Violent Deaths in Massachusetts: Surveillance Update 2004

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

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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/

NVDRS- MA Advisory Group Members

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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INTRODUCTION

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.[1] 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), and deaths of undetermined intent. Violent deaths are classified as undetermined when the medical examiner does not have enough information to make an absolute determination of how the individual died: whether a death was unintentional, was deliberately self-inflicted, or was caused by assault. While not enough is known about these deaths to definitively establish intent, they are included in NVDRS because limited information about intent is sometimes available. All firearm-related deaths, regardless of intent, are included in the NVDRS case definition.

Currently operating in 17 states[2], 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 (DPH). 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 or between victims and suspects.

Detailed information from multiple sources will enhance 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

With approximately 50,000 suicides and homicides taking place in the United States a 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 is now collecting detailed information on violent deaths as part of NVDRS. This report summarizes results from the second year of data collection in Massachusetts.

METHODS

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 injury and are important for quantifying the problem, while percentages offer a way of showing distributions in the underlying population relative to some 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, presented throughout this report, are important for developing proper 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 group (i.e., age, gender, marital status, race/ethnicity, and level of education), as well as by county and city level. More intensive analysis of NVDRS variables will be conducted as additional data years become available.

Case Definition and Data Source

Violent death cases in the NVDRS database are identified by reviewing the “manner of death” field on death certificates. A record is created in the NVDRS database for any death categorized as suicide, homicide, legal

[1] Additional information on NVDRS can be found at http://www.cdc.gov/ncipc/profiles/nvdrs/facts.htm.
[2] NVDRS states include Alaska, California, Colorado, Georgia, Kentucky, Maryland, Massachusetts, New Jersey, New Mexico, North Carolina, Oklahoma, Oregon, Rhode Island, South Carolina, Utah, Virginia, and Wisconsin.

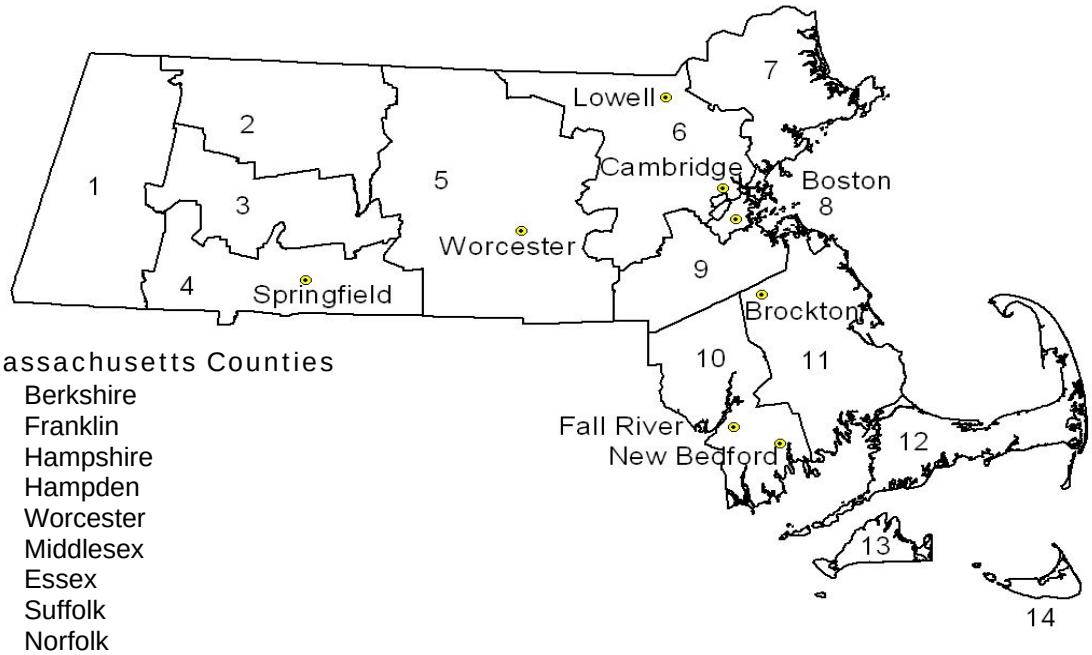
intervention (excluding execution), those of undetermined intent, and all firearm-related deaths, regardless of intent. For each record, additional information is subsequently added from law enforcement and medical examiner sources. Law enforcement documents include police reports and ballistic reports from the Boston Police Department and MA State Police Crime Lab. 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 such as media reports are analyzed 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 a homicide or suicide and relationship between a suspect and victim. The ICD-10 (International Classification of Diseases, Tenth Revision) coded death file maintained by NVDRS is used to establish the final database for all cases meeting the NVDRS case definition.

NVDRS 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. NVDRS also collects data on state of death and 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, actually refers to the location where the fatal injury occurred.

For this report, violent deaths are analyzed on the basis of ICD-10 codes for the underlying cause of death field on death certificates, which includes most suicides, homicides, deaths of undetermined intent, deaths due to legal intervention, and unintentional firearm deaths that occurred in Massachusetts in 2004. The ICD-10 codes used for case inclusion in this report can be found in the Technical Notes section of Appendix A.

Location of Counties and Major Cities in Massachusetts



Massachusetts Counties

1. Berkshire
2. Franklin
3. Hampshire
4. Hampden
5. Worcester
6. Middlesex
7. Essex
8. Suffolk
9. Norfolk
10. Bristol
11. Plymouth
12. Barnstable
13. Dukes
14. Nantucket

For inclusion in NVDRS-MA, 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. NVDRS-MA 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, which are established by the CDC.

In 2004, there were 51 victims who died in Massachusetts that were residents of other states and three were residents of other countries. There were 12 victims who were injured in another state or country, but were brought to Massachusetts where they later died. These two groups are included in NVDRS-MA database as they are occurrent deaths (deaths occurring in Massachusetts). However, there were 28 Massachusetts residents who died from a violent death in another state and are not included in the NVDRS-MA database, but may be captured in another NVDRS–funded state.

Summary of Findings

Overview

In 2004, 1,243 violent deaths occurred in Massachusetts as a result of 1,223 separate incidents. Ninety-nine percent of incidents consisted of only one death. The remaining incidents involved more than one violent death in multiple victim incidents (multiple homicide and/or suicide) or combined homicide/suicide incidents.

On average, 24 violent deaths a week occurred in the Commonwealth. The rate of violent death for all intents was 19.4/100,000. Of the 1,243 violent deaths in 2004, 35% were suicides, 15% were homicides, and 50% were undetermined. Suicides were approximately 2.4 times more frequent than homicides. The highest violent death rate (33.9/100,000) was among age groups 35-44. Black non-Hispanics had the highest rate overall (29.0/100,000) compared to the range of 6.6 to 20.0/100,000 for all other groups.

Similar to 2003, the violent death rate was highest in age group 35-44 for both males (49.3/100,000) and females (18.9/100,000). Fifty percent of all violent deaths (N=625) were of undetermined intent, and of these, 90% (N=560) were due to poisoning. Until May 2005, most drug overdoses were classified as deaths of undetermined intent by the Office of the Chief Medical Examiner in Massachusetts. At this time, the Chief Medical Examiner changed the protocol on how to classify these deaths: most drug overdoses will now be considered unintentional unless there is evidence or lack of evidence proving otherwise, similar to what most other states do. This classification of deaths of undetermined intent accounts for the higher proportion of these deaths in Massachusetts as compared to most other states.

Suicide

From 2003 to 2004, the number of suicides remained relatively stable (N=423 in 2003 to N=432 in 2004). In 2004, there were approximately 8 suicides per week. Suicides increased by 9% for males from 2003 to 2004 and decreased by 17% for females. The suicide rate for males was approximately four times higher than that of females. Among all age groups, suicide rates were highest among 45-54 year olds and those 85 years and older. The most common suicide method was hanging/strangulation/suffocation, which accounts for 42% of suicides and of these, the majority (93%) were due to hanging.

Homicide

From 2003 to 2004, the number of homicides increased by 32%. For males, homicides increased by 36% and females by 15%. In 2004, there were 183 homicides in Massachusetts or approximately four per week. Youth,

ages 15-24, had the highest homicide number (N=79) and rate (9.3/100,000), which was three times higher than the statewide rate. Sixty percent (N=112) of homicides were due to firearms.

Undetermined

From 2003 to 2004, the number of undetermined deaths decreased by 18%. The number decreased 21% for males and 9% for females. In 2004, there were 625 deaths of undetermined intent in Massachusetts, or approximately 12 a week. Age group 35-44 had the highest rate (22.0/100,000) of undetermined deaths. Males were three times more likely than females to have a manner of death classified as undetermined. Ninety percent of undetermined deaths were due to poisoning; this was the most frequent method of death for undetermined cases across genders. These poisonings were mostly due to drug overdoses.

Legal Intervention

Due to differences in death certificate wording, only one legal intervention death was captured by ICD-10 code; an additional five deaths were ICD-10 -coded as homicides because information on the police involvement was not present on the death certificate. Theses cases were identified as legal intervention during the data abstraction of the Medical Examiner and police reports. These five legal intervention deaths are included in all the analysis on homicides. All legal intervention victims tested positive for alcohol and in five incidents, the victim attacked the officer with a weapon.

Unintentional Firearm Deaths

Massachusetts reported two unintentional firearm deaths based on ICD-10 code for 2004.

Section 1: Overview of Violent Deaths in Massachusetts

Data Highlights for 2004:

- Violent deaths claimed the lives of an average of 24 victims a week in Massachusetts in 2004 (N=1,243).
- Of the 1,243 violent deaths, 35% were suicides (N=432) and 15% were homicides (N=183).
- Suicide was 2.4 times more frequent than homicide.
- Poisonings/drug overdoses were the most common method of violent death and accounted for 50% of the total number of violent deaths (N=658). Of these, 96 were suicides and 560 were deaths of undetermined intent.

Compared to 2003:

- The number of violent deaths overall decreased in number from 2003 to 2004 by 6%.
- From 2003 to 2004, the number of suicides remained relatively stable, homicides increased by 32% and undetermined deaths decreased by 18%.

Compared to the U.S.:

- The Massachusetts violent death rate for all intents was similar to that of the U.S. rate (19.4/100,000 and 19.0/100,000 respectively).
- In 2004, the U.S. rate of undetermined deaths was 1.7/100,000, compared to the Massachusetts rate of 9.7/100,000. Many deaths classified as undetermined intent in Massachusetts are classified as unintentional in other states.
- Massachusetts rates for homicide (2.9/100,000) and suicide (6.7/100,000) are lower than the U.S. homicide (5.9/100,000) and suicide (11.9/100,000) rates[1].

[1]Source: WISQARS: http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html, accessed August 2007.

NVDRS-MA Incidents and Victims

NVDRS is an incident-based reporting system; it captures information on all victims in any fatal injury included in the ICD-10 case definition. Some fatal incidents involve more than one person (as in a homicide/suicide) and therefore the number of victims is typically higher than the number of incidents. The ability to link multiple victims to a single incident is a unique contribution of NVDRS to prevention efforts.

Table 1.1: Type of Incidents and Victims: Number and Percent, MA 2004

	Incident		Victim	
Intent	**N**	**Percent**	**N**	**Percent**
Suicides				
Single victim suicide	420	34.3	420	33.8
Double victim suicide	1	0.1	2	0.2
Homicides				
Single victim homicide	158	12.9	158	12.7
Multiple victim homicide	6	0.5	13	1.0
Combined homicide-suicide	10	0.9	22	1.8
Single victim undetermined	625	51.1	625	50.3
Unintentional firearm	2	0.2	2	0.2
Legal intervention[1]	1	0.1	1	0.1
Total	**1,223**	**100**	**1,243**	**100**

In 2004, a total of 1,223 incidents in the NVDRS-MA database accounted for 1,243 violent deaths. Seventeen incidents resulted in the death of more than one person (e.g. “murder/suicide”).

- 99% of incidents consisted of only one death.
- Multiple victim incidents included the following:
  - 1 triple homicide (1 or more persons kills three people in the same incident)
  - 5 double homicides (1 or more persons kills 2 people in the same incident)
  - 1 double suicide (2 people kill themselves in the same incident)
- Combined homicide/suicide incidents included the following:
  - 8 homicide/suicide (1 person kills another, then kills self in the same incident)
  - 2 double homicide/suicide (1 person kills 2 people, then kills self in the same incident)
- There were two unintentional firearm deaths.

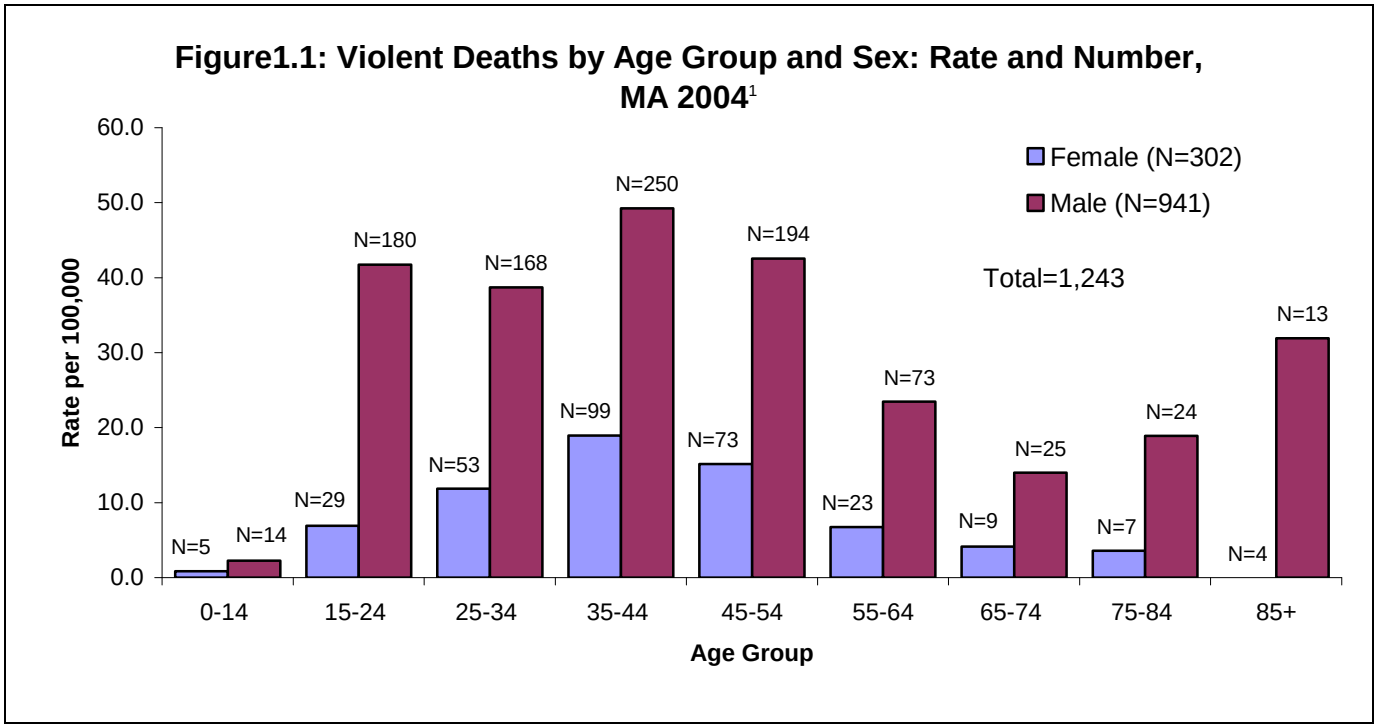
[1]Due to differences in death certificate wording, only one legal intervention death was captured by ICD-10 code; an additional five deaths were ICD-coded as homicides because information on the police involvement was not present on the death certificate. These five legal intervention deaths are included in all the analysis on homicides.

Table 1.2: Violent Deaths by Intent and Demographics: Number, Percent, and Rate, MA 2004			
	N	Percent	Rate per 100,000[1]
Intent			
Suicide	432	34.8	6.7
Homicide	183	14.7	2.9
Undetermined	625	50.3	9.7
Unintentional firearm	2	0.2	---
Legal intervention[2]	1	0.1	---
Sex			
Male	941	75.7	30.3
Female	302	24.3	9.1
Race/Ethnicity			
White non-Hispanic	991	79.7	19.0
Black non-Hispanic	112	9.0	29.0
Asian non-Hispanic	20	1.6	6.6
Hispanic	99	8.0	20.0
Other[3]	21	1.7	---
Age Group			
0-14	19	1.5	1.6
15-24	209	16.8	24.5
25-34	221	17.8	25.1
35-44	349	28.1	33.9
45-54	267	21.5	28.5
55-64	96	7.7	14.7
65-74	34	2.7	8.6
75-84	31	2.5	9.6
85+	17	1.4	12.5
Total	**1,243**	**100**	**19.4**

ADDITIONAL FINDINGS FOR 2004:

- The youngest victim was 14 days old and the oldest was 98 years old. The mean age of all victims was 40.0 and the median age was 40.
- There were 20 homeless victims of a violent death.
- Eighteen victims died while in custody, such as jail, state institution, or prior to arrest.[4]
- There were 82 war veterans[5] who died from a violent death in Massachusetts.
- Fourteen victims died of a violent death at their place of work.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates.
[2] The number of legal intervention deaths was captured by ICD-10 code from the Death Certificate. An additional five legal intervention deaths mentioned in the executive summary are included in the homicide number due to the wording on those death certificates that don't include information on the police involvement.
[3] Rates for Other race were not calculated due to lack of denominator information.
[4] The variable "in custody" is coded if the victim is in jail or other state institution, as well as under arrest but not in jail, injured prior to arrest, under house arrest, electronic monitoring, or legal home confinement.
[5] This report includes victims who were a US veteran **only if** the war in which they served was specified. It excludes deaths resulting from military-related operations occurring outside Massachusetts. See Technical notes in Appendix A for more specific definitions on veteran status.

