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Suicides in Massachusetts in 2013: Data Report

December 31, 2015



Legislative Mandate

The following report is hereby issued pursuant to Section 232 of Chapter 111 of the Massachusetts General Laws as follows:

Chapter 111 Massachusetts General Laws, Section 232

The department, in consultation with the executive office of public safety and security shall, subject to appropriation, collect, record and analyze data on all suicides in the commonwealth. Data collected for each incident shall include, to the extent possible and with respect to all applicable privacy protection laws, the following: (i) the means of the suicide; (ii) the source of the means of the suicide; (iii) the length of time between purchase of the means and the death of the decedent; (iv) the relationship of the owner of the means to the decedent; (v) whether the means was legally obtained and owned pursuant to the laws of the commonwealth; (vi) a record of past suicide attempts by the decedent; and (vii) a record of past mental health treatment of the decedent.

The department shall annually submit a report, which shall include aggregate data collected for the preceding calendar year and the department's analysis, with the clerks of the house of representatives and the senate and the executive office of public safety and security not later than December 31. Names, addresses or other identifying factors shall not be included.

The commissioner shall work in conjunction with the offices and agencies in custody of the data listed in this section to facilitate collection of the data and to ensure that data sharing mechanisms are in compliance with all applicable laws relating to privacy protection. Data collected and held by the department to complete the report pursuant to this section shall not be subject to section 10 of chapter 66 and clause Twenty-sixth of section 7 of chapter.

Executive Summary

Section 232 of Chapter 111 of the Massachusetts General Laws tasked the Massachusetts Department of Public Health (DPH) with collecting, recording and analyzing data on all suicides in the Commonwealth and submitting an annual report.

DPH analyzed data collected on suicides for 2013 and found the following:

- In 2013, 585 suicides occurred in Massachusetts. This number was greater than the number of deaths due to motor vehicles (N=326) and homicides (N=148) combined.
- In 2013, the rate of suicide in Massachusetts was 8.7/100,000 persons. This rate has increased an average of 3.6% per year since 2003. There were approximately 38% more suicides in 2013 than in 2003.
- The majority (73%) of suicide victims were male (n=427). However, rates for both males and females have increased since 2003.
- The majority of suicides that occurred in 2013 were among individuals 35-64 years old (n=334, 57%).
- The most prevalent means of suicide for males were hanging/suffocation (50%) and firearm (26%), which combined accounted for 76% of male suicides.
- For females, the most prevalent means of suicide were hanging/suffocation (45%) and poisoning/overdose (41%), which combined accounted for 86% of female suicides.
- Males (n=110) accounted for 96% of firearm suicides (n=115). Handguns (N=86, 75%) were the most common type of firearm used in suicides.
- For poisoning suicides, opiates (n=54, 21%) and antidepressants (n=53, 20%) were the most common classes of drugs used.
- 34% of female suicide victims (n=53) and 17% of male suicide victims (n=73) were known to have a prior suicide attempt.
- 63% of female suicide victims (n=99) and 37% of male suicide victims (n=159) were known to have a history of treatment for a mental health or substance abuse problem.

Introduction

In 2014 the Legislature passed Chapter 284 of the Acts of 2014: An Act to reduce gun violence. This law included a requirement for the Massachusetts Department of Public Health (DPH) to collect, record and analyze data on all suicides in the Commonwealth and to include the following information on each incident to the extent possible: (i) the means of the suicide; (ii) the source of the means of the suicide; (iii) the length of time between purchase of the means and the death of the decedent; (iv) the relationship of the owner of the means to the decedent; (v) whether the means was legally obtained and owned pursuant to the laws of the Commonwealth; (vi) a record of past suicide attempts by the decedent; and (vii) a record of past mental health treatment of the decedent.

