup>1</sup>**

Female	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95%CI)
White, non-Hispanic	176	84.2	6.6	6.2 (5.2, 7.1)
Black, non-Hispanic	14	6.7	6.8	6.8 (3.2, 10.4)
Asian, non-Hispanic	3	1.4	--	--
Hispanic	13	6.2	4.9	4.4 (2.0, 6.8)
Other/mixed <sup>2</sup>	3	1.4	--	--
<b>Total</b>	<b>209</b>	<b>100.0</b>	<b>6.3</b>	<b>6.1 (5.3, 6.9)</b>

Male	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95% CI)
White, non-Hispanic	422	71.2	16.9	16.0 (14.5, 17.6)
Black, non-Hispanic	84	14.2	43.1	37.9 (29.7, 46.1)
Asian, non-Hispanic	13	2.2	8.1	6.8 (3.0, 10.5)
Hispanic	63	10.6	23.9	22.7 (15.9, 29.5)
Other/mixed <sup>2</sup>	11	1.9	--	--
<b>Total</b>	<b>593</b>	<b>100.0</b>	<b>19.0</b>	<b>18.5 (17.0, 20.0)</b>

**Table 3. Violent Deaths by County: Number, Percent, Crude Rate, Age-adjusted Rate, MA 2007**

County	N	Percent <sup>3</sup>	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95% CI)
Barnstable	32	4.5	14.4	13.1 (8.3, 17.8)
Berkshire	20	2.8	15.4	15.5 (8.5, 22.4)
Bristol	57	8.0	10.5	10.3 (7.6, 13.0)
Dukes	0	0.0	0.0	--
Essex	76	10.6	10.4	10.0 (7.7, 12.3)
Franklin	8	1.1	11.2	10.6 (3.0, 18.1)
Hampden	58	8.1	12.7	12.8 (9.5, 16.1)
Hampshire	13	1.8	8.5	8.1 (3.6, 12.7)
Middlesex	113	15.8	7.7	7.3 (5.9, 8.6)
Nantucket	3	0.4	--	--
Norfolk	56	7.8	8.6	8.1 (5.9, 10.3)
Plymouth	54	7.5	11.0	11.1 (8.1, 14.1)
Suffolk	125	17.5	17.5	16.0 (13.1, 18.9)
Worcester	101	14.1	12.9	12.7 (10.2, 15.2)
Unknown/Outside MA <sup>4</sup>	86	--	--	--
<b>Total known MA county</b>	<b>716</b>	<b>100.0</b>	<b>--</b>	<b>--</b>
<b>Total</b>	<b>802</b>	<b>--</b>	<b>12.4</b>	<b>12.1 (11.2, 12.9)</b>

<sup>1</sup> See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

<sup>3</sup> Percent is based on known Massachusetts county of violent death (N=716); total rate is based on total violent deaths (N=802).

<sup>4</sup> Percent, crude rate, and age-adjusted rate were not calculated on unknown county nor injuries from outside Massachusetts.

## SUICIDE AGE-ADJUSTED RATES

<b>Table 4. Suicides by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2007<sup>1</sup></b>				
	<b>N</b>	<b>Percent</b>	<b>Crude Rate per 100,000</b>	<b>Age-adjusted Rate per 100,000 (95%CI)</b>
<b>Sex</b>				
Male	400	78.0	12.8	12.4 (11.2, 13.7)
Female	113	22.0	3.4	3.2 (2.6, 3.8)
<b>Race/Ethnicity</b>				
White, non-Hispanic	452	88.1	8.7	8.1 (7.4, 8.9)
Black, non-Hispanic	17	3.3	4.1	4.1 (2.2, 6.1)
Asian, non-Hispanic	11	2.1	3.4	2.8 (1.1, 4.5)
Hispanic	28	5.5	5.3	5.4 (3.1, 7.7)
Other/mixed <sup>2</sup>	5	1.0	--	--
<b>Age Group</b>				
0-14	3	0.6	--	NA
15-24	54	10.5	6.0	NA
25-34	84	16.4	10.2	NA
35-44	115	22.4	11.8	NA
45-54	108	21.1	10.9	NA
55-64	81	15.8	11.1	NA
65-74	32	6.2	7.7	NA
75-84	20	3.9	6.6	NA
85+	16	3.1	11.4	NA
<b>Total</b>	<b>513</b>	<b>100.0</b>	<b>8.0</b>	<b>7.6 (6.9, 8.3)</b>