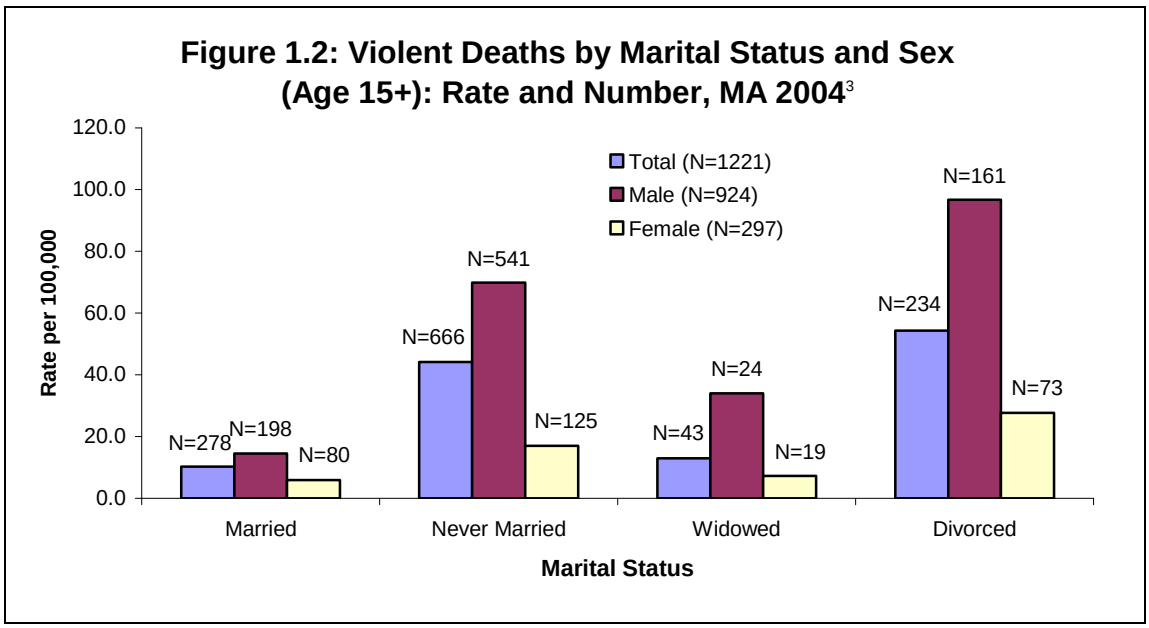


- The violent death rate[1] was highest among persons ages 35-44 for both male (49.3/100,000) and female victims (18.9/100,000).
- The violent death rate for males ages 85 and over (31.9/100,000) was eight times higher than for females in the same age group (4.2/100,000).
- Elderly men over age 85 had a higher violent death rate than the combined rate of males between the ages of 55 through 84 (19.8/100,000).

[1] 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.

Table 1.3: Violent Deaths by Race/Ethnicity and Sex: Number, Percent, and Rate, MA 2004[1]						
	Female			Male		
	N	Percent	Rate per 100,000[1]	N	Percent	Rate per 100,000[1]
White non-Hispanic	262	86.8	9.7	729	77.5	29.0
Black non-Hispanic	14	4.6	7.0	98	10.4	52.6
Asian non-Hispanic	5	1.7	3.2	15	1.6	10.0
Hispanic	18	6.0	7.3	81	8.6	32.9
Other[2]	3	1.0	---	18	1.9	---
Total	**302**	**24.3**	**9.1**	**941**	**75.7**	**30.3**

- Among females, the highest violent death rate was among White non-Hispanics (9.7/100,000).
- Among males, the highest violent death rate was among Black non-Hispanics (52.6/100,000).



- Marital status data are based on the death certificate, which does not capture "married, but separated" status.
- Rates for males were always higher than rates for females, regardless of marital status.
- Overall, the violent death rate was highest among divorced victims for both males (96.7/100,000) and females (27.6/100,000).
- The violent death rate was lowest among married victims for both males (14.6/100,000) and females (5.9/100,000).

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates.
[2] Rates for Other race were not calculated due to lack of denominator information.
[3] Rates were calculated among victims age 15 and over to minimize the effect of age over marital status. Number count does not include unknown or single, not specified marital status (N=4).

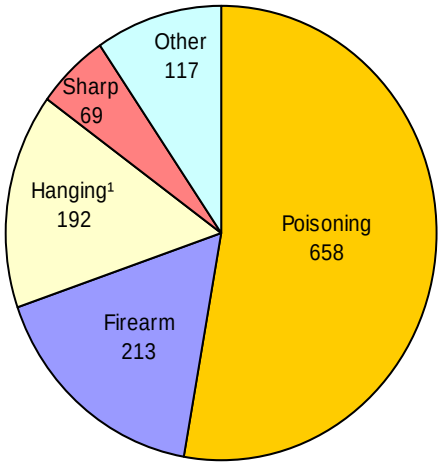
METHODS OF VIOLENT DEATHS

NVDRS 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, such as 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 typically refers to drug overdoses, including prescription drugs, street drugs, or a combination of both. A poisoning can also be carbon monoxide or other toxic substances.

Most drug overdoses in Massachusetts were classified as deaths of undetermined intent by the Office of the Chief Medical Examiner. This classification of deaths of undetermined intent accounts for the high proportion of these deaths in Massachusetts as compared to most other states.

In cases where more than one weapon type was used (including multiple poisons), only the first weapon type was selected for analysis in this report.
Poisoning/drug overdoses are the most common cause of all violent death (53%, N=656) for both males (48%, N=447) and females (69%, N=209). Typically, these were deaths of undetermined intent (86%).

Figure 1.3: Violent Deaths by Weapon Type, MA 2004



N=1,243

- Male victims were four times more likely to be killed by a firearm (21%, N=198) than female victims (5%, N=15).
- Other weapons include drowning, falls/jumps, and fire/burns. See Appendix A for complete list of weapon variables.
- Poisoning/drug overdoses, firearms, and hanging account for approximately 85% of all violent deaths.
- There were six deaths that were due to the use of two different weapon types. Each weapon contributed equally to the death. Of the victims who died as a result of multiple weapons:
    - Two deaths were due to a combination of hanging and a drug overdose/poisoning.
    - Two victims died due to a sharp and a blunt weapon combination.
    - One death was a combination of a blunt instrument and a motor vehicle.
    - One victim died due to an unknown weapon combined with a drug overdose/poisoning.

Table 1.4: Violent Deaths by County: Number, Percent, and Rate, MA 2004			
County[1]	**N**	**Percent**[2]	**Rate per 100,000**[3]
Population: 1,000,000+			
Middlesex	159	16.6	10.9
Population: 500,000 – 1,000,000			
Suffolk	157	16.4	23.6
Essex	122	12.7	16.5
Bristol	84	8.8	15.3
Worcester	101	10.5	13.0
Norfolk	78	8.1	11.9
Population: 100,000 - 500,000			
Hampden	94	9.8	20.4
Barnstable	38	4.0	16.6
Hampshire	23	2.4	14.9
Plymouth	72	7.5	14.7
Berkshire	17	1.8	12.8
Population: <100,000			
Franklin	8	0.8	11.1
Dukes	4	0.4	---
Nantucket	2	0.2	---
Unknown[1]	272	---	---
Outside MA[1]	12	---	---
TOTAL	**1,243**	**100.0**	**19.4**

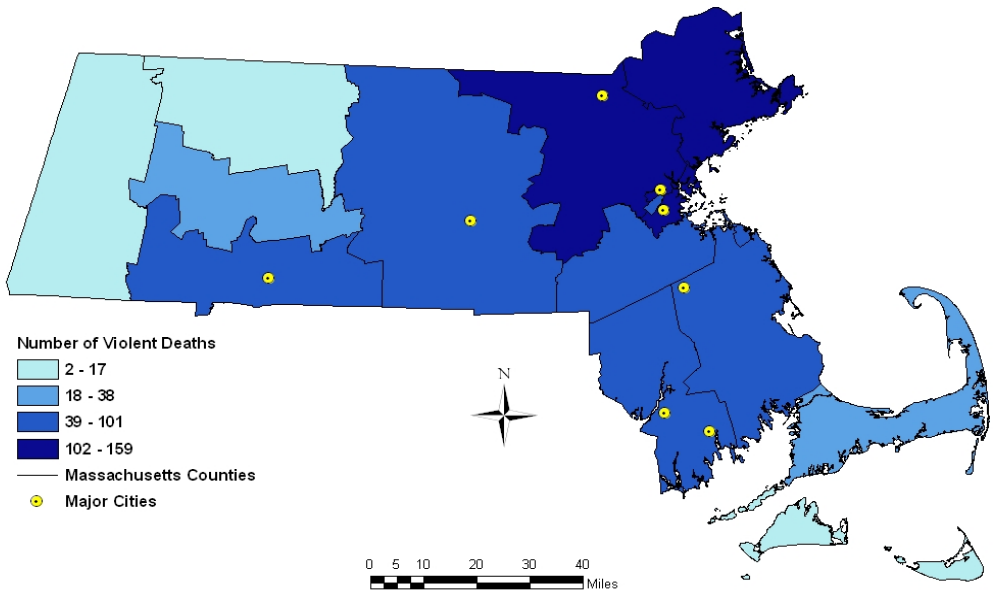
- Middlesex, Suffolk, and Essex Counties had the highest number of violent deaths (159, 157, and 122, respectively). Approximately 45% of the Massachusetts population lives in these counties and the same proportion of violent deaths (45%) occur in these counties, as well.
- Among counties with population between 500,000-1,000,000, Suffolk County, which includes Boston, had both the highest number and rate of violent death. Fifty-three percent of the Massachusetts population lives in these counties.
- Among counties with population between 100,000-500,000, Hampden had the highest number and rate of violent death (N=94, 20.4/100,000). Springfield is the largest city in Hampden County. Twenty-three percent of the Massachusetts population lives in these counties.

[1] Annual Estimates of the Population for Counties of Massachusetts: April 1, 2000 (CO-EST2004-01-25) Population Division, U.S. Census Bureau.
[2] Percent is based on known Massachusetts county of violent death (N=957). Rate was not calculated on unknown county of death nor out of state injuries.
[3] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates.

LOCALITY OF VIOLENT DEATHS

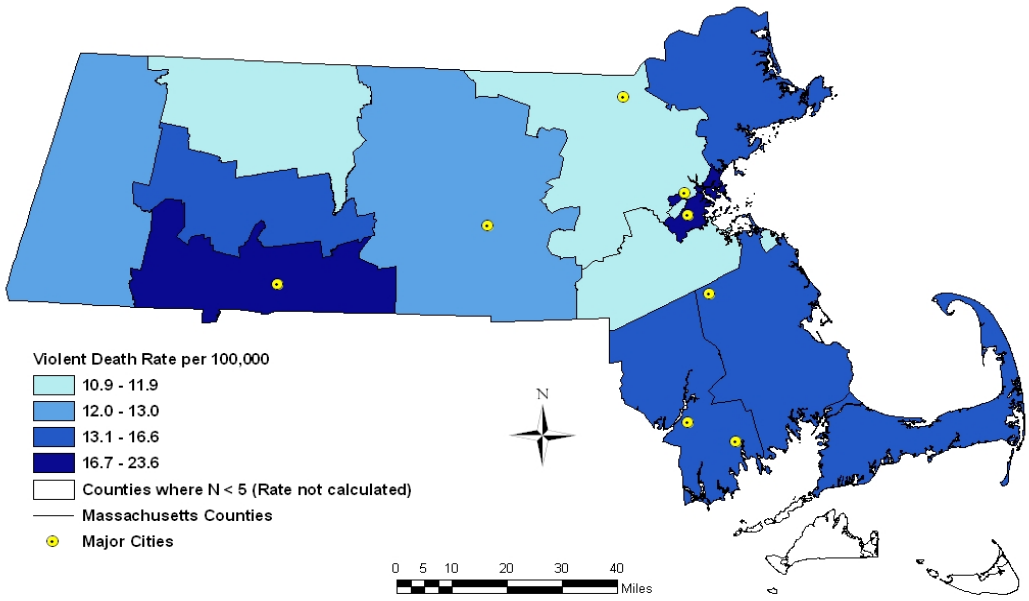
For county names and major cities, please refer to the map on page 8 of the Introduction.

Figure 1.4: Violent Death by County: Number, MA 2004



Data Sources: NVDRS, MA Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS.

Figure 1.5: Violent Death by County: Rate, MA 2004



Data Sources: NVDRS, MA Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS.

Table 1.5: Violent Deaths by Cities/Towns: Number, Percent, and Rate, MA 2004			
	N	Percent	Rate per 100,000[2]
Group 1: Cities/Towns over 175,000 population			
Boston	133	13.9	23.4
Worcester	31	3.2	17.6
Total Group 1	**164**	**17.1**	**22.0**
Group 2: Cities/Towns 75,000-175,000 population			
Springfield	48	5.0	31.6
Lynn	27	2.8	30.2
New Bedford	28	2.9	29.8
Quincy	23	2.4	25.6
Brockton	24	2.5	25.3
Lowell	23	2.4	22.2
Fall River	18	1.9	19.5
Cambridge	9	0.9	8.9
Somerville	6	0.6	7.9
Newton	4	0.4	---
Total Group 2	**210**	**21.9**	**21.5**
Group 3: Cities/Towns 50,000-75,000 population			
Weymouth	10	1.0	18.4
Malden	10	1.0	18.1
Waltham	10	1.0	16.9
Haverhill	10	1.0	16.5
Chicopee	9	0.9	16.4
Peabody	8	0.8	15.9
Lawrence	10	1.0	13.9
Brookline	7	0.7	12.5
Medford	5	0.5	9.2
Taunton	5	0.5	8.8
Framingham	5	0.5	7.6
Plymouth	4	0.4	---
Total Group 3	**93**	**9.7**	**13.4**
Group 4: Cities/Towns < 50,000 population			
Total Group 4	**490**	**51.2**	**12.2**
Unknown City/Town[3]	**274**	**---**	**---**
Outside MA[2]	**12**	**---**	**---**
Total known city	**957**	**100.0[4]**	**---**
Total	**1,243**	**---**	**19.4**

- The total rates for cities with a population over 175,000 (22.0/100,000) and 75,000-175,000 (21.5/100,000) were higher than the total rate for cities with a population of 50,000-75,000 (13.4/100,000).
- Cities/towns with population less than 50,000 had the lowest rates.
- Among cities with population over 175,000, Boston had the highest number and rate (N=133, 23.4/100,000).
- Among cities with population 75,000-175,000, Springfield had the highest number and rate (N=48, 31.6/100,000) followed by Lynn (N=27, 30.2/100,000) and New Bedford (N=28, 29.8/100,000).

[2] 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.
[3] Rate and percent were not calculated on unknown city of death nor out of state injuries.
[4] Percent was calculated on known Massachusetts city of violent death (N=957).

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Section 2: Suicides in Massachusetts

Data Highlights for 2004:

- An average of eight suicides per week occurred in 2004—more than one each day (N=432).
- Most suicides were White non-Hispanic males (N=305, 12.1/100,000).
- The suicide rate for males (11.1/100,000) was more than four times higher than the female rate (2.7/100,000).
- White non-Hispanics had the highest suicide rate (7.4/100,000). Hispanics had the lowest suicide rate (2.4/100,000).
- Almost 71% of suicides occurred in a home or its surrounding area (yard, driveway, and porch).

Compared to 2003:

- The number of suicides increased by 9% for males from 2003 to 2004 and decreased by 17% for females. Male suicides as a proportion of all violent deaths increased significantly from 2003 to 2004.
- There was no statistically significant difference in suicide rates, methods and demographic characteristics between 2003 and 2004.

Compared to the U.S.[1]:

- Massachusetts had a lower suicide rate (6.7/100,000) than the U.S. rate for suicides (11.1/100,000) in 2004.
- Suicide rates for both males and females were lower in Massachusetts than the U.S. average. The U.S. rate for male suicides in 2004 was 17.7/100,000 and 11.1/100,000 in Massachusetts. The U.S. rate for female suicides in 2004 was 4.6/100,000 and 2.7/100,000 in Massachusetts.
- In 2004, Massachusetts had a lower rate of firearm suicides (1.5/100,000) compared to the U.S. rate (5.7/100,000).

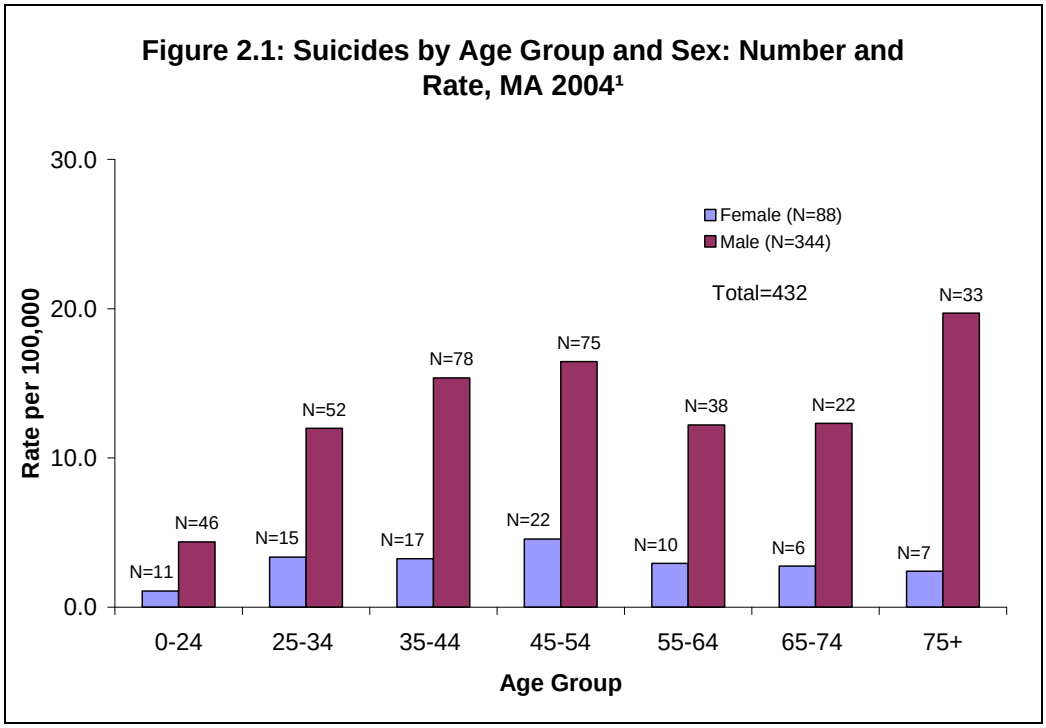
[1]Source: WISQARS: http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html, accessed August 2007.