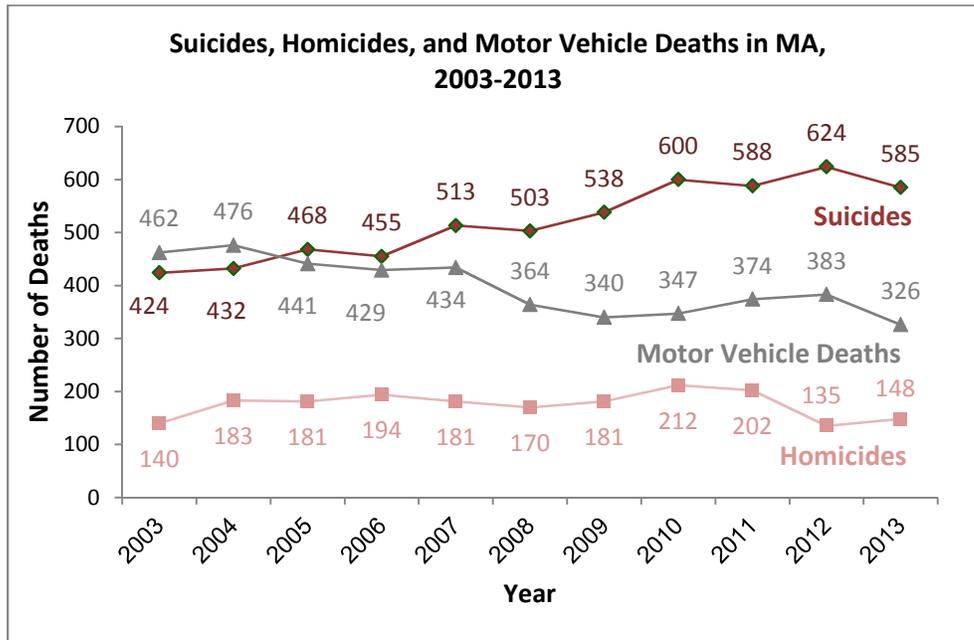
This report is based on data from the Massachusetts Violent Death Reporting System (MAVDRS). MAVDRS is housed in the Injury Surveillance Program (ISP) in the Office of Statistics & Evaluation (OSE) in the Bureau of Community Health & Prevention (BCHAP) at DPH. MAVDRS combines the death certificate information from the Registry of Vital Records and Statistics (RVRS) with various other data sources such as medical examiner files, toxicology reports, hospital records, and police reports.

MAVDRS began collecting data on all homicides, suicides, deaths of undetermined intent, unintentional firearm deaths and legal intervention deaths that occurred in the Commonwealth starting in 2003. MAVDRS is a part of the National Violent Death Reporting System (NVDRS) and is funded by the Centers for Disease Control and Prevention (CDC). The software, variables and coding guidance are standardized by CDC across all funded states. The data contained in this report is for 2013, the latest year available. Due to the extensive information collected, CDC allows eighteen months after the end of the data year for data completion.

Because the data in this report was collected prior to the passage of Chapter 284 of the Acts of 2014, it does not contain all information specified in the legislation. MAVDRS has been working with current data partners, which include the Registry of Vital Records and Statistics (RVRS), the Office of the Chief Medical Examiner (OCME), the Massachusetts State Police (MSP), and the Boston Police Department (BPD), as well as new partners within the Executive Office of Public Safety and Security (EOPSS) like the Department of Criminal Justice Information Services (DCJIS) to work on obtaining additional data elements as well as improving upon the quality of data currently collected.

Suicide Data 2013

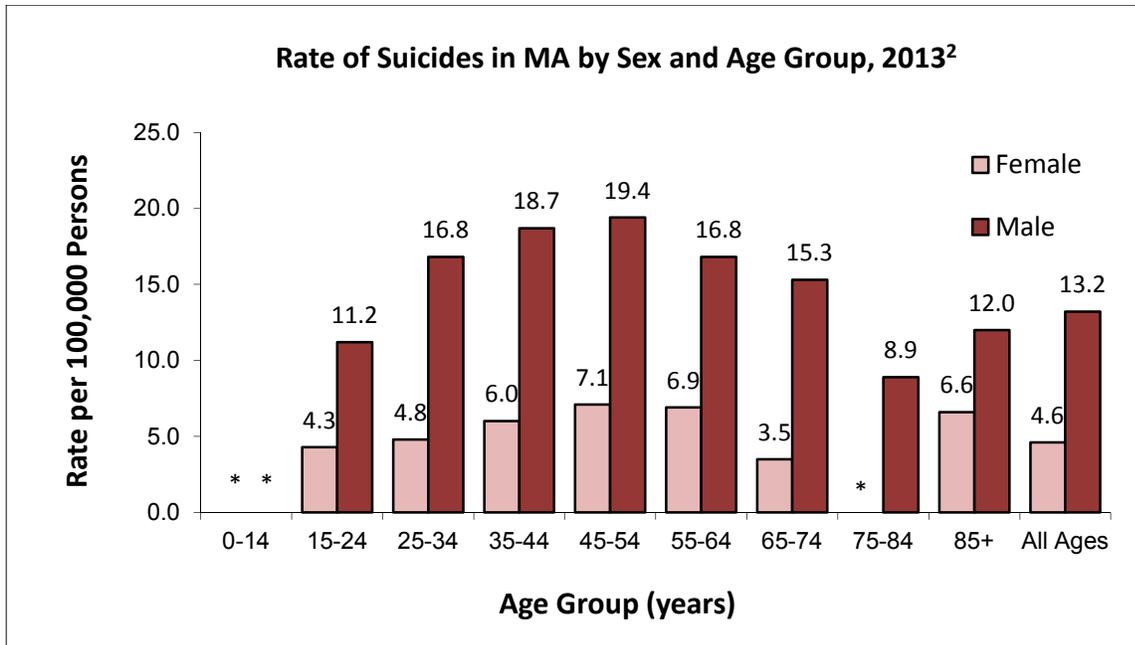
From January 1, 2013 to December 31, 2013, there were 585 suicides (8.7/100,000) that occurred in the Commonwealth of Massachusetts. Of the 585 suicide deaths, 427 of the victims were male (13.2/100,000, 76%) and 158 victims were female (4.6/100,000, 24%).



Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health; Fatality Analysis Reporting System, National Highway Traffic Safety Administration

- The number of suicide deaths was almost two times higher than the number of motor vehicle traffic-related deaths (N=326) and almost four times higher than homicides (N=148) in 2013.
- Massachusetts has a lower rate of suicide compared to the rest of the U.S. The age-adjusted rate of suicide for the U.S in 2013 was 12.6/100,000.¹
- Suicide rates increased an average of 3.6% per year. There were approximately 38% more suicides in 2013 than in 2003. This increase mirrors an increase in the U.S. age-adjusted suicides rate, which increased an average of 1.8% per year since 2003.¹
- While the majority of deaths by suicide occurred in males, there have been steady increases in the rates of suicide among men and among women between 2003 and 2013. The rate of suicide among males increased by 29% from 2003 to 2013; among females, the rate increased by 44%.

¹ Source: Centers for Disease Control and Prevention, WISQARS – Fatal Injuries Report, 1993-2013, for National, Regional, and States



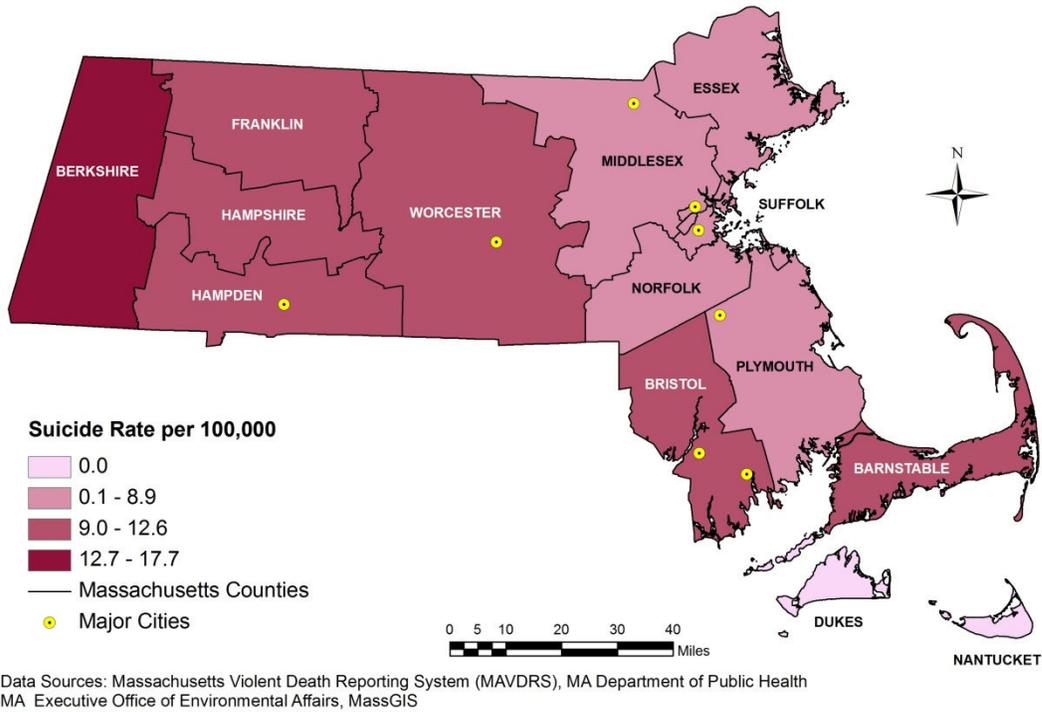
Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health

- The majority of suicides that occurred in 2013 were among individuals age 35-64 years (n=334, 57%). Between 2003 and 2013, the rate of suicides in this group increased an average of 4.2% per year.
- The highest rates of suicide were among individuals age 45-54 years for both males (19.4/100,000, n=94) and females (7.1/100,000, n=36).

