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December 26, 2018

Steven T. James
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Boston, MA 02133

William F. Welch
Senate Clerk
State House Room 335
Boston, MA 02133

Dear Mr. Clerk,

Pursuant to Section 2 of Chapter 111 of the Massachusetts General Laws, the attached report summarizes mortality data and statistics for the 2016 calendar year.

Sincerely,

Monica Bharel, MD, MPH
Commissioner
Department of Public Health

Charles D. Baker
Governor

Karyn Polito
Lieutenant Governor



Marylou Sudders
Secretary

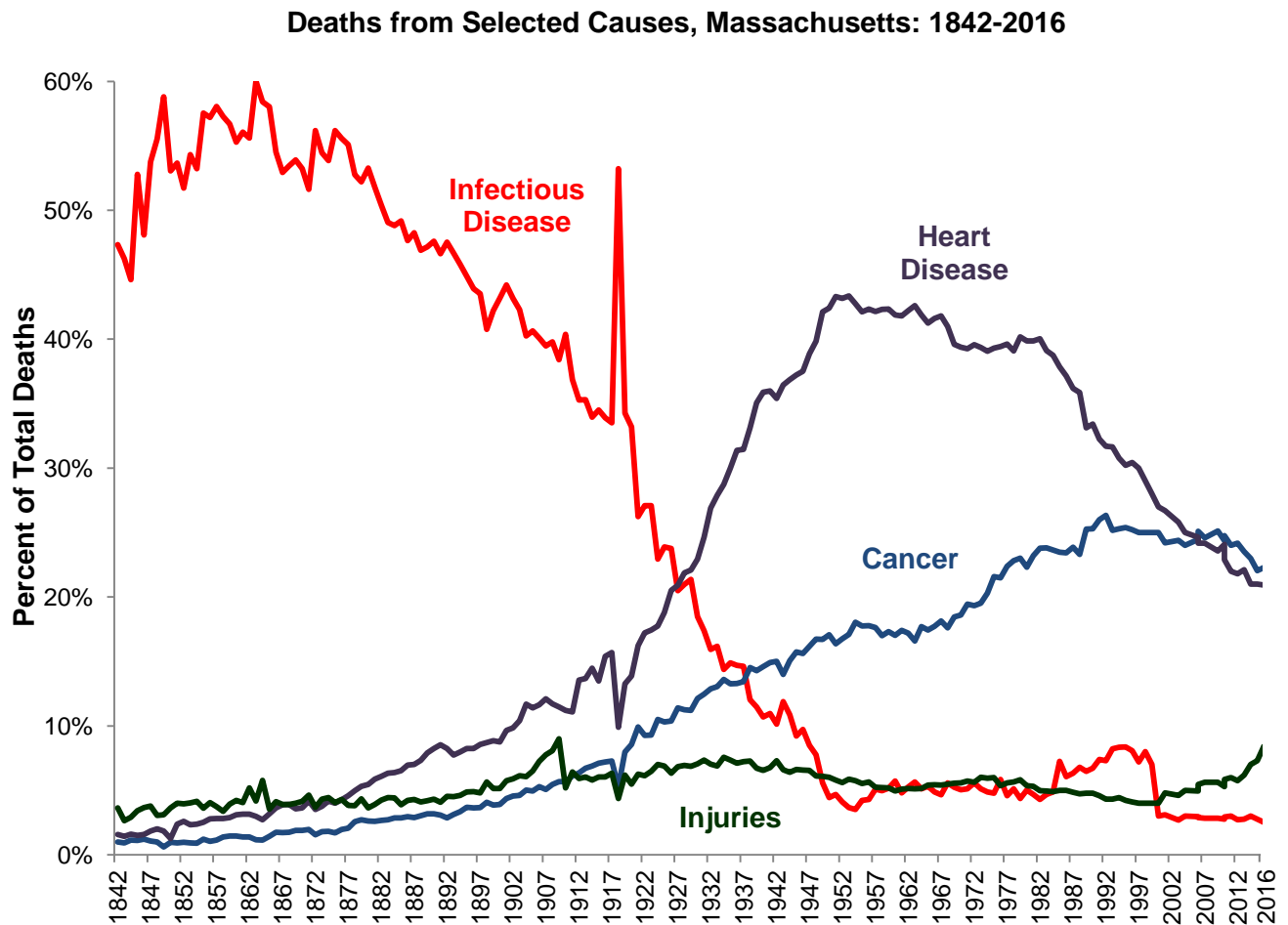
Monica Bharel, MD, MPH
Commissioner

Massachusetts Deaths 2016

December 2018



Massachusetts Deaths 2016



Office of Population Health

Massachusetts Department of Public Health

November 2018

Massachusetts Deaths 2016



Charles D. Baker, Governor
Marylou Sudders, Secretary of Health and Human Services
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November 2018

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To obtain more information on deaths in Massachusetts and other Department of Public Health data please visit the Department's free, Internet-based public health information reports at: <http://www.mass.gov/eohhs/researcher/community-health/masschip/>

or call 888-MAS-CHIP (toll free in MA) or 617-624-5629.

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2016 Massachusetts Deaths Highlights

- From 2015 to 2016, the age-adjusted mortality rate for Massachusetts residents significantly decreased from 684.6 deaths per 100,000 to 668.9 deaths per 100,000. The age-adjusted mortality rates for White non-Hispanic, Asian non-Hispanic, Hispanic, female, and male residents also significantly decreased, while the rate for Black non-Hispanic residents significantly increased (Table 1).
- The average life expectancy of Massachusetts residents was 80.7 years in 2016 (Figure 1). Since 2006, the Massachusetts life expectancy has remained close to 80 years, reaching 80.9 years at its highest in 2012/2013. Hispanic women had the highest life expectancy, living 89.0 years from birth, on average, while the life expectancies for White non-Hispanic women and Black non-Hispanic women were 82.9 and 83.6 years, respectively (Table 3).
- In 2016, the premature mortality rate (which only includes deaths that occur before age 75) remained higher for Black non-Hispanic residents (309.2 deaths per 100,000) than for White non-Hispanic (288.6), Hispanic (251.9), and Asian non-Hispanic (122.1) residents (Figure 6). However, the life expectancy of Black non-Hispanic residents who lived to age 75 was higher than that of White non-Hispanic residents (Table 3), which suggests that Black non-Hispanic residents live longer upon reaching old age.
- Among Massachusetts residents ages 25-64, the death rate for those who completed high school or less was more than three times higher than the corresponding rate among those who completed education above high school (Table 5).
- Every day in 2016, there were on average 156 deaths, which included 35 cancer deaths, 33 heart disease deaths, 14 respiratory condition deaths, and 13 injury deaths (Figure 7). Of the 13 injury deaths, 7 deaths were due to poisonings, which include opioid overdoses.
- Cancer was the leading cause of death for Massachusetts residents in 2016 (Table 6). The rate of cancer deaths was highest for White non-Hispanic residents (687.9 per 100,000) and lowest for Asian non-Hispanic residents (324.7 per 100,000) (Table 9). Lung cancer remained the leading cancerous cause of death (Table 11).
- In 2016, Black non-Hispanic and Hispanic residents died from cancer at younger ages when compared to White non-Hispanic and Asian non-Hispanic residents (Figure 9). Black non-Hispanic, Hispanic, and Asian non-Hispanic residents died from heart disease at younger ages when compared to White non-Hispanic residents (Figure 11).
- In 2016, the rate of heart disease deaths remained higher for White non-Hispanic men and women than for any other racial/ethnic group (Table 10).
- The percentage of deaths due to injuries continued to climb in 2016 (Figure 4). Deaths due to injury have steadily increased since 2012. Injury deaths include opioid overdoses.
- Poisonings, which include opioid overdoses, continued to be the largest cause of injury deaths in 2016, with the injury death rate increasing from 28.4 per 100,000 in 2015 to 35.4 per 100,000 in 2016 (Table 18). For all leading causes of injury death, rates were higher for men than for women, with the greatest disparity in poisoning deaths (52.6 per 100,000 for men and 18.7 per 100,000 for women).
- The rate of suicide deaths for White non-Hispanic residents (10.0 per 100,000) was almost double the corresponding rates for other groups (5.5 per 100,000 for Black non-Hispanics, 5.4 per 100,000 for Asian non-Hispanics, and 5.0 per 100,000 for Hispanics) (Table 23).
- In 2016, the rate of infant mortality for Black non-Hispanic residents (7.9 per 1,000 live births) was almost three times higher than the corresponding rate for White non-Hispanic residents (2.7 per 1,000 live births) (Table 29).
- The leading cause of infant deaths in 2016 was disorders relating to short gestation and low birthweight, representing 24.7% of all infant deaths (Table 30).

Note to Readers

Please review the information below before reading the report. As required by Chapter 111, Section 2 of the General Laws, this report satisfies the requirement of the annual report on statistics on deaths for calendar year 2016 (Annual Report Vital Statistics of Massachusetts-Deaths, Public Document #1 2016). Public Document #1 information on 2016 births, marriages, and divorces is covered in separate reports.

1. **Please Note:** Collection of vital records is a complex process. The National Center for Health Statistics (NCHS) deems an annual file closed when it has reached a certain level of completeness. In the past, the Massachusetts Department of Public Health has followed their definition to match the national numbers. Starting with the 2013 report, the department is closing our annual file later than the file sent to the NCHS to get more complete reporting of events¹. While cause of death information will be more complete due to this change, it may also cause the appearance of an increase in the number of deaths when compared to previous years. Thus, comparisons between years should be interpreted with caution. This caution should be applied especially for causes of death that are often referred to the Office of the Chief Medical Examiner for determination of underlying causes of death. See Figure 5 for details. Accidental deaths, poisonings, and complex cases are most likely to be impacted by closure dates that differ from year to year.

2. VIP System

- The Vitals Information Partnership (VIP) is an electronic registration system designed to streamline and integrate vital event registration, securely, across the Commonwealth. The VIP death application was launched in September 2014, and a revised version of the death certificate was also introduced at that time. Therefore 2015 was the first full year of data using improved data collection methods and new data items. Changes in data fields promote accuracy and now align with national standards.
 - Changes in data fields impact figures and tables that report trends over time. The reader must use caution when comparing 2016 results to findings from years prior to 2015.
 - For example, families of decedents now report race separately from ethnicity and may choose more than one race from the standard checkbox lists. Previously, families wrote free-form responses in a single field that were often difficult to categorize and may have resulted in some misclassifications. (See Note to Readers.)
 - While the new method improves accuracy, an algorithm must still be used to analyze multiple race responses and choose the most appropriate standard race category as used in this report. (See Technical Notes.)

3. 2003 Revisions of the U.S. Standard Certificate of Death

This report includes 2016 data on items that are collected on both the 1989 revision of the Standard Certificate of Death (unrevised) and the 2003 revision of the Standard Certificate of Death (revised). In addition to the collection of new variables, the 2003 revision allows the reporting of more than one race in accordance with the revised standards issued by the Office of Management and Budget (OMB) in 1997. See “Technical Notes” for detailed

¹ This report uses death record data prepared on 10/3/2017. In a very small number of cases, additional data will be obtained at a later date. Therefore, the statistics presented in this report could change slightly based on any information received after 10/3/2017.

information on the 2016 multiple-race reporting area and methods used to bridge responses for those who report more than one race to a single race.

4. Cabo Verdean Race Categorization

Prior to launching the VIP death application in September 2014, “Cape Verdean”² was an option that could be selected for a decedent’s race. Decedents of Cabo Verdean race were then reclassified as Non-Hispanic Black for Death Report analyses for consistency with NCHS standards. However, in the VIP death application “Cape Verdean”² is considered an ethnicity, and is collected separately from race. For this reason, decedents of Cabo Verdean ethnicity are now classified according to their reported race and may be distributed to any one of the five MDPH race/ethnicity categories (Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Asian and Pacific Islander, Non-Hispanic American Indian and Alaska Native, or Hispanic). This change in categorization may result in fewer Non-Hispanic Black deaths, and may particularly impact rates stratified by race/ethnicity that are based on smaller counts.

5. Population Sources. Two sources of population estimates were used to calculate population-based rates in *Massachusetts Deaths 2016*:

- a. State and County Death Rates: The 2016 Modified Age, Race/Ethnicity, and Sex file (MARS), which is a bridged population file produced by the National Center for Health Statistics (NCHS) and the Census Bureau Population Estimates Program was used to calculate state and county rates by race and Hispanic ethnicity, e.g., death rates. This file has data by single years of age, sex, race and Hispanic ethnicity in the five mutually exclusive categories used by the Department: Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Asian and Pacific Islander, Non-Hispanic American Indian and Alaska Native, and Hispanic.
- b. City and town death rates: The Massachusetts Department of Public Health Race Allocated Census 2010 Estimates (MRACE 2010), which are population estimates based upon the Census 2010 Summary File 1, was used to calculate city and town rates. In this estimates file, the Census 2010 race categories, “Two or more races” and “Some other race” are redistributed to the MDPH standard race categories: Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Asian and Pacific Islander, and Non-Hispanic American Indian and Alaska Native. All persons in the Census 2010 Hispanic ethnicity category are counted as “Hispanic” race in the MDPH estimates. This kind of file is often referred to as a “bridged” file, that is, one that bridges the new race and ethnicity collections to the conventionally used categories.

6. Resident deaths. All data in this publication are resident data unless otherwise stated. Resident data include all events that occur to residents of the Commonwealth, wherever they occur.

Suggested Citation

Massachusetts Deaths 2016. Boston, MA: Office of Population Health, Registry of Vital Records and Statistics, Massachusetts Department of Public Health. November 2018.

² The U.S. Board on Geographic Names approved the change of the country name from “Cape Verde” to “Cabo Verde” on December 9, 2013. However, in earlier years and in 2016 the death worksheet still used the name “Cape Verdean”.

Table 1. Trends in Mortality Characteristics, Massachusetts: 2006-2016

Year		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Resident deaths	Number	53,293	52,690	53,341	51,915	52,420	53,536	53,169	54,609	55,159	57,785	56,953
	Crude rate ^{1,2,3}	827.9	816.9	820.9	787.4	800.6	812.7	807.1	815.9	817.7	850.5	836.1
	Age-adjusted rate ⁴	717.6	704.4	703.5	675.1	672.7	674.0	669.2	664.1	662.5	684.6	668.9
Race/ethnicity of decedent^{5,6}												
White non-Hispanic	Number	49,132	48,518	49,059	47,520	48,010	48,844	48,430	49,486	49,621	51,688	50,654
	Percent ⁷	92.2	92.1	92.0	91.5	91.6	91.2	91.1	90.6	90.0	89.4	88.9
	Age-adjusted rate ⁴	723.3	711.1	710.7	682.8	684.4	686.9	681.0	680.9	679.5	703.3	687.9
Black non-Hispanic	Number	2,233	2,211	2,222	2,288	2,278	2,333	2,318	2,446	2,390	2,349	2,504
	Percent ⁷	4.2	4.2	4.2	4.4	4.3	4.4	4.4	4.5	4.3	4.1	4.4
	Age-adjusted rate ⁴	838.4	820.5	805.8	812.2	702.6	707.6	701.8	675.5	630.4	589.5	612.4
Asian non-Hispanic	Number	635	610	692	697	759	806	811	816	938	1,091	1,028
	Percent ⁷	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.5	1.7	1.9	1.8
	Age-adjusted rate ⁴	379.0	342.0	372.5	353.1	364.8	375.2	372.4	320.5	344.7	371.8	324.7
Hispanic	Number	1,194	1,264	1,275	1,337	1,308	1,477	1,487	1,548	1,702	2,037	2,126
	Percent ⁷	2.2	2.4	2.4	2.6	2.5	2.8	2.8	2.8	3.1	3.5	3.7
	Age-adjusted rate ⁴	479.9	477.7	458.2	439.8	443.9	468.9	484.9	444.9	447.9	493.0	473.2
Gender of decedent⁶												
Female	Number	28,508	27,851	28,246	27,356	27,368	27,983	27,883	28,558	28,289	29,880	28,952
	Age-adjusted rate ⁴	612.7	596.3	595.9	572.8	567.2	572.8	571.1	569.5	557.9	581.2	560.2
Male	Number	24,785	24,838	25,095	24,557	25,051	25,553	25,280	26,051	26,867	27,905	28,000
	Age-adjusted rate ⁴	858.9	853.3	852.2	822.1	811.9	808.5	797.9	786.5	795.9	814.7	804.9
Age of decedent⁷												
<1 year	Number	369	380	381	366	319	310	309	298	321	310	283
1-14 years	Number	124	128	119	118	113	114	99	118	129	119	115
15-24 years	Number	471	505	421	440	453	471	419	449	441	519	526
25-44 years	Number	1,953	2,023	1,906	1,974	1,823	1,870	1,880	1,993	2,234	2,475	2,742
45-64 years	Number	8,660	8,560	8,426	8,688	8,753	8,808	8,791	9,013	9,214	9,348	9,270
65-74 years	Number	7,572	7,494	7,425	7,380	7,423	7,616	7,891	8,259	8,678	9,038	9,332
75-84 years	Number	15,333	14,781	14,970	13,943	13,639	13,598	13,272	13,182	12,784	13,299	12,870
85+ years	Number	18,811	18,816	19,692	19,004	19,888	20,747	20,506	21,296	21,356	22,677	21,813

1. Deaths per 100,000 residents. 2. See Glossary for further definition of terms and rates. 3. Rate calculations are based on resident population estimates. 4. Rates are age-adjusted per 100,000 residents using the 2000 US standard population. 5. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation. 6. Column sum may not equal total because the race, gender or age of some decedents was unknown. 7. Percent of all resident deaths in that year.

**Table 2. Selected Leading Causes of Death, Age-Adjusted Rates,
Massachusetts and United States: 2001-2016**

Year	Age-Adjusted Rates ¹	Heart Disease		Cancer		Stroke	
		MA	US ²	MA	US ²	MA	US ²
2001	Rate	211.0	247.7	200.0	195.8	46.7	57.9
	% of Total	26.7	28.9	24.2	22.9	6.2	6.8
2002	Rate	201.1	240.4	200.1	194.0	48.1	56.3
	% of Total	26.0	28.4	24.0	22.8	6.0	6.7
2003	Rate	196.6	232.3	193.0	190.1	45.0	53.5
	% of Total	26.0	28.0	24.1	22.7	6.0	6.5
2004	Rate	182.8	217.0	188.4	185.8	42.5	50.0
	% of Total	25.3	27.2	24.5	23.1	6.0	6.3
2005	Rate	172.2	211.0	184.9	183.8	38.1	46.6
	% of Total	24.6	26.6	24.5	22.8	5.5	5.9
2006	Rate	168.8	199.4	186.3	180.8	36.7	43.6
	% of Total	24.2	25.9	25.1	23.1	5.4	5.7
2007	Rate	165.7	190.9	179.2	178.4	35.0	42.2
	% of Total	24.2	25.9	24.6	23.1	5.1	5.7
2008	Rate	165.5	186.5	177.8	175.3	33.7	40.7
	% of Total	24.1	25.4	24.4	23.2	4.9	5.6
2009	Rate	155.2	179.8	174.0	173.6	32.2	38.9
	% of Total	23.6	24.6	25.1	23.3	4.9	5.3
2010	Rate	149.4	178.5	171.0	172.5	31.2	39.0
	% of Total	22.9	24.1	24.7	23.3	4.8	5.2
2011	Rate	144.4	173.7	166.1	173.7	30.2	37.9
	% of Total	22.1	23.7	24.0	23.7	4.6	5.1
2012	Rate	141.3	170.5	166.7	166.5	28.7	36.9
	% of Total	21.8	23.6	24.2	22.9	4.4	5.1
2013	Rate	142.2	169.8	159.5	163.2	27.7	36.2
	% of Total	22.1	23.5	23.5	22.5	4.3	5.0
2014	Rate	137.5	167.0	155.6	161.2	28.7	36.5
	% of Total	21.5	23.4	23.2	22.5	4.5	5.1
2015	Rate	138.7	167.0	152.8	161.2	28.4	36.5
	% of Total	21.0	23.4	22.1	22.5	4.3	5.1
2016	Rate	134.8	197.2	149.8	185.4	27.9	43.7
	% of Total	20.9	23.4	22.3	22.0	4.3	5.2

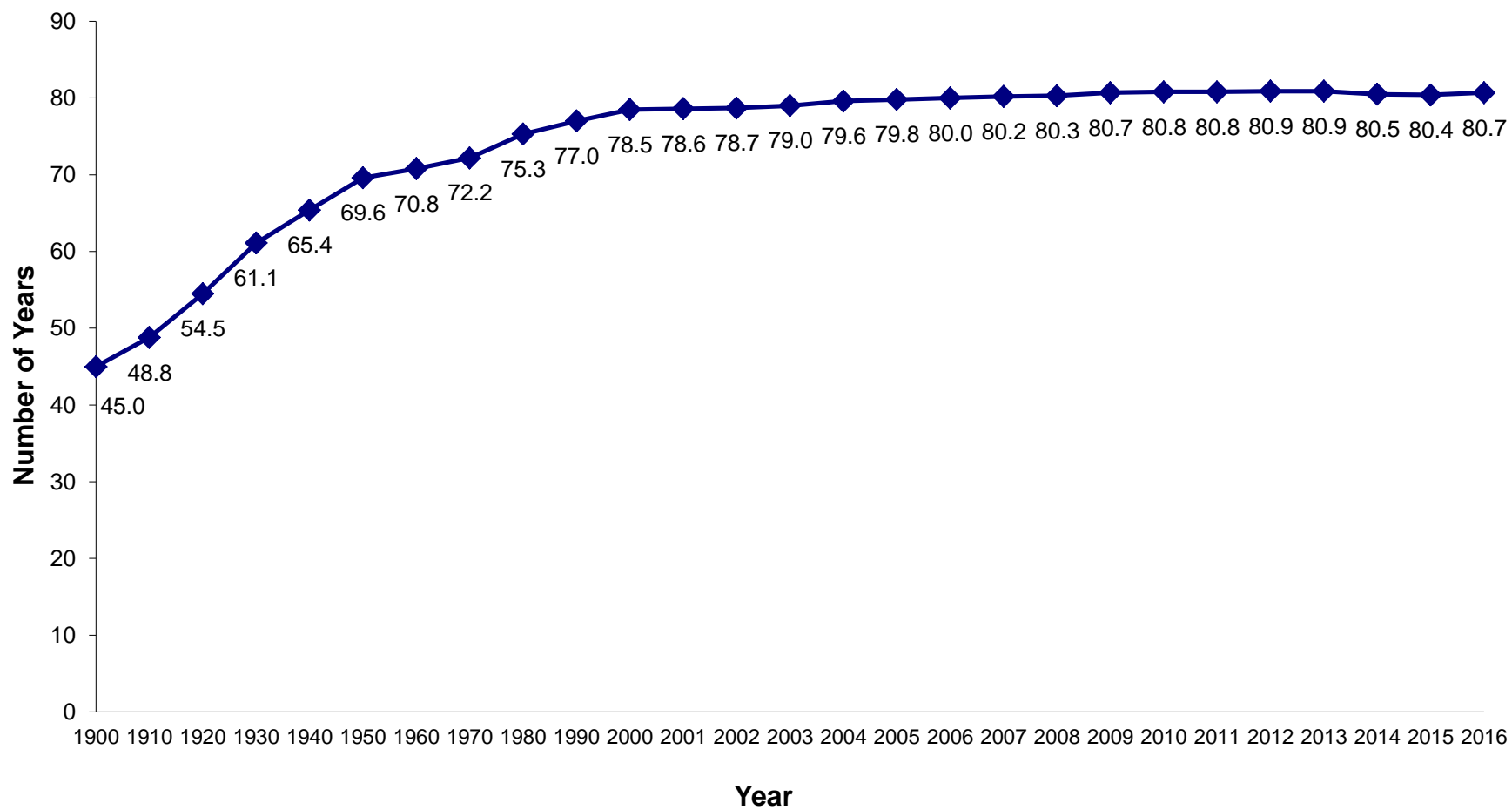
**Table 2 (continued). Selected Leading Causes of Death, Age-Adjusted Rates,
Massachusetts and United States: 2001-2016**

Year	Age-Adjusted Rates ¹	Influenza/Pneumonia		Unintentional Injuries		All Causes	
		MA	US ²	MA	US ²	MA	US ²
2001	Rate	24.0	21.8	21.9	34.3	803.5	855.0
	% of Total	3.1	2.6	2.6	4.0		
2002	Rate	27.3	22.7	20.5	35.3	793.8	846.8
	% of Total	4.0	2.7	2.0	4.2		
2003	Rate	26.0	22.0	20.1	37.3	772.6	832.7
	% of Total	3.6	2.7	2.5	4.3		
2004	Rate	24.9	19.8	19.4	37.7	739.3	800.8
	% of Total	3.6	2.5	2.5	4.7		
2005	Rate	24.2	20.3	27.4	39.1	720.6	798.8
	% of Total	3.6	2.6	3.5	4.8		
2006	Rate	22.0	17.7	31.4	38.5	717.6	776.4
	% of Total	3.3	2.3	4.1	4.8		
2007	Rate	19.4	16.2	30.5	40.0	704.4	760.2
	% of Total	2.9	2.3	4.0	4.9		
2008	Rate	20.0	16.9	28.6	38.8	703.5	758.3
	% of Total	3.0	2.2	3.8	5.1		
2009	Rate	16.8	16.2	28.5	37.0	675.1	741.0
	% of Total	2.6	2.2	3.9	4.8		
2010	Rate	15.9	15.1	28.3	37.1	672.7	746.2
	% of Total	2.5	2.0	3.9	4.8		
2011	Rate	16.9	15.7	30.0	39.4	674.0	740.6
	% of Total	2.6	2.0	4.1	4.9		
2012	Rate	16.3	14.4	30.0	39.1	669.2	732.8
	% of Total	2.6	2.0	4.1	5.0		
2013	Rate	18.0	15.9	34.0	39.4	664.1	731.9
	% of Total	2.8	2.2	4.6	5.0		
2014	Rate	15.7	15.1	39.4	40.5	662.5	724.6
	% of Total	2.5	2.1	5.2	5.2		
2015	Rate	17.1	15.1	45.5	40.5	684.6	724.6
	% of Total	2.6	2.1	5.8	5.2		
2016	Rate	14.1	17.8	53.6	45.6	668.9	844.0
	% of Total	2.2	2.1	6.8	5.4		

Note: Cause of death: the disease or injury that initiated the events leading to death or the circumstances of the unintentional or intentional injury that resulted in the death.

1. Data coded according to ICD-10. ICD-10 codes used in this publication are listed in the Appendix. Rates are age-adjusted per 100,000 residents using the 2000 US standard population. 2. US data for 2015 obtained from NVSS: Deaths: Leading Causes for 2015. NVSS, Volume 66, Number 5. November 27, 2017.

Figure 1. Life Expectancy at Birth, Massachusetts: 1900-2016



Note: Life Expectancy at birth calculated using the Greville Abridged Life Table Method (source: Dublin LI. Length of Life - A Study of the Life Table. Ronald Press Co. New York. 1949).