Table 2.1: Suicides by Demographics: Number, Percent, and Rate, MA 2004			
	N	Percent	Rate per 100,000[1]
Sex			
Male	344	79.6	11.1
Female	88	20.4	2.7
Race/Ethnicity			
White non-Hispanic	386	89.4	7.4
Black non-Hispanic	13	3.0	3.4
Asian non-Hispanic	14	3.2	4.6
Hispanic	12	2.8	2.4
Other[2]	7	1.6	---
Age Group			
0-14	3	0.7	---
15-24	54	12.5	6.3
25-34	67	15.5	7.6
35-44	95	22.0	9.2
45-54	97	22.5	10.4
55-64	48	11.1	7.4
65-74	28	6.5	7.1
75-84	26	6.0	8.1
85+	14	3.2	10.3
Total	**432**	**100**	**6.7**

ADDITIONAL FINDINGS FOR 2004:

- The youngest suicide victim was 11 years old and the oldest was 98 years old.
- Sixty percent of suicides occurred in persons between the ages of 25 and 54. The mean age was 45.7 and the median age was 44.
- Fifty-one war veterans[3] completed suicide, accounting for 62% of the total violent deaths among war veterans (N=82).
- Suicides in 2004 also included:
  - less than five victims that were homeless.
  - ten victims who completed suicide while in custody, such as jail, state institution, or prior to arrest.[4]
  - five victims who died at their place of work.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates.
[2] Rates for Other race were not calculated due to lack of denominator information.
[3] This report includes victims who were a US veteran **only if** the war in which they served was specified. It excludes deaths resulting from military-related operations occurring outside Massachusetts. See Technical notes in Appendix A for more specific definitions on veteran status.
[4] The variable "in custody" is coded if the victim is in jail or other state institution, as well as under arrest but not in jail, injured prior to arrest, under house arrest, electronic monitoring, or legal home confinement. It is not the same as place of suicide (page 30), which can include jail or state institution, as well as other places, such as home or street.



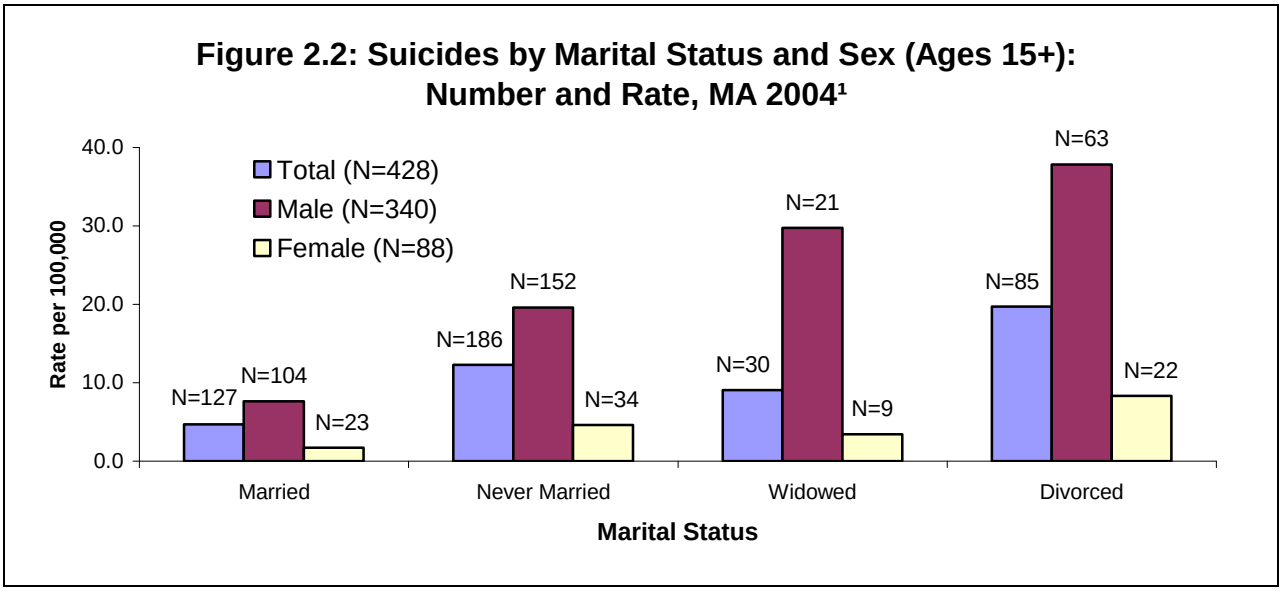
- AMong youths age 15-19, the suicide rate was 4.5/100,000 (N=19), which was lower than the statewide rate of 6.7/100,000.
- The suicide rate for persons ages 20-24 was 8.1/100,000 (N=35), which is higher than the statewide rate.
- Females aged 45-54 had the highest suicide rate (4.6/100,000) among females.
- Among males, those age 75 and over had the highest suicide rate (19.7/100,000).

Table 2.2: Suicides by Race/Ethnicity and Sex: Number, Percent, and Rate, MA 2004

	Female			Male		
	N	Percent	Rate per 100,000[1]	N	Percent	Rate per 100,000[1]
White non-Hispanic	81	92.0	3.0	305	88.7	12.1
Black non-Hispanic	3	3.4	---	10	2.9	5.4
Asian non-Hispanic	3	3.4	---	11	3.2	7.4
Hispanic	0	0.0	---	12	3.5	4.9
Other[2]	1	1.1	---	6	1.7	---
Total	**88**	**100**	**2.7**	**344**	**100**	**11.1**

- White non-Hispanics had the highest rates for both males (12.1/100,000) and females (3.0/100,000).
- There were 432 suicides; approximately 71% were White non-Hispanic males and 19% were White non-Hispanic females.
- Among males, Hispanics and Black non-Hispanics had the lowest suicide rates (4.9 and 5.4/100,000, respectively).

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates.
[2] Rates for Other race were not calculated due to lack of denominator information.



- In 2004, male suicide rates were always higher than the female suicide rate, regardless of marital status.
- Suicide rates were highest among divorced victims for both males (37.8/100,000) and females (8.3/100,000) and were lowest among married victims for both males (7.6/100,000) and females (1.7/100,000).

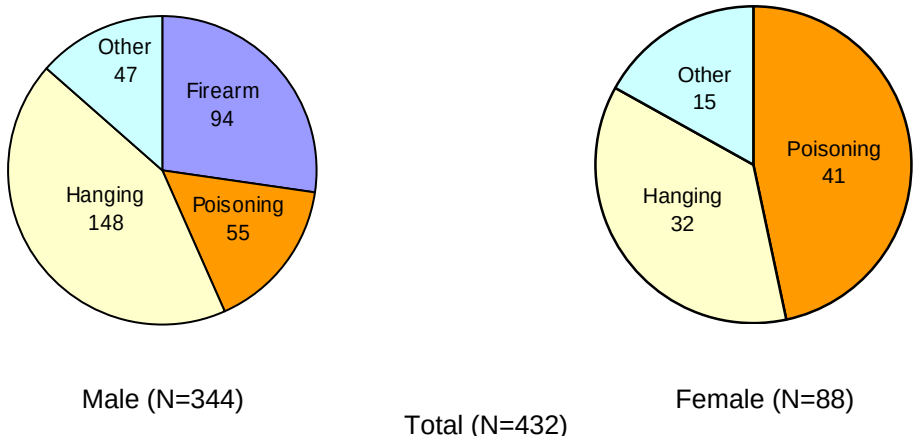
Table 2.3: Suicides (Ages 25+) by Level of Education and Sex: Number, Percent, and Total Rate, MA 2004[1]

Years of Education[2]	Female		Male		Total		
	N	Percent	N	Percent	N	Percent	Rate per 100,000
1-8	4	5.2	15	5.1	19	5.1	9.2
9-11	2	2.6	20	6.8	22	5.9	15.1
12[3]	40	51.9	165	55.7	205	55.0	
13-16	26	33.8	71	24.0	97	26.0	5.1
17 +	5	6.5	25	8.4	30	8.0	4.7
Total	**77**	**100**	**296**	**100**	**373**	**100**	**8.8**

- The highest suicide rate was among victims with 9-12 years of education.
- Approximately 66% of suicide victims had 12 or less years of education, while approximately 60% of the Massachusetts population has had more than 12 years of education.

[1] 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.
[2] There were two victims whose data element for level of education was unknown.
[3] Grades 9 through 12 were combined to calculate rates because an appropriate denominator was not available to separate 9 to 11 grades from 12th grade.

Figure 2.3: Suicide by Type of Weapon and Sex, MA 2004



- The above graph shows specific weapon categories with frequencies greater than 20. Weapon categories with 20 or fewer cases are combined into "other." Other weapons used in suicides include sharp instruments, falls, drowning, fire or burns. See Appendix A for a complete list of weapon variables.
- Hanging is defined by NVDRS as hanging/strangulation/suffocation. This was the most common suicide method, accounting for 42% of suicides.
  - The majority (93%) of hanging suicides were due to hanging by ligature.
  - Among deaths by hanging, 83% were male and 17% were female.
- Among females, poisoning/drug overdose was the most common method (46%), followed by hanging (36%).
- For males, hanging was the most common method (43%). The second most common method involved the use of a firearm (27%), followed by poisoning/drug overdose (16%).
- Of these poisoning/drug overdose suicide deaths (N=96):
  - 59% (N=57) were due to the ingestion of a substance, including street/recreation drugs, alcohol, pharmaceutical prescriptions, and over-the counter medications.
  - 22% (N=21) were due to carbon monoxide poisoning.
  - 8% (N=8) were due to another poison (such as insecticides or helium).
  - 10% (N=10) were due to an unknown poison.
- There were three firearm suicides by females, which are included in the "other" category.
- Of suicide poisoning deaths, in 31% of victims (N=30), more than one substance caused their death.
- There were two suicide victims who died from a combination of two weapon types. Each weapon contributed equally to the death; however, for the analysis, the first weapon type was selected. Of the victims who died as a result of multiple weapons:
  - one was due to hanging and poisoning/drug overdose.
  - one was due to an unknown weapon and poisoning/drug overdose.

Table 2.4: Suicide Method by Age Group: Number and Percent, MA 2004											
	0-14		15-24		25-44		45-64		65+		Total
Weapon	N	Percent	N	Percent	N	Percent	N	Percent	N	Percent	N
Firearm	0	0	12	22.2	26	16.1	30	20.7	29	42.7	97
Poisoning	0	0	10	18.5	32	19.8	44	30.3	10	14.7	96
Hanging	3	100	25	46.3	84	51.9	51	35.2	17	25.0	180
Other[1]	0	0	7	13.0	20	12.4	20	13.8	12	17.7	59
Total	**3**	**100**	**54**	**100**	**162**	**100**	**145**	**100**	**68**	**100**	**432**

- Hanging was the most common method of suicide through age 64.
- Firearms were most commonly used among persons age 65 and over.

[1] Other weapon includes sharp instruments, fall, blunt, drowning, fire and burns, buses/motorcycles, train. See Appendix A for complete list.

Table 2.5: Suicides by County: Number, Percent, and Rate, MA 2004			
County[1]	**N**	**Percent[2]**	**Rate per 100,000[3]**
Population: 1,000,000+			
Middlesex	72	16.9	4.9
Population: 500,000 – 1,000,000			
Essex	55	12.9	7.4
Worcester	54	12.7	6.9
Bristol	37	8.7	6.7
Norfolk	39	9.2	6.0
Suffolk	35	8.2	5.3
Population: 100,000 – 500,000			
Barnstable	25	5.9	10.9
Berkshire	13	3.1	9.8
Plymouth	41	9.6	8.4
Hampshire	12	2.8	7.8
Hampden	33	7.8	7.1
Population: <100,000			
Franklin	5	1.2	6.9
Dukes	4	0.9	---
Nantucket	0	0.0	---
Unknown[2]	2	---	---
Outside MA[2]	5	---	---
Total	**432**	**100**	**6.7**

- Middlesex, Essex, and Worcester Counties had the highest number of suicides (72, 55, and 54 respectively), accounting for more than 2 out of 5 victims. Approximately 46% of the population lives in these three counties combined.

- Among counties with population 500,000-1,000,000, Essex had the highest number and rate (N=55, 7.4/100,000). Rates ranged from 5.3/100,000 – 7.4/100,000 in these counties.

- Among counties with population 100,000-500,000, Plymouth had the highest number (N=41, 8.4/100,000) and Barnstable had the highest rate (N=25, 10.9/100,000). Rates ranged from 7.1 – 10.9/100,000 in these counties. These counties account for 29% of suicide occurrences but 23% percent of the Massachusetts population.

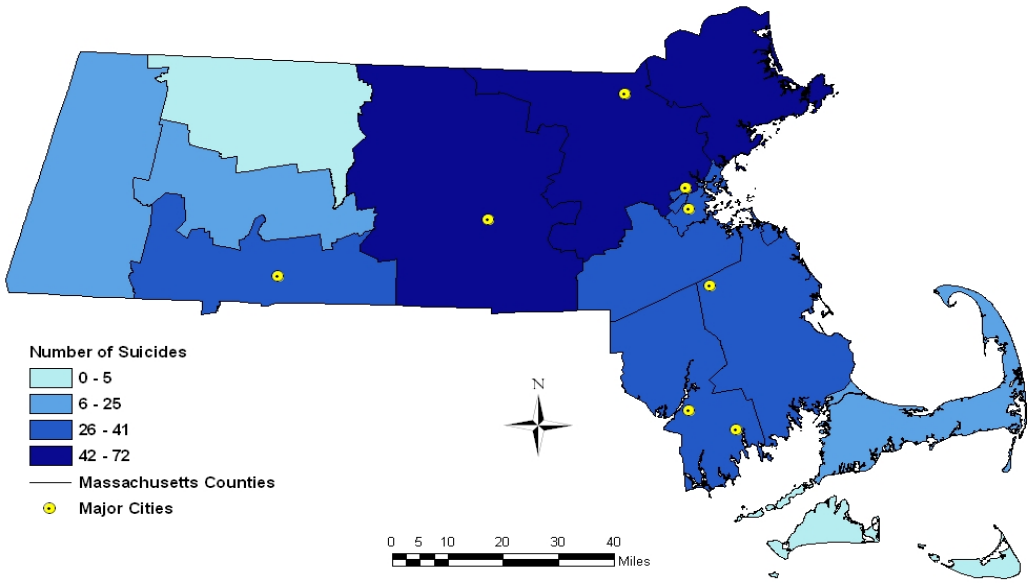
- Numbers of suicides for some counties are low, therefore rates may be unstable. Caution should be exercised in interpretation of these rates.

[1] Annual Estimates of the Population for Counties of Massachusetts: April 1, 2000 (CO-EST2004-01-25) Population Division, U.S. Census Bureau.
[2] Percent is based on known Massachusetts county of suicide (N=425). Rate was not calculated on Unknown County of death nor out of state injuries.
[3] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates. Rates may be much higher among counties with small a population.

LOCALITY OF SUICIDES

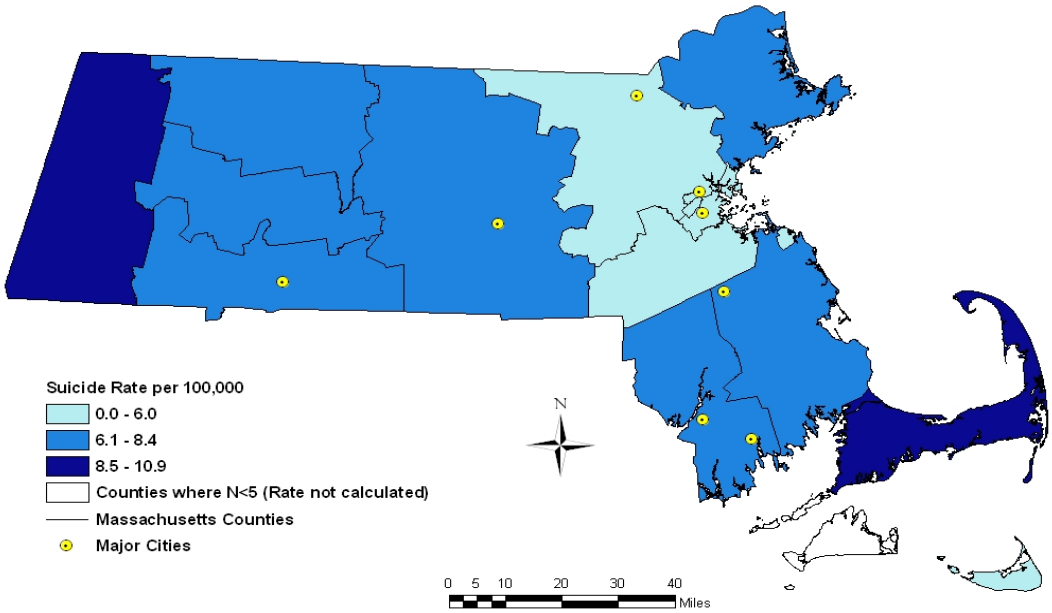
For county names and major cities, please refer to the map on page 8 of the Introduction.

Figure 2.4: Suicides by County: Number, MA 2004



Data Sources: NVDRS, MA Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS.

Figure 2.5: Suicides by County: Rate, MA 2004



Data Sources: NVDRS, MA Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS.