² *Rates are not calculated for counts less than 5.

Suicides by County of Injury

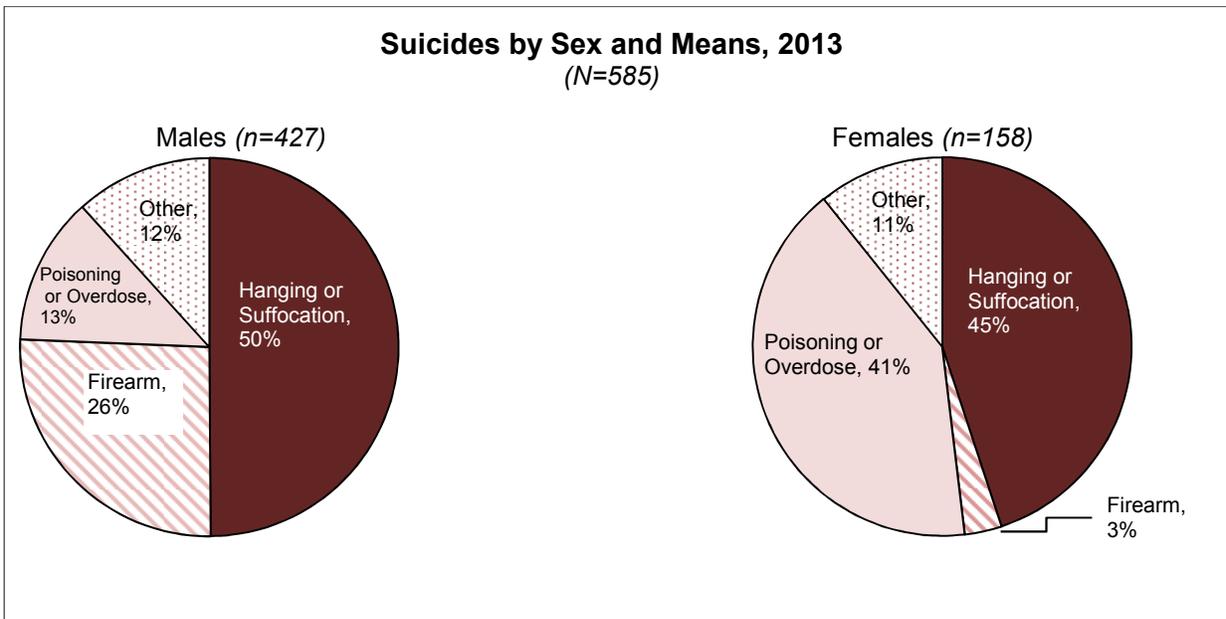
Suicides by County: Rate, MA 2013



- In 2013, Berkshire county had the highest rate of suicide (17.7/100,000, n=23) and Middlesex county had the highest number of suicides (n=112, 7.2/100,000).

The Means of Suicide and Source of the Means of Suicide

Chapter 11 M.G.L, Section 232, (i) and (ii) specify that this report contain both the means of the suicide (e.g., firearm suicides) and the source of the means (e.g., type of firearm). The means used in suicides varies greatly as does its source. The following information represents the data currently available on the type and source of means used in suicide in Massachusetts in 2013.



Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health

Means of Suicide: Number, Percent and Rate, MA 2013									
Means of Suicide	Male			Female			Total		
	n	Percent	Rate per 100,000	n	Percent	Rate per 100,000	n	Percent	Rate per 100,000
Firearm	110	25.8	3.4	5	3.2	0.1	115	19.7	1.7
Hanging/Suffocation	213	49.9	6.6	71	44.9	2.1	284	48.5	4.2
Poisoning	54	12.6	1.7	65	41.1	1.9	119	20.3	1.8
Sharp Instrument	15	3.5	0.5	5	3.2	0.1	20	3.4	0.3
Fall	12	2.8	0.4	5	3.2	0.1	17	2.9	0.3
Other Means	23	5.4	0.7	7	4.4	0.2	30	5.1	0.4
Total	427	100.0	13.2	158	100.0	4.6	585	100.0	8.7

Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health

- The most prevalent methods of suicide in 2013 were hanging/suffocation (n=284, 49%), poisoning (n=119, 20%), and firearms (n=115, 20%).
- Hanging/suffocation (n=213) and firearm (n=110) were the most common methods for men.
- Hanging/suffocation (n=71) and poisoning/overdose (n=65) were the most common methods for women.