Figure 2. Expected Years of Life Remaining¹ at Different Ages by Race and Hispanic Ethnicity², Massachusetts: 2016

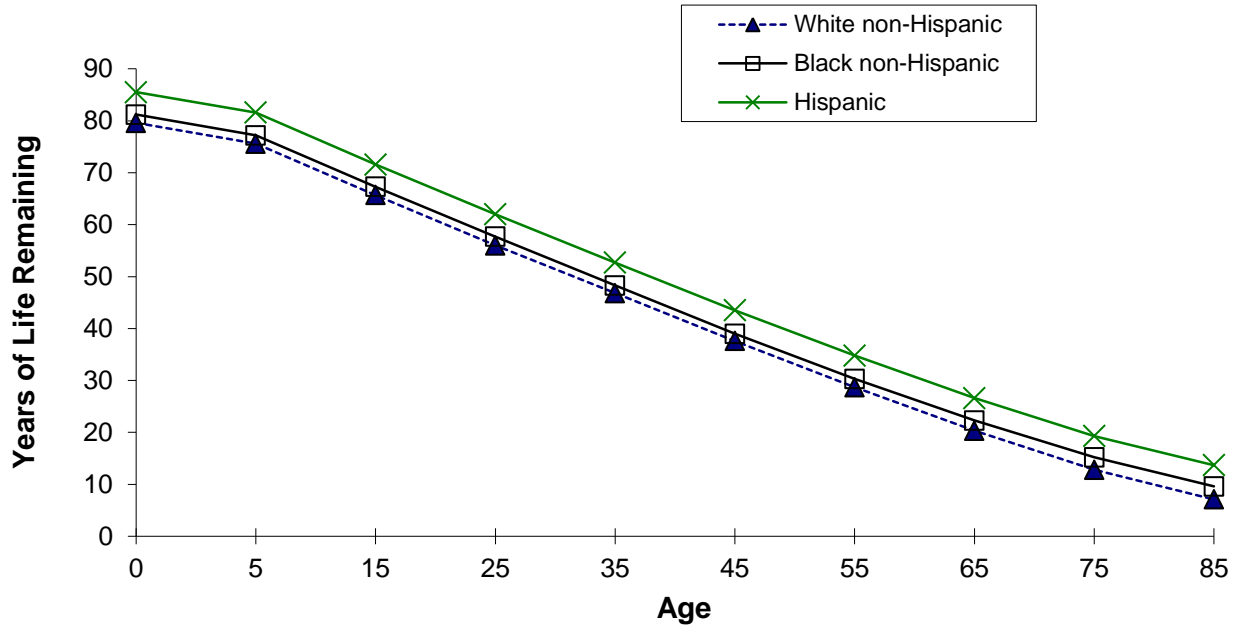
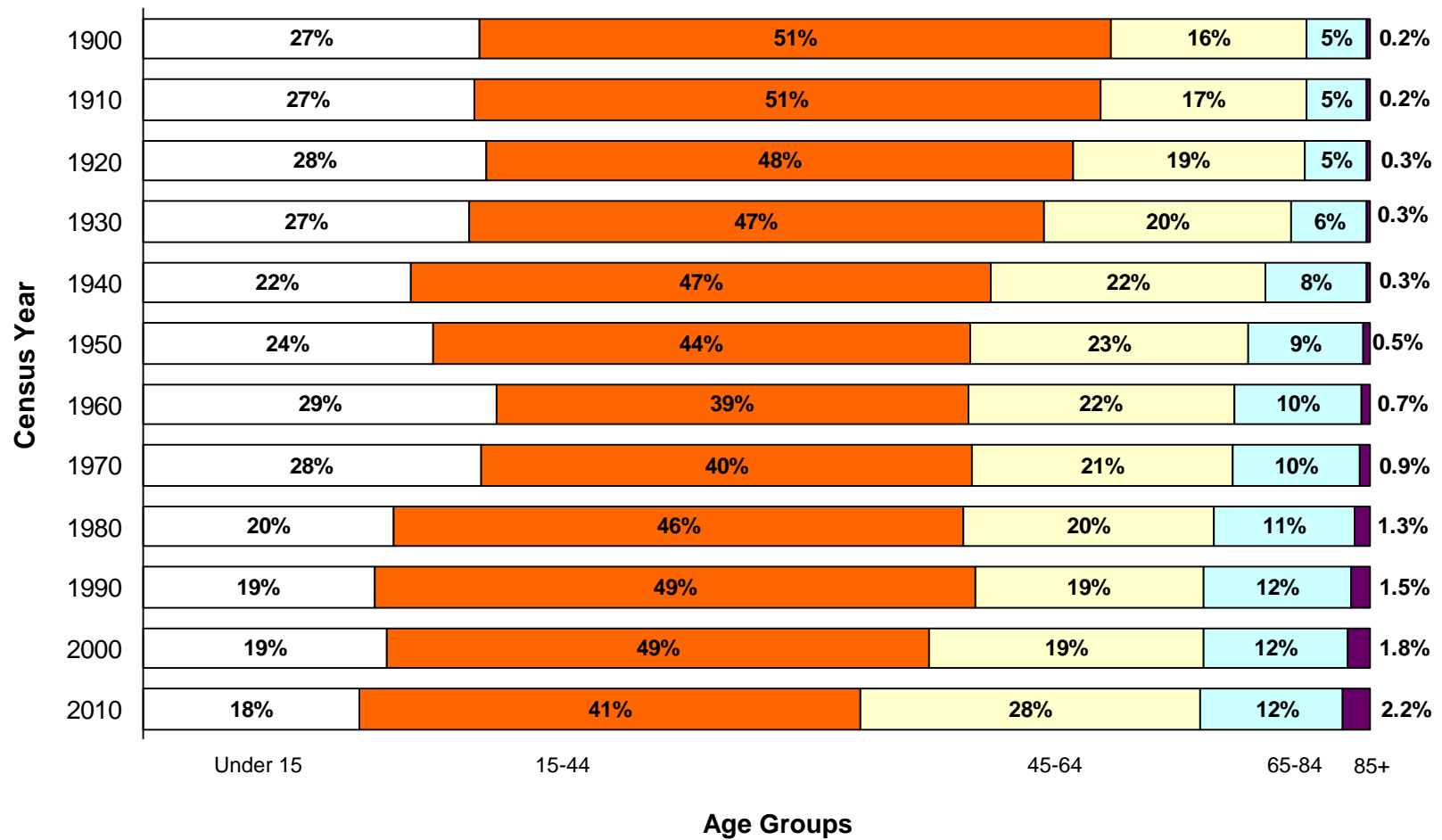


Table 3. Years of Life Remaining¹ by Race and Hispanic Ethnicity² and Gender, Massachusetts: 2016

At Age:	All	All Females	White non-Hispanic Females	Black non-Hispanic Females	Hispanic Females	All Males	White non-Hispanic Males	Black non-Hispanic Males	Hispanic Males
Birth	80.7	83.1	82.9	83.6	89.0	78.0	77.8	78.9	83.3
1 year old	80.0	82.4	82.1	83.3	88.4	77.4	77.0	78.6	82.8
5 years old	76.1	78.5	78.1	79.4	84.3	73.4	73.0	74.7	78.8
15 years old	66.1	68.6	68.2	69.5	74.4	63.5	63.1	64.8	68.8
25 years old	56.5	58.8	58.4	59.7	64.6	54.0	53.5	55.5	59.3
35 years old	47.1	49.2	48.9	50.1	54.9	44.9	44.6	46.3	50.2
45 years old	37.9	39.7	39.4	40.6	45.4	35.9	35.6	37.1	41.5
55 years old	28.9	30.5	30.2	31.7	36.1	27.2	26.9	28.5	33.3
65 years old	20.6	21.8	21.5	23.3	27.3	19.1	18.8	20.8	25.7
75 years old	13.1	13.9	13.6	15.7	19.4	12.0	11.7	14.4	19.2
85 years old	7.3	7.7	7.5	9.7	13.5	6.6	6.3	9.3	14.2

1. Years of Life Remaining calculated using the Greville Abridged Life Table Method (source: Dublin LI. Length of Life - A Study of the Life Table. Ronald Press Co. New York. 1949). 2. Population estimates are from 2016 bridged population file, MARS (Modified Age, Race/Ethnicity, and Sex) file. There are well-known difficulties in calculating accurate mortality rates for Massachusetts smaller populations such as Asians, Native Americans and Hispanics- please use caution when interpreting these numbers.

Figure 3. Changes in Age Composition of the Population, Massachusetts: 1900-2010



Source: US Census Bureau 1900-1999. Resident death data for 2000 are calculated using the Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2000 (MMARS00), released October 2006. Population estimates for 2010 are from the NCHS Modified Age, Race/Ethnicity, & Sex Estimates 2009, released July 2010.

Figure 4. Trends in Percentage of Deaths from Selected Causes, Massachusetts: 1842-2016

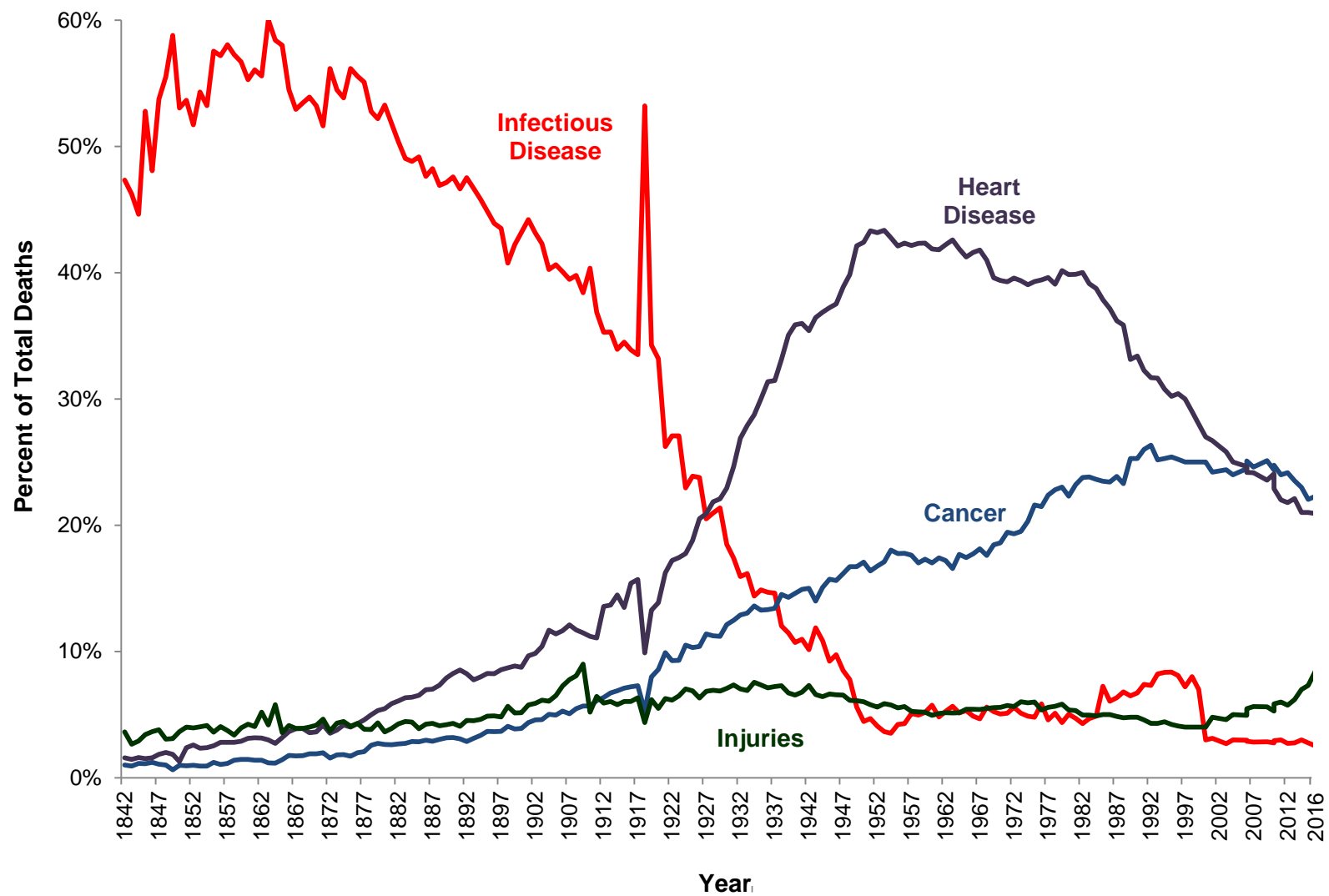
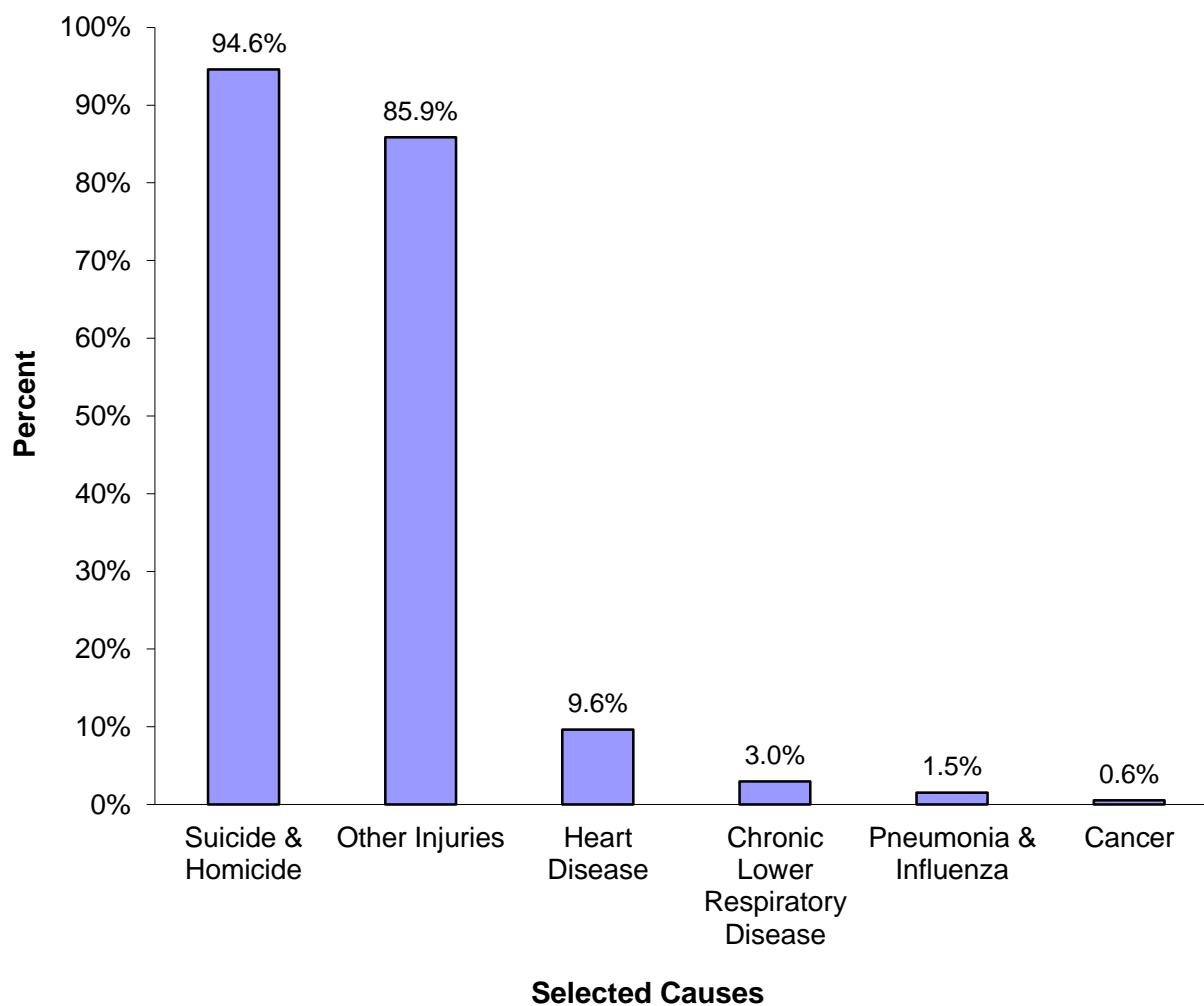


Table 4. Distribution of Deaths by Place of Occurrence, Massachusetts: 2012-2016

Type of Place where Death Occurred	2012		2013		2014		2015		2016	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Hospital (inpatient/outpatient)	19,963	38%	20,277	37%	20,534	37%	21,397	37%	20,579	36%
Dead on Arrival	623	1%	617	1%	641	1%	602	1%	732	1%
Nursing Home	15,377	29%	15,652	29%	15,353	28%	16,099	28%	14,800	26%
Hospice	-- ¹	-- ¹	-- ¹	-- ¹	-- ¹	-- ¹	2,628	5%	3,137	6%
Assisted Living Facility or Rest Home	-- ¹	-- ¹	-- ¹	-- ¹	-- ¹	-- ¹	1,251	2%	1,332	2%
At Home	14,553	27%	15,117	28%	15,096	27%	14,419	25%	14,925	26%
Other	2,624	5%	2,842	5%	3,499	6%	1,382	2%	1,446	3%
Unknown	29	0.05%	104	0.19%	36	0.07%	7	0.01%	2	0%

1. Prior to 2015, these deaths were included in the "Other" category.

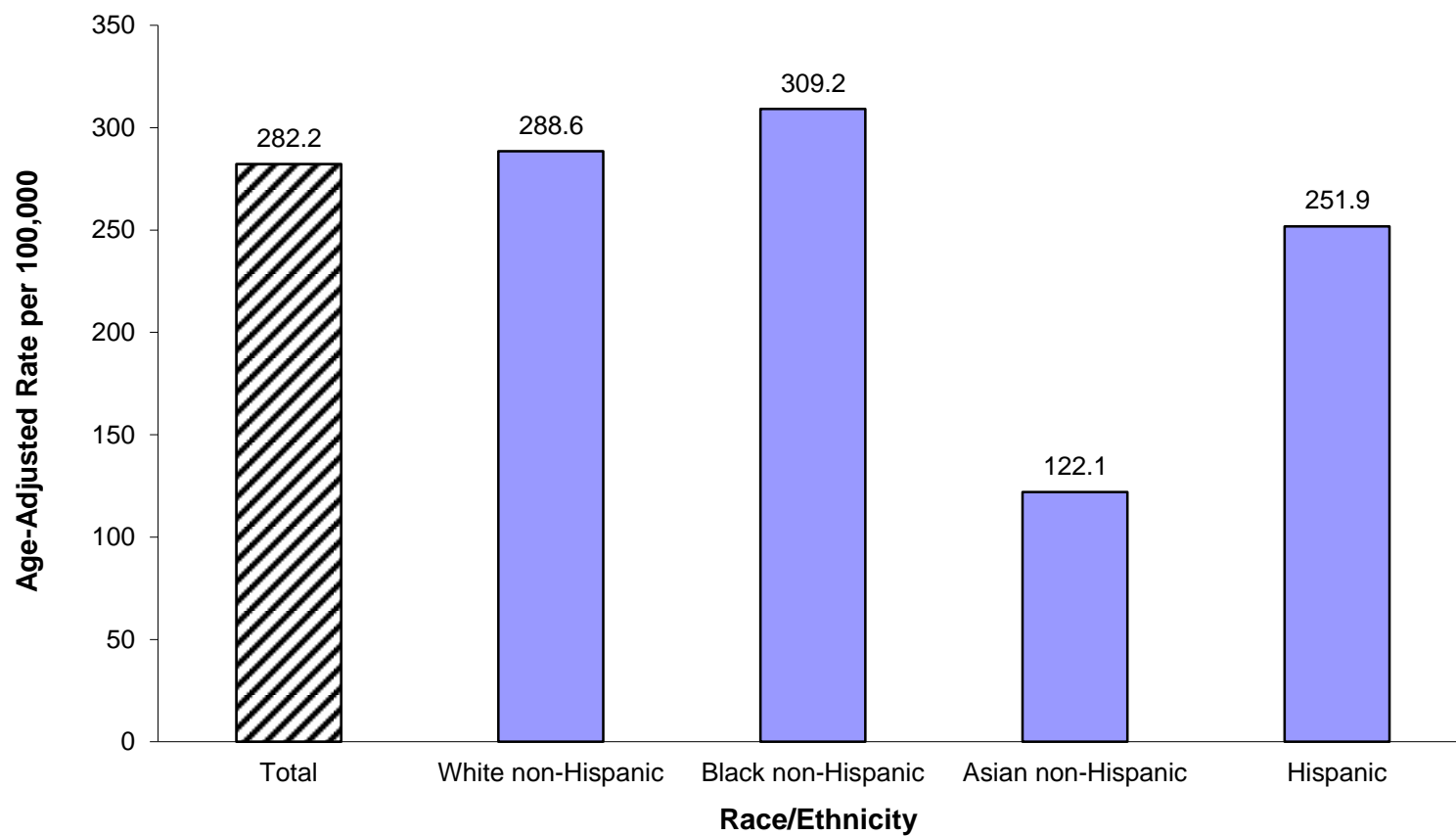
Figure 5. Proportion of Deaths Certified by Medical Examiner for Selected Causes of Death, Massachusetts: 2016



Note: See the Appendix section, "Circumstance for Referral to the Office of the Chief Medical Examiner (OCME)" for a list of circumstances requiring referral to the Medical Examiner's Office.

Note: Other Injuries include motor vehicle-related, poisonings, falls, etc.

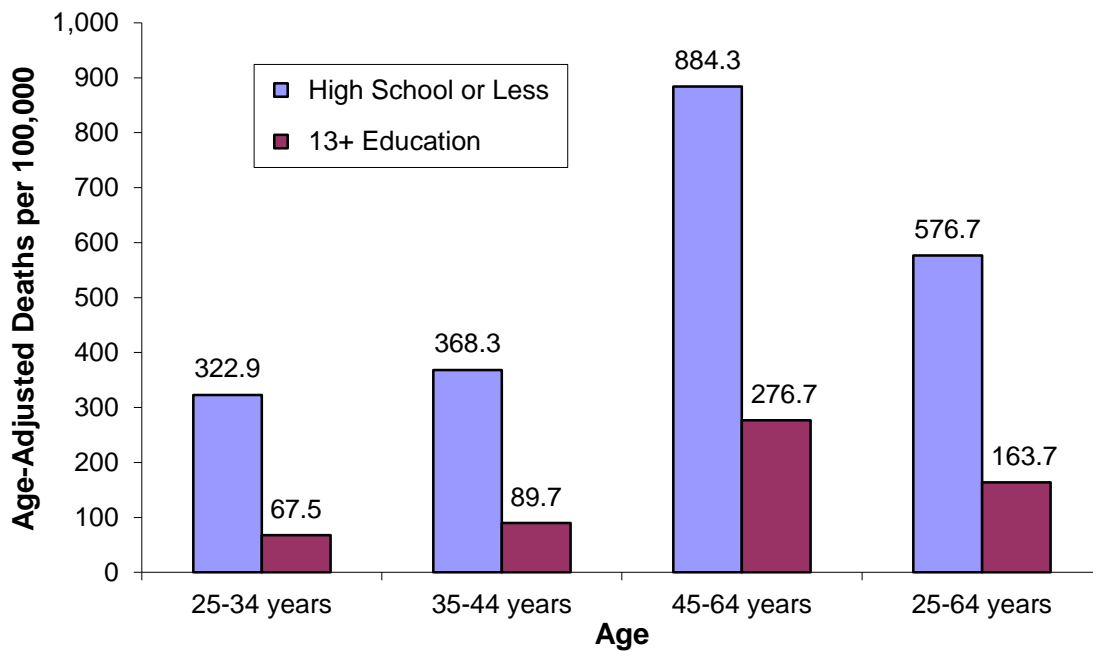
Figure 6. Premature Mortality Rate (PMR) by Race and Hispanic Ethnicity, Massachusetts: 2016



Note: Premature Mortality Rate is defined as deaths that occur before the age of 75 years per 100,000, age-adjusted to the 2000 US standard population under 75 years of age.

Table 5. Age-Specific and Age-Adjusted Death Rates for Ages 25-64 Years by Educational Attainment, Massachusetts: 2016

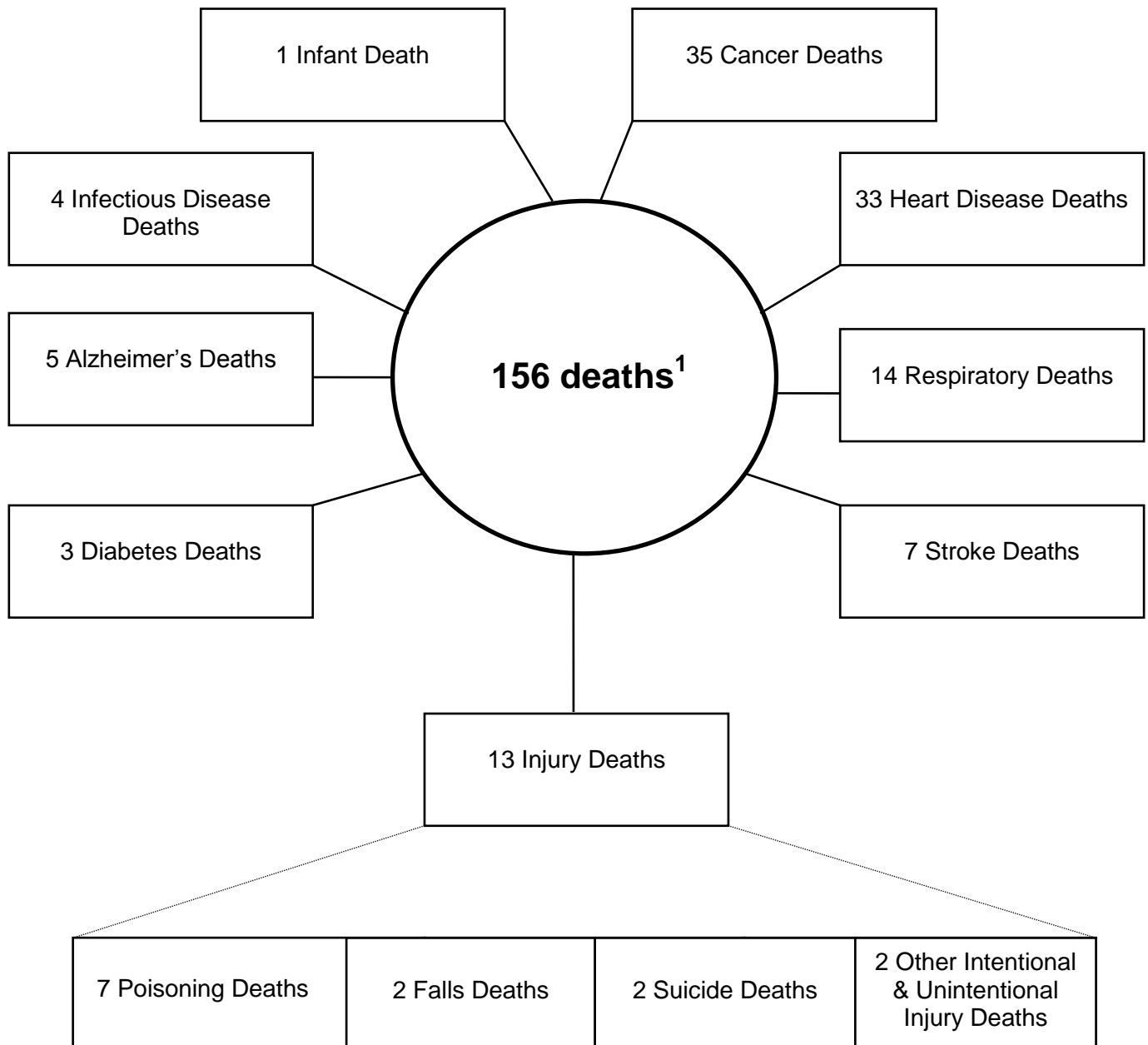
Years of School Completed	<u>Age-Specific Rates</u>			<u>Age-Adjusted Rates</u>
	25-34 years	35-44 years	45-64 years	25-64 years
High School or Less	322.9	368.3	884.3	576.7
13+ Education	67.5	89.7	276.7	163.7



Source: C15001: SEX BY AGE BY EDUCATIONAL ATTAINMENT FOR THE POPULATION 18 YEARS AND OVER
 Universe: Population 18 Years And Over. 2009-2011 American Community Survey 3-Year Estimates.

Figure 7. Daily Mortality Statistics, Massachusetts: 2016

Every day in 2016, in Massachusetts there were on average:



1. Includes 41 deaths due to other causes.

Table 6. Top Ten Leading Underlying Causes of Death by Age, Massachusetts: 2016

	Age Groups (number of deaths)								
Rank¹	<1 year	1-14 years	15-24 years	25-44 years	45-64 years	65-74 years	75-84 years	85+ years	All
1	Short Gestation and LBW ¹ (70)	Unintentional Injuries ³ (27)	Unintentional Injuries ³ (285)	Unintentional Injuries ³ (1,409)	Cancer (2,984)	Cancer (3,316)	Cancer (3,411)	Heart Disease (5,797)	Cancer (12,691)
2	Congenital Malformations (50)	Cancer (20)	Suicide (83)	Cancer (261)	Heart Disease (1,559)	Heart Disease (1,736)	Heart Disease (2,657)	Cancer (2,674)	Heart Disease (11,923)
3	Pregnancy Complications (28)	Heart Disease (8)	Homicide (44)	Suicide (210)	Unintentional Injuries ³ (1,097)	Chronic Lower Respiratory Disease ⁵ (616)	Chronic Lower Respiratory Disease ⁵ (838)	Stroke (1,325)	Unintentional Injuries³ (3,887)
4	SIDS ² (14)	Congenital Malformations (8)	Cancer (25)	Heart Disease (150)	Chronic Liver Disease (389)	Stroke (303)	Stroke (608)	Alzheimer's Disease (1,234)	Chronic Lower Respiratory Disease⁵ (2,676)
5	Complications of Placenta (11)	III-Defined Conditions ⁴ (7)	III-Defined Conditions ⁴ (16)	III-Defined Conditions ⁴ (79)	Chronic Lower Respiratory Disease ⁵ (300)	Diabetes (299)	Alzheimer's Disease (371)	Chronic Lower Respiratory Disease ⁵ (889)	Stroke (2,468)
6	Respiratory Distress (9)	Suicide (7)	Heart Disease (13)	Chronic Liver Disease (65)	Diabetes (254)	Unintentional Injuries ³ (255)	Nephritis (320)	Influenza & Pneumonia (652)	Alzheimer's Disease (1,710)
7	Necrotizing Enterocolitis (8)	Other Infections (4)	Congenital Malformations (5)	Homicide (65)	Suicide (243)	Nephritis (207)	Diabetes (317)	Unintentional Injuries ³ (508)	Diabetes (1,267)
8	Intrauterine Hypoxia (6)	In Situ Neoplasms (3)	Injuries of Undetermined Intent ³ (4)	Chronic Lower Respiratory Disease ⁵ (28)	Stroke (206)	Influenza & Pneumonia (172)	Unintentional Injuries ³ (301)	Nephritis (502)	Influenza & Pneumonia (1,243)
9	Pulmonary Hemorrhage (4)	Homicide (3)	Diabetes (3)	Diabetes (27)	Septicemia (123)	Septicemia (167)	Influenza & Pneumonia (289)	III-Defined Conditions ⁴ (449)	Nephritis (1,140)
10	Neonatal Hemorrhage (4)	Stroke (2)	Medical Complications (3)	Septicemia (24)	Hypertension (111)	Chronic Liver Disease (145)	Septicemia (258)	Diabetes (367)	III-Defined Conditions⁴ (890)
All Causes	Total (283)	Total (115)	Total (526)	Total (2,742)	Total (9,270)	Total (9,332)	Total (12,870)	Total (21,813)	Total (56,953)

Note: Ranking based on number of deaths. The number of deaths is shown in parentheses.

1. LBW: Low birthweight.

2. SIDS: Sudden Infant Death Syndrome

3. Injuries are subdivided into 4 separate categories by intent: unintentional, homicide, suicide, and injuries of undetermined intent (deaths where investigation has not determined whether injuries were accidental or purposely inflicted).

4. III-Defined Conditions: Includes ICD-10 codes R00-R99.

5. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title).

Table 7. Leading Underlying Causes of Death, Numbers and Age-Specific Rates by Gender, Massachusetts: 2016

Age	Cause of Death ¹	<u>Total</u>		<u>Female</u>		<u>Male</u>	
		Number	Rate ²	Number	Rate ²	Number	Rate ²
1-14 years	TOTAL	115	10.9	53	10.3	62	11.5
	Unintentional Injuries	27	2.6	9	1.7	18	3.3
	Cancer	20	1.9	9	1.7	11	2.0
	Heart Disease	8	0.8	4	-- ⁴	4	-- ⁴
	Congenital Malformations	8	0.8	6	1.2	2	-- ⁴
15-24 years	TOTAL	526	55.0	137	28.8	389	81.3
	Unintentional Injuries	285	29.8	76	16.0	209	43.7
	Suicide	83	8.7	18	3.8	65	13.6
	Homicide	44	4.6	4	-- ⁴	40	8.4
	Cancer	25	2.6	11	2.3	14	2.9
25-44 years	TOTAL	2,742	154.3	830	92.6	1,912	217.1
	Unintentional Injuries	1,409	79.3	345	38.5	1,064	120.8
	Cancer	261	14.7	152	17.0	109	12.4
	Suicide	210	11.8	48	5.4	162	18.4
	Heart Disease	150	8.4	42	4.7	108	12.3
45-64 years	TOTAL	9,270	493.6	3,544	365.2	5,726	630.9
	Cancer	2,984	158.9	1,404	144.7	1,580	174.1
	Heart Disease	1,559	83	445	45.9	1,114	122.7
	Unintentional Injuries	1,097	58.4	320	33.0	777	85.6
	Chronic Liver Disease	389	20.7	132	13.6	257	28.3
65+ years³	TOTAL	44,015	4,098.4	24,261	3,972.7	19,753	4,263.8
	Heart Disease	10,190	948.8	5,388	882.3	4,802	1,036.5
	Cancer	9,401	875.4	4,589	751.4	4,812	1,038.7
	Chronic Lower Respiratory Disease	2,343	218.2	1,335	218.6	1,008	217.6
	Stroke	2,236	208.2	1,441	236.0	795	171.6

1. Cause of Death classified using ICD-10 ranked based on number of deaths for all persons at specific age group. See Appendix for a list of ICD-10 codes. 2. Number of deaths per 100,000 residents in each age group. 3. See Table 8 for leading causes of death for detailed age groups for persons ages 65+ years. 4. Calculations based on values 1-4 are excluded.