Table 2.6: Suicides by Cities/Towns: Number, Percent, and Rate, MA 2004			
	N	**Percent**[1]	**Rate per 100,000**[2]
Group 1: Cities/Towns over 175,000 population:			
Worcester	10	2.4	5.7
Boston	28	6.6	4.9
Total Group 1	**38**	**8.9**	**5.1**
Group 2: Cities/Towns 75,000-175,000 population:			
Lynn	10	2.4	11.2
Brockton	9	2.1	9.5
Quincy	8	1.9	8.9
New Bedford	8	1.9	8.5
Fall River	7	1.6	7.6
Springfield	11	2.6	7.2
Cambridge	6	1.4	6.0
Lowell	6	1.4	5.8
Somerville	4	0.9	---
Newton	2	0.5	---
Total Group 2	**71**	**16.7**	**7.3**
Group 3: Cities/Towns 50,000-75,000 population:			
Brookline	5	1.2	8.9
Waltham	5	1.2	8.4
Haverhill	5	1.2	8.3
Medford	4	0.9	---
Peabody	4	0.9	---
Plymouth	4	0.9	---
Weymouth	4	0.9	---
Chicopee	3	0.7	---
Lawrence	2	0.5	---
Malden	2	0.5	---
Taunton	1	0.2	---
Framingham	0	0.0	---
Total Group 3	**39**	**9.2**	**5.6**
Group 4: Cities/Towns with < 50,000 population			
Total Group 4	**277**	**65.2**	**6.9**
Unknown City/Town[3]	**2**	**---**	**---**
Outside MA[3]	**5**	**---**	**---**
Total known city	**425**	**100.0**	**---**
Total	**432**	**---**	**6.7**

- The total suicide rate for cities with a population of 75,000-175,000 (7.3/100,000) was higher than the total rate for cities with population over 175,000 (5.1/100,000) and the total rate of cities with population of 50,000-75,000 (5.6/100,000).
- Between the two cities with a population over 175,000, Boston had the higher number (N=28, 4.9/100,000), but Worcester had the higher rate for suicide (N=10, 5.7/100,000).
- Among cities with population of 75,000-175,000, Springfield had the highest number (N=11, 7.2/100,000) and Lynn had the highest rate (N=10, 11.2/100,000) of suicide.

[1] Percent is based on known Massachusetts city of violent death (N=425). Rate was not calculated on unknown city of death nor out of state injuries.
[2] 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.
[3] Rate and percent were not calculated on unknown city of death nor out of state injuries.

Table 2.7: Places Where Suicide Occur: Number and Percent, MA 2004		
	N	**Percent [1]**
Buildings and surroundings:	**327**	**76.6**
House, apartment, including driveway, porch, yard	303	71.0
Hotel/motel	8	1.9
Jail, prison, detention facility	6	1.4
Hospital or medical facility	4	0.9
Supervised residential facility	3	0.7
Office building	1	0.2
Other commercial establishment	1	0.2
Abandoned house, building, or warehouse	1	0.2
Transportation utilities:	**43**	**10.1**
Motor vehicle (excl. school and public transportation)	19	4.5
Street/road, sidewalk, alley	7	1.6
Public transportation or station	6	1.4
Parking lot/public parking garage	5	1.2
Railroad track	4	0.9
Highway, freeway	2	0.5
Outdoor and recreational areas:	**43**	**10.1**
Natural area (field, river, woods, beach, etc)	36	8.4
Park, playground, public use area	6	1.4
Sports or athletic area	1	0.2
Educational facilities:	**5**	**1.2**
College/University	4	0.9
High school	1	0.2
Other:	**9**	**2.1**
Other[2]	6	1.4
Industrial or construction areas	2	0.5
Bar, nightclub	1	0.2
Unknown	**5**	**1.2**
Total Suicides	**432**	**100.0**

- Suicides typically occurred in a house, apartment, or its surroundings (71%).
- About 8% of suicides occurred in a natural area, such as woods and rivers.
- Six suicides occurred in jail or in custody and five occurred at a school.
- Nineteen suicides occurred in a motor vehicle and 18 of those were due to carbon monoxide poisoning.

[1] Percent is based on number of suicides with known place where suicide occurred (N=427).
[2] Other may include cemetery, railroad tracks, and etc.

SUICIDE CIRCUMSTANCES

Circumstance data included in analysis are for those victims where at least one circumstance category was known. Since some victims may have multiple circumstances noted, percent totals will not sum to 100%.

Table 2.8: Circumstances of Suicides: Number and Percent, MA 2004		
Circumstance	**N**	**Percent**
Health Characteristics		
Current mental health problem	174	46.2
Prior mental health treatment	153	40.6
Current treatment for mental illness	131	34.8
Alcohol problem/other substance problem	93	24.7
Physical health problem[1]	67	17.8
History of suicide attempts	66	17.5
Relationship Characteristics		
Intimate partner problem	96	25.5
Other relationship problem	28	7.4
Other death of friend or family in past five years	20	5.3
Perpetrator of interpersonal violence past month	17	4.5
Life Stressors		
Financial problem	27	7.2
Job problem	24	6.4
Recent criminal legal problem	22	5.8
Other legal problems	18	4.8
Event Characteristics		
Person left a suicide note	128	34.0
Current depressed mood	111	29.4
Disclosed intent to commit suicide	75	19.9
Crisis in past two weeks	46	12.2
Other suicide circumstance[2]	18	4.8

- There were a total of 344 males and 88 females who completed suicide. Eighty-seven percent of these victims had information about circumstances noted.
- Forty-six percent of the suicide victims had a current mental health problem. This is a broad category and includes victims who had been diagnosed by a professional with a psychiatric problem and victims who were prescribed antidepressants or other psychiatric medication.
- Twenty-nine percent of suicide victims 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.
- In 26% of the suicides, victims were reported to be having problems including divorce, jealousy, argument or other conflict with a current or former intimate partner.
- Approximately one third of victims left a suicide note and about 20% had disclosed their intent to harm themselves prior to completing suicide.

[1] Physical health problem was selected whether or not the health problem was stated in the file to have directly contributed to the suicide.
[2] Other suicide circumstances include: suicide of friend or family in past five years, school problem, victim of interpersonal violence in the past month, and other circumstances which are not included in above table.

SUICIDE CIRCUMSTANCES

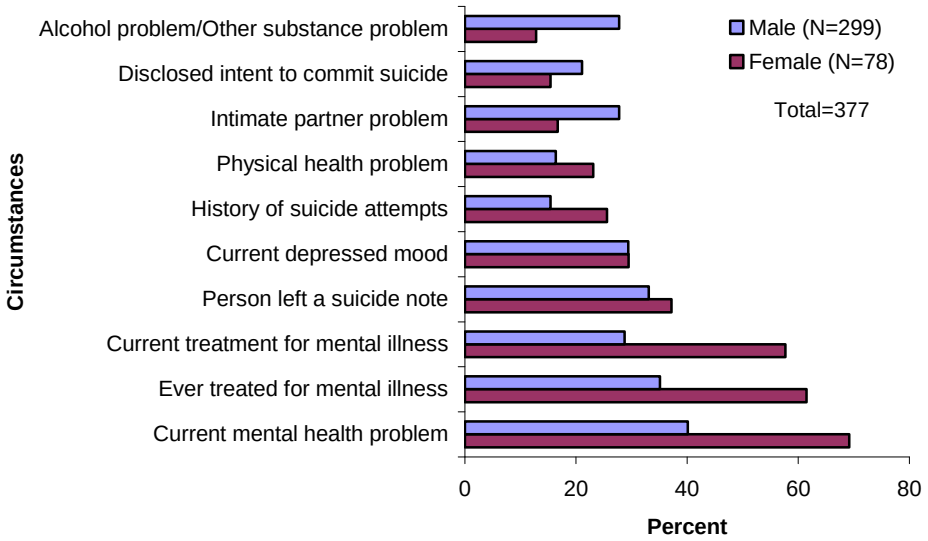
Circumstance data included in analysis are for those victims where at least one circumstance category was known, not the total number of suicide victims.

Table 2.9: Top Eight Most Commonly Mentioned Suicide Circumstances by Age Group, MA 2004

	Age Group and Rank			
Circumstance	**15 to 24**	**25 to 44**	**45 to 64**	**65 and over**
Current mental health problem	**1**	**1**	**1**	2
Current treatment for mental illness	2	5	3	4
Prior mental health treatment	3	3	2	3
Current depressed mood	4	6	4	5
Alcohol problem/Other substance problem	5	2	6	--
Intimate partner problem	7	4	5	--
Physical health problem[1]	--	--	--	**1**
Disclosed intent to commit suicide	8	8	7	6
History of suicide attempts	6	7	8	--
Crisis in past two weeks	--	--	--	7
Other death of friend/family in past 5 years	--	--	--	8

- Numerical rank (1-8) was determined by frequency of mention.
- For those victims 65 and over, physical health problem[1] was noted in about half of the cases.
- Older suicide victims (65 and over) were less likely to have a history of suicide attempts.

Figure 2.6: Ten Most Commonly Mentioned Circumstances of Suicides with Known Information by Sex, MA 2004



- Information about suicide circumstances was available for 87% of males and 89% of females.
- Males were more likely than females to have an alcohol or substance abuse problem, an intimate partner problem and disclosed their intent to commit suicide.

[1]Physical health problem was selected whether or not the health problem was stated in the file to have directly contributed to the suicide.

- An equal percentage of males and females were reported by family, friends, or others to have been depressed prior to their suicide.

TOXICOLOGY OF SUICIDE VICTIMS

Table 2.10: Toxicology Results of Suicide Victims: Number and Percent, MA 2004				
	Victims Tested[1]		Results Positive of Tested Victims	
	N	Percent	N	Percent
Alcohol	322	74.5	118	36.7
Cocaine	318	73.6	42	13.2
Opioids	318	73.6	45	14.2
Marijuana	76	17.6	11	14.5

- Of the 432 suicide victims in Massachusetts in 2004, 322 (75%) were tested for blood alcohol concentration, 318 (74%) were tested for cocaine, 318 (74%) were tested for opioids, and 76 (18%) were tested for marijuana. The above table details what number and percent of victims tested positive for those specific substances.

- In addition, 71% of victims (N=305) were also tested for other substances, such as benzodiazepines, anti-psychotics, over-the-counter drugs, and carbon monoxide. Of those tested, 33% (N=99) were positive for another substance. Tests for other substances may vary based upon the Medical Examiner's determination of need or clinical relevance.

Table 2.11: Blood Alcohol Concentration[2] of Suicide Victims Tested by Age Group: Number and Percent, MA 2004									
	Age Group								
	< 21		21-44		45-64		65+		Total
BAC %	N	Percent	N	Percent	N	Percent	N	Percent	N
0.00 – 0.040[3]	13	59.1	70	46.4	45	39.4	19	54.3	147
0.041 -0.079	1	4.6	7	4.6	12	10.5	1	2.9	21
0.08 and over	2	9.1	43	28.5	28	24.6	7	20.0	80
Unknown[4]	6	27.3	31	20.5	29	25.4	8	22.9	74
Total	**22**	**100**	**151**	**100**	**114**	**100**	**35**	**100**	**322**

- The above table only refers to those victims who were tested for Blood Alcohol Concentration (N=322). Seventy-five percent of suicide victims were tested for blood alcohol concentration (BAC).

- Victims with a BAC in the range of 0.0 – 0.04 comprise 46% of the total victims tested. These results must be interpreted with caution due to uncertainty of the cause of the elevated result.

- Among suicide victims where BAC was tested, 14% (N=3) of victims less than age 21 had a BAC over 0.041. Thirty-three percent of victims ages 21-44 had a BAC over 0.041, among victims ages 45-64, 35% had a BAC over 0.041, and among victims aged 65 and over, 23% had a BAC over 0.041. These levels are more likely indicative of alcohol ingestion.

- Twenty-five percent of all suicide victims tested had a BAC of 0.08 and over, which is over the legal limit for operating a motor vehicle in Massachusetts.

[1] Caution should be used in interpreting these numbers as the table only reflects victims that were tested for these substances and not all victims were tested.
[2] Caution should be used when interpreting BAC due to variation in time between ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.
[3] BAC in the range of 0.00 - 0.040 could be due to decomposition effects and does not necessarily reflect alcohol ingestion.
[4] Unknown numbers are those where the victim was tested, but the results were not available at the time of abstraction.

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Section 3: Homicides in Massachusetts

Data Highlights for 2004:

- Homicides claimed an average of 4 lives per week (N=183) in 2004.
- The homicide rate of males (4.9/100,000) was more than 5 times higher than the rate of females (0.9/100,000).
- The homicide rate of Black non-Hispanic males (35.5/100,000) was more than 20 times higher than the rate of White non-Hispanic males (1.7/100,000).
- Black non-Hispanics had the highest homicide rate (18.4/100,000) compared to all other races and ethnic groups.
- In 2004, over half of homicides (60%) in Massachusetts involved firearms. The total number of homicides by firearm was 112.

Compared to 2003:

- Homicides claimed an average of approximately 2.6 lives per week (N=139) in 2003.
- There was a 32% increase in the number of homicides. The number of homicides increased from 2003 to 2004 for both sexes: 36% for males and 15% for females.

Compared to the U.S.[1]:

- Massachusetts had a lower homicide rate (2.9/100,000) than the U.S. rate for homicides (5.9/100,000) in 2004.
- Massachusetts also had a lower homicide rate for males (4.9/100,000) in 2004 than the U.S. homicide rate for males (9.4/100,000).
- The Massachusetts rate for female homicides (0.9/100,000) was 2.8 times lower than that of the U.S. rate for female homicides in 2004 (2.5/100,000).

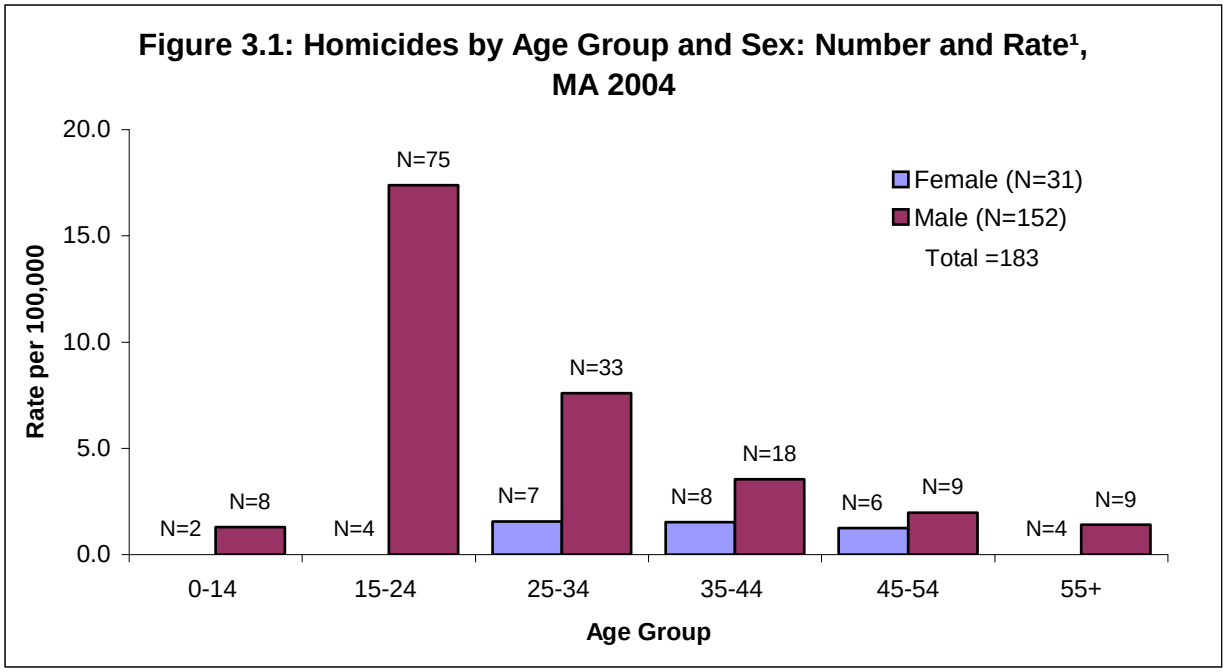
[1] Source: WISQARS: http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html, accessed August 2007.

Table 3.1: Homicides by Demographics: Number, Percent, and Rate, MA 2004			
	N	Percent	Rate per 100,000[1]
Sex			
Male	152	83.1	4.9
Female	31	16.9	0.9
Race/Ethnicity			
White non-Hispanic	64	35.0	1.2
Black non-Hispanic	71	38.8	18.4
Asian non-Hispanic	4	2.2	---
Hispanic	39	21.3	7.9
Other[2]	5	2.7	---
Age Group			
0-14	10	5.5	0.8
15-24	79	43.2	9.3
25-34	40	21.9	4.5
35-44	26	14.2	2.5
45-54	15	8.2	1.6
55-64	8	4.4	1.2
65-74	3	1.6	---
75-84	2	1.1	---
85+	0	0.0	---
Total	**183**	**100**	**2.9**

ADDITIONAL FINDINGS FOR 2004:

- The youngest homicide victim was two months old and the oldest was 83 years old. The mean age for homicide victims was 29.3 and the median age was 25.
- Almost half (49%) of all homicide victims were age 24 or younger and over 70% were age 34 or younger.
- In 2004, homicide victims included the following:
  - less than five homicide victims were homeless.
  - seven homicides that occurred at the victim's place of work.
  - less than five victims of homicide who died in custody, such as jail, state institution, or prior to arrest.[3]
  - nine war veterans[4] who were victims of a homicide.
- Black non-Hispanics accounted for approximately 40% of homicide victims, but make up 6% of the Massachusetts population. Hispanics accounted for about 21% of homicide victims and make up 7.7% of the Massachusetts population.

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates.
[2] Rates for Other race were not calculated due to lack of denominator information.
[3] The variable "in custody" is coded if the victim is in jail or other state institution, as well as under arrest but not in jail, injured prior to arrest, under house arrest, electronic monitoring, or legal home confinement. It is not the same as place of homicide (page 44), which can include jail or state institution, as well as other places, such as home or street.
[4] This report includes victims who were a US veteran **only if** the war in which they served was specified. It excludes deaths resulting from military-related operations occurring outside Massachusetts. See Technical notes in Appendix A for more specific definitions on veteran status.



- The homicide rate for persons age 15-19 was 7.6/100,000 (N=32), which was 2.8 times higher than the statewide rate. [1]
- The homicide rate for ages 20-24 was 10.9/100,000 (N=47), which was four times higher than the statewide rate.
- Males age 15-24 had the highest homicide rate (17.4/100,000), which was six times higher than the statewide rate.
- For females, there was less variability in rates across age groups, with rates ranging from 0.0 to 2.5/100,000 across all age groups.
- Males age 25-34 years had the second highest homicide rate (7.6/100,000).