Source of Means of Firearm Suicides: Number, MA 2013³		
Means	n	%
Firearm	115	100.0
Handgun	86	74.8
<i>Semi-Automatic Pistol</i>	43	
<i>Revolver</i>	34	
<i>Unknown Type</i>	9	
Rifle	14	12.2
<i>Semi-Automatic</i>	6	
<i>Bolt Action</i>	<6	
<i>Lever Action</i>	<6	
<i>Pump Action</i>	<6	
<i>Unknown Type</i>	<6	
Shotgun	14	12.2
<i>Pump Action</i>	7	
<i>Single Shot</i>	<6	
<i>Double Barrel</i>	<6	
<i>Semi-Automatic</i>	<6	
<i>Unknown Type</i>	<6	
Submachine Gun	<6	--

Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health

- There were four types of firearms used in firearm-related suicides in 2013: handguns, rifles, shotguns, and submachine guns.
- The most common amongst these types were handguns (n=86, 75%).
- The majority of victims who died from firearm-related suicides were male (n=110, 96%).

Source of Means of Hanging/Suffocation Suicides: Number, MA 2013³			
Means	Male	Female	Total
Hanging/Suffocation	213	71	284
Rope/Clothing Line	--	--	43
Cord/Cable/Wire	33	7	40
Belt	28	7	35
Plastic Bag/Plastic Bag + Helium	16	17	33
Dog Leash	13	6	19
Sheet	--	--	13
Scarf/Tie	--	--	8
Shoe Lace/String	<6	0	<6
Other Specified Means	11	0	11
Not Specified	54	23	77

Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health

- For suicides by hanging/suffocation, the most common known ligatures used were a rope/clothing line (n=43, 15%), cord/cable/wire (n=40, 14%), and belt (n=35, 12%).
- For men, the most common ligature used was a rope/clothing line.
- For women, the most common ligatures used were a cord/cable/wire (n=7) and a belt (n=7).
- Seventeen female victims used plastic bags as a means of suffocation, either alone or in conjunction with a gas (helium).

³ Data suppressed for counts less than 6 for select variables. Some values greater than 6 have also been suppressed when it would allow for a value of less than 6 to be calculated.

Source of Means of Poisoning Suicides: Number, MA 2013 ⁴⁵			
Means	Male	Female	Total
Poisoning¹			
Substance Classes	101	159	260
Alcohol	--	--	9
Amphetamine	<6	0	<6
Anticonvulsant	--	--	8
Antidepressant	15	38	53
Antipsychotic	6	8	14
Barbiturates	--	--	<6
Benzodiazepines	10	20	30
Carbon Monoxide	--	--	13
Cocaine	--	--	<6
Muscle Relaxant	--	--	<6
Opiate	23	31	54
Other Substance Class	26	38	64
<i>Acetaminophen</i>	--	--	6
<i>Diphenhydramine</i>	7	10	17
<i>Zolpidem</i>	--	--	8
<i>Other/Unknown Substance</i>	14	19	33

Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health

Source of Means of Sharp Instrument Suicides: Number, MA 2013 ⁵			
Means	Male	Female	Total
Sharp Instrument	15	5	20
Knife	--	--	11
Razor Blade/Box Cutter	--	--	<6
Scissors	<6	0	<6
Other/Not Specified	<6	<6	<6

Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health

This table includes all substances listed in the cause of death for poisoning suicides by substance class.

- Opiates (n=54, 21%) and antidepressants (n=53, 20%) were the most common classes of substances used in poisoning suicides.

- The most prevalent sharp instrument used in suicides was a knife (n=11, 55%).

⁴ The substances listed have been identified as the cause of death of victims; however, please note that more than one substance may be associated with a single suicide. Because these substances are not mutually exclusive, the total count will add up to more than the 119 victims who died from poisoning.

⁵ Data suppressed for counts less than 6 for select variables. Some values greater than 6 have also been suppressed when it would allow for a value of less than 6 to be calculated.

Source of Means of Fall Suicides: Number, MA 2013 ⁶			
Means	Male	Female	Total
Fall	12	5	17
Residential Building	--	--	8
Bridge	<6	<6	<6
Parking Garage	<6	<6	<6
Health Care Facility	<6	0	<6
Cliff	<6	0	<6
Construction Site	<6	0	<6

Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health

- In 2013, residential buildings were utilized in the majority of suicides resultant from falling/jumping (n=8, 47%).