**Table 8. Leading Underlying Causes of Death, Numbers and Age-Specific Rates
(Ages 65 and Older) by Gender, Massachusetts: 2016**

Age	Cause of Death ¹	Total		Female		Male	
		Number	Rate ²	Number	Rate ²	Number	Rate ²
65-74	TOTAL	9,332	1,523.5	3,982	1,210.2	5,350	1,887.1
	Cancer	3,316	541.4	1,519	461.7	1,797	633.9
	Heart Disease	1,736	283.4	602	183.0	1,134	400.0
	Chronic Lower Respiratory Disease	616	100.6	309	93.9	307	108.3
	Diabetes	303	49.5	143	43.5	160	56.4
75-84	TOTAL	12,870	4,252.8	6,384	3,649.9	6,485	5,077.7
	Cancer	3,411	1,127.1	1,642	938.8	1,769	1,385.1
	Heart Disease	2,657	878.0	1,237	707.2	1,420	1,111.8
	Chronic Lower Respiratory Disease	838	276.9	470	268.7	368	288.1
	Stroke	608	200.9	338	193.2	270	211.4
85+	TOTAL	21,813	13,735.6	13,895	13,017.0	7,918	15,209.1
	Heart Disease	5,797	3650.4	3,549	3,324.7	2,248	4,318.0
	Cancer	2,674	1683.8	1,428	1,337.8	1,246	2,393.3
	Stroke	1,325	834.4	960	899.3	365	701.1
	Alzheimer's Disease	1,234	777	916	858.1	318	610.8

1. Cause of Death classified according to ICD-10 ranked based on number of deaths for all persons at specific age group. See Appendix for a list of ICD-10 codes. 2. Number of deaths per 100,000 residents in each age group.

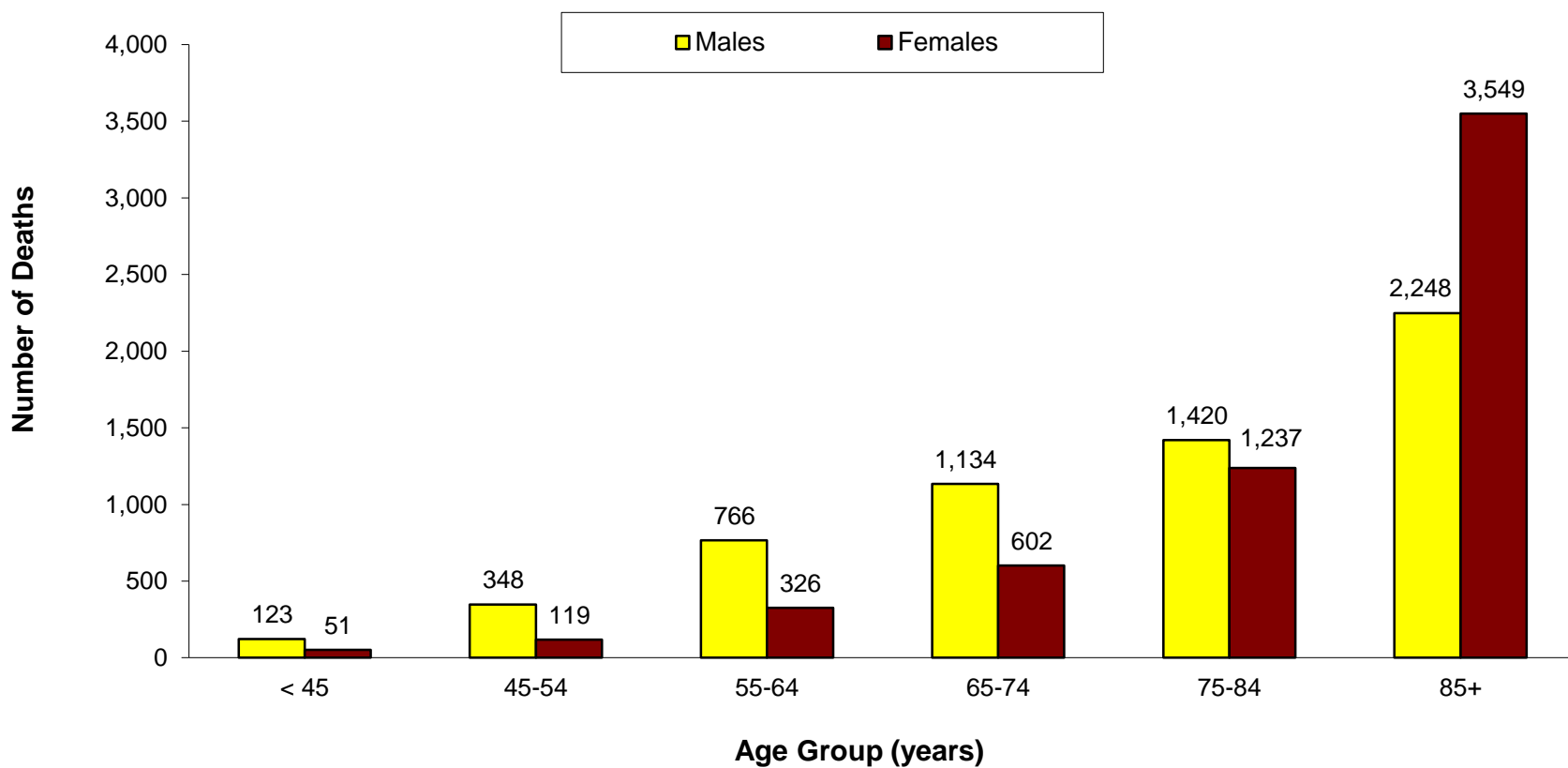
Table 9. Leading Causes of Death¹ and Age-Adjusted Rates by Race and Hispanic Ethnicity, Massachusetts: 2016

<u>White non-Hispanic²</u>			<u>Black non-Hispanic²</u>			<u>Asian non-Hispanic²</u>			<u>Hispanic²</u>		
Cause ³	#	Rate ⁴	Cause ³	#	Rate ⁴	Cause ³	#	Rate ⁴	Cause ³	#	Rate ⁴
Total	50,654	687.9	Total	2,504	612.4	Total	1,028	324.7	Total	2,126	473.2
Cancer	11,265	154.3	Cancer	566	133.7	Cancer	326	95.0	Cancer	403	91.7
Heart Disease	10,871	139.2	Heart Disease	443	113.9	Heart Disease	166	55.3	Unintentional Injuries ⁵	370	53.7
Unintentional Injuries ⁵	3,217	58.3	Unintentional Injuries ⁵	174	35.5	Stroke	76	26.4	Heart Disease	327	87.5
Chronic Lower Respiratory Disease	2,521	33.8	Diabetes	132	32.9	Unintentional Injuries ⁵	58	14.8	Stroke	81	22.4
Stroke	2,150	27.4	Stroke	123	32.8	Hypertension	34	12.8	Diabetes	79	21.8
Alzheimer's Disease	1,613	19.6	Nephritis	81	20.7	Suicide	25	5.4	Chronic Liver Disease	56	11.0
Influenza & Pneumonia	1,140	14.6	Chronic Lower Respiratory Disease	64	16.3	Diabetes	24	8.4	Perinatal Conditions	49	4.4
Diabetes	1,012	13.7	Septicemia	56	14.1	Chronic Lower Respiratory Disease	24	8.5	Chronic Lower Respiratory Disease	47	12.3
Nephritis	990	12.9	Homicide	49	8.9	Nephritis	22	7.6	Ill-Defined Conditions	41	7.4
Ill-Defined Conditions	785	10.8	Alzheimer's Disease	47	13.8	Septicemia	18	5.8	Suicide	38	5.0

<u>Total</u>		
Cause³	#	Rate⁴
Total	56,953	668.9
Cancer	12,691	149.8
Heart Disease	11,923	134.8
Unintentional Injuries ⁵	3,887	53.6
Chronic Lower Respiratory Disease	2,676	31.5
Stroke	2,468	27.9
Alzheimer's Disease	1,710	18.7
Diabetes	1,267	14.9
Influenza & Pneumonia	1,243	14.1
Nephritis	1,140	13.2
Ill-Defined Conditions	890	10.6

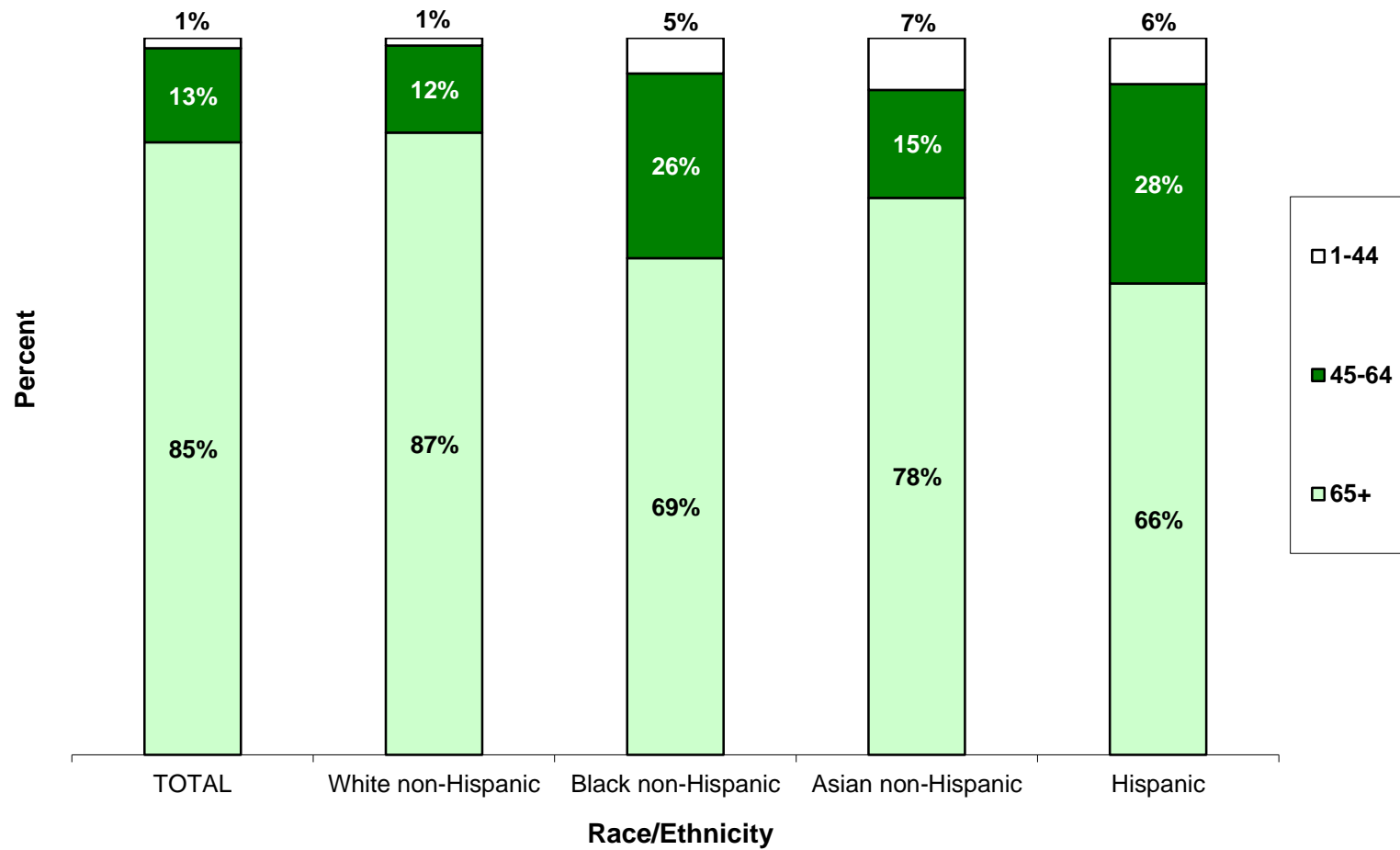
1. Ranking based on number of deaths. 2. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Technical Notes in the Appendix for a more detailed explanation. 3. Underlying Cause of Death based on ICD-10. Please see Appendix for a list of ICD-10 codes used. 4. All rates are age-adjusted per 100,000 residents using the 2000 US standard population. 5. Unintentional injuries such as motor vehicle-related deaths, poisonings, falls, fires, and drownings that were not intended to occur.

Figure 8. Number of Heart Disease Deaths by Age Group and Gender, Massachusetts: 2016



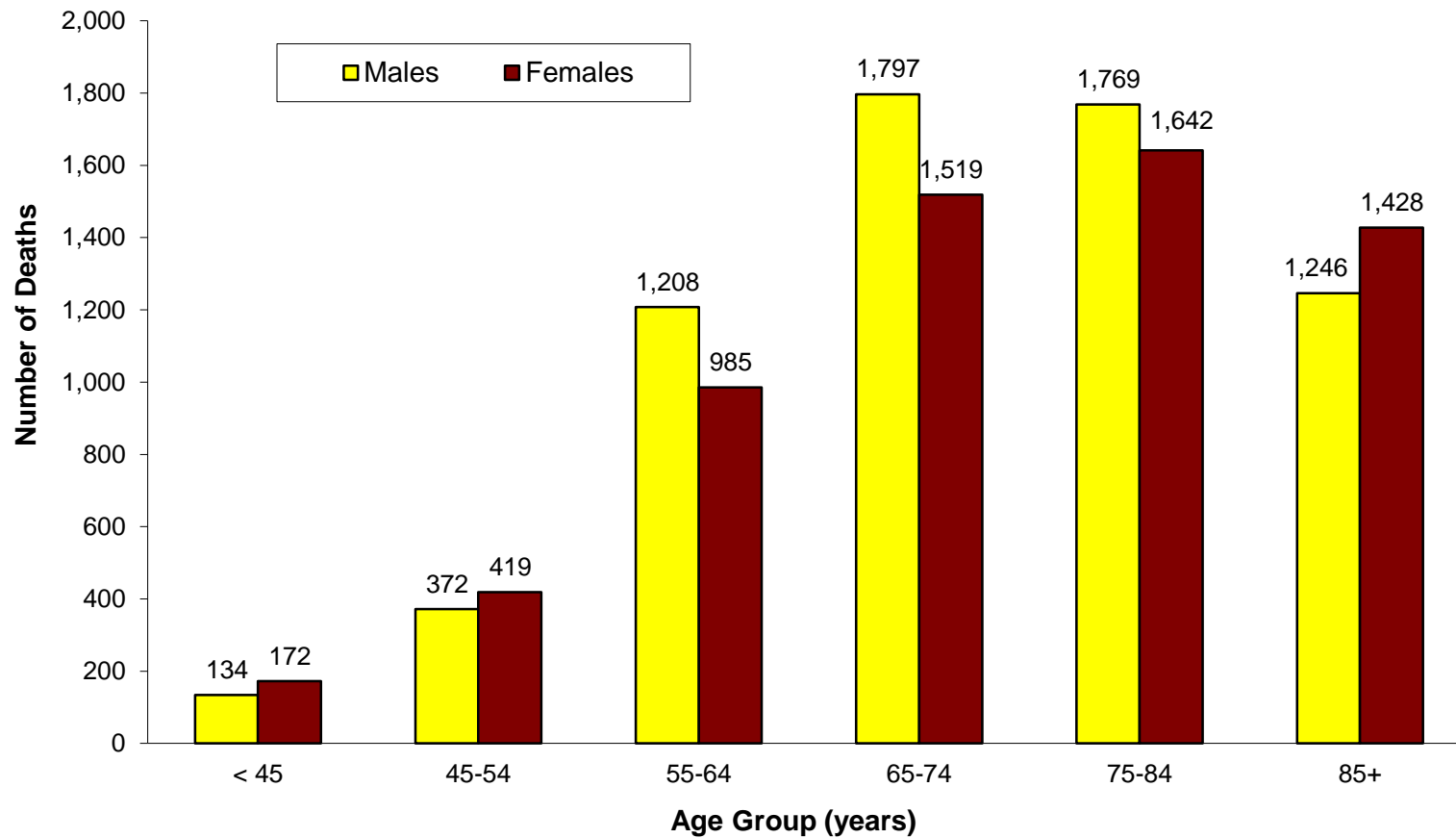
Note: The ICD-10 codes used for heart disease deaths were I00-I09, I11, I13, and I20-I51.

Figure 9. Age Distribution by Race and Hispanic Ethnicity for Heart Disease Deaths, Massachusetts: 2016



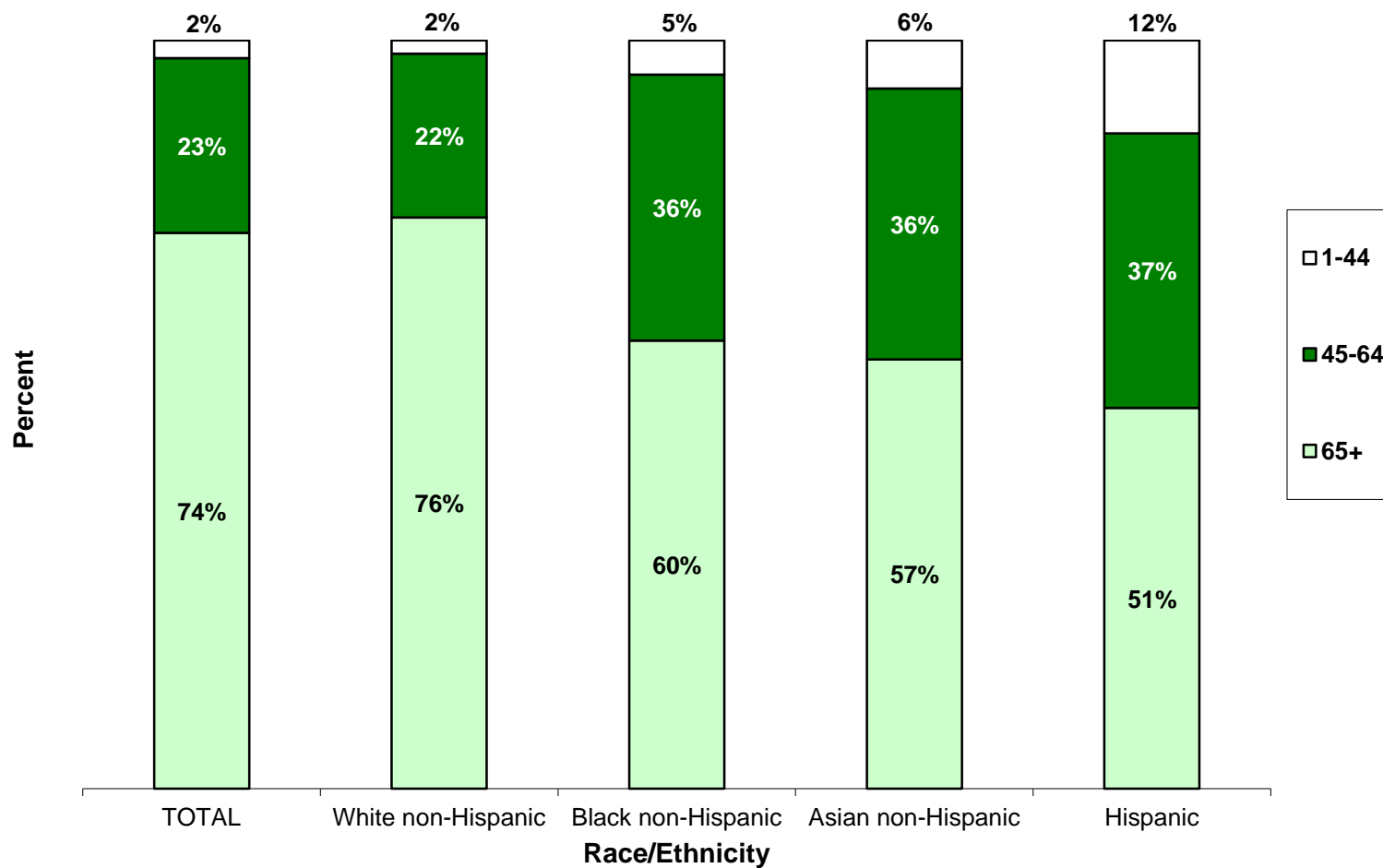
Note: The ICD-10 codes used for heart disease deaths were I00-I09, I11, I13, and I20-I51.

Figure 10. Number of Cancer Deaths by Age Group and Gender, Massachusetts: 2016



Note: The ICD-10 codes used for cancer deaths were C00-C97.

Figure 11. Age Distribution by Race and Hispanic Ethnicity for Cancer Deaths, Massachusetts: 2016



Note: The ICD-10 codes used for cancer deaths were C00-C97.

Table 10. Heart Disease and Cancer Deaths by Race and Hispanic Ethnicity and Gender, Age-Adjusted Rates¹, Massachusetts: 2003-2016

Heart Disease						
<u>White non-Hispanic²</u>				<u>Black non-Hispanic²</u>		
Year	Male	Female	Total	Male	Female	Total
2003	250.3	160.2	198.5	272.1	188.5	223.9
2004	233.1	150.3	185.7	268.1	148.3	198.8
2005	220.6	139.1	174.9	233.7	174.5	199.8
2006	216.5	138.8	172.2	222.3	127.6	165.3
2007	216.2	134.2	168.5	233.5	142.7	180.8
2008	217.1	133.1	167.9	226.7	151.7	181.7
2009	211.3	122.6	158.4	217.3	157.3	181.6
2010	197.5	119.6	152.9	222.3	119.4	159.7
2011	196.0	113.0	148.0	185.6	114.1	143.7
2012	187.5	113.0	144.7	167.3	125.2	144.3
2013	192.3	114.3	147.4	164.6	99.1	128.3
2014	185.5	109.4	142.0	168.3	98.0	127.9
2015	184.8	111.1	142.7	156.6	85.6	114.3
2016	179.8	109.1	139.2	147.5	90.8	113.9
<u>Asian non-Hispanic²</u>				<u>Hispanic²</u>		
Year	Male	Female	Total	Male	Female	Total
2003	115.2	65.0	87.6	124.8	96.2	109.7
2004	56.9	54.3	56.1	129.9	77.4	100.3
2005	77.5	48.2	61.3	118.5	83.7	99.2
2006	73.6	70.0	72.8	124.2	84.9	102.3
2007	83.3	52.9	67.4	124.9	61.8	88.3
2008	86.0	51.7	66.3	93.2	66.1	78.3
2009	69.6	51.3	60.1	111.6	62.7	83.8
2010	64.8	50.4	57.1	90.8	66.8	76.9
2011	74.1	61.0	67.5	114.9	72.0	89.7
2012	74.7	43.2	57.1	106.8	70.5	85.8
2013	67.7	43.2	54.4	81.3	56.4	67.7
2014	74.3	42.6	57.5	83.4	65.4	72.9
2015	78.6	47.2	60.6	104.6	77.6	90.0
2016	61.5	50.4	55.3	103.7	73.2	87.5

Table 10 (continued). Heart Disease and Cancer Deaths by Race and Hispanic Ethnicity and Gender, Age-Adjusted Rates, Massachusetts: 2003-2016

Cancer						
Year	<u>White non-Hispanic²</u>			<u>Black non-Hispanic²</u>		
	Male	Female	Total	Male	Female	Total
2003	237.1	169.4	195.7	304.5	199.0	238.7
2004	230.4	168.4	192.5	277.6	155.7	200.1
2005	226.1	163.2	188.1	264.2	168.1	204.1
2006	234.9	161.5	190.0	265.6	180.9	212.4
2007	226.0	156.5	183.2	270.7	159.7	201.7
2008	221.4	154.8	180.6	255.0	163.7	197.9
2009	212.7	157.0	177.7	244.7	164.7	193.1
2010	211.9	150.8	174.9	244.0	131.3	174.3
2011	206.5	145.9	170.4	209.9	162.3	178.0
2012	201.3	149.1	170.2	229.4	150.7	180.6
2013	193.2	144.0	163.8	207.0	141.7	166.3
2014	192.1	137.4	159.8	194.0	114.1	145.0
2015	185.2	138.6	157.3	161.8	116.3	133.2
2016	185.2	133.2	154.3	165.3	113.6	133.7
Year	<u>Asian non-Hispanic²</u>			<u>Hispanic²</u>		
	Male	Female	Total	Male	Female	Total
2003	134.6	87.4	109.3	110.0	76.6	90.0
2004	109.5	79.7	93.1	125.6	82.5	100.4
2005	138.9	79.5	106.1	118.2	97.3	105.7
2006	126.0	91.7	107.2	119.9	74.3	93.7
2007	124.4	76.4	98.4	125.0	90.0	104.7
2008	132.1	89.3	109.0	141.2	83.1	107.8
2009	123.2	71.0	94.3	129.9	98.2	111.8
2010	128.0	98.1	111.8	129.9	87.2	103.9
2011	127.1	92.6	107.3	125.6	84.0	101.1
2012	137.3	78.8	104.6	150.5	94.4	117.7
2013	106.3	66.3	84.4	122.6	91.7	105.1
2014	131.0	83.3	104.7	115.9	89.3	100.2
2015	112.9	86.5	97.9	114.3	83.3	95.6
2016	124.8	71.9	95.0	109.2	80.3	91.7

1. Rates are per 100,000 age-adjusted to the 2000 US standard population. 2. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Technical Notes in the Appendix for a more detailed explanation.

Table 11. Number and Age-Adjusted Rates of Cancer Deaths by Selected Causes and Gender, Massachusetts: 2016

Cause of Death ¹	ICD-10 Code	Total		Female		Male	
		#	Rate ^{2,3}	#	Rate ²	#	Rate ²
Total Cancer Deaths	C00-C97	12,691	149.8	6,165	129.0	6,526	180.5
Bladder	C67	430	5.0	115	2.3	315	9.2
Brain and nervous system	C70-C72	393	4.8	171	3.9	222	5.9
Cervix	C53	48	1.1	48	1.1	NA	NA
Colorectal	C18-C21	974	11.6	516	10.9	458	12.8
Esophageal	C15	372	4.3	85	1.7	287	7.5
Female breast ⁴	C50 ⁴	775	16.8	775	16.8	NA	NA
Hodgkin's disease	C81	20	0.2	10	0.2	10	0.3
Kidney and other urinary organs	C64, C65	263	3.1	99	2.0	164	4.5
Leukemia	C91-C95	477	5.7	219	4.5	258	7.5
Lung	C33, C34	3,168	37.3	1,570	32.5	1,598	43.8
Melanoma of the skin	C43	187	2.2	69	1.4	118	3.3
Multiple myeloma	C88, C90	269	3.1	119	2.3	150	4.2
Non-Hodgkin's lymphoma	C82-C85	433	5.2	204	4.2	229	6.5
Ovarian	C56	313	6.6	313	6.6	NA	NA
Pancreatic	C25	985	11.6	477	9.9	508	13.7
Prostate	C61	633	18.6	NA	NA	633	18.6
Stomach	C16	250	2.9	98	2.0	152	4.1
Uterus	C54, C55	210	4.3	210	4.3	NA	NA
All other cancers	Residual	2,491	29.2	1,067	22.2	1,424	38.5

1. Common terms are used to describe the causes of cancer deaths. For detailed terminology of cancer sites, please see the ICD-10 code list in the Appendix. 2. Rates are per 100,000 age-adjusted to the 2000 US standard population. 3. The total resident population is used to calculate all "Total Rates" except for ICD-10 codes C50, C53-C56, which are based on the total female population, and ICD-10 C61, which is based on the total male population. 4. Includes only female breast cancer.

Table 12. Selected Causes of Cancer Deaths by Age, Massachusetts: 2016

Age	Cause of Death ¹	ICD-10 Code	Number	Age-Specific Rate ²
1-14 years	Total		20	1.9
	Brain and nervous system	C70-C72	7	0.7
	Leukemia	C91-C95	2	-- ³
	Non-Hodgkin's lymphoma	C82-C85	1	-- ³
15-24 years	Total		25	2.6
	Leukemia	C91-C95	6	0.6
	Brain and nervous system	C70-C72	5	0.5
	Colorectal	C18-C21	1	-- ³
	Melanoma of the skin	C43	1	-- ³
25-44 years	Total		261	14.7
	Female breast ⁴	C50	48	5.4
	Colorectal	C18-C21	39	2.2
	Brain and nervous system	C70-C72	27	1.5
	Leukemia	C91-C95	20	1.1
45-64 years	Total		2,984	158.9
	Lung	C33, C34	723	38.5
	Colorectal	C18-C21	247	13.2
	Female breast ⁴	C50	243	25.0
	Pancreas	C25	240	12.8
65+ years	Total		9,401	875.4
	Lung	C33, C34	2,429	226.2
	Pancreas	C25	737	68.6
	Colorectal	C18-C21	687	64.0
	Prostate ⁵	C61	574	123.9
65-74 years	Total		3,316	541.4
	Lung	C33, C34	966	157.7
	Pancreas	C25	280	45.7
	Colorectal	C18-C21	203	33.1
	Female breast ⁴	C50	168	51.1
75-84 years	Total		3,411	1,127.1
	Lung	C33, C34	947	312.9
	Pancreas	C25	284	93.8
	Colorectal	C18-C21	244	80.6
	Prostate ⁵	C61	192	150.3
85+ years	Total		2,674	1,683.8
	Lung	C33, C34	516	324.9
	Prostate ⁵	C61	264	507.1
	Colorectal	C18-C21	240	151.1
	Pancreas	C25	173	108.9

1. Common terms are used to describe causes of cancer death. For detailed terminology, please see the ICD-10 codes listed in the Appendix. 2. Number of deaths per 100,000 residents in each age group. 3. Calculations based on values 1-4 are excluded.

4. Calculation based on female population in specified age group. 5. Calculation based on male population in specified age group.