Table 3.2: Homicides by Race/Ethnicity and Sex: Number, Percent, and Rate, MA 2004

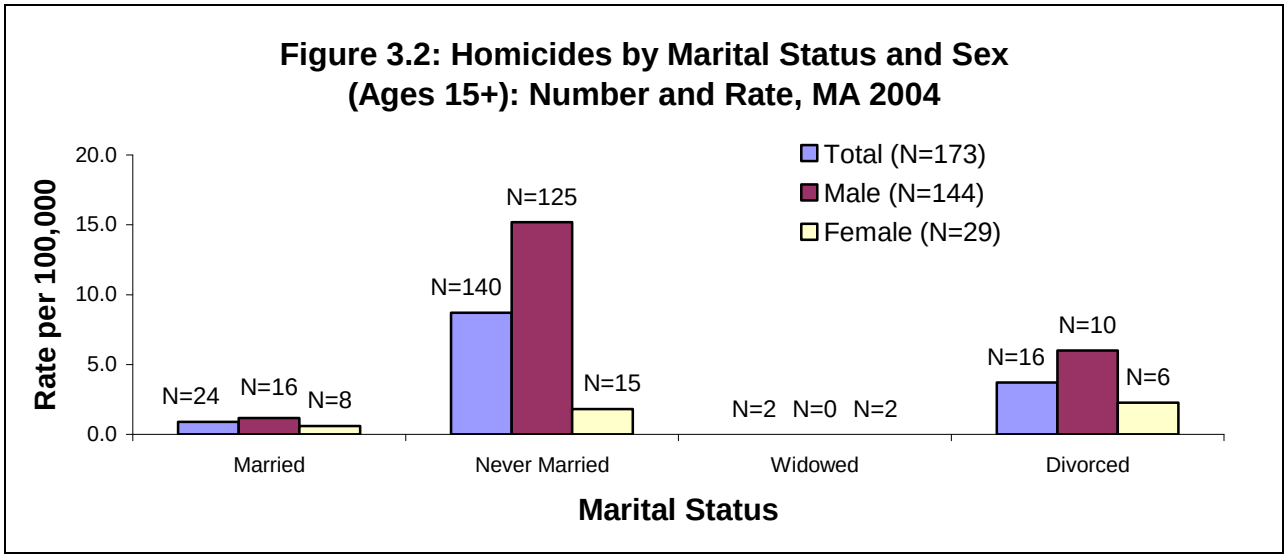
	Female			Male		
	N	Percent	Rate per 100,000[1]	N	Percent	Rate per 100,000[1]
White non-Hispanic	22	71.0	0.8	42	27.6	1.7
Black non-Hispanic	5	16.1	2.5	66	43.4	35.5
Asian non-Hispanic	0	0	---	4	2.6	---
Hispanic	4	12.9	---	35	23.0	14.2
Other[2]	0	0	---	5	3.3	---
Total	**31**	**100**	**0.9**	**152**	**100**	**4.9**

- Black non-Hispanics had the highest homicide rate for both males (35.5/100,000) and females (2.5/100,000).

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates.
[2] Rates for Other race were not calculated due to lack of denominator information.

Table 3.3: Homicide Victims (Ages 25+) by Level of Education and Sex: Number, Percent, and Total Rate, MA 2004[1]							
Years of Education	Female		Male		Total		
	N	Percent	N	Percent	N	Percent	Rate per 100,000[2]
0-8	0	0	6	8.7	6	6.4	2.9
9-11	4	16.0	9	13.0	13	13.8	4.1
12[3]	12	48.0	37	53.6	49	52.1	
13-16	9	36.0	14	20.3	23	24.5	1.2
17 +	0	0	3	4.4	3	3.2	---
Total	**25**	**100**	**69**	**100**	**94**	**100**	**2.2**

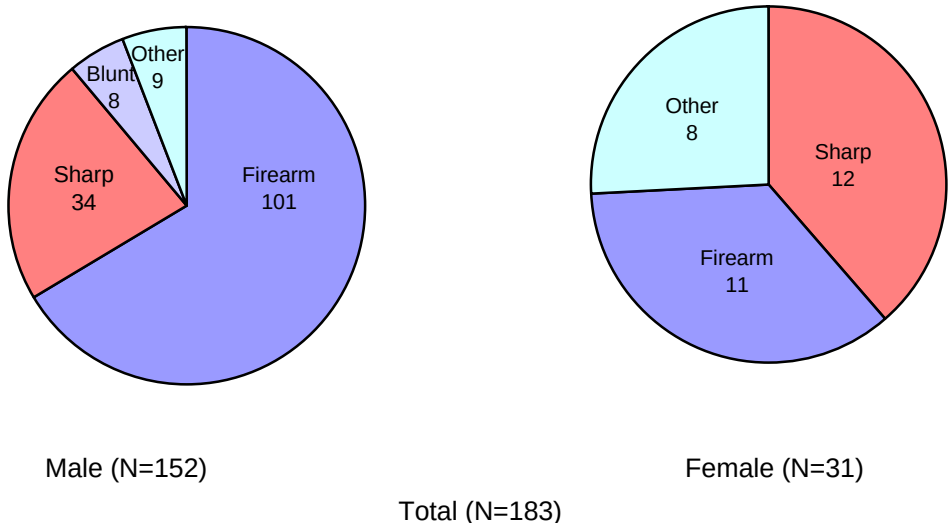
- Among homicide victims ages 25 and older, the highest homicide rate was among victims with 9-12 years of education (4.1/100,000).



- Homicide rates for males were higher than rates for females, regardless of marital status[4].
- Among males, homicide rates and numbers were highest among those who were never married (15.2/100,000), and among females, the highest rate was among those who were divorced (2.3/100,000).
- Males who were never married had a homicide rate eight times higher than the rate of females who were never married.
- Homicide numbers were lowest among widowed and married persons.

[1] There was 1 victim whose data element for education level was unknown.
[2] 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.
[3] Grades 9 through 12 were combined to calculate rates because an appropriate denominator was not available to separate 9 to 11 from 12th grade.
[4] Rates were calculated among victims age 15 and over to minimize the effect of age over marital status variable.

Figure 3.3: Homicides by Type of Weapon and Sex, MA 2004



- Firearms were the leading method of homicide and accounted for 60% of homicides (N=112), followed by sharp instruments, such as a knife (25%, N=46), and blunt instruments, such as a baseball bat (7%, N=13).
- The most common weapon varied by the sex of the victim.
- Firearms were the most commonly used weapon for male homicide deaths, and accounted for 66% of male homicides (N=101), followed by sharp instruments (22%, N=34), and blunt instruments (7%, N=10).
- Among females, sharp instruments were the most common weapon and accounted for 39% of female homicides (N=12), followed by firearms (36%, N=11).
- Other homicides resulted from bodily assaults (such as hands and feet) and other weapons. See Appendix A for a complete list of weapon variables.
- There were three homicide victims that died due to two types of weapons. Each weapon contributed equally to the death; however, for the analysis, the first weapon type was selected. Of the victims who died as a result of multiple weapons:
  - two victims died as a result of a combination of a sharp instrument and a blunt instrument.
  - one victim died from a blunt instrument combined with a motor vehicle that was used as a weapon.

Table 3.4: Homicide Weapons by Age Group: Number and Percent, MA 2004											
	0-14		15-24		25-44		45-64		65+		Total
Weapon	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**
Firearm	2	20	61	77.2	39	59.1	8	34.8	2	40.0	112
Sharp instrument	3	30	13	16.5	20	30.3	9	39.1	1	20.0	46
Blunt instrument	2	20	3	3.8	3	4.5	2	8.7	1	20.0	11
Other	3	30	2	2.5	4	6.1	4	17.4	1	20.0	15
Total[1]	**10**	**100**	**79**	**100**	**66**	**100**	**23**	**100**	**5**	**100**	**183**

- Firearms were the most common weapon of homicide for age group 15-24 (77%) and 25-44 (59%). Sharp instruments were the second most common method (17% and 30%, respectively).
- For persons 45-64, sharp instruments (39%) and firearms (35%) were the most common methods.

Table 3.5 includes the total number of weapons used in a homicide. Multiple firearms might be used in one incident, therefore the total number of weapons will be larger than the total number of homicides presented in previous tables.

Table 3.5: Type of Firearm Used in Homicides: Number and Percent, MA 2004		
	N	**Percent**
Firearm Deaths	114	100.0
Known Information	73	64.0
Unknown Information	41	36.0
Handgun	67	91.8
Semi-automatic Pistol	50	68.5
Revolver	11	15.1
Unknown Type	6	8.2
Rifle	3	4.1
Shotgun	3	4.1
Total	**73**	**100**

- Among a total of 114 firearms associated with homicides, 73 (64%) had information about the type of firearm used.
- Handguns were the most common firearm type for homicides. Semi-automatic pistols accounted for 69% of handguns used in homicides.
- Massachusetts has a lower rate of firearm homicides (1.7/100,000) overall compared to the United States rate (4.0/100,000).[2]

[1] Some deaths resulted from the use of multiple weapons so totals are higher than victim totals.
[2] WISQARS: http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html, accessed August 2007.

Table 3.6: Homicides by County: Number, Percent, and Rate, MA 2004			
County[1]	**N**	**Percent**[2]	**Rate per 100,000**[3]
Population: 1,000,000+			
Middlesex	20	11.2	1.4
Population: 500,000 – 1,000,000			
Suffolk	70	39.1	10.5
Bristol	13	7.3	2.4
Worcester	15	8.4	1.9
Essex	12	6.7	1.6
Norfolk	2	1.1	---
Population: 100,000 – 500,000			
Hampden	23	12.8	5.0
Plymouth	14	7.8	2.9
Barnstable	5	2.8	2.2
Hampshire	2	1.1	---
Berkshire	0	0.0	---
Population: <100,000			
Franklin	2	1.1	---
Nantucket	1	0.6	---
Dukes	0	0.0	---
Unknown[2]	1	---	---
Outside MA[2]	3	---	---
Total	**183**	**100**	**2.9**

- Suffolk County had the highest homicide number and rate (N=70, 10.5/100,000) and accounted for almost 2/5 of deaths, followed by Hampden County (N=23, 5.0/100,000). The homicide rate of Suffolk County was two times higher than Hampden County.

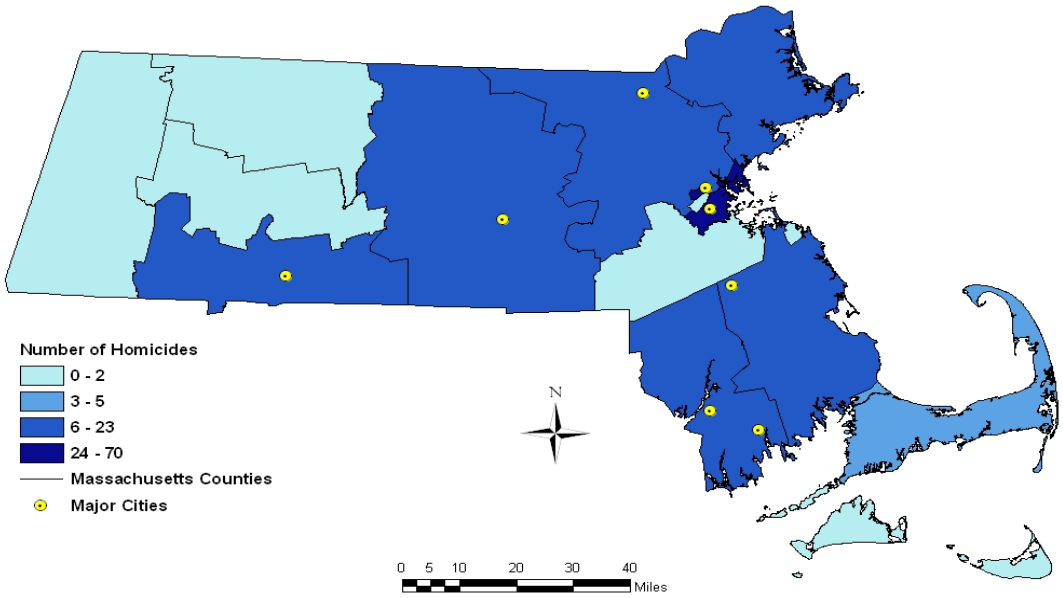
- Among counties with a population of 500,000-1,000,000, Suffolk County, which includes Boston, had the highest number and rate. While 53% of the Massachusetts population lives in these counties, 62% of all homicides occurred here.

- Among counties with a population of 100,000-500,000, Hampden County, which includes Springfield, had the highest number and rate (N=23, 5.0/100,000).

[1] Annual Estimates of the Population for Counties of Massachusetts: April 1, 2000 (CO-EST2004-01-25) Population Division, U.S. Census Bureau
[2] Percent is based on known Massachusetts county of violent death (N=179). Rate was not calculated on unknown county of death nor out of state injuries.
[3] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates.

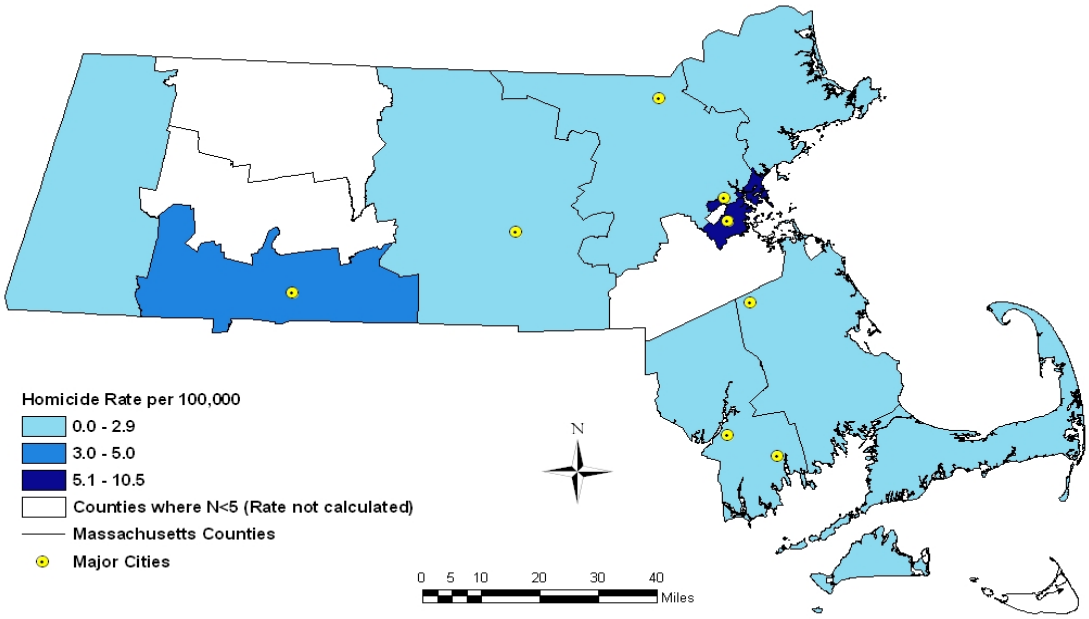
For county names and major cities, please refer to the map on page 8 of the Introduction.

Figure 3.4: Homicides by County: Number, MA 2004



Data Sources: NVDRS, MA Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS.

Figure 3.5: Homicides by County: Rate, MA 2004



Data Sources: NVDRS, MA Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS.

Table 3.7: Homicides by Cities/Towns: Number, Percent, and Rate, MA 2004			
	N	Percent[1]	Rate per 100,000[2]
Group 1: Cities/Towns over 175,000 population:			
Boston	66	36.9	11.6
Worcester	11	6.1	6.3
Total Group 1	**77**	**43.0**	**10.3**
Group 2: Cities/Towns 75,000-175,000 population			
Springfield	18	10.1	11.8
Brockton	9	5.0	9.5
New Bedford	6	3.4	6.4
Lowell	6	3.4	5.8
Lynn	4	2.2	---
Fall River	2	1.1	---
Somerville	2	1.1	---
Quincy	1	0.6	---
Cambridge	0	0.0	---
Newton	0	0.0	---
Total Group 2	**48**	**26.8**	**4.9**
Group 3: Cities/Towns 50,000-75,000 population			
Lawrence	4	2.2	---
Taunton	3	1.7	---
Malden	2	1.1	---
Framingham	1	0.6	---
Haverhill	1	0.6	---
Chicopee	1	0.6	---
Brookline	0	0.0	---
Medford	0	0.0	---
Peabody	0	0.0	---
Plymouth	0	0.0	---
Waltham	0	0.0	---
Weymouth	0	0.0	---
Total Group 3	**12**	**6.7**	**1.7**
Group 4: Cities/Towns <50,000 population			
Total Group 4	**42**	**23.5**	**1.0**
Unknown county[3]	**1**	**---**	**---**
Outside MA[3]	**3**	**---**	**---**
Total known city	**179**	**100.0**	**---**
Total	**183**	**---**	**2.9**

- Springfield had the second highest number of homicides (N=18) but the highest rate (11.8/100,000). Boston had the highest number (N=66) and the second highest rate (11.6/100,000). These two cities account for more than 60% of all homicide victims, but account for 12% of the total population of Massachusetts.

- Among cities with a population of 75,000-175,000, Springfield had the highest number and rate (N=18, 11.8/100,000), followed by Brockton (N=9, 9.5/100,000).

[1] Percent is based on known Massachusetts city of violent death (N=179). Rate was not calculated on unknown city of death nor out of state injuries.
[2] 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.
[3] Rate and percent were not calculated on Unknown county of death nor out of state injuries.

Table 3.8: Places Where Homicides Occur: Number and Percent, MA 2004		
Location of injury	**N**	**Percent[1]**
Buildings and surroundings:	**82**	**45.6**
House, apartment, including driveway, porch, yard	72	40.0
Other commercial establishment	5	2.8
Hospital or medical facility	3	1.7
Supervised residential facility	1	0.6
Hotel/motel	1	0.6
Transportation utilities:	**78**	**43.3**
Street/road, sidewalk, alley	57	31.7
Motor vehicle (excl. school bus and public transportation)	12	6.7
Parking lot/public parking garage	7	3.9
Public transportation or station	2	1.1
Outdoor:	**7**	**3.9**
Park, playground, public use area	5	2.8
Natural area (field, river, woods, beach, etc)	2	1.1
Retail and entertainment:	**8**	**4.4**
Bar, nightclub	5	2.8
Service station	2	1.1
Liquor store	1	0.6
Other[2]:	**5**	**2.8**
Unknown	**3**	---
Total	**183**	**100.0**

- Nearly 3/4 of homicides occurred in a residence (40%) or on the street (32%).
- Homicides occurred in a motor vehicle in 7% of the incidents.