<sup>1</sup> See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

**SUICIDE AGE-ADJUSTED RATES**

<b>Table 5. Suicides by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2007<sup>1</sup></b>				
<b>Female</b>	<b>N</b>	<b>Percent</b>	<b>Crude Rate per 100,000</b>	<b>Age-adjusted Rate per 100,000 (95%CI)</b>
White, non-Hispanic	108	95.6	4.0	3.8 (3.0, 4.5)
Black, non-Hispanic	1	0.9	--	--
Asian, non-Hispanic	2	1.8	--	--
Hispanic	2	1.8	--	--
Other/mixed <sup>2</sup>	0	0.0	0.0	0.0
<b>Total</b>	<b>113</b>	<b>100.0</b>	<b>3.4</b>	<b>3.2 (2.6, 3.8)</b>
<b>Male</b>	<b>N</b>	<b>Percent</b>	<b>Crude Rate per 100,000</b>	<b>Age-adjusted Rate per 100,000 (95%CI)</b>
White, non-Hispanic	344	86.0	13.8	13.0 (11.6, 14.4)
Black, non-Hispanic	16	4.0	8.2	7.9 (4.0, 11.8)
Asian, non-Hispanic	9	2.3	5.6	4.6 (1.5, 7.8)
Hispanic	26	6.5	9.9	10.6 (5.3, 15.9)
Other/mixed <sup>2</sup>	5	1.3	--	--
<b>Total</b>	<b>400</b>	<b>100.0</b>	<b>12.8</b>	<b>12.4 (11.2, 13.7)</b>

<b>Table 6. Suicides by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2007</b>				
<b>County</b>	<b>N</b>	<b>Percent<sup>3</sup></b>	<b>Crude Rate per 100,000</b>	<b>Age-adjusted Rate per 100,000 (95% CI)</b>
Barnstable	28	5.8	12.6	11.7 (7.2, 16.2)
Berkshire	17	3.5	13.1	13.2 (6.7, 19.6)
Bristol	43	9.0	7.9	7.7 (5.4, 10.0)
Dukes	0	0.0	0.0	0.0
Essex	59	12.3	8.0	7.6 (5.6, 9.6)
Franklin	6	1.3	8.4	8.0 (1.4, 14.6)
Hampden	27	5.6	5.9	5.9 (3.7, 8.2)
Hampshire	12	2.5	7.8	7.7 (3.2, 12.1)
Middlesex	87	18.1	5.9	5.5 (4.4, 6.7)
Nantucket	3	0.6	--	--
Norfolk	41	8.5	6.3	5.7 (3.9, 7.5)
Plymouth	38	7.9	7.8	7.6 (5.1, 10.0)
Suffolk	46	9.6	6.5	5.9 (4.2, 7.7)
Worcester	73	15.2	9.3	9.2 (7.1, 11.3)
Unknown/Outside MA <sup>4</sup>	33	--	--	--
<b>Total known MA county</b>	<b>480</b>	<b>100.0</b>	<b>--</b>	<b>--</b>
<b>Total</b>	<b>513</b>	<b>--</b>	<b>8.0</b>	<b>7.6 (6.9, 8.3)</b>

<sup>1</sup> See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

<sup>3</sup> Percent is based on known Massachusetts county of suicide (N=480); total rate is based on total number of suicides (N=513).

<sup>4</sup> Percent, crude rate, and age-adjusted rate were not calculated on unknown county nor injuries from outside Massachusetts.