Table 13. Leading Causes of Cancer Deaths and Age-Adjusted Rates by Race and Hispanic Ethnicity, Massachusetts: 2016

<u>White non-Hispanic</u> ¹			<u>Black non-Hispanic</u> ¹			<u>Asian non-Hispanic</u> ¹			<u>Hispanic</u> ¹		
Cause ²	#	Rate ³	Cause ²	#	Rate ³	Cause ²	#	Rate ³	Cause ²	#	Rate ³
Lung	2,895	39.5	Lung	113	26.5	Lung	93	29.1	Lung	50	12.4
Pancreatic	883	12.1	Colorectal	53	12.7	Stomach	25	6.9	Colorectal	33	6.7
Colorectal	853	11.9	Pancreatic	52	12.2	Colorectal	24	6.8	Female Breast ⁴	29	9.8
Female Breast ⁴	670	17.2	Prostate ⁵	50	37.3	Female Breast ⁴	23	10.3	Pancreatic	27	6.9
Prostate ⁵	551	18.3	Female Breast ⁴	40	15.5	Pancreatic	13	4.1	Non-Hodgkin's Lymphoma	20	4.6
Total Cancer	11,265	154.3	Total Cancer	566	133.7	Total Cancer	326	95.0	Total Cancer	403	91.7

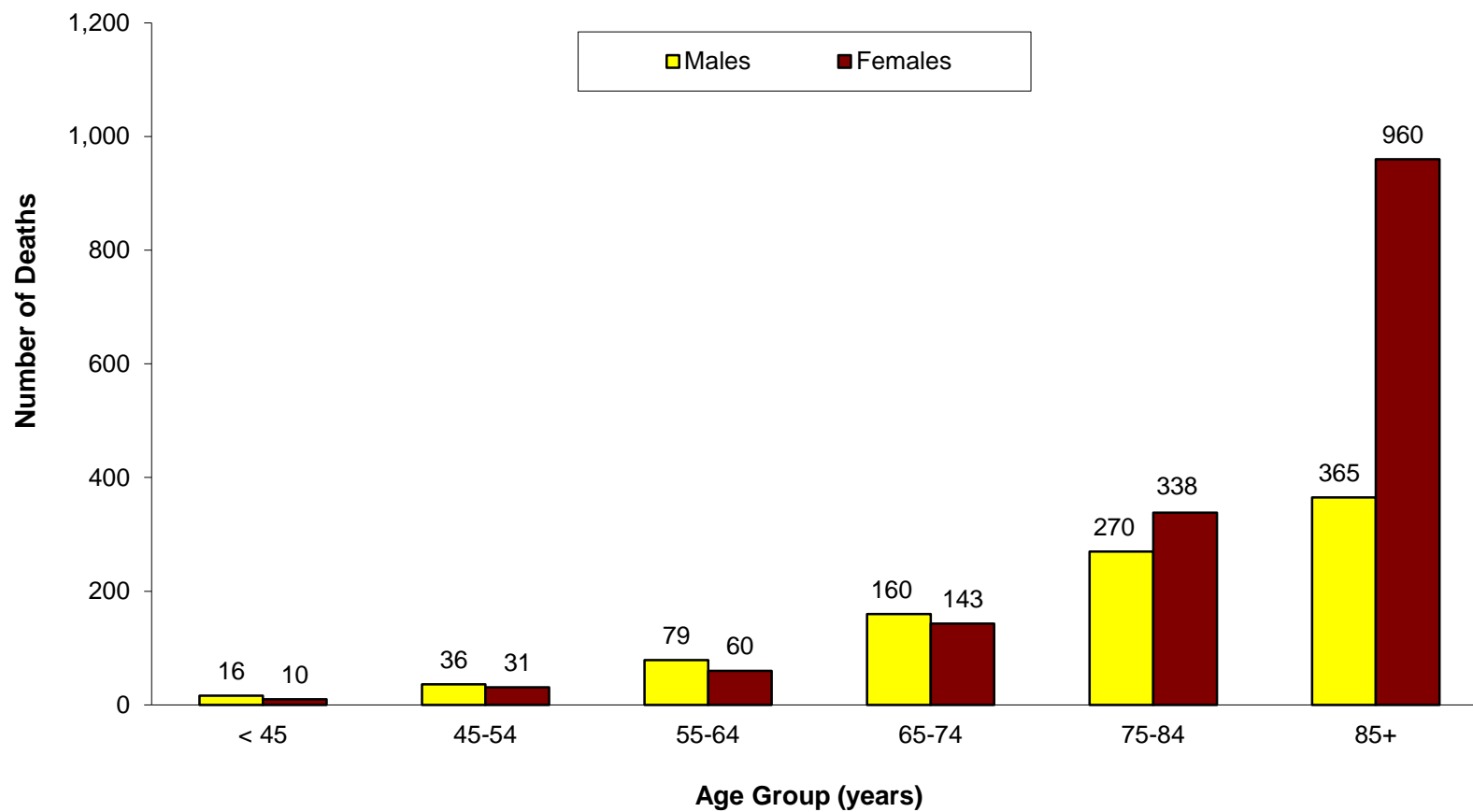
1. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation. 2. ICD-10 codes used. Please see the ICD-10 codes listing in the Appendix for detailed terminology. 3. Rates are per 100,000 age-adjusted to the 2000 US standard population. 4. Calculation based on female population. 5. Calculation based on male population.

Table 14. Number, Percent, and Age-Adjusted Rates of Stroke Deaths by Type and Gender, Massachusetts: 2016

Cause of Death	ICD-10 Code	Total			Female			Male		
		#	%	Rate ¹	#	%	Rate ¹	#	%	Rate ¹
Total Stroke Deaths	I60-I69	2,468	100%	27.9	1,542	100%	27.8	926	100%	27.3
Subarachnoid hemorrhage	I60	105	4.3%	1.3	65	4.2%	1.4	40	4.3%	1.1
Intracerebral and other intracranial hemorrhage	I61-I62	517	20.9%	6.0	281	18.2%	5.4	236	25.5%	6.9
Cerebral infarction	I63	217	8.8%	2.5	138	8.9%	2.5	79	8.5%	2.3
Stroke, not specified	I64	1,129	45.7%	12.5	743	48.2%	12.8	386	41.7%	11.5
Other	I67, I69	500	20.3%	5.6	315	20.4%	5.6	185	20.0%	5.6

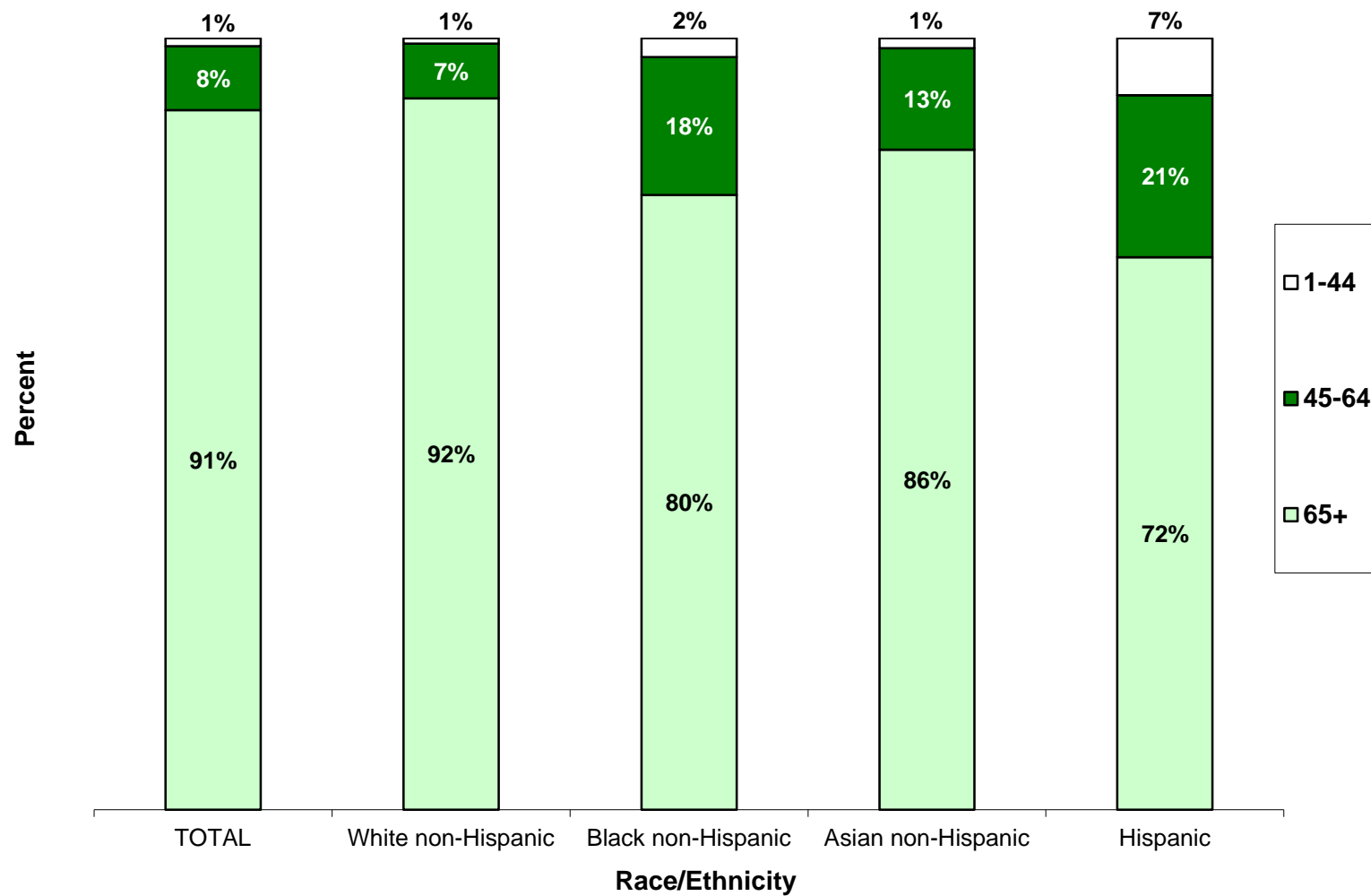
1. All rates are age-adjusted to the 2000 US Standard Population. Rates are per 100,000 population.

Figure 12. Number of Stroke Deaths by Age Group and Gender, Massachusetts: 2016



Note: The ICD-10 codes used for stroke deaths were I60-I69.

Figure 13. Age Distribution by Race and Hispanic Ethnicity for Stroke Deaths, Massachusetts: 2016



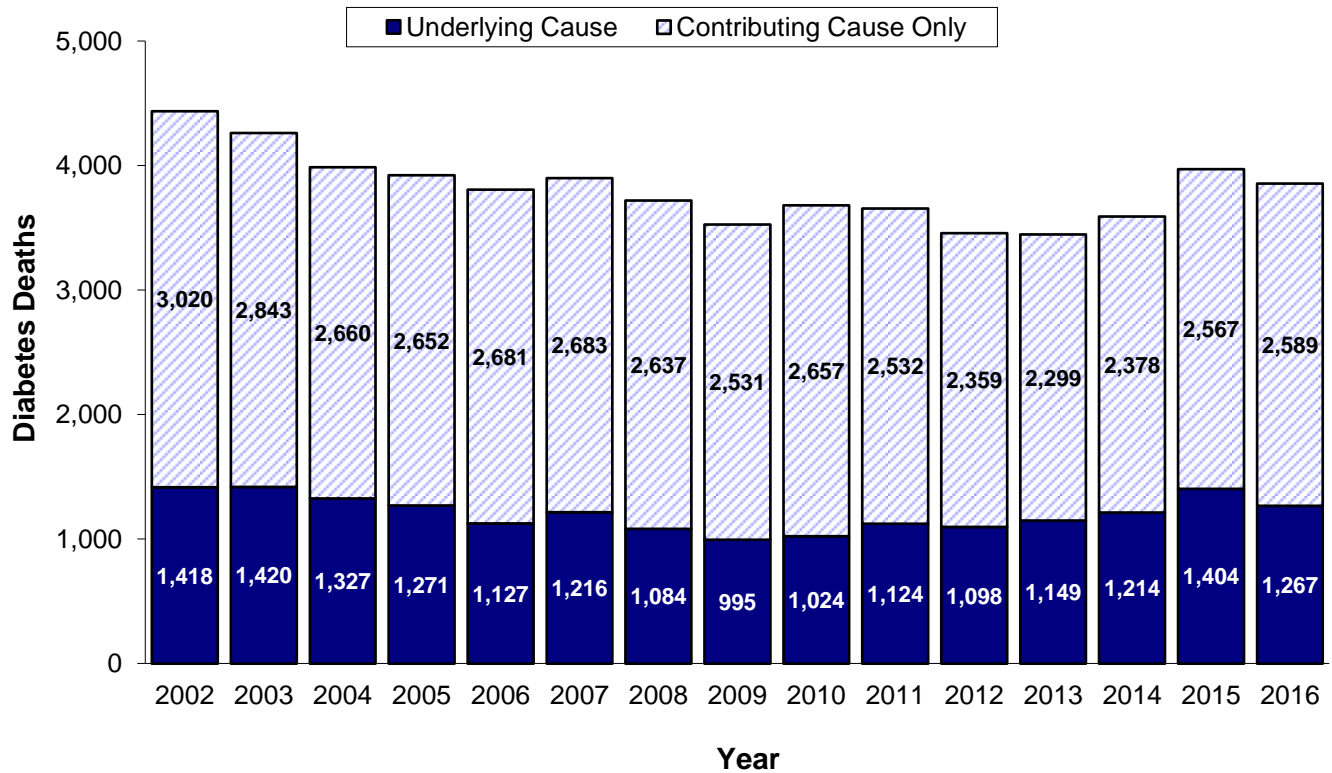
Note: The ICD-10 codes used for stroke deaths were I60-I69.

Table 15. Stroke Deaths by Race and Hispanic Ethnicity and Gender, Age-Adjusted Rates¹, Massachusetts: 2003-2016

<u>White non-Hispanic²</u>				<u>Black non-Hispanic²</u>		
Year	Male	Female	Total	Male	Female	Total
2003	44.7	43.9	44.7	45.9	54.9	52.7
2004	42.8	40.4	41.9	52.1	58.3	56.2
2005	37.7	37.3	37.9	50.6	44.9	47.5
2006	37.5	35.6	36.7	57.6	51.9	54.5
2007	35.4	34.0	34.8	34.4	36.4	35.6
2008	33.1	33.4	33.6	53.5	40.7	45.5
2009	31.7	31.7	32.0	51.7	36.0	42.7
2010	30.5	30.1	30.5	46.2	39.9	42.9
2011	30.4	29.6	30.2	34.4	29.8	32.0
2012	27.6	28.0	28.1	37.2	34.2	36.1
2013	26.4	27.9	27.7	33.4	29.6	31.3
2014	26.8	28.8	28.4	35.8	30.2	32.7
2015	27.4	28.0	28.0	33.1	24.7	28.0
2016	26.8	27.2	27.4	29.1	34.0	32.8
<u>Asian non-Hispanic²</u>				<u>Hispanic²</u>		
Year	Male	Female	Total	Male	Female	Total
2003	39.3	28.7	33.4	44.3	36.0	39.3
2004	35.2	32.7	34.1	39.7	32.6	35.5
2005	28.2	27.5	28.1	33.2	24.5	28.2
2006	34.5	41.9	39.2	26.5	29.6	28.8
2007	26.7	29.5	28.4	32.0	26.7	28.9
2008	23.4	27.1	25.6	23.9	18.4	21.1
2009	38.1	22.0	28.1	23.9	16.7	19.9
2010	35.2	27.0	30.8	31.1	22.1	26.0
2011	21.3	25.5	24.2	22.0	23.3	23.1
2012	31.0	24.4	27.0	19.2	27.2	24.7
2013	16.0	25.6	21.6	25.7	18.1	21.2
2014	19.1	20.8	20.4	24.8	22.2	23.4
2015	28.6	26.4	27.3	23.7	22.5	23.5
2016	24.9	26.7	26.4	26.5	19.6	22.4

1. Rates are per 100,000 age-adjusted to the 2000 US standard population. 2. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Technical Notes in the Appendix for a more detailed explanation.

Figure 14. Diabetes Deaths, Massachusetts: 2002-2016



Note: The ICD-10 codes used for diabetes deaths were E10-E14.

Table 16. Diabetes Deaths by Gender, Massachusetts: 2016

Cause of Death	Proportion of all Deaths (%) ¹			Number		
	Males	Females	Total	Males	Females	Total
Underlying	2.5%	2.0%	2.2%	700	567	1,267
Contributing/Associated	5.0%	4.1%	4.5%	1,390	1,199	2,589
Total Diabetes-Related	7.5%	6.1%	6.8%	2,090	1,766	3,856

Note: The ICD-10 codes used for diabetes deaths were E10-E14.

1. Proportions are out of total deaths due to all causes.

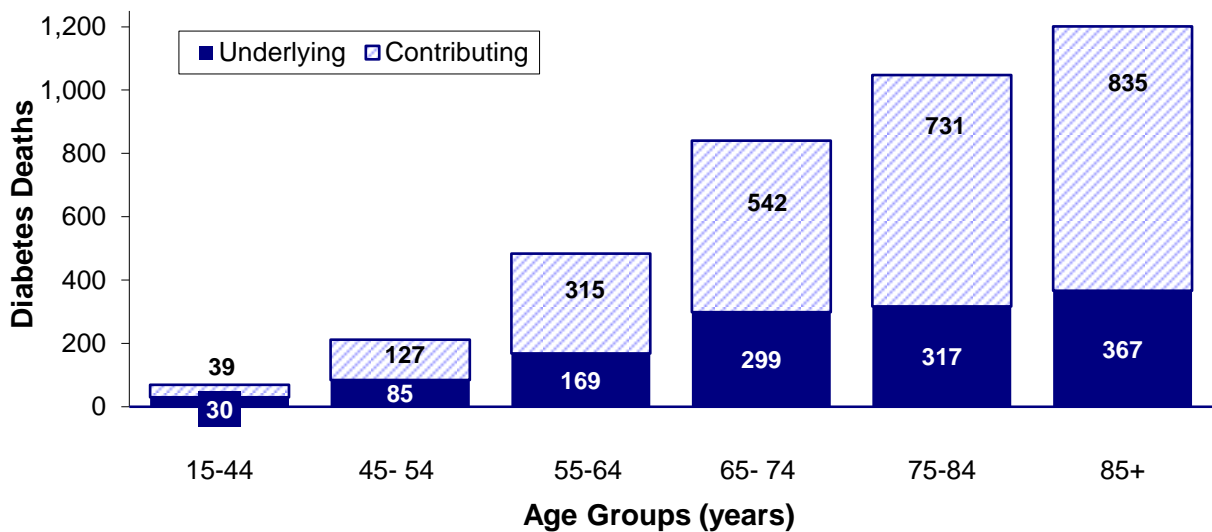
Table 17. Diabetes Deaths by Race and Hispanic Ethnicity, Massachusetts: 2016

	Race/Hispanic Ethnicity				
Cause of Death	White non-Hispanic	Black non-Hispanic	Hispanic	Asian non-Hispanic	Total
	Number				
Underlying	1,012	132	79	24	1,267
Contributing/Associated	2,185	181	134	53	2,589
<i>Total Diabetes-Related</i>	3,197	313	213	77	3,856
Total Deaths (All Causes)	50,654	2,504	2,126	1,028	56,953
	Proportion of all deaths (%)				
Underlying	2.0	5.3	3.7	2.3	2.2
Contributing/Associated	4.3	7.2	6.3	5.2	4.5
Total Diabetes-Related	6.3	12.5	10.0	7.5	6.8
	Death Rates ¹				
Underlying	13.7	32.9	21.8	8.4	14.9
Contributing/Associated	29.3	46.5	35.8	17.7	30.3
Total Diabetes-Related	43.0	79.4	57.6	26.1	45.2

Note: The ICD-10 codes used for diabetes deaths were E10-E14.

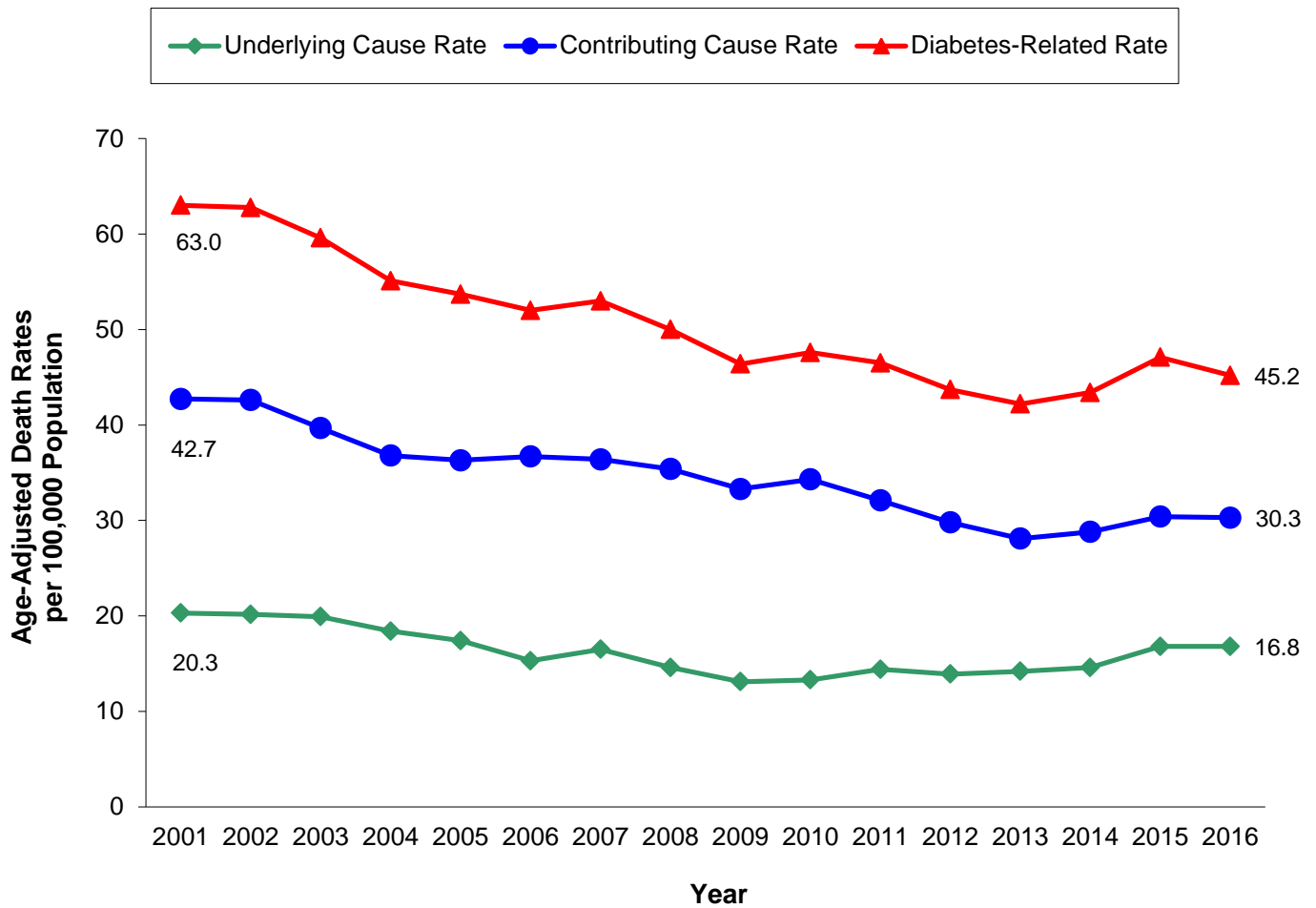
1. Rates are per 100,000 age-adjusted to the 2000 U.S. standard population

Figure 15. Age Distribution of Diabetes Deaths, Massachusetts: 2016



Note: The ICD-10 codes used for diabetes deaths were E10-E14.

Figure 16. Diabetes Death Rates, Massachusetts: 2001-2016



Note: The ICD-10 codes used for diabetes deaths were E10-E14.

Note: Rates are per 100,000 age-adjusted to the 2000 U.S. standard population.

Table 18. Injury Deaths by Leading Causes, Gender, Age: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2016

	All Injury Deaths ¹		Poisoning ²		Falls		Hanging, Strangulation, or Suffocation		Motor Vehicle-Related ³		Firearm		Other ⁴	
	Number	Rate ⁵	Number	Rate ⁵	Number	Rate ⁵	Number	Rate ⁵	Number	Rate ⁵	Number	Rate ⁵	Number	Rate ⁵
All Persons	4,793	66.2	2,396	35.4	735	8.5	441	5.9	466	6.3	242	3.4	513	6.7
<1	4	-- ⁶	0	0.0	0	0.0	2	-- ⁶	1	-- ⁶	0	0.0	1	-- ⁶
1-14	39	3.7	2	-- ⁶	1	-- ⁶	8	0.8	9	0.9	0	0.0	19	1.8
15-24	419	43.9	187	19.6	6	0.6	50	5.2	91	9.5	49	5.1	36	3.8
25-44	1,717	96.6	1,277	71.8	19	1.1	113	6.4	114	6.4	95	5.3	99	5.6
45-64	1,392	74.1	860	45.8	91	4.8	123	6.5	121	6.4	59	3.1	138	7.3
65-74	344	56.2	52	8.5	93	15.2	43	7.0	66	10.8	21	3.4	69	11.3
75-84	341	112.7	9	3.0	183	60.5	46	15.2	37	12.2	12	4.0	54	17.8
85+	535	336.9	8	5.0	342	215.4	56	35.3	27	17.0	6	3.8	96	60.5
All Females	1,501	37.0	657	18.7	360	6.7	142	3.4	143	3.7	14	0.4	185	4.0
<1	2	-- ⁶	0	0.0	0	0.0	0	0.0	1	-- ⁶	0	0.0	1	-- ⁶
1-14	13	2.5	1	-- ⁶	0	0.0	3	-- ⁶	3	-- ⁶	0	0.0	6	1.2
15-24	99	20.8	46	9.7	1	-- ⁶	12	2.5	31	6.5	2	-- ⁶	7	1.5
25-44	412	45.9	320	35.7	4	-- ⁶	32	3.6	32	3.6	7	0.8	17	1.9
45-64	407	41.9	263	27.1	29	3.0	28	2.9	39	4.0	5	0.5	43	4.4
65-74	100	30.4	17	5.2	35	10.6	14	4.3	17	5.2	0	0.0	17	5.2
75-84	146	83.5	4	-- ⁶	92	52.6	16	9.1	9	5.1	0	0.0	25	14.3
85+	322	301.7	6	5.6	199	186.4	37	34.7	11	10.3	0	0.0	69	64.6
All Males	3,292	97.6	1,739	52.6	375	11.0	299	8.7	323	9.2	228	6.7	328	9.5
<1	2	-- ⁶	0	0.0	0	0.0	2	-- ⁶	0	0.0	0	0.0	0	0.0
1-14	26	4.8	1	-- ⁶	1	-- ⁶	5	0.9	6	1.1	0	0.0	13	2.4
15-24	320	66.9	141	29.5	5	1.0	38	7.9	60	12.5	47	9.8	29	6.1
25-44	1,305	148.2	957	108.7	15	1.7	81	9.2	82	9.3	88	10.0	82	9.3
45-64	985	108.5	597	65.8	62	6.8	95	10.5	82	9.0	54	5.9	95	10.5
65-74	244	86.1	35	12.3	58	20.5	29	10.2	49	17.3	21	7.4	52	18.3
75-84	195	152.7	5	3.9	91	71.3	30	23.5	28	21.9	12	9.4	29	22.7
85+	213	409.1	2	-- ⁶	143	274.7	19	36.5	16	30.7	6	11.5	27	51.9

1. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Includes drug overdoses, which account for the largest percentage. 3. Motor vehicle deaths to occupants, pedestrians, motorcyclists and bicyclists. 4. All remaining injury causes. 5. Number of deaths per 100,000 persons in each age group; rates for all rows except the age group rows are age-adjusted to the 2000 US standard population. 6. Calculations based on values 1-4 are excluded.

Table 19. Injury Deaths by Leading Causes, Gender and Race and Hispanic Ethnicity: Numbers and Age Adjusted Rates, Massachusetts: 2016

	All Injury Deaths¹		Poisoning²		Falls		Hanging, Strangulation, or Suffocation		Motor Vehicle-Related³		Firearm		Other⁴	
	<u>Number</u>	<u>Rate⁵</u>	<u>Number</u>	<u>Rate⁵</u>	<u>Number</u>	<u>Rate⁵</u>	<u>Number</u>	<u>Rate⁵</u>	<u>Number</u>	<u>Rate⁵</u>	<u>Number</u>	<u>Rate⁵</u>	<u>Number</u>	<u>Rate⁵</u>
White non-Hispanic	3,903	71.0	1,968	40.4	667	8.8	352	6.2	359	6.3	150	2.7	407	6.6
Females	1,277	40.7	562	22.1	332	7.0	109	3.4	105	3.6	10	0.4	159	4.2
Males	2,626	103.3	1,406	59.2	335	11.3	243	9.2	254	9.3	140	5.3	248	9.1
Black non-Hispanic	262	52.0	95	18.3	20	5.0	20	4.2	36	6.9	49	9.0	42	8.7
Females	78	30.4	34	13.0	9	3.8	7	2.8	15	5.7	1	-- ⁶	12	4.7
Males	184	75.5	61	24.2	11	6.6	13	5.8	21	7.9	48	18.0	30	12.8
Asian non-Hispanic	86	21.1	22	4.0	16	5.4	23	5.5	12	3.0	1	--⁶	12	3.0
Females	23	11.1	4	-- ⁶	4	-- ⁶	8	3.0	5	2.4	0	0.0	2	-- ⁶
Males	63	32.6	18	6.7	12	8.4	15	8.4	7	3.8	1	-- ⁶	10	4.9
Hispanic	451	63.8	274	36.9	22	5.2	31	5.3	47	6.2	35	4.0	42	6.3
Females	99	29.5	49	12.5	11	4.8	12	4.4	15	4.0	3	-- ⁶	9	3.1
Males	352	99.4	225	62.8	11	5.5	19	6.0	32	8.4	32	7.3	33	9.3

1. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Includes drug overdoses, which account for the largest percentage. 3. Motor vehicle deaths to occupants, pedestrians, motorcyclists and bicyclists. 4. All remaining injury causes. 5. Number of deaths per 100,000 persons in each group; rates are age-adjusted to the 2000 US standard population. 6. Calculations based on values 1-4 are excluded.

Table 20. Unintentional Injury Deaths by Gender, Age: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2016

	All Unintentional¹		Poisonings		Falls		Motor Vehicle-Related	
	<u>Number</u>	<u>Rate²</u>	<u>Number</u>	<u>Rate²</u>	<u>Number</u>	<u>Rate²</u>	<u>Number</u>	<u>Rate²</u>
All Persons	3,887	53.6	2,231	33.1	716	8.3	466	6.3
<1	4	-- ³	0	0.0	0	0.0	1	-- ³
1-14	27	2.6	1	-- ³	1	-- ³	9	0.9
15-24	285	29.8	176	18.4	3	-- ³	91	9.5
25-44	1,409	79.3	1,224	68.9	16	0.9	114	6.4
45-64	1,097	58.4	783	41.7	82	4.4	121	6.4
65-74	255	41.6	36	5.9	90	14.7	66	10.8
75-84	301	99.5	6	2.0	182	60.1	37	12.2
85+	508	319.9	4	-- ³	342	215.4	27	17.0
All Females	1,278	31.0	578	16.6	353	6.6	143	3.7
<1	2	-- ³	0	0.0	0	0.0	1	-- ³
1-14	9	1.7	0	0.0	0	0.0	3	-- ³
15-24	76	16.0	42	8.8	0	0.0	31	6.5
25-44	345	38.5	300	33.5	3	-- ³	32	3.6
45-64	320	33.0	223	23.0	25	2.6	39	4.0
65-74	81	24.6	9	2.7	34	10.3	17	5.2
75-84	134	76.6	1	-- ³	92	52.6	9	5.1
85+	311	291.3	3	-- ³	199	186.4	11	10.3
All Males	2,609	77.8	1,653	50.2	363	10.6	323	9.2
<1	2	-- ³	0	0.0	0	0.0	0	0.0
1-14	18	3.3	1	-- ³	1	-- ³	6	1.1
15-24	209	43.7	134	28.0	3	-- ³	60	12.5
25-44	1,064	120.8	924	104.9	13	1.5	82	9.3
45-64	777	85.6	560	61.7	57	6.3	82	9.0
65-74	174	61.4	27	9.5	56	19.8	49	17.3
75-84	167	130.8	5	3.9	90	70.5	28	21.9
85+	197	378.4	1	-- ³	143	274.7	16	30.7

1. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table.