[1] Percentages are based on the total number of cases for which location was known (N=180).
[2] Other may include industrial or construction areas, office building, abandoned house or building, school, bank, and etc.

HOMICIDE CIRCUMSTANCES

Circumstance data were included for those victims where at least one circumstance category was known. Victims may have multiple circumstances noted so percent totals will not sum to 100%. Among 183 homicide victims, 63% (N=115) had at least one circumstance known.

Table 3.9 : Circumstances of Homicides: Number and Percent, MA 2004

Circumstance	N	Percent[1]
Argument, abuse, conflict	49	42.6
Intimate partner violence related	31	27.0
Precipitated by another crime	24	20.9
Other homicide circumstance	18	15.7
Drive-by shooting	10	8.7
Crime in progress	7	6.1
Drug involvement	6	5.2
Justifiable self defense/law enforcement	6	5.2
Brawl[2]	6	5.2
Jealousy or lovers' triangle	5	4.3
Gang related	5	4.3

- Forty-three percent of homicides were precipitated by an argument, abuse, or conflict, exclusive of categories of specific circumstances, such as intimate partner violence and argument over money/property/drugs, which are analyzed separately.
- Twenty-seven percent of total homicides involved intimate partner violence.
- About 1 of 5 (21%) homicides was precipitated by another crime, i.e. the homicide occurred as a result of another felony and homicide was not the primary intent.
- There were no mercy killings, deaths of police officers on duty, or hate crime fatalities reported to NVDRS in 2004.
- The following circumstances were known to be present in less than five homicides: argument over money/property/drugs, victim was bystander, and victim was intervener assisting crime victim.

[1] Percent was not calculated for numbers less than five.
[2] NVDRS defines brawl as: 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 if only two people were fighting.

HOMICIDE CIRCUMSTANCES

Circumstance data were included for those victims where at least one circumstance category was known. Victims may have multiple circumstances noted so percent totals will not sum to 100%. Among 183 homicide victims, 63% (N=115) had at least one circumstance known.

Table 3.10: Homicide Circumstances by Age Group: Number and Percent, MA 2004		
	N	**Percent**[1]
Age 15 to 24 (57% had information)		
Argument, abuse, conflict[2]	20	44.4
Precipitated by another crime (burglary, assault, etc)	9	20.0
Intimate partner violence related	6	13.3
Drug involvement	6	13.3
Brawl (mutual physical fight)	6	13.3
Drive-by shooting	6	13.3
Age 25 to 44 (64% had information)		
Argument, abuse, conflict[2]	18	42.9
Intimate partner violence related	12	28.6
Precipitated by another crime	9	21.4
Other homicide circumstance	8	19.0
Age 45 to 64 (61% had information)		
Intimate partner violence related	8	57.1
Argument, abuse, conflict[2]	5	35.7

- Circumstance information was available for over half of all cases in all age groups:
  - Age 15 to 24: 57% had information.
  - Age 25 to 44: 64% had information.
  - Age 45 to 64: 61% had information.

- The most common known circumstance (44%) among ages 15-24 was other argument, abuse, conflict, followed by homicides that were precipitated by another crime (20%).

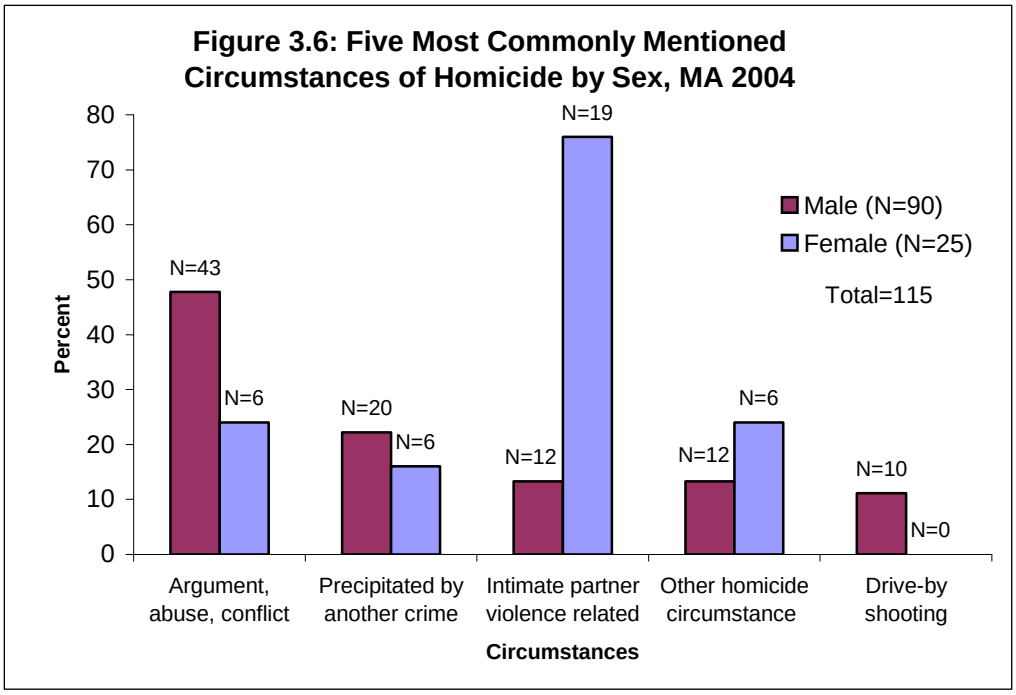
- Argument, abuse, conflict excludes those circumstances that can be counted in intimate partner-related, gang-related, drug-related, or argument over money/property/drugs, which are analyzed separately.

- Among all homicides that had information about circumstances, there were six homicides that were drug-related and six homicides that involved a brawl; they were all in age group 15-24.

[1] Victims may have multiple circumstances noted so percent totals will not sum to 100%.
[2] Argument, abuse, conflict is a circumstance exclusive of categories of specific circumstances, such as intimate partner violence and argument over money/property/drugs, which are analyzed separately.

HOMICIDE CIRCUMSTANCES

Circumstance data were included for those victims where at least one circumstance category was known. Victims may have multiple circumstances noted so percent totals will not sum to 100%. Among 183 homicide victims, 63% (N=115) had at least one circumstance known.



- There were a total of 152 male (83%) and 31 female homicide victims (17%).
- Of the 183 homicides, 49% of males (N=90) had circumstance information and 81% of females (N=25) had circumstances known. Of the total homicide victims, 115 had known circumstance information.
- Among female homicide victims, intimate partner violence contributed to 76% of homicides, compared to 13% of male homicides.
- The second most common known circumstance for female homicide victims was argument, abuse, conflict (24%), which is an argument that cannot be classified as intimate partner violence-related, gang-related, drug-related, or money/property related, which are analyzed separately.

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 2004

	N	Percent
Total Homicides	**183**	**100.0**
With suspect information	127	69.4
With **no** suspect information	56	30.6
Sex		
Total suspects	**164**	**100.0**
Male	152	92.9
Female	6	3.7
Unknown Sex	6	3.7
Age Group		
Total suspects	**164**	**100.0**
Known Age	139	84.8
Unknown Age	25	15.2
Suspects with Known Age	**139**	**100.0**
0-14	3	2.2
15-24	74	53.2
25-34	34	24.5
35-44	13	9.4
45-54	7	5.0
55 and over	8	5.8

- **Homicide victims**: Of the 183 victims of homicide, 69% (N=127) had one or more suspects associated with the death.
- **Homicide incidents**: Most incidents (N=174) with suspect information had only one suspect associated with it (N=94). Twenty-eight incidents had more than one suspect.
- Among the 139 identified suspects with known age, most (53%) were between the ages of 15-24 years, followed by age group 25-34 (24%). These two age groups account for 78% of suspects.
- Among homicide victims age 15-24 (N=31), more than one third had a suspect associated with their homicide from the same age group.

- In 117 cases, data was provided about a suspect. In the majority of these cases, (84.6%), the victim and suspect were known to each other (e.g. family member, intimate partner, friend, acquaintance, etc.). Of these known or identified suspects:
  - 16.2% of suspects were an intimate partner of the victim.
  - 9.4% of suspects were a family member or caregiver of the victim.
  - 58.9% of suspects were someone else known to the victim.
- There were 30 suspects who were an intimate partner, family member, or caregiver of the victim.

Table 3.12: Toxicology Results of Homicide Victims Tested: Number and Percent, MA 2004				
	Victims Tested[1]		Victims Tested with Positive Results	
Substance	**N**	**Percent**	**N**	**Percent**
Alcohol	170	92.9	67	39.4
Cocaine	170	92.9	28	16.5
Opioid	169	92.4	8	4.7
Marijuana	60	32.8	20	33.3

- Among the 183 homicide victims, 170 (93%) were tested for alcohol and cocaine, 169 (92%) were tested for opioids, and 60 were tested for marijuana (33%). The above table details the number and percent of those victims who were tested and had positive results.
- Over 90% of homicide victims were tested for alcohol, cocaine, marijuana, and opioids. The majority of victims were not positive for substances. Forty percent of victims tested for alcohol were positive for alcohol, although in approximately half of the cases with a positive test result for alcohol, the results may have been due to decomposition rather than ingestion of alcohol.
- In addition, 156 victims (85%) were tested for other substances, such as benzodiazepines, anti-psychotics, over-the-counter drugs, and carbon monoxide. Of those tested, 9% (N=14) were positive.

Table 3.13: Blood Alcohol Concentration[2] of Homicide Victims Tested by Age Group: Number and Percent, MA 2004									
	Age Group								
	< 21		21-44		45-64		65+		Total
BAC %	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**
0.00 - 0.040[3]	25	51.0	64	66.7	8	38.1	2	50.0	99
0.041 - 0.079	7	14.3	3	3.1	2	9.5	0	0.0	12
0.08 and over	9	18.4	16	16.7	8	38.1	0	0.0	33
Unknown[4]	8	16.3	13	13.5	3	14.3	2	50.0	26
Total	**49**	**100**	**96**	**100**	**21**	**100**	**4**	**100**	**170**

- Ninety-three percent (N= 170) of homicide victims were tested for blood alcohol concentration (BAC).
- Among homicide victims where BAC was tested, 33% of victims less than age 21 had a BAC over 0.041. Twenty percent of victims ages 21-44 had a BAC over 0.041 and among victims ages 45-64, about half (N=10) had a BAC over 0.041. These levels are more likely indicative of alcohol ingestion.
- Nineteen percent of all homicide victims tested had a BAC of 0.08 and over, which is over the legal limit for operating a motor vehicle in Massachusetts.

[1] Caution should be used in interpreting these numbers as the table only reflects victims that were tested for these substances and not all victims were tested.
[2] Caution should be used when interpreting BAC due to variation in time between ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.
[3] BAC of 0.04% or less could possibly be due to decomposition rather than ingestion of alcohol.
[4] Unknown numbers are those where the victim was tested, but the results were not available at the time of abstraction.

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Section 4: Deaths of Undetermined Intent in Massachusetts

A note about deaths of undetermined intent: In 2004, the proportion of deaths in the undetermined intent category was generally higher than that of other states due to the classification protocol utilized by the Office of the Chief Medical Examiner (OCME). Most of these deaths were poisonings resulting from drug overdoses, and Massachusetts was one of a very few states to classify these deaths (absent evidence of an alternative manner) as undetermined.

Data Highlights for 2004:

- Deaths of undetermined intent claimed an average of 12 lives per week in 2004 (N=625).
- In 2004, White non-Hispanics had the highest rate (10.3/100,000) of deaths of undetermined intent.
- Ninety-five percent (N=595) of undetermined intent victims were tested for opioids; of these, 73% were positive.
- The rate of undetermined intent for males (14.3/100,000) was 3 times higher than for females (5.5/100,000).
- Ninety percent of deaths of undetermined intent (N=560) were the result of poisonings/drug overdoses.

Compared to 2003:

- There were approximately three fewer deaths of undetermined intent per week in 2004 (N=12) than in 2003 (N=15).
- The number of undetermined deaths decreased overall from 2003 to 2004 by 18%. For males, the number decreased by 21% and for females, the number decreased by 9%.

Compared to the U.S.[1]:

- Massachusetts had a higher rate (9.7/100,000) of undetermined intent deaths compared to the national rate (1.7/100,000). The definition of undetermined deaths varies by state[2].
- The U.S. rate for male undetermined deaths in 2004 was 2.2/100,000 and 14.3/100,000 in Massachusetts; the U.S. rate for female undetermined intent deaths was 1.2/100,000 and 5.5/100,000 in Massachusetts.

[1] Source: WISQARS: http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html, accessed August 2007.
[2] Massachusetts has historically classified more deaths as undetermined. However, beginning in 2005, the majority of drug overdoses will be classified as unintentional without evidence of other intent.

DEMOGRAPHICS OF DEATHS OF UNDETERMINED INTENT VICTIMS

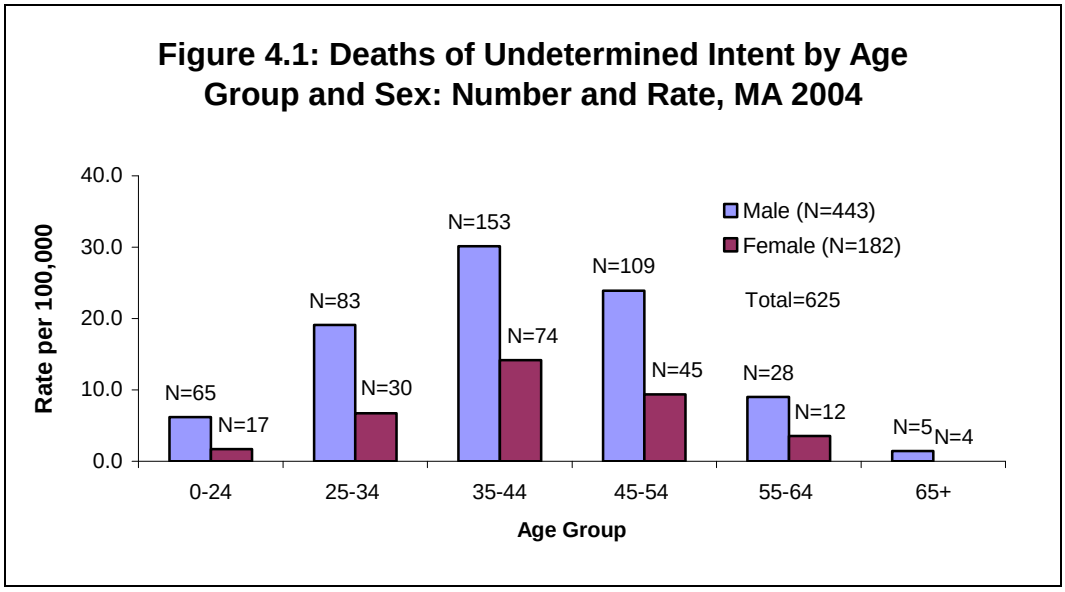
Table 4.1: Deaths of Undetermined Intent by Demographics: Number, Percent, and Rate, MA 2004			
	N	Percent	Rate per 100,000[1]
Sex			
Male	443	70.9	14.3
Female	182	29.1	5.5
Race/Ethnicity			
White non-Hispanic	539	86.2	10.3
Black non-Hispanic	27	4.3	7.0
Asian non-Hispanic	2	0.3	---
Hispanic	48	7.7	9.7
Other[2]	9	1.4	---
Age Group			
0-14	6	1.0	0.5
15-24	76	12.2	8.9
25-34	113	18.1	12.8
35-44	227	36.3	22.0
45-54	154	24.6	16.4
55-64	40	6.4	6.1
65-74	3	0.5	---
75-84	3	0.5	---
85+	3	0.5	---
Total	**625**	**100**	**9.7**

ADDITIONAL FINDINGS FOR 2004:

- The youngest undetermined intent victim was 14 days old and the oldest was 89 years old. The mean age for undetermined victims was 39.3 and the median age was 40.

- In 2004, victims of deaths of undetermined intent included the following:
  - fifteen victims were homeless.
  - less than five victims died in custody, such as jail, state institution, or prior to arrest.[3]
  - less than five deaths occurred at the victim's place of work.
  - twenty-one war veterans.[4]

[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates.
[2] Rates for Other race were not calculated due to lack of denominator information.
[3] The variable "in custody" is coded if the victim is in jail or other state institution, as well as under arrest but not in jail, injured prior to arrest, under house arrest, electronic monitoring, or legal home confinement.
[4] This report includes victims who were a US veteran **only if** the war in which they served was specified. It excludes deaths resulting from military-related operations occurring outside Massachusetts. See Technical notes in Appendix A for more specific definitions on veteran status.



- For deaths of undetermined intent, approximately 78% of males and 82% females were between the ages 25-54.
- Persons aged 35-44 had the highest number and rate among both male (N=153, 30.1/100,000) and female (N=74, 14.2/100,000) victims.
- The lowest rates of deaths of undetermined intent were among persons less than age 25 and over 65 years of age.
- While males 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 2.6 times higher than that of females.

Table 4.2: Deaths of Undetermined Intent by Race/Ethnicity and Sex: Number, Percent, and Rate, MA 2004

	Female			Male		
	N	Percent	Rate per 100,000[1]	N	Percent	Rate per 100,000[1]
White non-Hispanic	158	86.8	5.8	381	86.0	15.1
Black non-Hispanic	6	3.3	3.0	21	4.7	11.3
Asian non-Hispanic	2	1.1	---	0	0.0	---
Hispanic	14	7.7	5.7	34	7.7	13.8
Other[2]	2	1.1	---	7	1.6	---
Total	**182**	**100**	**5.5**	**443**	**100**	**14.3**

- White non-Hispanics had the highest rates of deaths of undetermined intent for both males (15.1/100,000) and females (5.8/100,000).
- Hispanics had the second highest rate for both male (13.8/100,000) and female (5.7/100,000) victims.