Source of Means of Other Suicides: Number, MA 2013 ⁶			
Means	Male	Female	Total
Other Means	23	7	30
Train	--	--	12
Drowning	--	--	9
Motor Vehicle	<6	<6	<6
Fire	<6	0	<6
Nail Gun	<6	0	<6

Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health

- The most prevalent methods of suicide in the other category were those involving trains (n=12) and drowning (n=9).

⁶ Data suppressed for counts less than 6 for select variables. Some values greater than 6 have also been suppressed when it would allow for a value of less than 6 to be calculated.

The Length of Time between Purchase of the Means and the Death of the Decedent

The length of time between the purchase of the means and the death of the decedent is not currently available and is not captured in MAVDRS. Work is currently being done to obtain available information on this regarding firearms, and it is planned to be included in future reports.

The Relationship between the Owner of the Means and the Decedent

MAVDRS collects information on the relationship of the owner of a firearm to the decedent from police reports and medical examiner files. However, information on the relationship between the owner and decedent is not always clearly documented in these records. In 2013, of the 115 firearm suicides, only 27 had documented information on the relationship of the firearm owner to the decedent. In 20 of these 27 cases, it is known that the decedent was the owner of the firearm. MAVDRS is working to improve upon the information reported so that more complete information can be included in future reports.

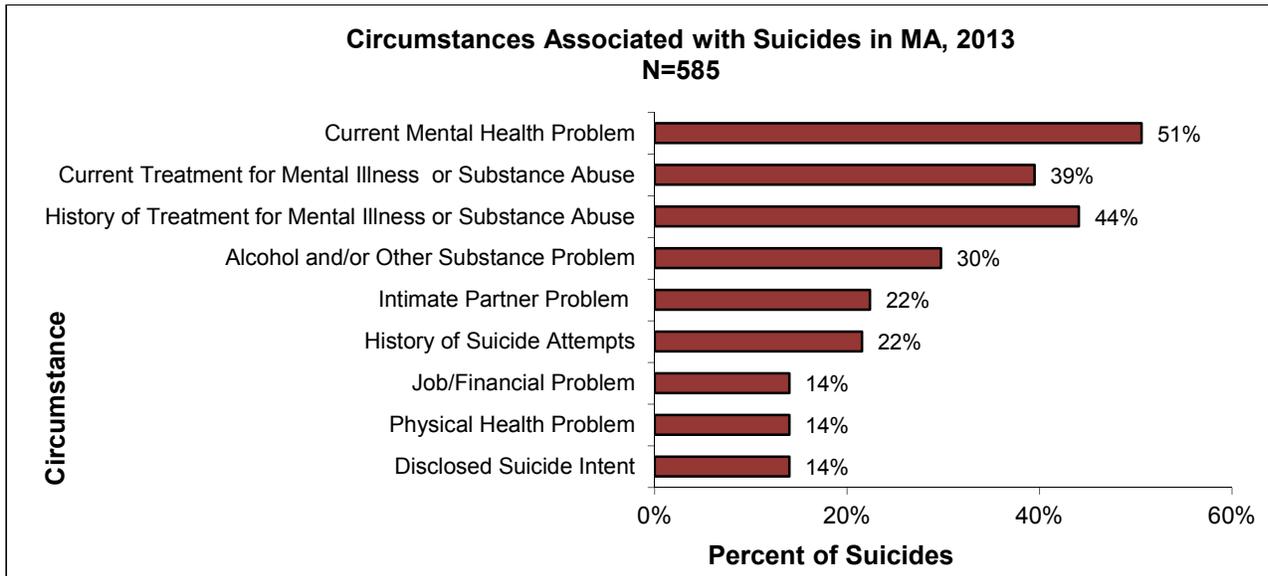
For prescription drugs used in poisoning suicides, MAVDRS collects information on the relationship between the decedent and the person for whom the prescription medication was prescribed. In 2013, 64% of pharmaceutical drugs used in poisoning suicides were known to be prescribed to the decedent. MAVDRS will also be working to improve upon the information reported on this so that more complete information can be included in future reports.

MAVDRS does not collect information on the relationship between on the owner of the means and the decedent for the following means because these are commonly available and non-regulated objects: hanging/suffocation and sharps instrument. MAVDRS also does not collect information on the owner of the means for non-prescription drugs or falls.

Whether the Means was Legally Obtained and Owned Pursuant to the Laws of the Commonwealth

Of the variety of means used in suicides, only those by firearm and poisoning may or may not be obtained and owned legally. For firearms, MAVDRS currently collects information on whether a firearm was known to be stolen, but this information is often incomplete. Of the 115 firearm suicides in 2013, less than six were known to be stolen. MAVDRS is working to improve on the completeness of this variable and determine whether or not a firearm was legally obtained and owned. MAVDRS does not currently have a variable for capturing whether substances used in poisoning suicides were obtained legally or not. MAVDRS is working with data partners to capture this information for future reports.