2. Number of deaths per 100,000 persons in each age group; rates for all rows except the age group rows are age-adjusted to the 2000 US standard population. 3. Calculations based on values 1-4 are excluded.

Table 21. Unintentional Injury Deaths by Gender and Race and Hispanic Ethnicity: Numbers and Age-Adjusted Rates, Massachusetts: 2016

	All Unintentional¹		Poisonings		Falls		Motor Vehicle-Related	
	<u>Number</u>	<u>Rate²</u>	<u>Number</u>	<u>Rate²</u>	<u>Number</u>	<u>Rate²</u>	<u>Number</u>	<u>Rate²</u>
White non-Hispanic	3,217	58.3	1,816	37.7	657	8.6	359	6.3
Females	1,094	34.2	489	19.7	329	6.9	105	3.6
Males	2,123	83.9	1,327	56.2	328	11.1	254	9.3
Black non-Hispanic	174	35.5	89	17.1	17	4.4	36	6.9
Females	70	27.3	33	12.6	7	3.1	15	5.7
Males	104	44.7	56	22.1	10	6.3	21	7.9
Asian non-Hispanic	58	14.8	19	3.4	14	4.8	12	3.0
Females	12	6.5	2	-- ³	4	-- ³	5	2.4
Males	46	24.2	17	6.3	10	7.2	7	3.8
Hispanic	370	53.7	271	36.6	19	4.8	47	6.2
Females	82	25.3	47	12.0	10	4.5	15	4.0
Males	288	83.1	224	62.5	9	5.0	32	8.4

1. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table.

2. Number of deaths per 100,000 persons in each group; rates are age-adjusted to the 2000 US standard population. 3. Calculations based on values 1-4 are excluded.

Table 22. Intentional Injury Deaths by Gender, Age: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2016

	All Intentional¹		Suicide		Homicide	
	<u>Number</u>	<u>Rate²</u>	<u>Number</u>	<u>Rate²</u>	<u>Number</u>	<u>Rate²</u>
All Persons	776	10.9	636	8.8	140	2.1
<1	0	0.0	0	0.0	0	0.0
1-14	10	0.9	7	0.7	3	-- ³
15-24	127	13.3	83	8.7	44	4.6
25-44	275	15.5	210	11.8	65	3.7
45-64	258	13.7	243	12.9	15	0.8
65-74	65	10.6	60	9.8	5	0.8
75-84	25	8.3	19	6.3	6	2.0
85+	16	10.1	14	8.8	2	-- ³
All Females	176	4.8	149	4.0	27	0.8
<1	0	0.0	0	0.0	0	0.0
1-14	4	-- ³	3	-- ³	1	-- ³
15-24	22	4.6	18	3.8	4	-- ³
25-44	59	6.6	48	5.4	11	1.2
45-64	71	7.3	64	6.6	7	0.7
65-74	10	3.0	10	3.0	0	0.0
75-84	7	4.0	3	-- ³	4	-- ³
85+	3	-- ³	3	-- ³	0	0.0
All Males	600	17.4	487	14.0	113	3.4
<1	0	0.0	0	0.0	0	0.0
1-14	6	1.1	4	-- ³	2	-- ³
15-24	105	21.9	65	13.6	40	8.4
25-44	216	24.5	162	18.4	54	6.1
45-64	187	20.6	179	19.7	8	0.9
65-74	55	19.4	50	17.6	5	1.8
75-84	18	14.1	16	12.5	2	-- ³
85+	13	25.0	11	21.1	2	-- ³

1. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table.

2. Number of deaths per 100,000 persons in each age group; rates for all rows except the age group rows are age-adjusted to the 2000 US standard population. 3. Calculations based on values 1-4 are excluded.

Table 23. Intentional Injury Deaths by Gender and Race and Hispanic Ethnicity: Numbers and Age-Adjusted Rates, Massachusetts: 2016

	All Intentional ¹		Suicide		Homicide	
	<u>Number</u>	<u>Rate</u> ²	<u>Number</u>	<u>Rate</u> ²	<u>Number</u>	<u>Rate</u> ²
White non-Hispanic	580	10.9	533	10.0	47	0.9
Females	141	5.2	124	4.5	17	0.7
Males	439	16.9	409	15.7	30	1.2
Black non-Hispanic	77	14.5	28	5.5	49	8.9
Females	6	2.3	3	-- ³	3	-- ³
Males	71	27.2	25	10.5	46	16.8
Asian non-Hispanic	25	5.4	25	5.4	0	0.0
Females	10	3.9	10	3.9	0	0.0
Males	15	7.2	15	7.2	0	0.0
Hispanic	74	9.1	38	5.0	36	4.1
Females	15	3.7	10	2.5	5	1.1
Males	59	14.9	28	7.7	31	7.2

1. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table.

2. Number of deaths per 100,000 persons in each group; rates are age-adjusted to the 2000 US standard population. 3. Calculations based on values 1-4 are excluded.

Table 25. HIV/AIDS Deaths by Place of Occurrence, Massachusetts: 2000-2016

Year		Total ¹	<u>Place of Occurrence</u>			
			At Home	Hospital	Out of State	Hospice/Nursing Home/Other
2000	#	226	48	145	0	33
	%	100.0	21.2	64.2	0.0	14.6
2001	#	249	47	164	4	34
	%	100.0	18.9	65.9	-- ²	13.7
2002	#	229	33	156	4	36
	%	100.0	14.4	68.1	-- ²	15.7
2003	#	226	55	134	5	32
	%	100.0	24.3	59.3	2.2	14.2
2004	#	211	45	134	1	31
	%	100.0	21.3	63.5	-- ²	14.7
2005	#	180	28	122	1	30
	%	100.0	15.6	67.8	-- ²	16.7
2006	#	179	22	122	2	33
	%	100.0	12.3	68.2	-- ²	18.4
2007	#	143	15	98	2	28
	%	100.0	10.5	68.5	-- ²	19.6
2008	#	143	27	92	1	23
	%	100.0	18.9	64.3	-- ²	16.1
2009	#	124	25	76	1	22
	%	100.0	20.2	61.3	-- ²	17.7
2010	#	119	22	68	1	28
	%	100.0	18.5	57.1	-- ²	23.5
2011	#	91	14	58	0	19
	%	100.0	15.4	63.7	0.0	20.9
2012	#	100	24	56	0	20
	%	100.0	24.0	56.0	0.0	20.0
2013	#	86	13	53	0	20
	%	100.00	15.1	61.6	0.0	23.3
2014	#	80	13	50	0	17
	%	100.00	16.3	62.5	0.0	21.3
2015	#	92	26	42	0	24
	%	100.00	28.3	45.7	0.0	26.1
2016	#	75	11	44	0	20
	%	100.00	14.7	58.7	0.0	26.7

1. AIDS: Acquired Immune Deficiency Syndrome, HIV: Human Immunodeficiency Virus. The deaths reported are cases for which AIDS or HIV-related disease was the underlying cause of death. Deaths were coded according to ICD-10: B20-B24. 2. Calculations based on values 1-4 are excluded.

Table 26. HIV/AIDS¹ Deaths by Age, Massachusetts: 2000-2016

Year		Age (in years)				
		<15	15-24	25-34	35-44	45+
2000	#	4	0	26	104	92
	%	-- ²	0.0	11.5	46.0	40.7
2001	#	1	2	25	111	110
	%	-- ²	-- ²	10.0	44.6	44.2
2002	#	1	1	10	91	126
	%	-- ²	-- ²	4.4	39.7	55.0
2003	#	1	3	14	94	114
	%	-- ²	-- ²	6.2	41.6	50.4
2004	#	0	2	9	79	121
	%	0.0	-- ²	4.3	37.4	57.4
2005	#	0	1	6	64	109
	%	0.0	-- ²	3.3	35.6	60.6
2006	#	0	1	6	71	101
	%	0.0	-- ²	3.4	39.7	56.4
2007	#	0	0	5	34	104
	%	0.0	0.0	3.5	32.7	72.7
2008	#	0	1	6	32	104
	%	0.0	-- ²	4.2	22.4	72.7
2009	#	0	0	6	25	93
	%	0.0	0.0	4.8	20.2	75.0
2010	#	0	1	4	24	90
	%	0.0	-- ²	-- ²	20.2	75.6
2011	#	0	2	1	19	69
	%	0.0	-- ²	-- ²	20.9	75.8
2012	#	0	0	2	16	82
	%	0.0	0.0	-- ²	16.0	82.0
2013	#	0	2	3	3	78
	%	0.0	-- ²	-- ²	-- ²	90.7
2014	#	0	1	6	9	64
	%	0.0	-- ²	7.5	11.3	80.0
2015	#	0	0	4	7	81
	%	0.0	0.0	-- ²	7.6	88.0
2016	#	0	0	2	5	68
	%	0.0	0.0	-- ²	6.7	90.7

1. AIDS: Acquired Immune Deficiency Syndrome, HIV: Human Immunodeficiency Virus. The deaths reported are cases for which AIDS or HIV-related disease was the underlying cause of death. Deaths were coded according to ICD-10: B20-B24. 2. Calculations based on values 1-4 are excluded.

Table 27. HIV/AIDS¹ Deaths by Gender, Race and Hispanic Ethnicity, Massachusetts: 2000-2016

Year		Gender		Race and Ethnicity			
		Male	Female	White non-Hispanic ²	Black non-Hispanic ²	Other ³	Hispanic ²
2000	#	161	65	104	61	2	59
	%	71.2	28.8	46.0	27.0	-- ⁴	26.1
2001	#	182	67	125	73	0	51
	%	73.1	26.9	50.2	29.3	0.0	20.5
2002	#	163	66	108	68	1	52
	%	71.2	28.8	47.1	29.7	-- ⁴	22.7
2003	#	150	76	113	58	2	53
	%	66.4	33.6	50.0	25.7	-- ⁴	23.5
2004	#	151	60	976	55	4	55
	%	71.6	28.4	46.0	26.1	-- ⁴	26.1
2005	#	122	58	75	56	4	45
	%	67.8	32.2	41.7	31.1	-- ⁴	25.0
2006	#	122	57	91	49	2	37
	%	68.2	31.8	50.8	27.4	-- ⁴	20.7
2007	#	96	47	58	48	0	37
	%	67.4	32.9	40.6	33.6	0.0	25.9
2008	#	101	42	69	37	5	31
	%	70.6	29.4	48.6	26.1	3.5	21.8
2009	#	89	35	48	37	6	33
	%	71.8	28.2	38.7	29.8	4.8	26.6
2010	#	80	39	58	34	1	26
	%	67.2	32.8	48.7	28.6	-- ⁴	21.8
2011	#	64	27	36	30	1	24
	%	70.3	29.7	39.6	33.0	-- ⁴	26.4
2012	#	62	38	50	26	1	23
	%	62.0	38.0	50.0	26.0	-- ⁴	23.0
2013	#	58	28	35	32	0	18
	%	67.4	32.6	41.2	37.6	0.0	21.2
2014	#	59	21	41	21	1	16
	%	73.8	26.3	51.3	26.3	-- ⁴	20.0
2015	#	74	18	41	28	2	21
	%	80.4	19.6	44.6	30.4	-- ⁴	22.8
2016	#	49	26	36	23	5	11
	%	65.3	34.7	48.0	30.7	6.7	14.7

1. AIDS: Acquired Immune Deficiency Syndrome, HIV: Human Immunodeficiency Virus. The deaths reported are cases for which AIDS or HIV-related disease was the underlying cause of death. Deaths were coded according to ICD-10: B20-B24. 2. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Technical Notes in the Appendix for a more detailed explanation. 3. The "Other" category represents Asian non-Hispanics, American Indian non-Hispanics, and other non-Hispanics. 4. Calculations based on values 1-4 are excluded.

Table 28. HIV/AIDS¹ Deaths by Gender, Race and Hispanic Ethnicity: Numbers, Percent and Age-Adjusted Rates, Massachusetts: 2003-2016

Year	<u>White non-Hispanic²</u>			<u>Black non-Hispanic²</u>			<u>Hispanic²</u>		
	#	Percent	Rate ³	#	Percent	Rate ³	#	Percent	Rate ³
2003	113	50%	2.0	58	26%	17.2	53	23%	14.9
2004	97	46%	1.7	55	26%	15.8	55	26%	13.9
2005	75	42%	1.3	56	31%	16.0	45	25%	11.5
2006	91	51%	1.6	49	27%	13.7	37	21%	8.4
2007	58	41%	1.0	48	34%	13.0	37	26%	8.9
2008	69	50%	1.2	37	27%	10.6	31	23%	8.3
2009	48	41%	0.5	37	31%	15.2	33	28%	11.6
2010	58	49%	0.5	34	29%	15.2	26	22%	11.6
2011	36	40%	0.6	30	33%	6.9	24	27%	4.7
2012	50	51%	0.8	26	26%	6.1	23	23%	4.6
2013	35	41%	0.5	32	38%	6.7	18	21%	3.2
2014	41	51%	0.6	21	26%	4.4	16	20%	3.2
2015	41	46%	0.6	28	31%	5.9	21	23%	3.6
2016	36	51%	0.5	23	33%	4.7	11	16%	1.8
MALE									
2003	74	49%	2.7	36	24%	23.4	39	26%	23.8
2004	74	49%	2.7	39	26%	24.0	34	23%	18.4
2005	52	43%	1.9	34	28%	20.9	33	27%	18.4
2006	67	55%	2.4	33	27%	20.0	21	17%	9.8
2007	48	50%	1.7	23	24%	13.4	25	26%	13.3
2008	55	56%	1.9	25	26%	16.0	18	18%	11.0
2009	32	38%	1.1	29	34%	15.6	24	28%	12.4
2010	40	51%	1.1	20	25%	15.6	19	24%	12.4
2011	30	48%	1.1	14	22%	6.6	19	30%	8.2
2012	35	57%	1.2	14	23%	7.8	12	20%	5.6
2013	24	69%	0.7	21	21%	9.8	12	12%	4.3
2014	34	59%	1.0	14	24%	6.5	10	17%	4.7
2015	33	45%	1.0	23	32%	10.3	17	23%	6.4
2016	28	61%	0.9	12	26%	5.7	6	13%	2.2
FEMALE									
2003	39	51%	1.4	22	29%	12.0	14	18%	7.1
2004	23	38%	0.8	16	27%	8.7	21	35%	10.0
2005	23	40%	0.8	22	38%	11.8	12	21%	5.4
2006	24	42%	0.9	16	28%	8.3	16	28%	7.1
2007	10	21%	0.3	25	53%	12.8	12	26%	5.2
2008	14	36%	0.5	12	31%	6.4	13	33%	6.4
2009	16	48%	0.5	8	24%	3.8	9	27%	3.8
2010	18	46%	0.5	14	36%	3.8	7	18%	3.8
2011	6	22%	0.2	16	59%	7.1	5	19%	1.6
2012	15	39%	0.4	12	32%	4.9	11	29%	3.9
2013	11	11%	0.3	11	11%	4.4	6	6%	2.1
2014	7	35%	0.2	7	35%	2.7	6	30%	2.0
2015	8	47%	0.3	5	29%	2.1	4	-- ⁴	-- ⁴
2016	8	33%	0.2	11	46%	4.0	5	21%	1.5

1. AIDS and HIV disease deaths coded using ICD-10: B20-B24. 2. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Technical Notes in the Appendix for a more detailed explanation. 3. Number of deaths per 100,000 persons; rates are age-adjusted to the 2000 US standard population. 4. Calculations based on values 1-4 are excluded

Table 29. HIV/AIDS¹ Deaths by Race, Hispanic Ethnicity, and Gender of Persons Ages 25-44, Massachusetts: 2003-2016

	White non-Hispanic ²		Black non-Hispanic ²		Hispanic ²	
<u>Year</u>	<u>#</u>	<u>Rate³</u>	<u>#</u>	<u>Rate³</u>	<u>#</u>	<u>Rate³</u>
2003	63	4.1	19	15.8	25	15.1
2004	38	2.6	17	14.0	31	18.0
2005	29	2.0	22	18.2	19	10.7
2006	35	2.5	17	14.2	23	12.9
2007	16	1.2	11	9.1	12	6.6
2008	19	1.4	9	7.4	8	4.3
2009	11	0.8	7	5.7	12	6.3
2010	9	0.7	6	4.7	12	6.1
2011	6	0.5	7	5.4	7	3.4
2012	6	0.5	3	-- ⁴	9	4.4
2013	1	-- ⁴	3	-- ⁴	2	-- ⁴
2014	1	-- ⁴	9	6.4	5	2.2
2015	2	-- ⁴	6	4.2	3	-- ⁴
2016	2	-- ⁴	2	-- ⁴	2	-- ⁴
MALE						
2003	42	5.6	10	17.3	19	23.1
2004	30	4.1	11	18.9	19	22.1
2005	21	2.9	12	20.4	11	12.3
2006	22	3.2	12	20.5	12	13.3
2007	16	2.4	5	8.5	9	9.7
2008	13	2.0	3	-- ⁴	6	6.2
2009	8	1.2	4	-- ⁴	5	5.5
2010	3	-- ⁴	3	-- ⁴	3	-- ⁴
2011	4	-- ⁴	4	-- ⁴	3	-- ⁴
2012	5	0.8	1	-- ⁴	5	4.8
2013	1	-- ⁴	2	-- ⁴	1	-- ⁴
2014	1	-- ⁴	6	8.8	3	-- ⁴
2015	1	-- ⁴	4	-- ⁴	1	-- ⁴
2016	1	-- ⁴	2	-- ⁴	2	-- ⁴
FEMALE						
2003	21	2.7	9	14.4	6	7.2
2004	8	1.1	6	9.6	12	13.9
2005	8	1.1	10	16.0	8	9.0
2006	13	1.8	5	8.2	11	12.5
2007	0	0.0	6	9.8	3	-- ⁴
2008	6	0.9	6	9.8	2	-- ⁴
2009	3	-- ⁴	3	-- ⁴	7	7.0
2010	6	0.9	3	-- ⁴	9	9.3
2011	2	-- ⁴	3	-- ⁴	4	-- ⁴
2012	1	-- ⁴	2	-- ⁴	4	-- ⁴
2013	0	0.0	1	-- ⁴	1	-- ⁴
2014	0	0.0	3	-- ⁴	2	-- ⁴
2015	1	-- ⁴	2	-- ⁴	2	-- ⁴
2016	1	-- ⁴	0	0.0	0	0.0

1. AIDS and HIV disease deaths coded using ICD-10: B20-B24. 2. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Technical Notes in the Appendix for a more detailed explanation. 3. Number of deaths per 100,000 residents in the specified population group. 4. Calculations based on values 1-4 are excluded.

Table 30. Trends in Infant, Neonatal, and Post Neonatal Mortality, by Race and Hispanic Ethnicity, Massachusetts: 2006-2016

INFANT MORTALITY (less than one year of age)												
Year	State Total ¹		White non-Hispanic		Black non-Hispanic		Hispanic		Asian non-Hispanic		Other ²	
	#	Rate ³	#	Rate ³	#	Rate ³	#	Rate ³	#	Rate ³	#	Rate ³
2006	369	4.8	220	4.1	72	11.1	63	5.9	10	1.8	3	-- ⁴
2007	380	4.9	206	3.9	66	10.2	81	7.4	18	3.1	4	-- ⁴
2008	381	5.0	192	3.7	79	11.9	86	7.9	16	2.7	8	5.1
2009	366	4.9	205	4.1	54	7.8	78	7.1	20	3.4	9	7.8
2010	319	4.4	163	3.4	56	8.2	65	6.1	25	4.3	7	4.4
2011	310	4.2	158	3.4	47	6.7	75	5.8	22	3.6	6	4.2
2012	309	4.3	158	3.5	57	8.2	71	5.4	17	2.6	4	-- ⁴
2013	298	4.2	161	3.6	63	8.9	49	3.9	15	2.4	3	-- ⁴
2014	321	4.5	169	3.8	54	7.6	62	5.0	20	3.2	8	10.5
2015	310	4.3	146	3.3	59	8.3	75	5.7	15	2.3	14	21.8
2016	283	4.0	119	2.8	56	7.7	78	5.8	18	2.7	10	13.7
NEONATAL MORTALITY (birth to 27 days)												
Year	State Total ¹		White non-Hispanic		Black non-Hispanic		Hispanic		Asian, non-Hispanic		Other ²	
	#	Rate ³	#	Rate ³	#	Rate ³	#	Rate ³	#	Rate ³	#	Rate ³
2006	279	3.6	173	3.3	53	8.2	42	3.9	7	1.3	3	-- ⁴
2007	263	3.4	141	2.7	48	7.4	53	4.9	15	2.6	4	-- ⁴
2008	290	3.8	152	2.9	57	8.6	65	6.0	10	1.7	6	3.8
2009	276	3.7	162	3.2	36	5.2	54	4.9	17	2.9	7	6.0
2010	238	3.3	121	2.5	43	6.3	47	4.4	20	3.4	5	4.6
2011	230	3.1	111	2.4	33	4.7	60	4.7	19	3.1	3	-- ⁴
2012	216	3.0	111	2.5	41	5.9	46	3.5	13	2.0	3	-- ⁴
2013	221	3.1	119	2.6	45	6.3	39	3.1	10	1.6	0	0.0
2014	236	3.3	122	2.7	38	5.3	50	3.9	15	2.3	6	9.5
2015	237	3.3	106	2.4	45	6.4	59	4.5	15	2.3	11	17.1
2016	214	3.0	87	2.0	47	6.5	64	4.8	9	1.3	5	6.8
POST NEONATAL MORTALITY (28-365 days)												
Year	State Total ¹		White non-Hispanic		Black non-Hispanic		Hispanic		Asian non-Hispanic		Other ²	
	#	Rate ³	#	Rate ³	#	Rate ³	#	Rate ³	#	Rate ³	#	Rate ³
2006	90	1.2	47	0.9	19	2.9	21	2.0	3	-- ⁴	0	0.0
2007	117	1.5	65	1.2	18	2.8	28	2.6	3	-- ⁴	0	0.0
2008	91	1.2	40	0.8	22	3.3	21	1.9	6	1.0	2	-- ⁴
2009	90	1.2	43	0.9	18	2.6	24	2.2	3	-- ⁴	2	-- ⁴
2010	81	1.1	42	0.9	13	1.9	18	1.7	5	0.9	2	-- ⁴
2011	80	1.1	47	1.0	14	2.0	15	1.2	3	-- ⁴	3	-- ⁴
2012	93	1.3	47	1.0	16	2.3	25	1.9	4	-- ⁴	1	-- ⁴
2013	77	1.1	42	0.9	18	2.5	10	0.8	5	0.8	1	-- ⁴
2014	85	1.2	47	1.1	16	2.2	12	0.9	5	0.8	2	-- ⁴
2015	73	1.0	40	0.9	14	2.0	16	1.2	0	0.0	3	-- ⁴
2016	69	1.0	32	0.7	9	1.2	14	1.0	9	1.3	5	6.8

1. Deaths of infants of unknown race are included in the total calculation. For rate computations, births of infants of unknown race are allocated into the race categories according to the distribution of births of known race. 2. Other: American Indian and Other races. 3. Rates are expressed per 1,000 live births. 4. Calculations based on values 1-4 are excluded.

Table 31. Infant, Neonatal, and Post Neonatal Deaths by Cause, Massachusetts: 2016

Cause of Death ¹	ICD-10 Code	Infant (<1 year)		Neonatal (<28 days)		Post Neonatal (28-365 days)	
		#	%	#	%	#	%
TOTAL		283	100.0	214	100.0	69	100.0
Infectious and parasitic diseases	A00-B99	5	1.8	0	0.0	5	7.2
Cancer	C00-C97	0	0.0	0	0.0	0	0.0
Diseases of the blood and blood forming organs (anemia)	D50-D89	0	0.0	0	0.0	0	0.0
Diseases of nervous system and ear	G00-G98, H60-H93	4	-- ²	3	-- ²	1	-- ²
Diseases of the respiratory system	J00-J98	7	2.5	1	-- ²	6	8.7
Diseases of digestive system	K00-K92	2	-- ²	2	-- ²	0	0.0
Congenital malformations	Q00-Q99	50	17.7	34	15.9	16	23.2
Congenital malformations of nervous system	Q00-Q07	11	3.9	7	3.3	4	-- ²
Anencephalus and similar malformations	Q00	4	-- ²	4	-- ²	0	0.0
Congenital malformations of heart	Q20-Q24	9	3.2	6	2.8	3	-- ²
Other congenital malformations of circulatory system	Q25-Q28	5	1.8	2	-- ²	3	-- ²
Congenital malformations of respiratory system	Q30-Q34	9	3.2	7	3.3	2	-- ²
Congenital malformations of genitourinary system	Q50-Q64	3	-- ²	3	-- ²	0	0.0
Congenital malformations of musculoskeletal system	Q65-Q85	3	-- ²	3	-- ²	0	0.0
Chromosomal abnormalities	Q90-Q99	7	2.5	6	2.8	1	-- ²
Certain conditions originating in the perinatal period	P00-P96	180	63.6	170	79.4	10	14.5
Newborn affected by maternal conditions which may be unrelated to present pregnancy	P00	1	-- ²	1	-- ²	0	0.0
Newborn affected by maternal complications of pregnancy	P01	28	9.9	28	13.1	0	0.0
Newborn affected by complications of placenta, cord and membrane	P02	11	3.9	10	4.7	1	-- ²
Newborn affected by other complications of labor and delivery	P03	2	-- ²	2	-- ²	0	0.0
Disorders relating to short gestation and low birthweight	P07	70	24.7	69	32.2	1	-- ²
Intrauterine hypoxia and birth asphyxia	P20-P21	6	2.1	6	2.8	0	0.0
Respiratory distress of newborn	P22	9	3.2	8	3.7	1	-- ²
Other respiratory conditions of newborn	P23-P28	13	4.6	10	4.7	3	-- ²
Infections specific to the perinatal period	P35-P39	5	1.8	3	-- ²	2	-- ²
Neonatal hemorrhage	P50-P52, P54	4	-- ²	4	-- ²	0	0.0
Other and ill-defined conditions originating in the perinatal period	P90-P96	5	1.8	5	2.3	0	0.0
Symptoms, signs, and ill-defined conditions	R00-R99	26	9.2	2	--²	24	34.8
Sudden Infant Death Syndrome (SIDS)	R95	14	4.9	0	0.0	14	20.3
Unintentional injuries	V01-X59	4	--²	1	--²	3	--²
Homicide	X85-Y09	0	0.0	0	0.0	0	0.0
All other causes	Residual	5	1.8	1	--²	4	--²

1. Please see Technical Notes in the Appendix for an explanation of ICD-10 codes. 2. Calculations based on values 1-4 are excluded.

Table 32. Infant Deaths by Major Causes, Race and Hispanic Ethnicity¹, Massachusetts: 2016

		White non-Hispanic		Black non-Hispanic		Asian non-Hispanic		Hispanic	
Cause of Death ¹	ICD-10 Code	#	%	#	%	#	%	#	%
TOTAL		119	100.0%	56	100.0%	18	100.0%	78	100.0%
Certain conditions originating in the perinatal period	P00- P96	76	63.9%	38	67.9%	11	61.1%	49	62.8%
Congenital malformations	Q00-Q99	22	18.5%	9	16.1%	1	-- ²	16	20.5%
Symptoms, signs, and ill-defined conditions	R00-R99	14	11.8%	4	-- ²	2	-- ²	5	6.4%
SIDS	R95	8	6.7%	2	-- ²	1	-- ²	3	-- ²
Unintentional Injuries	V01-X59	1	-- ²	2	-- ²	0	0.0%	1	-- ²
Homicide	X85-Y09	0	0.0%	0	0.0%	0	0.0%	0	0.0%
All other causes	Residual	6	5.0%	3	-- ²	4	-- ²	7	9.0%

1. Deaths are coded according to ICD-10. Please see Appendix for comparability ratios. 2. Calculations based on values 1-4 are excluded.