## HOMICIDE AGE-ADJUSTED RATES

<b>Table 7. Homicides by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2007<sup>1</sup></b>				
	<b>N</b>	<b>Percent</b>	<b>Crude Rate per 100,000</b>	<b>Age-adjusted Rate per 100,000 (95%CI)</b>
<b>Sex</b>				
Male	131	72.0	4.2	4.1(3.4, 4.8)
Female	51	28.0	1.5	1.6 (1.2, 2.1)
<b>Race/Ethnicity</b>				
White, non-Hispanic	55	30.2	1.1	1.1 (0.8, 1.4)
Black, non-Hispanic	74	40.7	18.4	16.4 (12.6, 20.2)
Asian, non-Hispanic	3	1.6	--	--
Hispanic	42	23.1	8.0	6.3 (4.4, 8.3)
Other/mixed <sup>2</sup>	8	4.4	--	--
<b>Age Group</b>				
0-14	20	11.0	1.7	NA
15-24	69	37.9	7.6	NA
25-34	44	24.2	5.3	NA
35-44	20	11.0	2.1	NA
45-54	15	8.2	1.5	NA
55-64	9	4.9	1.2	NA
65-74	3	1.6	--	NA
75-84	2	1.1	--	NA
85+	0	0	--	NA
<b>Total</b>	<b>182</b>	<b>100.0</b>	<b>2.8</b>	<b>2.9 (2.5, 3.3)</b>

<sup>1</sup> See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

## HOMICIDE AGE-ADJUSTED RATES

Table 8. Homicides by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2007 <sup>1</sup>				
Female	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95%CI)
White, non-Hispanic	26	51.0	1.0	1.0 (0.6, 1.4)
Black, non-Hispanic	11	21.6	5.3	5.2 (2.1, 8.4)
Asian, non-Hispanic	1	2.0	--	--
Hispanic	11	21.6	4.2	3.6 (1.5, 5.8)
Other/mixed <sup>2</sup>	2	3.9	--	--
<b>Total</b>	<b>51</b>	<b>100.0</b>	<b>1.5</b>	<b>1.6 (1.2, 2.1)</b>
Male	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95%CI)
White, non-Hispanic	29	22.1	1.2	1.2 (0.8, 1.6)
Black, non-Hispanic	63	48.1	32.4	27.6 (20.7, 34.5)
Asian, non-Hispanic	2	1.5	--	--
Hispanic	31	23.7	11.8	8.9 (5.7, 12.1)
Other/mixed <sup>2</sup>	6	4.6	--	--
<b>Total</b>	<b>131</b>	<b>100.0</b>	<b>4.2</b>	<b>4.1 (3.4, 4.8)</b>

Table 9. Homicides by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2007 <sup>1</sup>				
County	N	Percent <sup>3</sup>	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95% CI)
Barnstable	2	1.1	--	--
Berkshire	1	0.6	--	--
Bristol	6	3.4	1.1	1.2 (0.2, 2.1)
Dukes	0	0.0	0.0	0.0
Essex	15	8.5	2.0	2.2 (1.1, 3.3)
Franklin	2	1.1	--	--
Hampden	27	15.3	5.9	6.0 (3.7, 8.3)
Hampshire	0	0.0	0.0	0.0
Middlesex	15	8.5	1.0	1.0 (0.5, 1.5)
Nantucket	0	0.0	0.0	0.0
Norfolk	8	4.5	1.2	1.4 (0.4, 2.3)
Plymouth	14	8.0	2.9	3.1 (1.5, 4.7)
Suffolk	69	39.2	9.7	8.7 (6.6, 10.7)
Worcester	17	9.7	2.2	2.2 (1.2, 3.3)
Unknown/Outside MA <sup>4</sup>	6	--	--	--
<b>Total known MA county</b>	<b>176</b>	<b>100.0</b>	<b>--</b>	<b>--</b>
<b>Total</b>	<b>182</b>	<b>--</b>	<b>2.8</b>	<b>2.9 (2.5, 3.3)</b>

<sup>1</sup> See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

<sup>3</sup> Percent is based on known Massachusetts county of homicide (N=176), total rate is based on total number of homicides (N=182).

<sup>4</sup> Percent, crude rate, and age-adjusted rate were not calculated on unknown county nor injuries from outside Massachusetts.