Circumstances



Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health

A circumstance is a condition, fact or event that affects a situation. Circumstances surrounding the decedent's life prior to the death can highlight opportunities for future prevention efforts. MAVDRS systematically collects information on suicides and allows for more than one circumstance to be listed for a suicide victim. 94% of suicide victims had at least one circumstance identified during case-review (n=548) and 84% had multiple circumstances known (n=491). It is important to remember that some circumstances are more likely to be known and documented than others and if a circumstance is not identified, that does not mean it was not present in the decedent's life. The above chart represents percentages of circumstances noted out of all suicides (N=585).

- 51% of suicide victims had a documented current mental health problem, such as depression, anxiety disorder, schizophrenia and post-traumatic stress disorder.
- 39% were currently receiving treatment for a mental health or substance abuse problem and 44% had any history of treatment for a mental illness or substance abuse problem.
- 30% had an alcohol or other substance use problem.
- 22% experienced an intimate partner problem prior to their death such as divorce, break-up, jealousy and conflict.
- 22% had a history of suicide attempts.

⁷ More than one circumstance may be noted for each suicide.

Past Suicide Attempts

Information on past suicide attempts is obtained from the medical examiner file and police reports. This information may come from the decedent's family, friends or psychiatric/hospital records. Friends and family of the decedent may not know of the decedent's past suicide attempts or may choose not to report that information to the authorities. Also, hospital records are not available on all suicides and even if they are present, not all suicide attempts would cause an injury that would make this information be present in the records.

Confirmed Past Suicide Attempts by Means Used in Suicide & Sex: Number & Percent, MA 2013			
	n	%	Total N
Firearm			
Male	--	--	110
Female	--	--	5
Total	7	6%	115
Hanging/Suffocation			
Male	40	19%	213
Female	19	27%	71
Total	59	21%	284
Poisoning			
Male	14	26%	54
Female	27	42%	65
Total	41	34%	119
All Other Means			
Male	13	26%	50
Female	6	35%	17
Total	19	28%	67

Source: Massachusetts Violent Death Reporting System,
Massachusetts Department of Public Health

- Thirty-four percent of female victims (n=53) and 17% of male victims (n=73) were confirmed to have prior suicide attempts.
- Forty-two percent of female poisoning victims (n=27) and 27% of female hanging/suffocation victims (n=19) had prior suicide attempts.
- Nineteen percent of male hanging/suffocation victims (n=40) and 26% of male poisoning victims (n=14) had prior suicide attempts.

Past Mental Health Treatment of the Decedent

History of Treatment for Mental Health or Substance Abuse Problem: Number, MA 2013			
	n	%	Total N
Firearm			
Male	--	--	110
Female	<6	--	5
Total	30	26%	115
Hanging/Suffocation			
Male	82	38%	213
Female	47	66%	71
Total	129	45%	284
Poisoning			
Male	29	54%	54
Female	43	66%	65
Total	72	61%	119
All Other Means			
Male	20	40%	50
Female	7	41%	17
Total	27	40%	67

Source: Massachusetts Violent Death Reporting System,
Massachusetts Department of Public Health

- Sixty-three percent of female victims (n=99) and 37% of male victims (n=159) were noted to have a history of treatment for a mental health or substance abuse problem.

Suicide Prevention Program

The Suicide Prevention Program (SPP) at DPH employs the latest suicide prevention strategies using the public health approach and is funded by a specific line item in the Massachusetts State budget. The SPP uses data to help inform its prevention strategies.

Massachusetts has one of the lowest suicide rates in the country. Factors that contribute to Massachusetts' low rate include: the Commonwealth's low rate of household gun ownership, better access to emergency medical care, a robust behavioral health industry and a 10-year history of state suicide prevention funding.

A major public health strategy is to identify health disparities – when a disease, illness or injury disproportionately affects a particular population. Analyzing data on suicides and non-fatal self-injuries enables the Program to identify at-risk populations and target funding to those populations. The Program issued a competitive procurement for FY15 that resulted in the funding of 20 community-based providers to address the needs of these vulnerable populations statewide. Services provided include:

- The four Samaritan agencies funded to provide a toll free helpline and survivor to survivor grief support services.
- Survivor support groups facilitated by individuals who themselves are survivors of suicide loss.
- Online screening and referral for conditions such as depression, anxiety, substance abuse, post-traumatic stress and eating disorders available across the Commonwealth.
- Postvention services after a suicide occurs; often conducted in a school setting where the suicide death of a student has a profound effect on the school and the community.