**Table 33. Target Status for Selected Healthy People 2020 Mortality Objectives
(underlying cause of death only)**

HEALTHY PEOPLE 2020 OBJECTIVE	TARGET 2020 ¹	MA 2010 ²	MA 2013 ²	MA 2014 ²	MA 2015 ²	MA 2016 ²	TARGET STATUS
Overall Cancer	161.4	171.0	159.5	155.6	152.8	149.8	✓
Lung Cancer	45.5	47.3	41.4	40.7	39.0	37.3	✓
Female Breast Cancer (per 100,000 females)	20.7	19.1	18.4	18.0	17.7	16.8	✓
Uterine Cervical Cancer (per 100,000 females)	2.2	4.3	1.0	1.3	1.1	1.1	✓
Colorectal Cancer	14.5	14.9	13.0	12.6	12.0	11.6	✓
Oropharyngeal Cancer	2.3	3.0	2.4	2.3	2.4	2.1	✓
Prostate Cancer (per 100,000 males)	21.8	21.2	18.5	18.8	17.9	18.6	✓
Malignant Melanoma	2.4	3.1	3.2	3.6	3.1	3.1	●
COPD, Ages 45+	102.6	84.4	86.8	85.8	90.9	86.2	✓
Coronary Heart Disease	103.4	96.5	87.6	82.4	80.8	76.9	✓
Stroke	34.8	31.2	31.8	39.4	45.5	53.6	●
Cirrhosis	8.2	5.4	4.6	5.5	4.1	4.3	✓
Drug-Induced Deaths	11.3	12.5	19.0	23.5	29.0	35.8	●
HIV/AIDS	3.3	1.6	1.0	0.7	1.1	0.9	✓
Injury Deaths	53.7	43.3	46.7	51.6	58.0	66.2	○
Residential Fire Deaths	0.9	0.2	0.2	0.4	0.5	0.5	✓
Falls	7.2	6.9	7.8	7.9	8.7	8.5	○
Falls, Ages 65+	47.0	48.1	55.4	52.2	59.4	57.5	○
Firearm-Related	9.3	4.0	3.2	3.1	3.0	3.4	✓
Poisonings	13.2	12.5	18.4	23.6	28.4	35.4	●
Poisonings, Ages 35-54	25.6	22.8	30.5	30.5	46.5	58.1	●
Unintentional or Undetermined Intent Injuries	11.1	10.9	16.5	16.5	26.3	33.1	●
Unintentional or Undetermined Intent Injuries, Ages 35-54	21.6	20.0	30.5	30.7	46.5	58.1	●
Unintentional Injuries	36.4	28.3	33.9	39.4	45.5	53.6	●
Motor Vehicle Crashes	12.4	5.4	5.2	5.7	5.4	6.3	✓
Drowning	1.1	1.2	1.3	1.0	1.0	1.2	○
Hanging, Strangulation or Suffocation	1.8	5.8	5.4	3.8	6.3	5.9	●
Homicide	5.5	3.2	2.3	2.3	2.2	2.1	✓
Suicide	10.2	8.7	8.5	8.5	9.0	8.8	✓
Infant and Child Health							
Infant Deaths (per 1,000 live births)	6.0	4.4	4.2	4.5	4.3	4.0	✓
Neonatal Deaths (per 1,000 live births)	4.1	3.3	3.1	3.3	3.3	3.0	✓
Post Neonatal Deaths (per 1,000 live births)	2.0	1.1	1.1	1.2	1.0	1.0	✓
Birth Defects (per 1,000 live births)	1.3	0.7	0.8	0.7	0.5	0.7	✓
Congenital Heart Defects (per 1,000 live births)	0.3	0.1	0.2	0.2	0.1	0.1	✓
Sudden Infant Death Syndrome (SIDS) (per 1,000 live births)	0.5	0.5	0.2	0.3	0.3	0.2	✓
Child/Adolescent/Young Adults Death Rates							
1-4 years old	26.5	13.6	15.4	14.7	16.7	14.2	✓
5-9 years old	12.4	7.3	8.4	5.3	9.1	8.8	✓
10-14 years old	14.8	8.6	10.3	6.8	9.1	10.4	✓
15-19 years old	54.3	30.9	27.8	19.5	31.1	30.4	✓
20-24 years old	88.3	65.2	66.6	40.9	76.1	77.7	✓
Asthma Deaths (per million)							
Ages 35-64 Years	4.9	6.3	10.3	11.4	10.3	12.6	●
Ages 65+ Years	21.5	29.9	31.3	35.4	45.9	36.3	●

✓ = YES, met target

○ = NO, but within 25% of target

● = NO, > 25% from target

1. Data 2020 the Healthy People 2020 Database. (Source: <https://www.healthypeople.gov>).

2. Death rates are per 100,000 and age adjusted to the 2010 US Population except when noted.

Table 34. Rank of Premature Mortality Rates for the Largest 30 Communities, Massachusetts: 2016 (Sorted by PMR)

Largest 30 Communities¹	Number of Premature Deaths	PMR² (per 100,000)
Fall River	467	517.7*
New Bedford	469	502.8*
Pittsfield	250	500.0*
Lowell	450	485.7*
Worcester	771	477.2*
Brockton	429	467.6*
Haverhill	279	462.0*
Springfield	612	441.0*
Taunton	246	428.2*
Chicopee	251	417.3*
Weymouth	244	405.9*
Lawrence	256	403.1*
Attleboro	177	399.2*
Revere	207	389.9*
Lynn	331	383.4*
Methuen	180	375.5*
Quincy	348	350.1*
Barnstable	187	349.5*
Boston	1816	345.4*
Malden	196	340.5*
Somerville	187	326.6
Plymouth	216	324.9
Peabody	187	317.1
Medford	179	311.3
Framingham	178	261.8
Waltham	151	261.5
Cambridge	217	250.7
Arlington	90	193.3*
Newton	148	166.8*
Brookline	81	149.8*
STATE	22,268	282.2

1. These communities had the largest populations in Massachusetts, based on 2010 Census. Rates for cities and towns were calculated using MDPH population estimates for 2010, which are the most up-to-date information available on the number of persons by age, race, and sex at the sub-state level. 2. Rates are age-adjusted to the 2000 US Standard Population for person ages 0-74 years.

* Significantly different from State PMR.

Table 35. Premature Mortality Rates by Community, Massachusetts: 2016

<u>City/Town</u>	<u>Premature Deaths (#)</u>	<u>PMR</u>¹ (per 100,000 population)
STATE	22,268	282.2
Abington	56	338.8
Acton	62	288.6
Acushnet	44	384.8
Adams	42	438.6
Agawam	110	321.2
Alford	1	-- ²
Amesbury	59	357.4
Amherst	38	202.9
Andover	75	208.3
Aquinnah	2	-- ²
Arlington	90	193.3
Ashburnham	23	383.7
Ashby	10	276.2
Ashfield	3	-- ²
Ashland	45	276.2
Athol	65	542.2
Attleboro	177	399.2
Auburn	54	277.7
Avon	23	466.7
Ayer	48	661.3
Barnstable	187	349.5
Barre	22	386.6
Becket	8	320.5
Bedford	37	245.5
Belchertown	46	338.5
Bellingham	66	393.9
Belmont	47	171.0
Berkley	18	320.4
Berlin	10	231.7
Bernardston	6	196.5
Beverly	150	366.4
Billerica	141	329.7
Blackstone	41	480.3
Blandford	2	-- ²
Bolton	8	150.8
Boston	1,816	345.4
Bourne	86	367.7
Boxborough	11	252.8
Boxford	19	185.8
Boylston	9	177.9
Braintree	135	337.0
Brewster	24	183.3
Bridgewater	85	339.5
Brimfield	16	354.8
Brockton	429	467.6
Brookfield	15	329.2

**Table 35 (continued). Premature Mortality Rates by Community,
Massachusetts: 2016**

<u>City/Town</u>	<u>Premature Deaths (#)</u>	<u>PMR</u>¹ (per 100,000 population)
Brookline	81	149.8
Buckland	10	537.8
Burlington	60	214.2
Cambridge	217	250.7
Canton	70	299.4
Carlisle	7	103.6
Carver	66	539.9
Charlemont	3	-- ²
Charlton	44	367.5
Chatham	21	242.7
Chelmsford	97	248.9
Chelsea	129	471.5
Cheshire	10	258.4
Chester	2	-- ²
Chesterfield	7	404.3
Chicopee	251	417.3
Chilmark	2	-- ²
Clarksburg	2	-- ²
Clinton	58	419.9
Cohasset	17	258.0
Colrain	9	348.2
Concord	35	154.5
Conway	4	-- ²
Cummington	2	-- ²
Dalton	18	223.0
Danvers	124	407.3
Dartmouth	111	308.5
Dedham	97	353.6
Deerfield	13	179.2
Dennis	82	373.0
Dighton	23	288.4
Douglas	22	288.1
Dover	8	180.5
Dracut	116	374.2
Dudley	40	356.1
Dunstable	8	242.2
Duxbury	42	248.5
East Bridgewater	55	354.9
East Brookfield	12	466.8
East Longmeadow	39	222.8
Eastham	14	175.4
Easthampton	60	341.6
Easton	68	290.3
Edgartown	13	253.9
Egremont	5	220.9
Erving	8	355.2
Essex	13	397.6
Everett	151	387.7
Fairhaven	53	261.6

**Table 35 (continued). Premature Mortality Rates by Community,
Massachusetts: 2016**

<u>City/Town</u>	<u>Premature Deaths (#)</u>	<u>PMR</u>¹ (per 100,000 population)
Fall River	467	517.7
Falmouth	127	338.4
Fitchburg	198	522.2
Florida	4	-- ²
Foxborough	60	312.8
Framingham	178	261.8
Franklin	65	247.7
Freetown	29	303.4
Gardner	92	446.4
Georgetown	18	229.4
Gill	1	-- ²
Gloucester	117	307.9
Goshen	5	396.9
Gosnold	0	0.0
Grafton	41	223.9
Granby	20	297.2
Granville	3	-- ²
Great Barrington	34	404.9
Greenfield	83	401.1
Groton	28	283.5
Groveland	15	205.0
Hadley	19	339.3
Halifax	30	375.4
Hamilton	28	353.0
Hampden	18	329.5
Hancock	4	-- ²
Hanover	45	338.4
Hanson	36	331.9
Hardwick	14	492.3
Harvard	10	139.1
Harwich	69	431.9
Hatfield	22	494.1
Haverhill	279	462.0
Hawley	1	-- ²
Heath	3	-- ²
Hingham	60	232.3
Hinsdale	5	244.4
Holbrook	52	444.6
Holden	63	337.6
Holland	5	141.7
Holliston	35	202.0
Holyoke	161	424.9
Hopedale	21	407.6
Hopkinton	23	163.9
Hubbardston	21	500.4
Hudson	57	262.6
Hull	48	353.9
Huntington	6	245.0

**Table 35 (continued). Premature Mortality Rates by Community,
Massachusetts: 2016**

<u>City/Town</u>	<u>Premature Deaths (#)</u>	<u>PMR</u>¹ (per 100,000 population)
Ipswich	38	247.0
Kingston	34	236.5
Lakeville	36	292.1
Lancaster	26	315.9
Lanesborough	12	295.7
Lawrence	256	403.1
Lee	18	245.0
Leicester	52	428.8
Lenox	12	220.1
Leominster	171	403.8
Leverett	4	-- ²
Lexington	48	144.7
Leyden	2	-- ²
Lincoln	18	248.7
Littleton	27	289.1
Longmeadow	28	160.7
Lowell	450	485.7
Ludlow	71	304.7
Lunenburg	44	374.6
Lynn	331	383.4
Lynnfield	23	195.0
Malden	196	340.5
Manchester	17	306.4
Mansfield	60	307.7
Marblehead	47	214.8
Marion	21	351.4
Marlborough	116	304.6
Marshfield	109	363.5
Mashpee	62	333.8
Mattapoisett	21	242.7
Maynard	31	259.6
Medfield	17	130.3
Medford	179	311.3
Medway	37	294.0
Melrose	76	257.9
Mendon	15	234.5
Merrimac	24	336.7
Methuen	180	375.5
Middleborough	110	424.2
Middlefield	2	-- ²
Middleton	23	243.4
Milford	89	318.9
Millbury	48	314.6
Millis	32	379.7
Millville	7	244.3
Milton	77	283.4
Monroe	1	-- ²
Monson	30	298.3
Montague	47	492.2

**Table 35 (continued). Premature Mortality Rates by Community,
Massachusetts: 2016**

<u>City/Town</u>	<u>Premature Deaths (#)</u>	<u>PMR</u>¹ (per 100,000 population)
Monterey	0	0.0
Montgomery	5	612.5
Mount Washington	0	0.0
Nahant	15	301.4
Nantucket	33	294.8
Natick	87	250.9
Needham	47	158.2
New Ashford	3	-- ²
New Bedford	469	502.8
New Braintree	2	-- ²
New Marlborough	3	-- ²
New Salem	4	-- ²
Newbury	17	232.0
Newburyport	51	232.5
Newton	148	166.8
Norfolk	20	182.3
North Adams	67	448.1
North Andover	55	204.9
North Attleboro	87	314.1
North Brookfield	18	358.5
North Reading	33	200.1
Northampton	84	281.7
Northborough	42	289.9
Northbridge	56	377.3
Northfield	9	292.5
Norton	60	337.3
Norwell	27	207.1
Norwood	83	264.2
Oak Bluffs	27	480.6
Oakham	4	-- ²
Orange	53	621.5
Orleans	28	356.6
Otis	8	384.7
Oxford	48	326.1
Palmer	62	474.1
Paxton	10	207.2
Peabody	187	317.1
Pelham	4	-- ²
Pembroke	66	365.1
Pepperell	36	310.4
Peru	2	-- ²
Petersham	5	241.4
Phillipston	7	452.3
Pittsfield	250	500.0
Plainfield	3	-- ²
Plainville	38	409.0
Plymouth	216	324.9
Plympton	8	255.9
Princeton	11	274.8

**Table 35 (continued). Premature Mortality Rates by Community,
Massachusetts: 2016**

<u>City/Town</u>	<u>Premature Deaths (#)</u>	<u>PMR</u>¹ (per 100,000 population)
Provincetown	12	214.2
Quincy	348	350.1
Randolph	116	349.0
Raynham	53	359.2
Reading	54	207.9
Rehoboth	31	249.0
Revere	207	389.9
Richmond	2	-- ²
Rochester	16	297.2
Rockland	108	601.6
Rockport	19	176.8
Rowe	1	-- ²
Rowley	9	135.5
Royalston	3	-- ²
Russell	8	437.5
Rutland	26	354.6
Salem	139	331.7
Salisbury	51	533.2
Sandisfield	7	406.5
Sandwich	60	239.9
Saugus	93	304.9
Savoy	4	-- ²
Scituate	59	273.3
Seekonk	49	322.1
Sharon	26	124.7
Sheffield	13	289.3
Shelburne	13	621.1
Sherborn	9	281.9
Shirley	24	342.8
Shrewsbury	69	201.8
Shutesbury	3	-- ²
Somerset	70	325.0
Somerville	187	326.6
South Hadley	50	270.7
Southampton	14	204.0
Southborough	14	125.8
Southbridge	85	509.2
Southwick	29	269.0
Spencer	51	398.7
Springfield	612	441.0
Sterling	17	195.7
Stockbridge	6	214.2
Stoneham	71	302.2
Stoughton	103	350.7
Stow	12	177.5
Sturbridge	34	304.3
Sudbury	34	195.4
Sunderland	10	311.9
Sutton	19	194.6

**Table 35 (continued). Premature Mortality Rates by Community,
Massachusetts: 2016**

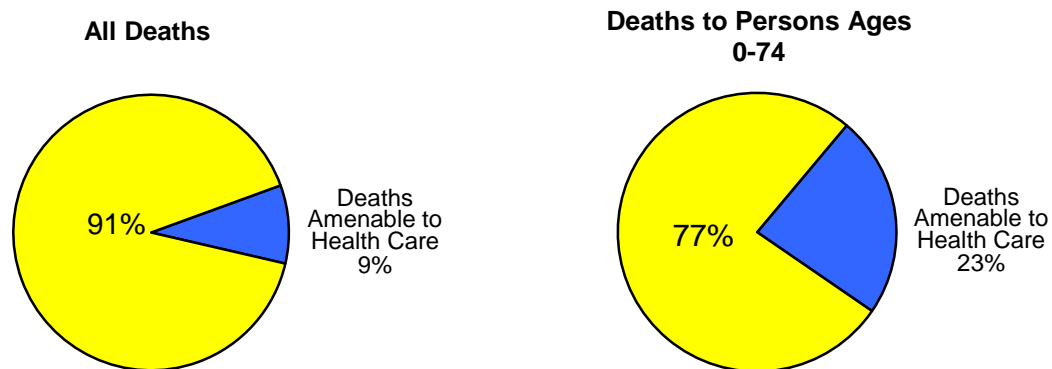
<u>City/Town</u>	<u>Premature Deaths (#)</u>	<u>PMR</u>¹ (per 100,000 population)
Swampscott	46	302.8
Swansea	37	196.3
Taunton	246	428.2
Templeton	27	322.7
Tewksbury	110	333.2
Tisbury	18	360.3
Tolland	3	-- ²
Topsfield	15	222.0
Townsend	32	363.5
Truro	8	277.4
Tyngsborough	33	347.7
Tyringham	0	0.0
Upton	22	258.5
Uxbridge	35	239.7
Wakefield	98	357.2
Wales	9	409.8
Walpole	61	244.6
Waltham	151	261.5
Ware	39	381.0
Wareham	138	526.1
Warren	11	196.3
Warwick	4	-- ²
Washington	1	-- ²
Watertown	86	259.3
Wayland	22	159.5
Webster	72	402.4
Wellesley	35	119.7
Wellfleet	14	237.1
Wendell	4	-- ²
Wenham	8	185.3
West Boylston	14	151.9
West Bridgewater	26	324.4
West Brookfield	25	555.1
West Newbury	9	191.9
West Springfield	122	394.7
West Stockbridge	5	234.9
West Tisbury	8	288.5
Westborough	41	234.4
Westfield	155	370.0
Westford	48	212.7
Westhampton	8	415.9
Westminster	24	287.6
Weston	17	121.7
Westport	57	266.5
Westwood	34	272.5
Weymouth	244	405.9
Whately	3	-- ²
Whitman	61	409.3
Wilbraham	33	193.3

Table 35 (continued). Premature Mortality Rates by Community, Massachusetts: 2016

<u>City/Town</u>	<u>Premature Deaths (#)</u>	<u>PMR</u>¹ (per 100,000 population)
Williamsburg	10	347.5
Williamstown	18	239.1
Wilmington	67	302.8
Winchendon	32	306.5
Winchester	34	173.4
Windsor	6	414.3
Winthrop	93	425.5
Woburn	147	353.4
Worcester	771	477.2
Worthington	5	260.8
Wrentham	42	404.1
Yarmouth	120	346.6

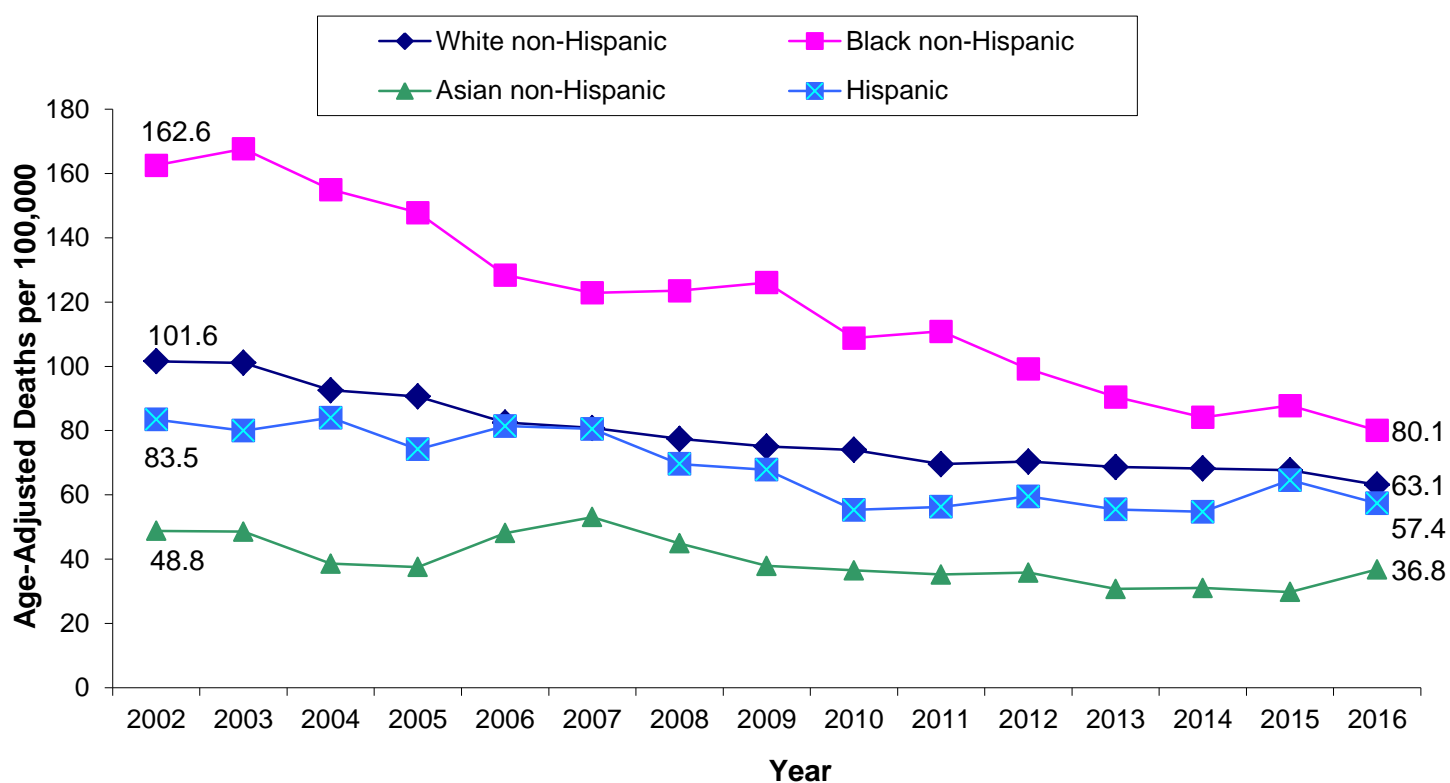
1. Premature mortality rates (PMR) are age-adjusted to the 2000 US Standard Population for persons ages 0-74 years.
2. Age-adjusted rates based on values 1-4 are excluded.

Figure 17. Percent of Deaths Amenable to Health Care¹, Massachusetts: 2016



1. Deaths amenable to health care are deaths that should be preventable with timely and effective health care. See Table A6 for a complete list of ICD codes included in this category.

**Figure 18. Amenable Mortality¹ by Race and Hispanic Ethnicity²,
Massachusetts: 2002-2016**



1. Deaths amenable to health care are deaths that should be preventable with timely and effective health care. See Table A6 for a complete list of ICD codes included in this category.

2. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Technical Notes in the Appendix for a more detailed explanation.

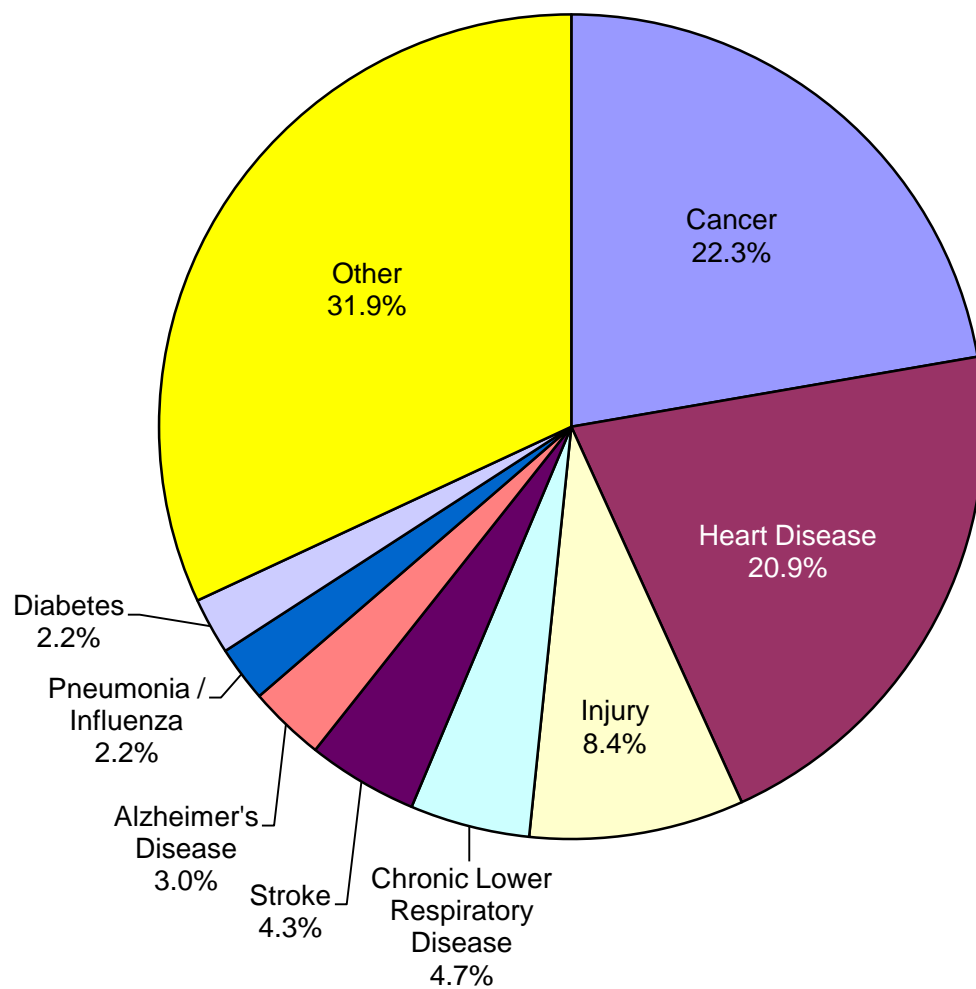
APPENDIX

Additional Tables & Figures

Technical Notes

Glossary

**Figure 19. Percent Distribution of Leading Underlying Causes of Death,
Massachusetts: 2016**



Note: Total Number of Deaths = 56,953

Note: Causes of Death are classified according to ICD-10

Table 36. Number and Age-Specific Rates for Leading Underlying Causes of Death by Race and Hispanic Ethnicity, Massachusetts: 2016

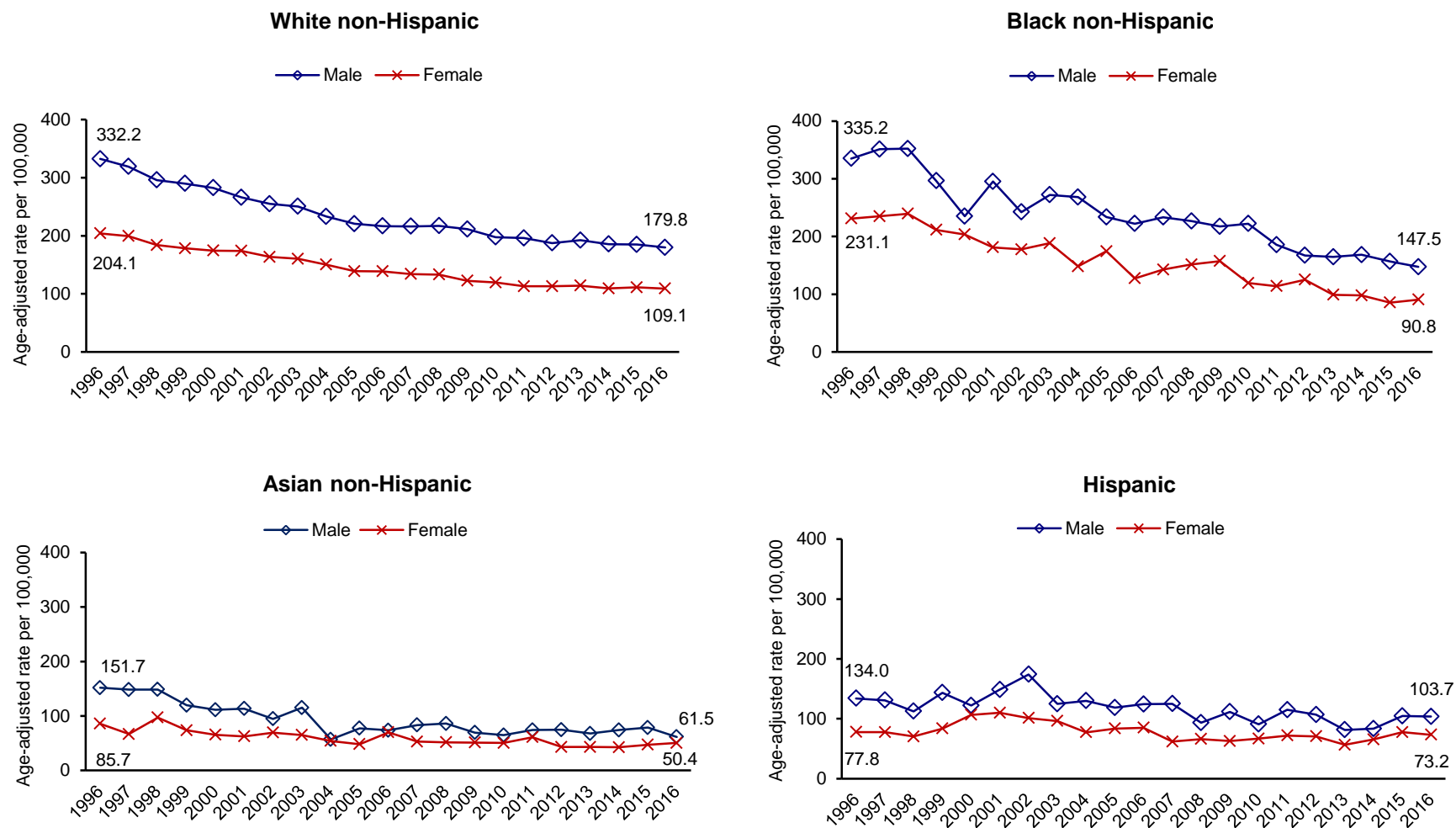
Selected Causes ²	<u>Total</u>		<u>White non-Hispanic¹</u>		<u>Black non-Hispanic¹</u>		<u>Asian non-Hispanic¹</u>		<u>Hispanic¹</u>	
	#	Rate ³	#	Rate ³	#	Rate ³	#	Rate ³	#	Rate ³
Age: 1-14, TOTAL	115	10.9	68	10.0	17	16.6	7	8.8	16	8.4
Unintentional Injuries ⁴	27	2.6	16	2.4	5	4.9	1	-- ⁶	3	-- ⁶
Cancer	20	1.9	9	1.3	2	-- ⁶	3	-- ⁶	6	3.1
Heart Disease	8	0.8	6	0.9	1	-- ⁶	1	-- ⁶	0	0.0
Congenital malformations	8	0.8	4	-- ⁶	1	-- ⁶	1	-- ⁶	1	-- ⁶
Age: 15-24, TOTAL	526	55.1	346	53.3	58	67.6	25	33.3	82	57.6
Unintentional Injuries ⁴	285	29.8	203	31.3	22	25.6	8	10.7	44	30.9
Suicide	83	8.7	62	9.5	4	-- ⁶	8	10.7	9	6.3
Homicide	44	4.6	10	1.5	19	22.2	0	0.0	15	10.5
Cancer	25	2.6	15	2.3	1	-- ⁶	4	-- ⁶	3	-- ⁶
Age: 25-44, TOTAL	2,742	154.3	2,054	169.5	201	135.7	58	34.4	359	146.7
Unintentional Injuries ⁴	1,409	79.3	1,135	93.7	50	33.8	13	7.7	185	75.6
Cancer	261	14.7	174	14.4	23	15.5	14	8.3	41	16.7
Suicide	210	11.8	172	14.2	12	8.1	6	3.6	15	6.1
Heart Disease	150	8.4	98	8.1	20	13.5	9	5.3	20	8.2
Age: 45-64, TOTAL	9,270	493.6	7,674	507.8	655	545.5	209	208.4	603	424.4
Cancer	2,984	158.9	2,470	163.4	201	167.4	118	117.6	148	104.2
Heart Disease	1,559	83.0	1,320	87.3	114	94.9	25	24.9	91	64.0
Unintentional Injuries ⁴	1,097	58.4	902	59.7	61	50.8	13	13.0	105	73.9
Chronic Liver Disease	389	20.7	329	21.8	17	14.2	1	-- ⁶	35	24.6
Age: 65+, TOTAL	44,015	4,098.4	40,392	4,297.4	1,517	3,148.0	711	1,815.5	987	2,203.6
Heart Disease	10,190	948.8	9,438	1,004.1	307	637.1	129	329.4	215	480.0
Cancer	9,401	875.4	8,597	914.7	339	703.5	187	477.5	205	457.7
Chronic Lower Respiratory Disease	2,343	218.2	2,232	237.5	44	91.3	21	53.6	29	64.7
Stroke	2,236	208.2	1,982	210.9	98	203.4	65	166.0	58	129.5

Table 36 (continued). Number and Age-Specific Rates for Leading Underlying Causes of Death by Race and Hispanic Ethnicity, Massachusetts: 2016