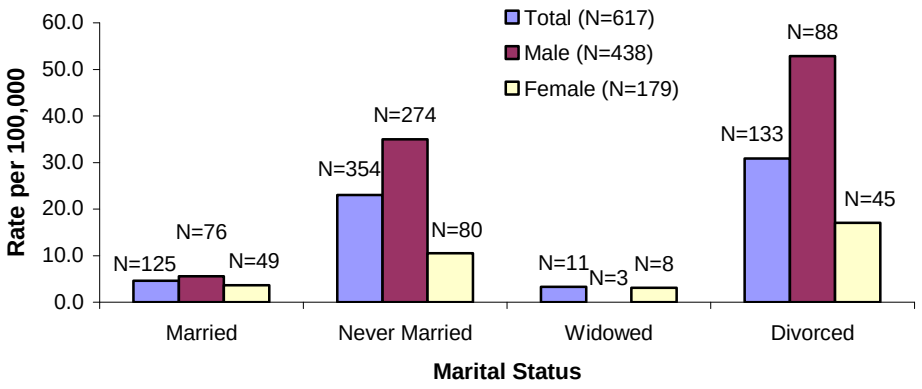
[1] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates.
[2] Rates for Other race were not calculated due to lack of denominator information.

Table 4.3: Deaths of Undetermined Intent (Ages 25+) by Level of Education and Sex: Number, Percent and Rate, MA 2004

Years of Education[1]	Female		Male		Total		
	N	Percent	N	Percent	N	Percent	Rate per 100,000[2]
1-8	2	1.2	15	4.0	17	3.2	8.2
9-11	15	9.1	61	16.4	76	14.2	26.1
12[3]	90	54.6	226	60.8	316	58.8	
13-16	50	30.3	57	15.3	107	19.9	5.6
17 +	8	4.9	13	3.5	21	3.9	3.3
Total	**165**	**100**	**372**	**100**	**537**	**100**	**12.6**

- The highest undetermined intent rate was among victims with 9-12 years of education (26.1/100,000).
- Almost 60% of victims of deaths of undetermined intent had 12 years of education; 226 males and 90 females.

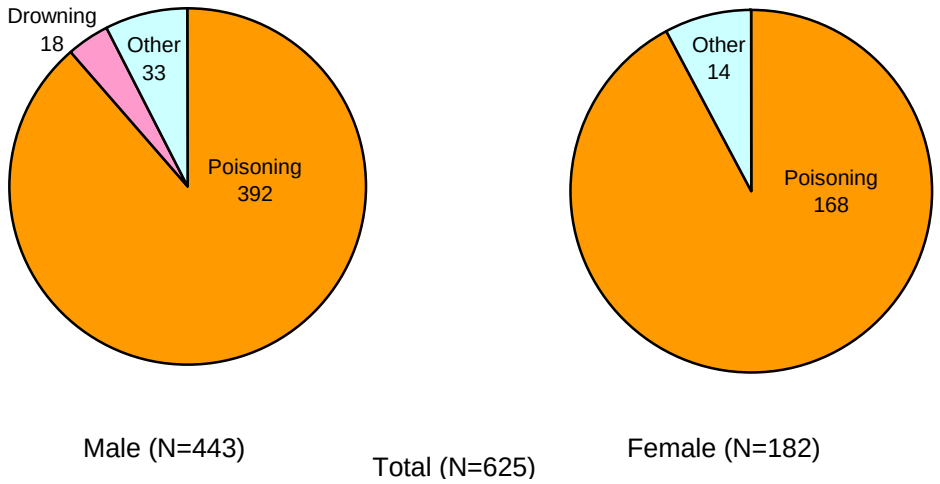
Figure 4.2: Deaths of Undetermined Intent by Marital Status and Sex (Ages 15+): Number and Rate, MA 2004



- Divorced (30.9/100,000) and never married (23.0/100,000) persons had higher rates than married (4.6/100,000) and widowed (3.3/100,000) persons.
- Only widowed females had a higher rate of undetermined deaths than males for any marital status group.
- The divorced male rate (52.9/100,000) was three times higher than the rate for divorced females (17.0/100,000).
- The rate of never married males (35.0/100,000) was three times higher than the rate for females (10.5/100,000) who were never married.

[1] There were 6 victims whose data element for education level was unknown.
[2] 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.
[3] Grades 9 through 12 were combined to calculate rates because an appropriate denominator was not available to separate 9 to 11 from 12th grade.

Figure 4.3: Deaths of Undetermined Intent by Weapon Type and Sex, MA 2004



- The above graph shows weapon categories with frequencies greater than 17. Weapon categories with 17 or fewer cases are combined into "other."
- Overwhelmingly, poisonings/drug overdoses account for a majority (90%) of deaths of undetermined intent in Massachusetts in 2004 (N=560).
- Of these poisoning/drug overdose deaths (N=560):
  - 84% (N=472) were due to the ingestion of a substance, including street/recreation drug, alcohol, pharmaceutical prescription, and over-the counter medication
  - 0.4% (N=2) were due to carbon monoxide poisoning
  - 6% (N=36) were due to the ingestion of another poison (such as insecticides or helium)
  - 9% (N=50) were due to an unknown poison
- Poisoning/drug overdose was the leading weapon for deaths of undetermined intent for both males (89%, N=393) and females (92%, N=168).
- For males, drowning was the second leading method of death (N=18) and hanging was the third leading method for deaths of undetermined intent (N=7).
- Five females drowned and four died from a fall in incidents where intent was undetermined.
- There was one death of undetermined intent that was due to the use of two different weapon types. Each weapon contributed equally to the death; however, for this analysis, the first weapon type was selected. This victim died from a combination of hanging and a drug overdose/poisoning.
- For those victims whose cause of death included more than one poison, only one poison was counted in the weapon analysis.
- Of the poisoning deaths, 66% of victims (N=369) ingested more than one substance.

[1] Many deaths classified as undetermined intent in Massachusetts are classified as unintentional in other states. Changes in Massachusetts classification standards in 2005 will result in a decrease in the rate over the next several years. For this reason, it is difficult to make comparisons between other states.

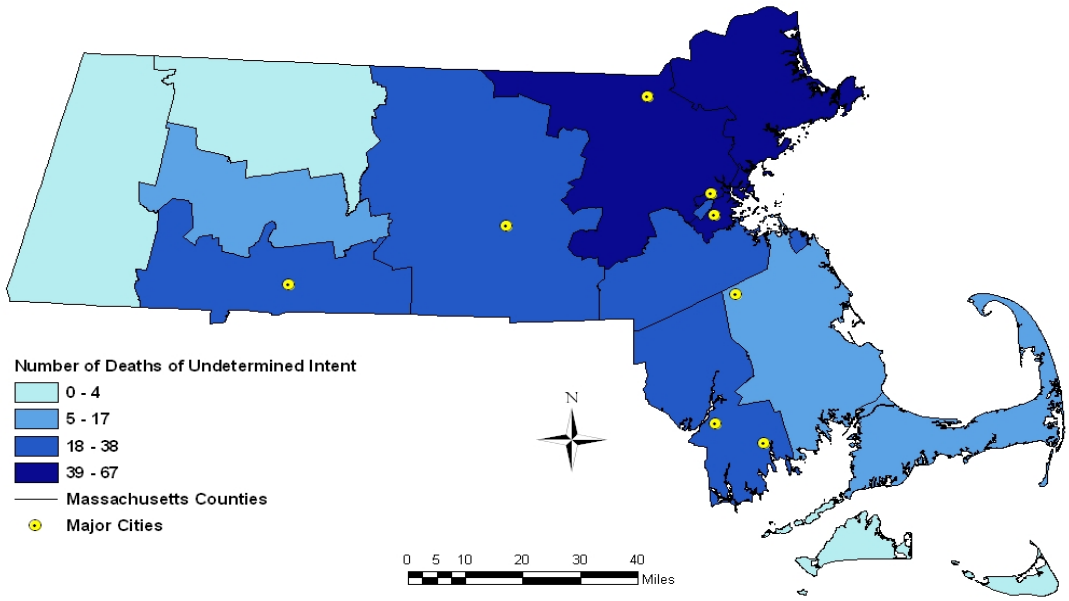
Table 4.4: Deaths of Undetermined Intent by County: Number, Percent, and Rate, MA 2004			
County[1]	**N**	**Percent[2]**	**Rate per 100,000[3]**
Population: 1,000,000+			
Middlesex	67	19.0	4.6
Population: 500,000 – 1,000,000			
Suffolk	51	14.4	7.7
Essex	55	15.6	7.4
Bristol	34	9.6	6.2
Norfolk	37	10.5	5.7
Worcester	31	8.8	4.0
Population: 100,000 – 500,000			
Hampden	38	10.8	8.2
Hampshire	9	2.5	5.8
Barnstable	8	2.3	3.5
Plymouth	17	4.8	3.5
Berkshire	4	1.1	---
Population: <100,000			
Franklin	1	0.3	---
Nantucket	1	0.3	---
Dukes	0	0.0	---
Unknown county[2]	268	---	---
Outside MA[2]	4	---	---
Total	**625**	**100**	**9.7**

- County of occurrence was missing in 43% (N=268) of deaths of undetermined intent.
- Among undetermined deaths with location information provided, Middlesex, Essex, and Suffolk Counties had the highest number of victims (67, 55, and 51, respectively) which accounted for almost half of the undetermined intent deaths.
- Among counties with population 500,000-1,000,000, Suffolk County, which includes Boston, had the highest rate and second highest number (N=51, 7.7/100,000). Essex had the highest number and second highest rate (N=55, 7.4/100,000).
- Among counties with population 100,000-500,000, Hampden County, which includes Springfield, had the highest number and rate (N=38, 8.2/100,000).

[1] Annual Estimates of the Population for Counties of Massachusetts: April 1, 2000 (CO-EST2004-01-25) Population Division, U.S. Census Bureau.
[2] Percent is based on known Massachusetts county of violent death (N=353). Rate was not calculated on unknown county of death nor out of state injuries.
[3] Rates were not calculated for counts less than 5 and are considered unstable for counts less than 20. See Appendix B for age-adjusted rate. See Technical Notes in Appendix A for calculating rates.

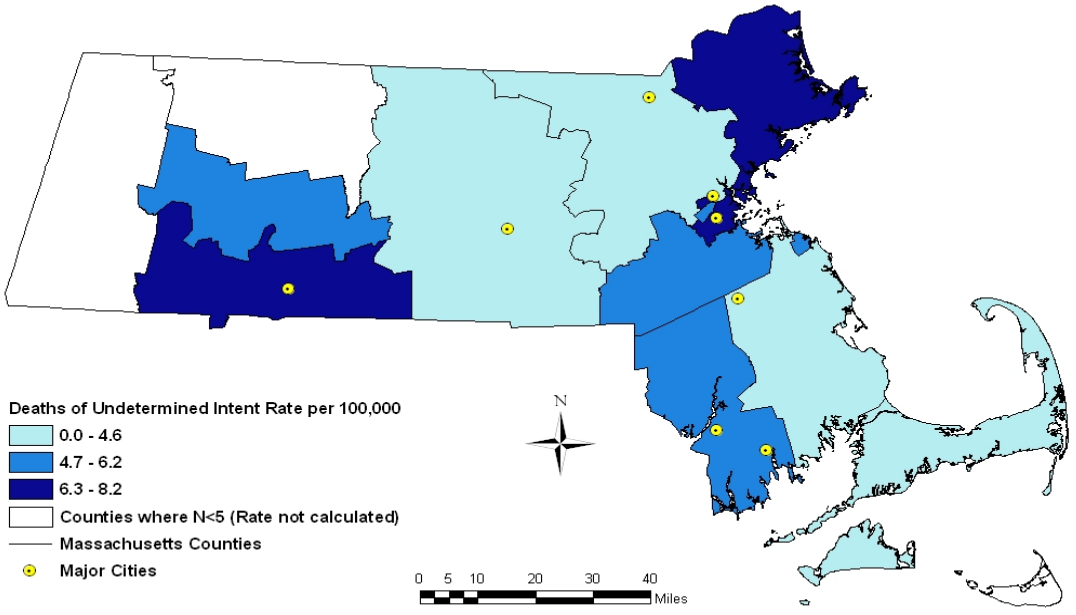
For county names and major cities, please refer to the map on page 8 of the Introduction.

Figure 4.4: Deaths of Undetermined Intent by County: Number, MA 2004



Data Sources: NVDRS, MA Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS.

Figure 4.5: Deaths of Undetermined Intent by County: Rate, MA 2004



Data Sources: NVDRS, MA Department of Public Health; Massachusetts Executive Office of Environmental Affairs, MassGIS.

Table 4.5: Deaths of Undetermined Intent by Cities/Towns: Number, Percent, and Rate, MA 2004			
	N	**Percent[1]**	**Rate per 100,000[2]**
Group 1: Cities/Towns over 175,000 population			
Boston	38	10.8	6.7
Worcester	10	2.8	5.7
Total Group 1	**48**	**13.7**	**6.4**
Group 2: Cities/Towns 75,000-175,000 population			
Quincy	14	4.0	15.6
New Bedford	14	4.0	14.9
Lynn	13	3.7	14.5
Springfield	19	5.4	12.5
Lowell	11	3.1	10.6
Fall River	9	2.6	9.7
Brockton	6	1.7	6.3
Cambridge	3	0.9	---
Newton	2	0.6	---
Somerville	0	0.0	---
Total Group 2	**91**	**25.9**	**9.3**
Group 3: Cities/Towns 50,000-75,000 population			
Weymouth	6	1.7	11.1
Malden	6	1.7	10.8
Chicopee	5	1.4	9.1
Waltham	5	1.4	8.4
Framingham	4	1.1	---
Haverhill	4	1.1	---
Lawrence	4	1.1	---
Peabody	4	1.1	---
Brookline	2	0.6	---
Medford	1	0.3	---
Taunton	1	0.3	---
Plymouth	0	0.0	---
Total Group 3	**42**	**12.0**	**6.1**
Group 4: Cities/Towns < 50,000			
Total Group 4	**170**	**48.4**	**4.2**
Unknown City/Town[1]	**270**	**---**	**---**
Outside MA[1]	**4**	**---**	**---**
Total known city	**351**	**100.0**	**---**
Total	**625**	**---**	**9.7**

- Cities with a population of 75,000-175,000 (9.3/100,000) had a higher rate than total rate for cities with a population over 175,000 (6.4/100,000) and the total rate of cities with a population of 50,000-75,000 (6.1/100,000).

- Quincy had the highest rate (15.6/100,000) of cities with a population of 75,000-175,000. By comparison, Springfield, the largest city in that group, had the highest number (N= 19), but not have the highest rate (12.5/100,000).

[1] Percent is based on known Massachusetts city of violent death (N=351). Rate was not calculated on unknown city of death nor out of state injuries.
[2] 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.

Table 4.6: Toxicology Results of Undetermined Intent Victims Tested: Number and Percent, MA 2004				
	Victims Tested[1]		Victims Tested with Positive Results	
	N	**Percent**	**N**	**Percent**
Alcohol	588	93.9	210	35.7
Cocaine	595	95.1	228	38.3
Opioids	595	95.1	436	73.3
Marijuana	166	26.5	38	22.9

- Of the 625 victims of undetermined intent deaths, 588 (94%) were tested for blood alcohol concentration, 595 (95%) were tested for cocaine and/or opioids, and 166 (27%) were tested for marijuana.
- Ninety-one percent (N=569) of victims were tested for other substances, such as benzodiazepines, anti-psychotics, and over-the-counter drugs, and carbon monoxide based on the Medical Examiner's determination of need or clinical significance. Of those, 46% (N= 261) tested positive for an additional substance.
- Nearly 3/4 of victims tested were positive for opioids. However, it was not determined if the opioid was from a street drug, like heroin, or a prescription medication, such as codeine.

Table 4.7: Blood Alcohol Concentration[2] of Undetermined Intent Victims Tested by Age Group: Number and Percent, MA 2004									
	Age Group								
	< 21		**21-44**		**45-64**		**65+**		**Total**
BAC%	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**	**Percent**	**N**
0.00 -0.040[3]	13	44.8	173	47.1	73	39.0	3	60.0	262
0.041 -0.079	2	6.9	18	4.9	7	3.7	0	0.0	27
0.08 and over	5	17.2	64	17.4	54	28.9	2	40.0	125
Unknown[4]	9	31.0	112	30.5	53	28.3	0	0.0	174
Total	**29**	**100**	**367**	**100**	**187**	**100**	**5**	**100**	**588**

- Ninety-four percent of undetermined intent victims were tested for blood alcohol concentration (BAC) (N=588).
- Approximately half of victims had a BAC in the 0.00-0.040 range. With BAC at these low levels, it cannot be determined if the source of the alcohol was due to the natural effects of decomposition and/or ingestion of an alcoholic beverage.
- A significant number of victims of an undetermined intent death had a BAC of over .08, including 17% of victims under 21 years of age. These levels are more likely indicative of alcohol ingestion.
- Twenty percent of victims tested, had a BAC of 0.08 and over, which is over the legal limit for operating a motor vehicle in Massachusetts.

[1] Caution should be used in interpreting these numbers as the table only reflects victims that were tested for these substances and not all victims were tested.
[2] Caution should be used when interpreting BAC due to variation in time between ingestion of alcohol, time of death, and drawing of blood for testing which will affect the outcome of the test.
[3] BAC of 0.04% or less could be due to decomposition, rather than ingestion of alcohol.
[4] Unknown numbers are those where the victim was tested, but the results were not available at the time of abstraction.