## DEATHS OF UNDETERMINED INTENT AGE-ADJUSTED RATES

<b>Table 10. Deaths of Undetermined Intent by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2007<sup>1</sup></b>				
	<b>N</b>	<b>Percent</b>	<b>Crude Rate per 100,000</b>	<b>Age-adjusted Rate per 100,000 (95%CI)</b>
<b>Sex</b>				
Male	57	55.9	1.8	1.8 (1.3, 2.2)
Female	45	44.1	1.4	1.3 (0.9, 1.6)
<b>Race/Ethnicity</b>				
White, non-Hispanic	88	86.3	1.7	1.6 (1.2, 1.9)
Black, non-Hispanic	5	4.9	1.2	1.2 (0.1, 2.3)
Asian, non-Hispanic	2	2.0	--	--
Hispanic	6	5.9	1.1	1.5 (0.2, 2.8)
Other/mixed <sup>2</sup>	1	1.0	--	--
<b>Age Group</b>				
0-14	2	2.0	--	NA
15-24	6	5.9	0.7	NA
25-34	8	7.8	1.0	NA
35-44	26	25.5	2.7	NA
45-54	34	33.3	3.4	NA
55-64	14	13.7	1.9	NA
65-74	7	6.9	1.7	NA
75-84	2	2.0	--	NA
85+	2	2.0	--	NA
Unknown	1	0.1	--	NA
<b>Total</b>	<b>102</b>	<b>100.0</b>	<b>1.6</b>	<b>1.5 (1.2, 1.8)</b>

<sup>1</sup> See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

**DEATHS OF UNDETERMINED INTENT AGE-ADJUSTED RATES**

<b>Table 11. Deaths of Undetermined Intent by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2007<sup>1</sup></b>				
<b>Female</b>	<b>N</b>	<b>Percent</b>	<b>Crude Rate per 100,000</b>	<b>Age-adjusted Rate per 100,000 (95%CI)</b>
White, non-Hispanic	42	93.3	1.6	1.4 (1.0, 1.9)
Black, non-Hispanic	2	4.4	--	--
Asian, non-Hispanic	0	0.0	0.0	0.0
Hispanic	0	0.0	0.0	0.0
Other/mixed <sup>2</sup>	1	2.2	--	--
<b>Total</b>	<b>45</b>	<b>100.0</b>	<b>1.4</b>	<b>1.3 (0.9, 1.6)</b>
<b>Male</b>	<b>N</b>	<b>Percent</b>	<b>Crude Rate per 100,000</b>	<b>Age-adjusted Rate per 100,000 (95%CI)</b>
White, non-Hispanic	46	80.7	1.8	1.7 (1.2, 2.2)
Black, non-Hispanic	3	5.3	--	--
Asian, non-Hispanic	2	3.5	--	--
Hispanic	6	10.5	2.3	3.2 (0.3, 6.1)
Other/mixed <sup>2</sup>	0	0.0	0.0	0.0
<b>Total</b>	<b>57</b>	<b>100.0</b>	<b>1.8</b>	<b>1.8 (1.3, 2.2)</b>

<b>Table 12. Deaths of Undetermined Intent by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2007<sup>1</sup></b>				
<b>County</b>	<b>N</b>	<b>Percent<sup>3</sup></b>	<b>Crude Rate per 100,000</b>	<b>Age-adjusted Rate per 100,000 (95% CI)</b>
Barnstable	2	3.6	--	--
Berkshire	2	3.6	--	--
Bristol	8	14.5	1.5	1.5 (0.4, 2.5)
Dukes	0	0.0	0.0	0.0
Essex	2	3.6	--	--
Franklin	0	0.0	0.0	0.0
Hampden	3	5.5	--	--
Hampshire	1	1.8	--	--
Middlesex	10	18.2	0.7	0.7 (0.2, 1.1)
Nantucket	0	0.0	0.0	0.0
Norfolk	6	10.9	0.9	0.9 (0.2, 1.6)
Plymouth	2	3.6	--	--
Suffolk	9	16.4	1.3	1.3 (0.4, 2.1)
Worcester	10	18.2	1.3	1.1 (0.4, 1.9)
Unknown/Outside MA <sup>4</sup>	47	--	--	--
<b>Total known MA county</b>	<b>55</b>	<b>100.0</b>	<b>--</b>	<b>--</b>
<b>Total</b>	<b>102</b>	<b>--</b>	<b>1.6</b>	<b>1.5 (1.2, 1.8)</b>

<sup>1</sup> See Technical Notes in Appendix A for calculating crude and age adjusted rates. Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20.

<sup>2</sup> Rates for other/mixed race were not calculated due to lack of denominator information.

<sup>3</sup> Percent is based on known Massachusetts county of undetermined intent death (N= 55); total rate is based on total number of undetermined intent deaths (N=102).

<sup>4</sup> Percent, crude rate, and age-adjusted rate were not calculated on unknown county nor injuries from outside Massachusetts.



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