Selected Causes²	<u>Total</u>		<u>White non-Hispanic¹</u>		<u>Black non-Hispanic¹</u>		<u>Asian non-Hispanic¹</u>		<u>Hispanic¹</u>	
	#	Rate³	#	Rate³	#	Rate³	#	Rate³	#	Rate³
Age: 65-74, TOTAL	9,332	1,523.5	8,240	1,554.8	478	1,630.8	169	716.8	344	1,205.6
Cancer	3,316	541.4	2,969	560.2	151	515.2	70	296.9	98	343.4
Heart Disease	1,736	283.4	1,543	291.1	80	272.9	24	101.8	64	224.3
Chronic Lower Respiratory Disease ⁵	616	100.6	587	110.8	15	51.2	2	-- ⁶	8	28.0
Stroke	303	49.5	248	46.8	18	61.4	11	46.7	17	59.6
Age: 75-84, TOTAL	12,870	4,252.8	11,679	4,407.3	484	3,568.8	252	2,175.2	329	2,753.6
Cancer	3,411	1,127.1	3,149	1,188.3	102	752.1	72	621.5	61	510.5
Heart Disease	2,657	878.0	2,399	905.3	110	811.1	39	336.6	78	652.8
Chronic Lower Respiratory Disease ⁵	838	276.9	793	299.3	19	140.1	7	60.4	14	117.2
Stroke	608	200.9	532	200.8	24	177.0	24	207.2	17	142.3
Age: 85+, TOTAL	21,813	13,735.6	20,473	14,124.4	555	10,438.2	290	7,250.0	314	7,288.8
Heart Disease	5,797	3,650.4	5,496	3,791.7	117	2,200.5	66	1,650.0	73	1,694.5
Cancer	2,674	1,683.8	2,479	1,710.3	86	1,617.5	45	1,125.0	46	1,067.8
Stroke	1,325	834.4	1,202	829.3	56	1,053.2	30	750.0	24	557.1
Alzheimer's Disease	1,234	777.0	1,171	807.9	28	526.6	12	300.0	14	325.0

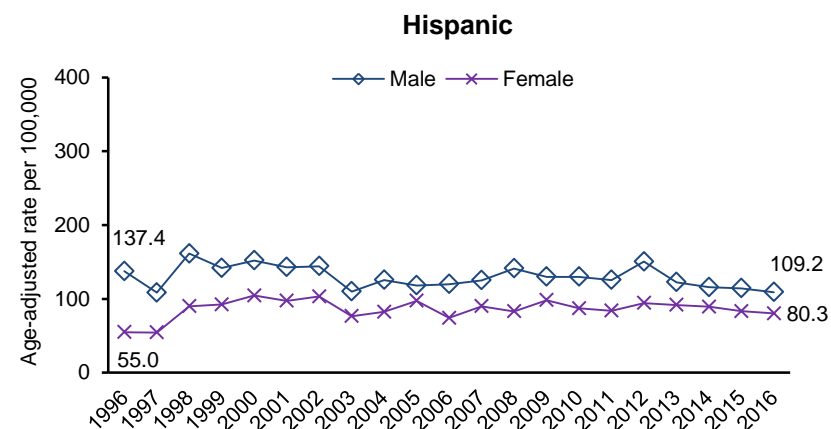
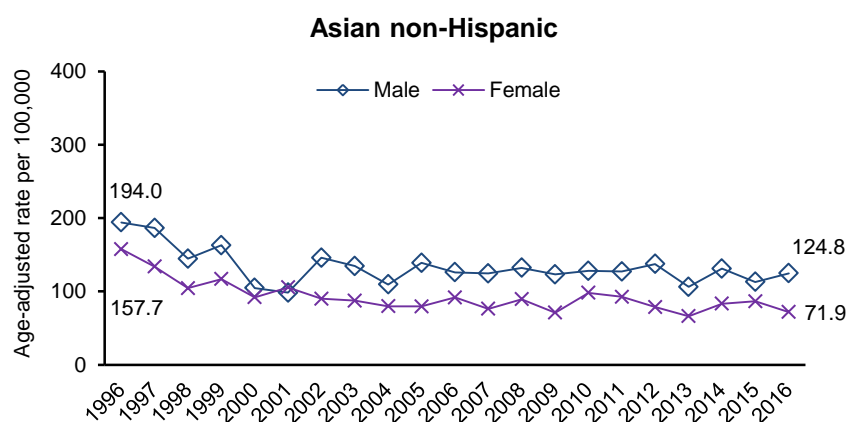
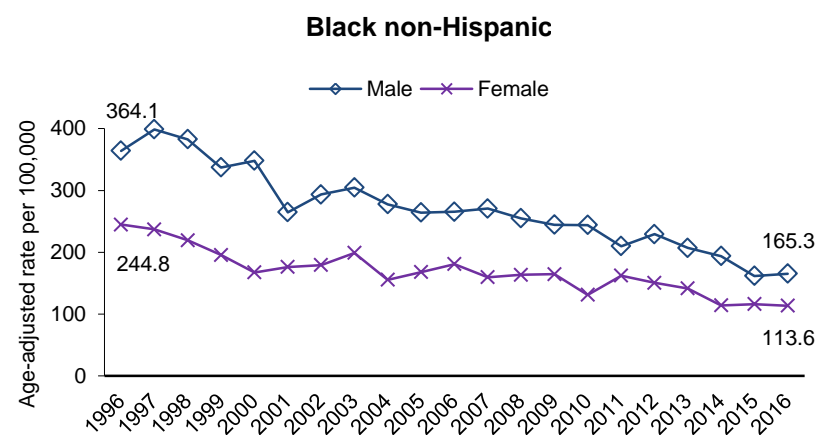
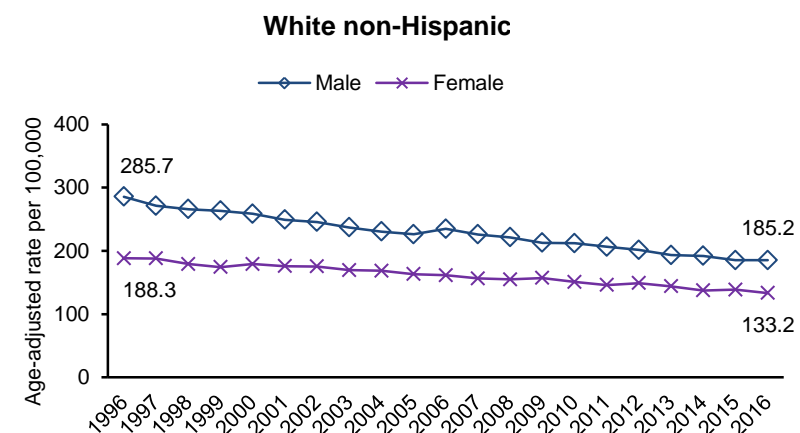
1. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see Technical Notes in the Appendix for a more detailed explanation. 2. Deaths are coded according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 3. Number of deaths per 100,000 persons in each age group. 4. Unintentional injuries include injuries such as motor vehicle-related and other transportation related deaths, falls, fires, and drownings that were not intended to occur. 5. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title). 6. Calculations based on values 1-4 are excluded.

Figure 20. Heart Disease Death Rates¹ by Race and Hispanic Ethnicity and Gender, Massachusetts: 1996-2016²



1. Rates are per 100,000 population, age-adjusted to the 2010 U.S. Standard Population. 2. For 1996-1998 the comparability-modified rates were used.

Figure 21. Cancer Death Rates¹ by Race and Hispanic Ethnicity and Gender, Massachusetts: 1996-2016²



1. Rates are per 100,000 population, age-adjusted to the 2010 U.S. Standard Population. 2. For 1996-1998 the comparability-modified rates were used.

**Table 37. Premature Mortality Rates by Community Health Network Area (CHNA),
Massachusetts: 2016**

CHNA (Name and Number)	Number of Deaths	PMR¹ (per 100,000 population)
Massachusetts	22,268	282.2
1. Community Health Network of Berkshire	570	363.1
2. Upper Valley Health Web (Franklin County)	382	376.5
3. Partnership for Health in Hampshire County (Northampton)	438	292.3
4. The Community Health Connection (Springfield)	1,104	363.5
5. Community Health Network of Southern Worcester County	485	380.2
6. Community Partners for Health (Milford)	495	308.4
7. Community Health Network of Greater Metro West (Framingham)	1,016	249.5
8. Common Pathways (Worcester)	1,131	377.1
9. Community Health Network of North Central Massachusetts	1,018	375.4
10. Greater Lowell Community Health Network	1,003	362.7
11. Greater Lawrence Community Health Network	589	321.4
12. Greater Haverhill Community Health Network	551	347.5
13. Community Health Network North (Beverly/Gloucester)	405	305.2
14. North Shore Community Health Network	1,005	328.6
15. Northwest Suburban Health Alliance	553	236.5
16. North Suburban Health Alliance (Medford/Malden/Melrose)	858	307.0
17. Greater Cambridge/Somerville Community Health Network	627	246.6
18. West Suburban Health Network (Newton/Waltham)	537	199.4
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	2,326	340.3
20. Blue Hills Community Health Alliance (Greater Quincy)	1,310	313.8
21. Community Health Network of Chicopee, Holyoke, Ludlow, Westfield	646	382.9
22. Greater Brockton Community Health Network	958	395.1
23. South Shore Community Health Network	760	361.3
24. Greater Attleboro-Taunton Health & Education Response	950	361.9
25. Partners for Healthier Communities (Fall River)	631	419.9
26. Greater New Bedford Community Health Network	902	414.0
27. Cape Cod and Islands Health Network	1,017	318.9

1. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population for persons ages 0-74 years.

Table 38. Premature Mortality Rates by County, Massachusetts: 2016

County	Number of Deaths	PMR¹ (per 100,000 population)
Massachusetts	22,268²	282.2
Barnstable	914	305.1
Berkshire	570	339.3
Bristol	2,209	341.0
Dukes	70	279.8
Essex	2,550	280.2
Franklin	302	305.3
Hampden	1,774	329.3
Hampshire	444	247.6
Middlesex	4,184	234.2
Nantucket	33	244.1
Norfolk	2,034	248.8
Plymouth	2,008	319.7
Suffolk	2,245	301.1
Worcester	2,930	311.0
<p>1. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population for persons ages 0-74 years. 2. Includes one death with an unknown county of residence.</p>		

Table 39. Selected Causes of Death by Community, Massachusetts: 2016

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁵
Massachusetts	56,953	668.9	11,923	12,691	3,168	775	2,468	2,676	1,267	1,243	466	140	636	2,034
Abington	127	803.5	34	26	7	4	5	7	3	5	0	0	2	2
Acton	144	725.4	24	44	11	2	4	7	5	1	2	0	5	7
Acushnet	101	798.1	22	28	9	1	7	4	1	0	4	0	1	4
Adams	103	769.0	26	19	6	1	8	5	1	0	0	0	1	1
Agawam	339	714.7	83	67	15	3	17	19	10	7	3	0	1	3
Alford	2	-- ⁴	1	0	0	0	0	0	0	0	0	0	0	0
Amesbury	146	818.5	35	25	5	3	9	7	5	3	0	0	1	7
Amherst	132	515.3	26	29	7	2	4	6	0	4	1	0	1	2
Andover	223	559.1	56	48	13	1	7	12	4	2	2	0	2	3
Aquinnah	3	-- ⁴	1	0	0	0	0	0	0	1	0	0	0	0
Arlington	345	560.3	63	77	19	5	8	13	10	6	5	0	2	5
Ashburnham	40	787.3	5	14	0	0	4	0	0	0	1	0	1	2
Ashby	27	1,129.9	8	3	0	1	4	1	1	1	0	0	2	0
Ashfield	10	490.9	5	2	1	0	0	0	0	1	0	0	0	0
Ashland	93	618.8	20	28	3	1	5	4	1	1	1	0	2	4
Athol	147	964.4	35	32	10	2	8	6	2	2	1	0	1	3
Attleboro	389	789.1	84	73	20	4	17	22	13	16	2	0	5	18
Auburn	180	684.6	46	38	7	3	7	11	1	8	0	0	2	2
Avon	51	880.3	16	9	1	0	2	4	0	0	0	0	1	3
Ayer	105	1,434.6	22	20	8	1	7	2	1	3	0	0	3	6
Barnstable	514	721.3	116	107	30	7	35	29	9	13	9	1	3	21
Barre	48	799.8	11	10	5	1	5	4	2	1	1	0	0	0
Becket	19	1,085.4	5	3	1	0	2	1	1	0	1	0	0	0
Bedford	142	629.0	24	33	6	3	3	3	4	1	1	0	0	6
Belchertown	98	796.1	17	19	5	0	8	6	2	2	0	1	0	2
Bellingham	126	826.9	35	28	6	3	4	8	3	2	3	0	1	5
Belmont	167	485.3	28	32	4	3	4	6	2	0	0	1	3	4
Berkley	36	881.3	6	6	1	1	2	4	2	1	2	0	0	5
Berlin	22	558.7	8	5	0	0	1	0	0	0	1	0	0	0
Bernardston	19	597.0	3	5	3	0	0	0	0	1	1	0	0	1

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2016

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁵
Beverly	416	810.4	107	69	16	4	14	27	6	7	1	1	5	16
Billerica	317	877.8	67	79	28	2	8	13	2	6	3	0	3	15
Blackstone	80	914.8	12	16	3	0	2	5	1	0	0	0	1	7
Blandford	7	554.7	2	2	1	0	0	0	0	0	0	0	0	0
Bolton	23	711.5	7	7	0	0	1	1	0	0	0	0	0	1
Boston	3,799	702.5 ⁶	707	910	226	57	154	133	123	58	45	35	44	189
Bourne	267	901.9	55	54	12	1	11	18	3	6	2	0	2	9
Boxborough	21	603.7	6	4	1	0	1	0	1	1	0	0	2	1
Boxford	48	576.8	13	15	5	1	0	2	0	1	0	0	0	0
Boylston	30	625.4	12	9	3	0	0	1	1	0	0	0	0	0
Braintree	411	786.2	79	90	22	8	23	19	7	10	3	0	2	8
Brewster	151	583.2	45	26	5	3	4	9	7	4	0	0	2	3
Bridgewater	191	835.6	40	48	15	4	1	11	3	4	2	0	2	10
Brimfield	34	857.3	9	5	2	0	1	2	0	2	0	0	1	1
Brockton	830	870.5	177	175	44	11	38	26	24	24	7	4	6	41
Brookfield	37	974.8	6	11	4	0	4	2	2	1	0	0	0	1
Brookline	305	457.9	64	84	13	5	16	6	9	8	1	0	4	2
Buckland	21	999.0	5	5	1	1	1	2	0	0	3	0	0	0
Burlington	246	786.3	54	54	12	2	9	11	5	4	1	1	2	7
Cambridge	477	554.7	97	128	32	5	16	13	10	7	3	0	6	27
Canton	234	684.1	51	29	8	1	10	9	6	6	2	0	1	6
Carlisle	29	910.6	4	10	1	1	2	0	0	0	0	0	1	0
Carver	132	1,002.7	21	37	14	2	6	12	2	2	4	0	3	8
Charlemont	4	-- ⁴	1	0	0	0	1	1	0	0	0	0	0	0
Charlton	127	878.8	30	23	5	1	5	4	3	0	4	0	4	4
Chatham	108	601.0	25	15	5	1	2	8	2	3	2	0	1	1
Chelmsford	322	719.9	76	64	14	6	16	18	6	9	0	0	7	6
Chelsea	280	963.8	47	54	6	6	9	14	5	2	2	4	4	13
Cheshire	29	737.6	6	9	3	3	1	3	0	0	1	0	0	1
Chester	6	404.4	1	1	1	0	1	1	0	0	0	0	0	0
Chesterfield	14	922.6	5	3	1	0	0	0	0	0	0	0	0	0
Chicopee	604	819.4	132	122	40	8	20	38	11	14	9	1	6	26
Chilmark	5	288.7	2	2	1	1	0	0	0	0	0	0	0	0
Clarksburg	15	741.6	3	5	1	0	2	1	0	0	0	0	0	0

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2016

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁵
Clinton	139	908.1	30	38	11	1	6	8	4	5	0	0	0	6
Cohasset	69	680.4	13	11	4	1	4	3	0	4	1	0	0	2
Colrain	15	640.8	3	6	0	0	1	0	0	0	0	0	0	0
Concord	172	480.8	32	38	9	4	7	6	5	5	1	0	1	1
Conway	14	979.0	2	5	2	0	1	1	0	0	0	0	0	0
Cummington	7	607.3	3	2	1	0	1	0	0	1	0	0	0	0
Dalton	71	638.8	18	12	3	0	3	5	1	1	1	0	0	1
Danvers	370	886.9	66	73	17	4	14	21	5	12	3	0	2	4
Dartmouth	323	702.7	70	65	12	4	18	11	4	5	5	0	5	9
Dedham	345	807.7	74	64	17	2	16	21	8	4	1	3	2	11
Deerfield	37	567.7	11	10	2	0	5	1	0	1	0	0	1	0
Dennis	242	757.4	62	66	16	6	12	15	4	4	0	0	2	5
Dighton	70	919.5	15	14	2	2	2	6	3	2	1	0	1	3
Douglas	43	740.2	9	14	5	1	1	0	1	0	0	0	0	1
Dover	26	599.0	3	7	2	1	1	0	0	1	0	0	1	0
Dracut	261	846.3	58	66	26	1	11	20	6	8	1	1	3	6
Dudley	101	850.7	34	17	3	0	3	5	2	2	1	0	0	0
Dunstable	17	752.8	3	3	0	1	3	1	1	1	0	0	0	0
Duxbury	142	662.6	30	27	8	1	5	8	2	2	3	0	1	3
East Bridgewater	121	855.8	44	27	4	1	4	10	1	3	3	1	0	1
East Brookfield	16	604.9	3	6	0	0	1	2	0	0	0	0	0	0
East Longmeadow	187	577.4	50	29	4	4	7	12	0	2	1	0	1	2
Eastham	63	525.0	18	13	4	0	5	2	2	1	1	0	0	0
Easthampton	152	728.2	39	37	5	3	8	5	3	2	0	0	1	5
Easton	187	864.6	40	40	11	0	3	10	2	7	2	0	2	8
Edgartown	38	854.7	10	10	2	1	1	1	1	0	0	0	1	0
Egremont	13	605.0	5	4	1	0	1	1	0	0	0	0	0	0
Erving	19	818.0	3	7	2	0	2	1	0	0	0	0	0	0
Essex	27	711.5	5	5	0	0	1	1	0	0	0	0	2	0
Everett	324	771.8	63	84	19	4	12	18	14	5	0	1	3	22
Fairhaven	213	735.4	40	39	8	0	11	13	4	7	0	0	4	4
Fall River	996	880.1	219	177	59	10	38	54	31	26	15	1	7	63
Falmouth	422	724.9	76	100	22	6	24	22	7	7	7	0	2	14
Fitchburg	423	953.0	91	88	22	6	22	24	10	9	3	1	3	22

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2016

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁵
Florida	7	822.2	0	1	1	0	0	1	0	0	0	0	1	0
Foxborough	139	768.4	33	36	7	2	2	8	0	0	2	0	0	6
Framingham	542	628.2 ⁶	139	112	27	8	18	32	9	12	6	2	6	18
Franklin	186	729.9	32	48	11	5	8	7	7	5	0	0	3	7
Freetown	62	789.8	11	13	3	1	4	6	1	1	2	0	2	3
Gardner	215	805.9	42	51	9	4	34	10	4	3	1	0	3	8
Georgetown	46	705.7	10	10	2	0	2	1	2	0	0	0	0	1
Gill	5	309.9	0	2	0	0	0	0	0	0	0	0	0	0
Gloucester	295	701.5	54	74	13	3	15	19	3	6	1	0	2	8
Goshen	8	734.6	2	3	0	1	0	0	0	0	0	0	0	0
Gosnold	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0
Grafton	100	599.7	21	20	5	3	5	4	1	2	1	2	1	1
Granby	53	843.3	10	17	6	1	0	2	1	0	0	0	0	1
Granville	11	681.2	2	6	1	2	0	0	0	0	0	0	0	0
Great Barrington	84	770.1	11	19	2	1	2	2	4	2	2	0	1	1
Greenfield	226	861.6	48	48	7	3	15	12	1	8	0	0	2	6
Groton	68	723.4	15	14	1	0	4	0	0	2	1	1	3	0
Groveland	54	696.6	13	13	3	5	2	4	0	1	0	0	0	1
Hadley	69	743.6	19	8	0	1	3	1	0	3	0	0	1	2
Halifax	76	940.1	21	15	3	1	3	5	1	1	2	0	2	2
Hamilton	48	600.8	15	8	3	2	0	2	1	0	1	0	0	3
Hampden	59	853.2	8	9	0	2	1	4	2	1	0	0	3	1
Hancock	9	878.8	1	4	2	0	0	0	0	0	0	0	0	1
Hanover	110	816.0	21	38	10	4	6	1	0	2	1	0	0	6
Hanson	82	953.4	23	19	7	2	1	5	4	1	1	0	4	2
Hardwick	25	827.7	2	10	4	0	0	0	0	0	0	0	1	1
Harvard	31	693.0	4	10	0	1	1	0	1	2	1	0	0	0
Harwich	206	814.6	45	42	9	4	11	7	1	0	1	0	2	3
Hatfield	44	922.2	9	16	4	1	2	1	1	1	0	0	3	1
Haverhill	593	889.1	115	114	33	7	23	32	13	14	2	1	13	35
Hawley	2	-- ⁴	1	0	0	0	1	0	0	0	0	0	0	0
Heath	5	472.2	0	2	0	0	2	1	0	0	0	0	0	0
Hingham	295	704.2	69	60	8	3	11	18	6	7	1	0	2	1

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2016

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁵
Hinsdale	11	484.7	1	4	1	0	0	2	0	0	0	0	0	2
Holbrook	105	821.2	22	27	7	2	4	7	1	0	1	0	1	7
Holden	163	776.9	32	40	5	2	8	7	4	4	1	0	2	5
Holland	11	484.2	5	3	1	0	0	0	1	0	0	0	0	0
Holliston	96	728.2	17	28	6	2	2	3	4	3	1	0	2	1
Holyoke	468	902.8	112	85	21	4	18	27	7	11	5	3	2	10
Hopedale	49	666.9	9	11	5	1	0	5	2	2	0	0	0	0
Hopkinton	73	748.8	20	18	4	1	0	3	1	2	2	0	2	0
Hubbardston	37	1,084.0	6	13	3	1	2	2	1	1	2	1	0	1
Hudson	153	744.1	41	31	5	5	7	6	3	0	1	0	2	2
Hull	117	1,007.7	28	30	9	1	4	3	1	3	0	0	1	5
Huntington	15	776.2	4	4	0	0	0	0	1	1	0	0	0	0
Ipswich	103	537.8	25	20	5	3	1	3	3	1	0	0	1	3
Kingston	127	711.0	20	36	8	1	6	9	0	1	1	1	0	1
Lakeville	113	1,066.9	20	26	10	1	7	8	4	2	0	0	1	1
Lancaster	69	868.5	11	15	2	1	9	2	1	2	2	0	2	1
Lanesborough	18	457.3	5	3	1	0	2	1	0	0	0	0	1	1
Lawrence	477	769.4	96	90	20	3	15	18	21	5	6	4	4	44
Lee	55	584.7	11	12	5	1	3	1	0	1	2	0	0	1
Leicester	117	969.5	25	34	11	2	2	8	2	2	0	1	1	1
Lenox	89	591.7	23	18	2	2	5	3	2	0	1	0	0	0
Leominster	406	805.4	77	97	25	3	35	13	9	5	0	0	4	13
Leverett	9	522.4	2	1	0	0	0	1	0	0	0	0	0	0
Lexington	222	423.4	42	51	12	4	10	3	3	5	2	0	2	2
Leyden	5	1,177.1	1	2	0	0	0	1	0	0	1	0	0	0
Lincoln	49	591.5	12	9	1	0	3	1	0	0	0	0	0	0
Littleton	65	596.2	10	17	2	0	3	2	0	1	0	0	2	2
Longmeadow	176	576.8	42	26	8	0	6	7	0	2	0	0	2	3
Lowell	893	939.1	165	198	57	13	28	29	22	25	4	1	12	67
Ludlow	217	740.8	48	37	11	3	16	4	4	6	4	2	1	6
Lunenburg	82	732.8	15	22	6	3	5	1	0	2	3	0	2	1
Lynn	708	784.5	147	166	38	17	26	36	25	13	3	3	5	43
Lynnfield	105	622.6	20	16	5	1	11	8	1	4	0	0	1	1
Malden	411	675.3	85	104	29	4	16	13	14	9	5	1	3	15

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2016

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁵
Manchester	52	764.5	7	15	2	1	2	1	0	1	0	0	1	2
Mansfield	151	875.9	31	29	8	1	3	11	2	5	0	0	4	8
Marblehead	160	597.2	36	36	10	2	9	6	1	3	0	0	5	4
Marion	73	842.2	14	6	3	1	6	6	2	3	0	0	2	1
Marlborough	336	771.9	75	68	15	1	20	23	6	4	3	0	3	4
Marshfield	236	942.7	50	56	9	7	11	15	8	10	1	0	1	9
Mashpee	200	855.9	32	47	18	1	8	17	7	8	1	0	2	8
Mattapoissett	56	612.9	9	15	4	0	3	3	1	1	1	0	0	2
Maynard	77	702.9	15	25	6	3	1	5	3	0	2	0	2	0
Medfield	61	521.6	13	14	3	2	1	2	4	0	0	0	0	1
Medford	496	653.9	99	123	26	7	19	18	15	8	1	0	9	17
Medway	101	826.2	16	26	3	0	3	5	2	2	1	0	3	2
Melrose	240	651.1	46	50	11	2	8	19	4	2	1	1	5	10
Mendon	45	987.6	11	15	5	0	1	1	1	0	0	0	1	0
Merrimac	45	669.9	12	12	3	1	0	1	0	1	0	0	1	1
Methuen	424	734.7	96	94	22	5	18	17	9	6	3	2	6	14
Middleborough	239	911.1	47	55	18	5	11	8	2	6	2	0	7	11
Middlefield	3	-- ⁴	2	1	0	0	0	0	0	0	0	0	0	0
Middleton	64	703.4	12	21	3	0	2	4	2	2	0	0	1	2
Milford	256	783.4	67	58	6	3	8	11	3	7	5	0	3	10
Millbury	135	798.2	26	36	11	1	3	8	5	1	0	0	3	4
Millis	67	942.0	11	19	8	1	4	4	0	0	1	0	1	3
Millville	15	631.5	6	3	0	0	0	0	0	0	0	0	0	0
Milton	244	651.8	59	46	11	0	14	7	7	2	1	0	2	6
Monroe	2	-- ⁴	1	0	0	0	0	0	0	0	0	0	0	0
Monson	60	649.0	17	9	3	1	1	3	3	1	0	0	1	3
Montague	95	843.6	22	27	5	1	2	3	3	3	2	0	1	3
Monterey	7	597.8	0	3	1	0	1	1	0	0	0	0	0	0
Montgomery	12	1,629.7	2	2	0	0	0	0	0	0	1	0	0	1
Mount Washington	1	-- ⁴	1	0	0	0	0	0	0	0	0	0	0	0
Nahant	39	612.7	7	12	2	0	1	4	1	0	0	0	0	2
Nantucket	71	677.6	21	17	5	0	6	6	2	2	0	0	1	2
Natick	249	631.5	48	53	19	3	10	10	7	6	1	0	4	3
Needham	284	583.8	60	72	10	2	7	9	4	6	1	0	1	1

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2016

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁵
New Ashford	5	1,380.2	0	2	0	0	0	0	0	0	0	0	0	0
New Bedford	1,084	909.1	210	222	67	10	47	53	27	29	11	3	7	56
New Braintree	10	1,525.5	2	3	0	0	0	0	0	1	0	0	0	0
New Marlborough	7	314.5	1	0	0	0	0	0	0	0	0	0	0	0
New Salem	8	933.3	1	2	0	0	0	1	1	0	0	0	0	0
Newbury	51	782.2	9	12	3	1	3	3	1	1	1	0	0	1
Newburyport	182	711.6	48	34	7	1	4	7	6	1	3	0	2	4
Newton	565	467.2	122	120	19	9	29	13	8	12	1	0	7	16
Norfolk	58	906.5	15	13	4	1	2	3	1	2	0	0	2	3
North Adams	151	798.9	35	33	14	1	6	9	4	4	1	0	2	6
North Andover	243	611.0	45	37	3	1	15	10	2	6	1	0	3	3
North Attleboro	221	859.8	60	46	17	6	10	17	9	6	1	0	2	7
North Brookfield	40	734.5	5	11	1	2	2	1	1	1	0	0	0	3
North Reading	101	678.1	20	19	5	4	6	6	3	3	0	0	3	2
Northampton	264	728.2	58	57	12	6	12	11	4	10	3	0	5	8
Northborough	129	820.5	25	26	4	2	6	4	3	5	0	0	2	3
Northbridge	159	827.5	27	32	15	0	9	6	3	3	3	0	2	2
Northfield	30	821.1	7	7	2	1	0	0	0	1	0	0	1	0
Norton	127	772.5	26	28	11	0	9	6	1	1	1	1	4	7
Norwell	86	582.7	13	13	2	0	3	6	0	1	0	0	1	1
Norwood	305	675.3	62	65	14	3	21	15	2	5	2	1	3	6
Oak Bluffs	58	904.0	7	18	7	0	3	4	2	3	0	0	0	1
Oakham	10	725.4	2	1	0	1	0	1	0	0	0	0	1	0
Orange	98	1,082.1	15	24	9	4	5	13	4	0	0	2	2	1
Orleans	112	708.2	30	32	7	1	4	7	4	3	1	0	1	2
Otis	15	751.3	4	2	0	0	2	0	0	0	1	0	0	1
Oxford	113	862.6	24	27	3	1	5	10	5	2	1	0	1	7
Palmer	134	859.6	31	34	9	2	2	6	3	2	1	0	0	4
Paxton	30	571.8	7	13	1	0	1	0	0	0	0	0	0	0
Peabody	729	754.6	134	154	45	9	41	34	20	12	3	3	4	11
Pelham	9	530.6	4	2	1	0	1	0	0	0	0	0	0	0
Pembroke	143	984.1	29	37	13	0	6	11	2	1	1	0	4	8
Pepperell	79	839.7	13	24	7	1	1	3	2	0	0	0	0	1
Peru	7	1,453.1	3	2	1	0	0	0	0	1	0	0	0	0