Through Inter-agency Service Agreements (ISAs), the program funds activities specific to the populations served by the Executive Office of Elder Affairs, the Department of Mental Health and the Department of Veterans' Services' SAVE Program.

The SAVE Program (Statewide Advocacy for Veterans Empowerment) is composed of outreach workers who are returning veterans or family members of returning veterans who reach out to military personnel coming back from Iraq and Afghanistan to educate them on services and benefits available to them, and to screen for behavioral health issues. They are highly mobile and attend veterans' gatherings all across the state. SAVE is not restricted to working only with returning veterans. They can serve any veteran. Despite the age differences when dealing with Viet Nam war veterans, for example, they still command credibility because of their military service.

The SPP also funds the statewide MA Coalition for Suicide Prevention and its prevention activities. The Coalition develops and supports nine Regional Coalitions covering the entire Commonwealth. The Regional Coalitions provide the local networking to assure that prevention services reach all areas of the Commonwealth.

Community Coalitions are given technical assistance and some Program funding in their initial stages to support their development. Some coalitions, like Montachusett, Needham, Newton, Nantucket and New Bedford, for example, were formed in response to one or more youth suicides. After a year or two of operation, these coalitions usually expand to include activities addressing suicide across the lifespan.

The SPP works in partnership with these agencies as well as the Department of Elementary and Secondary Education, the Department of Corrections, our own Bureau of Substance Abuse Services, the Office of Emergency Services, Department of Children and Families, Department of Youth Services, County Sheriff's Departments, and the MA National Guard. An especially significant and close partner is the Department of Mental Health which provides senior management staff participation in all aspects of the Program.

A primary strategy for preventing suicide is raising public awareness that suicide is preventable. Gatekeeper training teaches everyone how to recognize signs of suicide and instills confidence in talking about suicide.

Behavioral health professionals, until very recently, received little education in assessing and managing suicide risk despite the fact that they inevitably served clients with suicidality. Skills training for clinicians fill that gap.

Education and screening training for health professionals helps them to identify at risk individuals in their practices.

We prefer to introduce system-wide approaches to suicide that include appropriate levels of training, protocols to follow and postvention strategies to minimize further deaths if a suicide occurs. Schools, DYS, Community mental health centers and hospital systems are some examples of systems with which we are working.

Last April, 500 participants attended each of the two days of our annual conference. Participants were from clinical settings, schools, law enforcement, policy makers, survivors, attempters and service providers.

The Program provides technical assistance to interagency prevention policy initiatives to assure that the most current suicide prevention strategies are employed.

Recently, the Program has worked with the Department of Elementary and Secondary Education to implement the requirements of suicide prevention training for licensed school personnel, the Department of Labor and Workforce Development to establish protocols to guide employees when they identify a client as at-risk, and the Bureau of Health Care Safety & Quality implementing the Valor Act (2) which calls for emergency medical staff in ambulances, emergency departments and in inpatient units to determine whether individuals with behavioral health issues are veterans and, if so identified, to receive referrals.

Conclusion

Suicide is a major public health problem and Massachusetts needs to collect data on these deaths to better inform prevention efforts. Suicides have been tracked in the Massachusetts Violent Death Reporting System since 2003 and have been increasing. Suicides have been increasing for both sexes, although males have a higher rate and make up about 73% of suicides. The majority (57%) of suicides occurred in persons ages 35-64 in 2013. The means most commonly used in suicides are hanging/suffocation (49%), poisoning/overdose (20%) and firearm (20%). For suicides by hanging, rope/clothing line was the most common ligature (15%). For suicide by firearm, handguns (75%) were the most common type of firearm used. For suicides by poisoning, opiates (21%) and antidepressants (20%) were the most common class of substance used. 22% of suicide victims had made a prior suicide attempt. 44% had a history of treatment for a mental health or substance abuse problem.

MAVDRS is working with other data partners capturing additional data required by the legislature and improving data quality of existing data fields. There are three essential data elements that the MAVDRS staff are working on to either capture, or improve the quality of, to more accurately identify the opportunities for suicide prevention in the Commonwealth: the length of time between purchase of the means and the death of the decedent, the relationship of the owner of the means to the decedent and whether the means was legally obtained and owned pursuant to the laws of the Commonwealth. More information on these will be included in future reports.

The Suicide Prevention Program at DPH frequently uses all of the data available at DPH, including MAVDRS, to help inform its ongoing prevention efforts and new strategies. This data helps the Program target efforts towards populations with the greatest need.