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Appendix A

- **Technical Notes**
- **Annual Estimates of the Population for Counties of Massachusetts, 2004**
- **Data Elements and Sources**
- **Primacy Among Data Sources**
- **Circumstances**
- **Glossary**
- **Weapons**

Case Identification
Violent death cases in the NVDRS 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 NVDRS 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 states are determined by the CDC and are listed below:

	ICD-10 Code	
Manner of Death	**Death < 1 Year after the injury**	**Death >1 year after the injury**
• 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 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
In 2004, the proportion of deaths in the undetermined intent category was generally higher than that of other states due to the classification protocol utilized by the OCME. Most of these deaths were poisonings resulting from drug overdose, and Massachusetts was one of a very few states to classify these deaths (absent evidence of an alternative manner) as undetermined. Due to a protocol change in 2005, the majority of drug overdoses from 2005 forward will be classified as Unintentional unless there is clear evidence of some other intent.

Veteran Status
NVDRS-MA 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." 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.

Calculating Rates
The rates used in this report are based upon injuries per 100,000 population. In calculating rates for race, Hispanic origin, sex, age group, and county, population estimates were based upon 2004 MA resident population estimates produced by the National Center for Health Statistics Vintage 2004 postcensal series, in collaboration with the U.S. Census Bureau's Population Estimation Program, available on the internet at: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm. Education and marital status rates were

calculated using the U.S. Census Bureau's American Community Survey 2003 population found on the internet at http://www.census.gov/acs/www/Products/Profiles/Single/2003/ACS/Tabular/040/04000US252.htm. City/town rates are calculated using 2004 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, 2004* (SUB-EST2004-05-25).

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.

Annual Estimates of the Population for Counties of Massachusetts, 2004

Annual Estimates of the Population for Counties of Massachusetts[1]		
County	**Population Estimate**	**Percent**
Middlesex	1,464,628	22.8
Worcester	779,488	12.1
Essex	738,984	11.5
Suffolk	666,022	10.4
Norfolk	653,617	10.2
Bristol	548,176	8.5
Plymouth	490,655	7.6
Hampden	461,844	7.2
Barnstable	228,683	3.6
Hampshire	153,894	2.4
Berkshire	132,486	2.1
Franklin	72,235	1.1
Dukes	15,669	0.2
Nantucket	10,124	0.2
Massachusetts	**6,416,505**	**100.0**

Data Elements and Sources

Data sources utilized by NVDRS 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.

[1] Annual Estimates of the Population for Counties of Massachusetts: April 1, 2000 to July 1, 2004 (CO-EST2004-01-25) Population Division, U.S. Census Bureau

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 NVDRS 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

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, CME records as the second choice, and police records as the third choice.

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

CIRCUMSTANCES

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 appropriate homicide circumstances are entered. For suicides and deaths of undetermined intent, the same set of circumstances is used. Variables collected for homicides are not the same as those for suicides or deaths of undetermined intent and vice versa.

Homicide Circumstances include the following:

Precipitated by another crime
- Nature of first other crime
- Nature of second other crime

Argument over money/property
Jealousy (lovers` triangle)
Intimate partner violence related
Other argument, abuse, conflict
Drug involvement
Gang related
Hate crime
Brawl (mutual physical fight)
Terrorist attack
Victim was a bystander
Victim was a police officer on duty
Victim used weapon
Intervener assisting crime victim
Mercy killing
Other (includes drive-by shooting)

Suicide/Undetermined Circumstances include the following:

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

Unintentional Firearm Circumstances include the following:

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

GLOSSARY

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 if only two people were fighting.

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 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 CME 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 should 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 anti-depressant 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) with the exception of alcohol and other substance dependence (as these are captured in separate variables).

Drowning: weapon of 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 definition).

Veteran Status: NVDRS-MA 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, NVDRS captures unintentional firearm deaths.

WEAPONS

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
Non-powder gun
Sharp instrument
Blunt instrument
Poisoning
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)
Other transport vehicle, (e.g., trains, planes, boats)
Intentional neglect, (e.g., starving a baby)
Biological weapons
Other
Unknown

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Appendix B

Age-adjusted Rates

Table 1. Violent Deaths by Intent and Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2004[1]				
	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95% CI)
Intent				
Suicide	432	34.8	6.7	6.5 (5.9, 7.1)
Homicide	183	14.7	2.9	2.9 (2.5, 3.3)
Undetermined	625	50.3	9.7	9.5 (8.8, 10.3)
Unintentional firearm[2]	2	0.2	---	---
Legal Intervention[2]	1	0.1	---	---
Sex				
Male	941	75.7	30.3	29.5 (27.7, 31.5)
Female	302	24.3	9.1	9.0 (7.9, 10.0)
Race/Ethnicity				
White non-Hispanic	991	79.7	19.0	18.5 (17.3, 19.6)
Black non-Hispanic	112	9.0	29.0	27.0 (21.9, 32.1)
Asian non-Hispanic	20	1.6	6.6	7.4 (3.8, 10.9)
Hispanic	99	8.0	20.0	18.7 (14.8, 22.6)
Other[3]	21	1.7	---	---
Age Group				
0-14	19	1.5	1.6	NA
15-24	209	16.8	24.5	NA
25-34	221	17.8	25.1	NA
35-44	349	28.1	33.9	NA
45-54	267	21.5	28.5	NA
55-64	96	7.7	14.7	NA
65-74	34	2.7	8.6	NA
75-84	31	2.5	9.6	NA
85+	17	1.4	12.5	NA
Total	**1,243**	**100**	**19.4**	**19.0 (17.9, 20.0)**

[1] 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.
[2] Rates for unintentional firearm and legal intervention deaths were not calculated due to lack of denominator information.
[3] Rates for Other race were not calculated due to lack of denominator information.

Table 2. Violent Deaths by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2004[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White non-Hispanic	262	86.8	9.7	9.5 (8.4, 10.7)
Black non-Hispanic	14	4.6	7.0	6.9 (3.3, 10.6)
Asian non-Hispanic	5	1.7	3.2	4.1 (-0.03, 8.3)
Hispanic	18	6	7.3	6.7 (3.5, 10.0)
Other[2]	3	1	---	---
Total	**302**	**24.3**	**9.1**	**9.0(7.9-10.0)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
White non-Hispanic	729	77.5	29.0	28.0 (26.0, 30.1)
Black non-Hispanic	98	10.4	52.6	47.7 (38.2, 57.3)
Asian non-Hispanic	15	1.6	10.0	10.4 (4.9, 15.8)
Hispanic	81	8.6	32.9	31.0 (23.7, 38.3)
Other[2]	18	1.9	---	---
Total	**941**	**75.7**	**30.3**	**29.5 (27.7, 31.5)**

Table 3. Violent Deaths by County: Number, Percent, Crude Rate, Age-adjusted Rate, MA 2004[1]				
County	**N**	**Percent[3]**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	38	4.0	16.6	17.0 (11.4, 22.5)
Berkshire	17	1.8	12.8	12.0 (6.2, 17.9)
Bristol	84	8.8	15.3	15.2 (11.9, 18.4)
Dukes	4	0.4	---	---
Essex	122	12.7	16.5	16.6 (13.6, 19.5)
Franklin	8	0.8	11.1	11.4 (3.5, 19.3)
Hampden	94	9.8	20.4	20.6 (16.4, 24.8)
Hampshire	23	2.4	14.9	15.7 (9.2, 22.2)
Middlesex	159	16.6	10.9	10.5 (8.8, 12.1)
Nantucket	2	0.2	---	---
Norfolk	78	8.1	11.9	11.6 (9.0, 14.2)
Plymouth	72	7.5	14.7	14.7 (11.3, 18.2)
Suffolk	157	16.4	23.6	22.5 (18.9, 26.1)
Worcester	101	10.5	13.0	12.8 (10.3, 15.4)
Unknown/Outside MA[4]	284	---	---	---
Total	**1,243**	**100.0**	**19.4**	**19.0 (17.9, 20.0)**

[1] 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.
[2] Rates for Other race were not calculated due to lack of denominator information.
[3] Percent is based on known Massachusetts county of violent death (N= 959)
[4] Rate and percent was not calculated for unknown county or county outside Massachusetts.

Table 4. Suicides by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2004[1]				
	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95%CI)
Sex				
Male	344	79.6	11.1	10.9 (9.7, 12.1)
Female	88	20.4	2.7	2.5 (2.0, 3.1)
Race/Ethnicity				
White non-Hispanic	386	89.4	7.4	7.0 (6.3, 7.7)
Black non-Hispanic	13	3.0	3.4	3.3 (1.4, 5.2)
Asian non-Hispanic	14	3.2	4.6	4.6 (2.0, 7.1)
Hispanic	12	2.8	4.6	2.5 (1.0, 4.0)
Other[2]	7	1.6	---	---
Age Group				
0-14	3	0.7	---	NA
15-24	54	12.5	6.3	NA
25-34	67	15.5	7.6	NA
35-44	95	22.0	9.2	NA
45-54	97	22.5	10.4	NA
55-64	48	11.1	7.4	NA
65-74	28	6.5	7.1	NA
75-84	26	6.0	8.1	NA
85+	14	3.2	10.3	NA
Total	**432**	**100**	**6.7**	**6.5 (5.9, 7.1)**

[1] 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.
[2] Rates for Other race were not calculated due to lack of denominator information.

Table 5. Suicides by Race/Ethnicity and Sex: Number, Percent, Crude Rate, Age-adjusted Rate, MA 2004[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White non-Hispanic	81	92.0	3.0	2.8 (2.2, 3.5)
Black non-Hispanic	3	3.4	---	---
Asian non-Hispanic	3	3.4	---	---
Hispanic	0	0.0	---	---
Other[2]	1	1.1	---	---
Total	**88**	**100**	**2.7**	**2.5 (2.0, 3.1)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000[1] (95%CI)**
White non-Hispanic	305	88.7	12.1	11.6 (10.3, 12.9)
Black non-Hispanic	10	2.9	5.4	4.9 (1.8, 7.9)
Asian non-Hispanic	11	3.2	7.4	7.2 (2.8, 11.7)
Hispanic	12	3.5	4.9	5.1 (1.9, 8.3)
Other[2]	6	1.7	---	---
Total	**344**	**100**	**11.1**	**10.9 (9.7, 12.1)**

Table 6. Suicides by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2004[1]				
County	**N**	**Percent[3]**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	25	5.9	10.9	10.7 (6.4, 15.1)
Berkshire	13	3.1	9.8	9.3 (4.2, 14.5)
Bristol	37	8.7	6.7	6.7 (4.5, 8.8)
Dukes	4	0.9	---	---
Essex	55	12.9	7.4	7.3 (5.4, 9.2)
Franklin	5	1.2	6.9	7.2 (0.9, 13.5)
Hampden	33	7.8	7.1	7.2 (4.7, 9.6)
Hampshire	12	2.8	7.8	8.0 (3.4, 12.6)
Middlesex	72	16.9	4.9	4.7 (3.6, 5.8)
Nantucket	0	0.0	---	---
Norfolk	39	9.2	6.0	5.8 (3.9, 7.6)
Plymouth	41	9.6	8.4	8.2 (5.6, 10.7)
Suffolk	35	8.2	5.3	5.0 (3.3, 6.8)
Worcester	54	12.7	6.9	6.8 (5.0, 8.7)
Unknown/Outside MA[4]	7	---	---	---
Total	**432**	**100.0**	**6.7**	**6.5 (5.9, 7.1)**

[1] 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.
[2] Rates for Other race were not calculated due to lack of denominator information.
[3] Percent is based on known Massachusetts county of violent death (N= 425)
[4] Rate and percent was not calculated for unknown county or county outside Massachusetts.

Table 7. Homicides by Demographics: Number, Percent, Crude Rate, Age-adjusted Rate, MA 2004[1]				
	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95%CI)
Sex				
Male	152	83.1	4.9	4.8 (4.1, 5.6)
Female	31	16.9	0.9	0.9 (0.6, 1.3)
Race/Ethnicity				
White non-Hispanic	64	35.0	1.2	1.3 (0.9, 1.6)
Black non-Hispanic	71	38.8	18.4	16.0 (12.3, 19.8)
Asian non-Hispanic	4	2.2	---	---
Hispanic	39	21.3	7.9	6.6 (4.4, 8.8)
Other[2]	5	2.7	---	---
Age Group				
0-14	10	5.5	0.8	NA
15-24	79	43.2	9.3	NA
25-34	40	21.9	4.5	NA
35-44	26	14.2	2.5	NA
45-54	15	8.2	1.6	NA
55-64	8	4.4	1.2	NA
65-74	3	1.6	---	NA
75-84	2	1.1	---	NA
85+	0	0	---	NA
Total	**183**	**100**	**2.9**	**2.9 (2.5, 3.3)**

[1] 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.
[2] Rates for Other race were not calculated due to lack of denominator information.

Table 8. Homicides by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2004[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White non-Hispanic	22	71.0	0.8	0.8 (0.5, 1.2)
Black non-Hispanic	5	16.1	2.5	2.3 (0.3, 4.2)
Asian non-Hispanic	0	0.0	---	---
Hispanic	4	12.9	---	---
Other[2]	0	0.0	---	---
Total	**31**	**100**	**0.9**	**0.9 (0.6, 1.3)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White non-Hispanic	42	27.6	1.7	1.7 (1.2, 2.2)
Black non-Hispanic	66	43.4	35.5	30.1 (22.8, 37.4)
Asian non-Hispanic	4	2.6	---	---
Hispanic	35	23.0	14.2	11.6 (7.5, 15.8)
Other[2]	5	3.3	---	---
Total	**152**	**100**	**4.9**	**4.8 (4.1, 5.6)**

Table 9. Homicides by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2004[1]				
County	**N**	**Percent[3]**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	5	2.8	2.2	2.4 (0.2, 4.5)
Berkshire	0	0.0	---	---
Bristol	13	7.3	2.4	2.4 (1.1, 3.7)
Dukes	0	0.0	---	---
Essex	12	6.7	1.6	1.7 (0.8, 2.7)
Franklin	2	1.1	---	---
Hampden	23	12.8	5.0	5.1 (3.0, 7.2)
Hampshire	2	1.1	---	---
Middlesex	20	11.2	1.4	1.4 (0.8, 2.0)
Nantucket	1	0.6	---	---
Norfolk	2	1.1	---	---
Plymouth	14	7.8	2.9	3.0 (1.4, 4.6)
Suffolk	70	39.1	10.5	9.6 (7.3, 11.9)
Worcester	15	8.4	1.9	1.9 (1.0, 2.9)
Unknown/Outside MA[4]	4	---	---	---
Total	**183**	**100**	**2.9**	**2.9 (2.5, 3.3)**

[1] 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.
[2] Rates for Other race were not calculated due to lack of denominator information.
[3] Percent is based on known Massachusetts county of violent death (N= 179)
[4] Rate and percent was not calculated for unknown county or county outside Massachusetts.

Table 10. Deaths of Undetermined Intent by Demographics: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2004[1]				
	N	Percent	Crude Rate per 100,000	Age-adjusted Rate per 100,000 (95%CI)
Sex				
Male	443	70.9	14.3	13.8 (12.5, 15.1)
Female	182	29.1	5.5	5.4 (4.7, 6.2)
Race/Ethnicity				
White non-Hispanic	539	86.2	10.3	10.2 (9.3, 11.1)
Black non-Hispanic	27	4.3	7.0	7.4 (4.6, 10.2)
Hispanic	48	7.7	9.7	9.6 (6.7, 12.4)
Asian non-Hispanic	2	0.3	---	---
Other[2]	9	1.4	---	---
Age Group				
0-14	6	1.0	0.5	NA
15-24	76	12.2	8.9	NA
25-34	113	18.1	12.8	NA
35-44	227	36.3	22.0	NA
45-54	154	24.6	16.4	NA
55-64	40	6.4	6.1	NA
65-74	3	0.5	---	NA
75-84	3	0.5	---	NA
85+	3	0.5	---	NA
Total	**625**	**100**	**9.7**	**9.5 (8.8, 10.3)**

[1] 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.
[2] Rates for Other race were not calculated due to lack of denominator information.

Table 11. Deaths of Undetermined Intent by Race/Ethnicity and Sex: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2004[1]				
Female	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White non-Hispanic	158	86.8	5.8	5.8 (4.9, 6.7)
Black non-Hispanic	6	3.3	3.0	3.1 (0.6, 5.6)
Asian non-Hispanic	2	1.1	---	---
Hispanic	14	7.7	5.7	5.2 (2.4, 8.0)
Other[2]	2	1.1	---	---
Total	**182**	**100**	**5.5**	**5.4 (4.7, 6.2)**
Male	**N**	**Percent**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95%CI)**
White non-Hispanic	381	86.0	15.1	14.7 (13.2, 16.2)
Black non-Hispanic	21	4.7	11.3	12.2 (7.0, 17.5)
Asian non-Hispanic	0	0.0	---	---
Hispanic	34	7.7	13.8	14.2 (9.1, 19.3)
Other[2]	7	1.6	---	---
Total	**443**	**100**	**14.3**	**13.8 (12.5, 15.1)**

Table 12. Deaths of Undetermined Intent by County: Number, Percent, Crude Rate, and Age-adjusted Rate, MA 2004[1]				
County	**N**	**Percent[3]**	**Crude Rate per 100,000**	**Age-adjusted Rate per 100,000 (95% CI)**
Barnstable	8	2.3	3.5	3.9 (1.1, 6.6)
Berkshire	4	1.1	---	---
Bristol	34	9.6	6.2	6.1 (4.0, 8.1)
Dukes	0	0.0	---	---
Essex	55	15.6	7.4	7.5 (5.5, 9.5)
Franklin	1	0.3	---	---
Hampden	38	10.8	8.2	8.4 (5.7, 11.0)
Hampshire	9	2.5	5.8	6.7 (2.3, 11.1)
Middlesex	67	19.0	4.6	4.4 (3.3, 5.4)
Nantucket	1	0.3	---	---
Norfolk	37	10.5	5.7	5.5 (3.7, 7.3)
Plymouth	17	4.8	3.5	3.5 (1.9, 5.2)
Suffolk	51	14.4	7.7	7.7 (5.5, 9.8)
Worcester	31	8.8	4.0	4.0 (2.6, 5.4)
Unknown/Outside MA[4]	272	---	---	---
Total	**625**	**100.0**	**9.7**	**9.5 (8.8, 10.3)**

[1] 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.
[2] Rates for Other race were not calculated due to lack of denominator information.
[3] Percent is based on known Massachusetts county of violent death (N= 353).
[4] Rate and percent was not calculated for unknown county or county outside Massachusetts.

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