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2016

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁵
Petersham	13	924.4	4	4	2	0	0	0	1	1	0	0	0	0
Phillipston	9	652.2	3	2	1	0	1	0	0	0	1	0	0	0
Pittsfield	550	855.2	126	105	38	6	26	29	15	10	4	2	5	18
Plainfield	7	1,091.6	1	2	1	1	0	0	1	0	1	0	0	0
Plainville	74	851.9	15	19	5	2	2	3	4	2	1	0	0	3
Plymouth	519	787.6	99	134	29	10	22	17	6	14	6	1	5	25
Plympton	17	693.4	3	3	1	0	0	1	0	0	0	0	0	2
Princeton	28	955.6	5	10	1	0	1	0	0	0	0	0	0	1
Provincetown	35	637.7	3	9	1	0	3	5	1	2	0	0	0	0
Quincy	839	691.4	181	211	61	12	27	36	16	18	9	3	11	44
Randolph	252	686.7	50	49	12	1	9	6	2	7	1	1	3	11
Raynham	136	875.4	36	36	9	2	5	6	4	2	0	0	2	2
Reading	193	607.2	53	42	6	1	4	7	3	8	2	0	1	4
Rehoboth	77	739.5	12	25	6	2	2	7	1	4	1	0	1	0
Revere	469	734.0	93	121	41	8	12	26	9	7	2	1	2	26
Richmond	11	584.7	1	1	0	0	2	0	0	0	1	0	1	0
Rochester	32	706.3	10	11	3	1	4	0	0	1	0	0	0	0
Rockland	224	1,118.2	47	41	12	0	6	13	0	11	3	0	0	22
Rockport	59	428.2	9	14	4	0	3	3	1	1	0	0	0	1
Rowe	4	-- ⁴	2	1	0	0	0	1	0	0	0	0	0	0
Rowley	33	583.9	9	7	1	0	2	2	0	2	0	0	0	0
Royalston	6	620.1	3	0	0	0	0	0	0	0	0	0	0	1
Russell	21	1,324.8	5	6	1	0	1	1	0	0	0	0	0	0
Rutland	49	811.0	10	12	4	0	4	2	3	0	2	0	0	2
Salem	335	714.5	68	62	16	2	22	19	8	13	0	2	5	18
Salisbury	95	1,048.5	20	19	7	0	4	6	1	2	1	0	1	12
Sandisfield	9	561.5	1	2	0	0	0	0	0	0	0	0	1	0
Sandwich	164	639.3	33	34	14	3	8	11	3	3	1	0	3	4
Saugus	285	774.2	60	72	19	2	9	18	8	5	2	2	2	13
Savoy	6	945.6	1	0	0	0	0	0	0	0	0	0	1	0
Scituate	165	660.8	39	36	6	1	8	8	3	3	1	0	2	3
Seekonk	108	681.4	18	31	8	4	3	9	2	3	2	0	1	4
Sharon	102	550.7	19	28	9	0	6	5	3	3	0	0	1	1
Sheffield	26	533.8	7	5	2	0	1	1	2	1	0	0	0	0

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2016

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁵
Shelburne	31	1,127.8	7	5	1	0	3	1	1	0	1	0	0	1
Sherborn	30	782.0	4	10	2	2	1	0	1	1	0	0	1	1
Shirley	39	604.8	10	12	3	0	2	2	1	0	0	0	2	0
Shrewsbury	253	594.4	53	63	20	5	13	10	4	7	1	0	0	7
Shutesbury	9	748.8	3	2	1	0	0	0	0	0	0	0	0	0
Somerset	219	673.6	41	53	13	1	19	7	3	9	1	0	0	5
Somerville	401	659.2	78	88	19	11	13	24	16	11	0	0	10	21
South Hadley	161	614.3	33	41	9	4	6	6	2	5	3	0	1	4
Southampton	41	758.1	12	11	4	1	0	2	0	0	0	0	0	2
Southborough	47	579.9	14	10	1	1	3	0	0	0	0	0	0	1
Southbridge	177	861.8	46	29	11	0	2	17	4	6	1	0	2	12
Southwick	82	673.5	15	24	4	0	3	2	0	0	0	0	3	2
Spencer	130	988.8	22	21	6	0	5	7	2	5	3	0	3	3
Springfield	1,210	825.8	253	265	66	19	59	51	38	26	15	12	9	40
Sterling	57	574.0	14	9	0	1	3	4	2	0	0	0	1	1
Stockbridge	17	467.3	3	7	2	1	0	2	1	1	1	0	1	0
Stoneham	247	736.2	54	61	14	6	15	11	4	9	2	2	0	8
Stoughton	259	732.9	58	51	16	6	8	12	3	5	0	1	2	10
Stow	45	741.5	10	12	4	0	2	2	0	0	0	0	0	1
Sturbridge	76	697.2	11	22	7	1	3	5	1	3	0	0	1	2
Sudbury	105	601.1	24	25	3	2	5	5	2	2	1	0	3	0
Sunderland	28	812.2	8	8	1	1	1	2	0	0	0	0	1	1
Sutton	48	690.6	7	13	4	1	2	3	2	3	1	0	0	0
Swampscott	128	609.0	31	34	11	4	7	7	2	2	3	0	1	4
Swansea	139	604.4	26	27	5	3	10	8	3	5	2	0	5	1
Taunton	534	830.3	105	109	27	5	12	33	14	18	3	5	5	28
Templeton	71	806.2	6	18	4	3	5	2	2	0	0	0	0	5
Tewksbury	300	888.7	60	72	17	1	10	13	6	11	1	1	0	12
Tisbury	36	655.3	6	8	0	0	1	3	1	2	0	0	3	1
Tolland	6	965.0	2	2	1	0	0	0	0	0	0	0	0	0
Topsfield	56	591.5	13	13	0	0	2	0	1	2	0	0	2	1
Townsend	64	927.3	13	15	4	1	3	1	2	3	1	0	1	1
Truro	21	675.1	2	4	0	0	2	1	1	0	0	0	0	1
Tyngsborough	70	869.0	12	23	6	0	3	2	2	1	1	0	2	1

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2016

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁵
Tyringham	3	-- ⁴	2	0	0	0	0	0	0	0	0	0	0	0
Upton	49	739.2	9	13	2	0	4	1	2	1	0	0	1	2
Uxbridge	89	638.9	20	15	6	0	4	5	3	2	1	0	0	0
Wakefield	266	831.4	56	58	13	2	9	11	7	8	1	0	2	9
Wales	19	1,234.0	5	3	1	0	1	2	0	2	1	0	0	0
Walpole	211	655.1	55	40	12	4	8	9	3	6	1	0	2	7
Waltham	391	588.5	86	85	20	7	19	13	17	5	3	1	5	15
Ware	97	816.7	22	17	7	0	5	3	4	2	1	0	2	7
Wareham	288	1,014.8	47	74	19	4	11	24	2	9	2	1	4	15
Warren	44	864.9	11	9	1	2	2	4	1	3	0	0	1	0
Warwick	10	1,109.1	3	2	1	0	0	0	0	0	0	0	0	0
Washington	6	1,517.5	2	0	0	0	0	1	0	1	0	0	0	0
Watertown	269	654.8	55	68	10	8	9	12	8	4	4	1	4	10
Wayland	107	564.8	30	27	3	3	4	4	1	3	1	0	0	2
Webster	197	853.4	39	47	16	3	17	10	2	6	2	0	3	5
Wellesley	175	497.9	34	41	9	2	5	4	6	1	0	0	4	1
Wellfleet	39	684.2	7	11	2	2	2	5	1	0	0	0	0	0
Wendell	6	889.6	0	2	0	0	0	1	0	0	0	0	0	0
Wenham	36	607.4	10	6	1	0	1	2	2	1	0	0	0	0
West Boylston	82	585.9	9	13	4	1	2	6	2	3	0	0	0	1
West Bridgewater	77	711.0	17	16	3	1	5	5	0	1	1	0	3	3
West Brookfield	45	790.3	13	9	4	0	6	2	1	1	0	0	1	1
West Newbury	24	641.3	3	6	2	1	2	0	0	0	0	0	1	0
West Springfield	283	774.9	72	63	18	4	13	20	6	4	2	2	2	9
West Stockbridge	17	809.7	3	3	1	0	2	0	0	0	1	0	0	0
West Tisbury	18	662.8	3	4	0	0	1	1	0	1	0	0	0	1
Westborough	128	580.3	18	28	4	4	7	6	1	4	1	0	1	4
Westfield	368	764.1	86	81	18	6	17	20	6	6	5	0	4	15
Westford	141	918.9	29	34	8	1	2	4	2	5	1	0	5	3
Westhampton	17	1,026.9	3	7	2	0	0	0	0	0	0	0	1	0
Westminster	58	788.0	9	16	3	2	3	3	0	2	0	0	1	0
Weston	92	472.6	14	24	7	1	7	2	3	1	0	0	0	0
Westport	151	686.6	40	31	5	1	2	5	4	1	2	0	3	4
Westwood	128	555.5	29	28	8	1	8	5	2	2	1	1	1	5

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2016

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁵
Weymouth	599	883.9	131	139	39	13	24	24	7	19	1	1	4	38
Whately	7	286.7	2	4	2	0	0	0	0	0	0	0	0	0
Whitman	117	907.1	21	34	11	2	3	8	1	2	3	0	1	1
Wilbraham	130	528.5	37	27	6	2	4	5	5	6	0	0	1	1
Williamsburg	20	633.9	3	6	4	0	1	0	0	1	0	0	1	0
Williamstown	72	530.2	11	18	4	0	1	1	5	2	1	0	0	1
Wilmington	184	759.0	46	39	9	5	8	8	4	7	4	0	4	3
Winchendon	78	825.2	20	17	5	0	8	3	2	2	1	0	1	1
Winchester	184	575.0	43	42	8	3	11	6	4	3	2	0	4	3
Windsor	9	731.9	2	3	1	0	2	1	0	0	0	0	0	0
Winthrop	222	928.7	36	59	19	6	8	12	7	6	0	0	0	3
Woburn	418	788.2	96	86	28	4	22	13	11	5	3	1	3	17
Worcester	1,662	859.8	299	333	88	20	65	75	42	45	11	6	19	74
Worthington	13	953.1	2	5	2	1	0	0	2	0	0	0	0	0
Wrentham	109	826.3	17	20	2	0	5	2	3	1	1	0	1	5
Yarmouth	396	717.4	79	104	14	5	20	22	5	18	3	0	5	7
Unknown	2	-- ⁴	0	1	0	0	0	0	0	0	0	0	0	0

1. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population and calculated using MDPH population estimates for 2010, which are the most up-to-date information available on the number of persons by age, race, and sex at the sub-state level. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Includes only female breast cancer. 3. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title). 4. Rates based on 1 to 4 deaths are not calculated. 5. The term opioid designates a class of drugs derived naturally from the opium poppy (opium, morphine, codeine), synthesized or derived from a natural opiate (heroin, oxycodone, hydrocodone), or manufactured synthetically with a chemical structure similar to opium (fentanyl, methadone). (Opioid Overdose Response Strategies in Massachusetts, MDPH, 2014). This report combines all opioid overdoses since classification of specific drugs can be difficult. For example, many deaths related to heroin cannot be specifically coded as such due to the fast metabolism of heroin into morphine, as well as, the possible interaction of multiple drugs. 6. Age-adjusted death rate does not include one death missing age.

Table 40. Selected Causes of Death by Community Health Network Area (CHNA), Massachusetts: 2016

CHNA Name	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related ⁴
Massachusetts	56,953	668.9	11,923	12,691	3,168	775	2,468	2,676	1,267	1,243	466	140	636	2,034
1. Community Health Network of Berkshire	1,444	717.3	319	299	93	16	72	71	36	24	18	2	15	35
2. Upper Valley Health Web (Franklin County)	894	793.3	201	217	53	13	49	49	13	18	10	2	9	17
3. Partnership for Health in Hampshire County (Northampton)	1,209	695.5	270	283	71	22	51	43	20	31	9	1	16	34
4. The Community Health Connection (Springfield)	2,717	753.1	621	571	137	39	114	130	67	51	23	14	23	69
5. Community Health Network of Southern Worcester County	1,167	831.1	263	243	65	10	57	73	25	34	13	0	17	39
6. Community Partners for Health (Milford)	1,246	764.8	260	292	71	14	46	57	30	27	14	0	15	36
7. Community Health Network of Greater Metro West (Framingham)	2,928	672.6	659	662	147	50	115	138	57	54	26	2	36	71
8. Common Pathways (Worcester)	2,752	778.0	530	599	155	37	106	130	62	72	14	9	28	95
9. Community Health Network of North Central Massachusetts	2,303	822.7	458	554	127	32	170	89	48	44	20	3	31	74
10. Greater Lowell Community Health Network	2,321	861.6	470	539	156	25	81	100	47	66	11	3	32	110
11. Greater Lawrence Community Health Network	1,431	693.4	305	290	61	10	57	61	38	21	12	6	16	66
12. Greater Haverhill Community Health Network	1,317	794.1	287	267	71	20	51	65	28	26	7	1	19	62
13. Community Health Network North (Beverly/Gloucester)	1,092	686.1	245	224	44	13	39	58	17	19	3	1	13	34
14. North Shore Community Health Network	2,859	745.1	569	625	163	41	140	153	71	64	14	10	25	100
15. Northwest Suburban Health Alliance	1,876	632.0	393	427	100	28	83	60	42	33	16	2	26	49
16. North Suburban Health Alliance (Medford/Malden/Melrose)	2,278	692.6	476	541	123	30	89	103	64	52	12	5	26	87
17. Greater Cambridge/Somerville Community Health Network	1,659	586.4	321	393	84	32	50	68	46	28	12	2	25	67
18. West Suburban Health Network (Newton/Waltham)	2,006	549.6	422	441	92	25	92	67	48	32	7	5	21	49
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	5,074	701.4	947	1,228	305	82	199	191	153	81	50	40	54	233
20. Blue Hills Community Health Alliance (Greater Quincy)	3,718	719.2	794	807	205	44	164	159	60	88	22	6	33	132
21. Community Health Network of Chicopee, Holyoke, Ludlow, Westfield	1,678	807.1	383	330	91	21	72	90	29	38	23	6	13	57
22. Greater Brockton Community Health Network	2,065	828.2	469	453	119	31	73	100	38	51	19	6	20	86
23. South Shore Community Health Network	1,808	857.0	364	443	114	28	72	97	25	45	23	2	20	88
24. Greater Attleboro-Taunton Health & Education Response	2,201	824.1	460	478	137	33	83	137	57	66	15	6	33	94
25. Partners for Healthier Communities	1,505	790.9	326	288	82	15	69	74	41	41	20	1	15	73
26. Greater New Bedford Community Health Network	2,232	838.8	433	473	128	22	111	120	42	56	25	4	25	94
27. Cape Cod and Islands Health Network	3,169	715.1	678	723	174	42	163	193	63	81	28	1	30	83

1. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Includes only female breast cancer. 3. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title). 4. The term opioid designates a class of drugs derived naturally from the opium poppy (opium, morphine, codeine), synthesized or derived from a natural opiate (heroin, oxycodone, hydrocodone), or manufactured synthetically with a chemical structure similar to opium (fentanyl, methadone). (Opioid Overdose Response Strategies in Massachusetts, MDPH, 2014). This report combines all opioid overdoses since classification of specific drugs can be difficult. For example, many deaths related to heroin cannot be specifically coded as such due to the fast metabolism of heroin into morphine, as well as, the possible interaction of multiple drugs.

Table 41. Selected Causes of Death by County, Massachusetts: 2016

County	Total Deaths	Age-Adjusted Death Rate ¹	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer ²	Stroke	CLRD ³	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioids-related ⁴
Massachusetts	56,953	668.9	11,923	12,691	3,168	775	2,468	2,676	1,267	1,243	466	140	636	2,034
Barnstable	2,940	694.2	628	664	159	40	151	178	57	72	28	1	25	78
Berkshire	1,444	695.3	319	299	93	16	72	71	36	24	18	2	15	35
Bristol	5,324	748.5	1,112	1,092	301	58	224	292	131	148	57	10	61	239
Dukes	158	627.3	29	42	10	2	6	9	4	7	0	0	4	3
Essex	6,699	666.0	1,406	1,406	339	84	287	337	154	130	36	18	73	262
Franklin	719	732.1	156	179	40	11	40	43	10	15	8	2	8	13
Hampden	4,444	747.7	1,019	908	232	60	188	224	96	92	47	20	37	127
Hampshire	1,224	632.7	274	287	71	22	51	43	21	32	9	1	16	34
Middlesex	11,469	605.1	2,406	2,654	629	167	454	465	272	240	76	16	159	387
Nantucket	71	558.9	21	17	5	0	6	6	2	2	0	0	1	2
Norfolk	5,865	623.3	1,247	1,314	324	80	244	243	110	121	35	11	57	204
Plymouth	4,735	726.8	993	1,095	280	68	196	248	78	120	46	8	54	186
Suffolk	4,769	645.7	883	1,144	292	77	183	185	144	73	49	40	50	231
Worcester	7,088	725.9	1,430	1,589	393	90	366	332	152	167	57	11	76	233

1. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Includes only female breast cancer. 3. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title). 4. The term opioid designates a class of drugs derived naturally from the opium poppy (opium, morphine, codeine), synthesized or derived from a natural opiate (heroin, oxycodone, hydrocodone), or manufactured synthetically with a chemical structure similar to opium (fentanyl, methadone). (Opioid Overdose Response Strategies in Massachusetts, MDPH, 2014). This report combines all opioid overdoses since classification of specific drugs can be difficult. For example, many deaths related to heroin cannot be specifically coded as such due to the fast metabolism of heroin into morphine, as well as, the possible interaction of multiple drugs.

TECHNICAL NOTES

DATA SOURCES

Data for this document are derived from Massachusetts death certificates, Massachusetts birth certificates, the US Census, the Massachusetts Institute for Social and Economic Research (MISER) (population data pre-2000), and the National Center for Health Statistics (NCHS).

CHANGES TO MORTALITY DATA, EFFECTIVE 1999

Beginning with data year 1999, two major changes in Federal classification and tabulation procedures occurred that affects the tabulation and analyses of mortality data over time. First, a new revision for classifying causes of death was implemented: The International Classification of Diseases, Tenth Revision (ICD-10) replaced the International Classification of Diseases, Ninth Revision (ICD-9) for coding all mortality data. Second, a new standard population for the tabulation of age-adjusted mortality rates was also implemented.

CHANGES TO THE PRESENTATION OF RACE AND ETHNICITY DATA

The 2003 revision of the Standard Certificate of Death allows the reporting of more than one race in accordance with the revised standards issued by the Office of Management and Budget (OMB) in 1997. The revised standards require federal data collection programs to allow respondents to select *one or more race categories*. In order to provide uniformity and comparability of the data during the transition period, before multiple-race data are available for all reporting areas, it is necessary to “bridge” the responses of those who reported more than one race to a single-race. The method used to bridge responses for those who report more than one race to a single race is based on a procedure whereby multiple races are assigned to the smallest minority group first (i.e. Asian and White becomes Asian or Black and Native American becomes Native American). All multiple races that include Hispanic will be assigned as Hispanic and this group also includes all respondents who reported Hispanic ethnicities as well.

Decedent Race

<input type="checkbox"/> American Indian/Alaska Native (specify tribal nation): _____	<input type="checkbox"/> Native Hawaiian
<input type="checkbox"/> Asian	<input type="checkbox"/> Samoan
<input type="checkbox"/> Black	<input type="checkbox"/> White
<input type="checkbox"/> Guamanian or Chamorro	<input type="checkbox"/> Other Pacific Islander (specify): _____
<input type="checkbox"/> Hispanic/Latino/Black	<input type="checkbox"/> Other race not listed (specify): _____
<input type="checkbox"/> Hispanic/Latino/White	<input type="checkbox"/> Refused
<input type="checkbox"/> Hispanic/Latino/Other(specify): _____	<input type="checkbox"/> Not obtainable
	<input type="checkbox"/> Unknown

Decedent Race

Enter race to appear on death certificate: _____

Decedent Ethnicity

<input type="checkbox"/> African (specify): _____	<input type="checkbox"/> Laotian
<input type="checkbox"/> African-American	<input type="checkbox"/> Mexican, Mexican American, Chicano
<input type="checkbox"/> American	<input type="checkbox"/> Middle Eastern (specify): _____
<input type="checkbox"/> Asian Indian	<input type="checkbox"/> Native American (specify tribal nation(s)): _____
<input type="checkbox"/> Brazilian	<input type="checkbox"/> Portuguese
<input type="checkbox"/> Cambodian	<input type="checkbox"/> Puerto Rican
<input type="checkbox"/> Cape Verdean	<input type="checkbox"/> Russian
<input type="checkbox"/> Caribbean Islander (specify): _____	<input type="checkbox"/> Salvadoran
<input type="checkbox"/> Chinese	<input type="checkbox"/> Vietnamese
<input type="checkbox"/> Colombian	<input type="checkbox"/> Other Asian (specify): _____
<input type="checkbox"/> Cuban	<input type="checkbox"/> Other Central American (specify): _____
<input type="checkbox"/> Dominican	<input type="checkbox"/> Other Pacific Islander (specify): _____
<input type="checkbox"/> European (specify): _____	<input type="checkbox"/> Other Portuguese (specify): _____
<input type="checkbox"/> Filipino	<input type="checkbox"/> Other South American (specify): _____
<input type="checkbox"/> Guatemalan	<input type="checkbox"/> Other ethnicity (ies) not listed (specify): _____
<input type="checkbox"/> Haitian	<input type="checkbox"/> Refused
<input type="checkbox"/> Honduran	<input type="checkbox"/> Not obtainable
<input type="checkbox"/> Japanese	<input type="checkbox"/> Unknown
<input type="checkbox"/> Korean	

POPULATION ESTIMATES

Two sources of population estimates were used to calculate population-based rates in *Massachusetts Deaths 2016*:

- a. **State and County Death Rates**: The 2016 Modified Age, Race/Ethnicity, and Sex file (MARS), which is a bridged population file produced by the National Center for Health Statistics (NCHS) and the Census Bureau Population Estimates Program was used to calculate state rates by race and Hispanic ethnicity, e.g., death rates. This file has data by single years of age, sex, race and Hispanic ethnicity in the five mutually exclusive categories used by the Department: White Non-Hispanic, Black Non-Hispanic, Asian Non-Hispanic, American Indian/Alaska Native Non-Hispanic, and Hispanic. Available from: http://www.cdc.gov/nchs/nvss/bridged_race.htm as of June 27, 2017.
- b. **City and town death rates**: The Massachusetts Department of Public Health Race Allocated Census 2010 Estimates (MRACE 2010), which are population estimates based upon the Census 2010 Summary File 1, was used to calculate city and town rates. In this estimates file, the Census 2010 race categories, “Two or more races” and “Some other race” are redistributed to the MDPH standard race categories: White Non-Hispanic, Black Non-Hispanic, Asian Non-Hispanic, American Indian/Alaska Native Non-Hispanic, and Hispanic. All persons in the Census 2010 Hispanic ethnicity category are counted as “Hispanic” race in the MDPH estimates. This kind of file is often referred to as a “bridged” file, that is, one that bridges the new race and ethnicity collections to the conventionally used categories. These population estimates are available from MassCHIP (<http://masschip.state.ma.us>).

LIMITATIONS OF SMALL NUMBERS

Cells in some tables contain small numbers. Rates and proportions based on fewer than five observations are suppressed, and trends based upon small numbers should be interpreted cautiously.

APPLYING COMPARABILITY RATIOS TO EXAMINE TRENDS IN MORTALITY

Beginning with 1999, mortality data are coded according to the International Classification of Diseases Tenth Revision (ICD-10). Due to the changes in coding rules, comparison of mortality trends over time using different revisions of ICD is challenging. A method was devised to assess if changes in causes of death are “real” changes, or due to the new classification system. Using this method, death data for 1996 were coded twice; once according to ICD-9 and again according to ICD-10. A comparability ratio (CR) was then calculated by dividing the number of deaths coded according to ICD-10 by the number of deaths coded according to the most similar codes in ICD-9 (please refer to Table A4. Preliminary Comparability Ratios for a list of codes and CR used in this publication).

A CR of 1.00 indicates that the same number of deaths was assigned to a cause of death whether ICD-9 or ICD-10 was used. A CR of less than 1.00 results from 1) a decrease in the number of deaths assigned to a cause in ICD-10 compared with ICD-9 or 2) the cause described in ICD-10 is only a part of the ICD-9 title to which it is being compared. A CR of more than 1.00 results from 1) an increase in the assignments of deaths to a cause in ICD-10 compared with ICD-9 or 2) the ICD-10 title is broader than the ICD-9 title to which it is being compared.

EXAMPLE: Influenza and Pneumonia¹ Deaths: Massachusetts, 1996-2000

Year	Age-adjusted rate ²	Comparability Ratio	Comparability Modified Rate (=Age-Adjusted Rate*Comparability Ratio)
1996	41.5	0.6982	29.0
1997	39.1	0.6982	27.3
1998	40.2	0.6982	28.1
1999	30.3		
2000	29.3		

1. Influenza and pneumonia defined as ICD-9: 480-487 for years 1996-1998 and ICD-10: J10-J18 for year 1999 and 2000.
2. Age-adjusted to the 2000 US standard population, per 100,000.

If you look only at the age-adjusted rate over time, not taking the ICD coding changes into account, it appears that deaths from influenza and pneumonia have decreased between 1996-1999. However, because the coding rules changed between ICD-9 and ICD-10 revisions, we need to apply the comparability ratio to the rates for 1996-1998. (This is done by multiplying the age-adjusted rate by the comparability ratio.) Now we can make a fairer comparison and examine the changes between the comparability modified rate and the 1999 or 2000 rate. We see that deaths to influenza and pneumonia have remained constant between 1996-2000, and have actually increased between 1998 and 1999 (28.1 to 30.3 per 100,000, respectively) after taking the changes in the classification system into account.

PLEASE NOTE: the comparability ratios used in this report are based on the Preliminary Comparability Study conducted by the National Center for Health Statistics (NCHS), February 2001, and are subject to change once the Final Comparability Study is completed.

TESTS OF STATISTICAL SIGNIFICANCE

Beginning with *Massachusetts Deaths 2004*, statistics presented in the text section have been tested to determine whether they differ significantly from a target statistic. For example, the number of deaths in 2008 was compared with the number of deaths in 2007 to determine whether their difference was unlikely to have occurred by chance. When a difference is unlikely to have occurred by chance, it is referred to as “significant.”

Note: With respect to statistical difference, the language of this year’s report differs from the language of reports prior to 2004, and caution must be used when comparing the text of previous reports with this year’s report.

In testing for statistical significance, we have used the testing methods from the National Center for Health Statistics (NCHS). These methods are presented in the following document:

National Vital Statistics Reports, Volume 52, Number 10

Births: Final Data for 2002

by Joyce A. Martin, M.P.H.; Brady E. Hamilton, Ph.D.; Paul D. Sutton, Ph.D.; Stephanie J. Ventura, M.A.; Fay Menacker, Dr. P.H.; and Martha L. Munson, M.S.;

From the Division of Vital Statistics, NCHS. (Technical Notes, “Significance testing” section begins on page 110).

This document is available from the following website:

<http://www.cdc.gov/nchs/products/pubs/pubd/nvsr/52/52-23.htm>

For comparisons of more than 100 events, whether they are rates, proportions, or numbers, the binomial distribution is assumed, and confidence intervals are examined to see whether they overlap (Refer to the “Confidence Intervals” section in the next page for an explanation of using confidence intervals to determine statistical significance). When the number of events is less than 100, a Poisson distribution is assumed, and confidence intervals are constructed based upon the Poisson distribution. For more details and exact formulas for calculating confidence intervals or other tests of statistical significance, refer to the publication listed above.

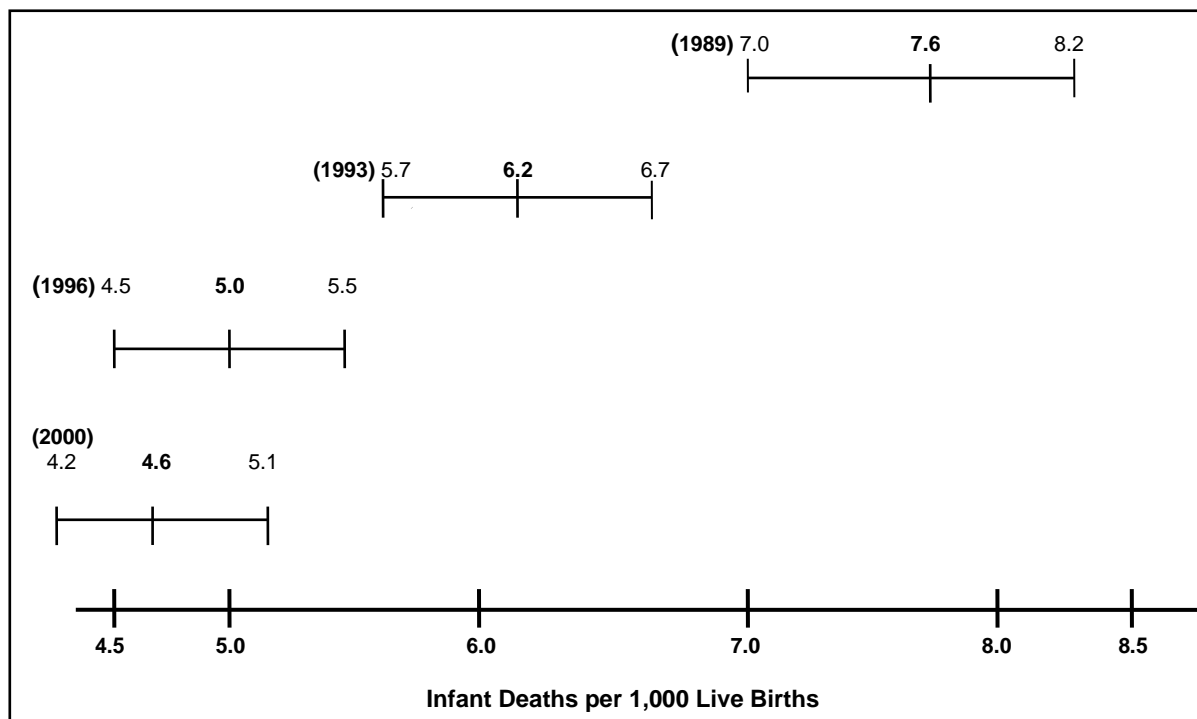
When two statistics are determined to differ significantly, they are referred to in the text as being “significantly” different, either lower or higher than the statistic of comparison.

CONFIDENCE INTERVALS

The confidence interval (CI) provides a measure of rate stability and a basis for comparing rates to determine if they are statistically different. Rates can be compared for the same group in different years or for different groups in the same year. The width of the CI reflects the stability of the rate. For example, a narrow CI reflects high stability, and a wide CI reflects low stability. If the CIs around two rates being compared do not overlap, the difference between the two rates is statistically significant. The following table and chart illustrate the concept of statistically significant differences using actual infant mortality data from 1989, 1993, 1996, and 2000.

Comparison of Infant Mortality Rates and Confidence Intervals for Selected Years

Year	IMR (per 1,000 births)	95% Confidence Interval
1989	7.6	(7.0-8.2)
1993	6.2	(5.7-6.7)
1996	5.0	(4.5-5.5)
2000	4.6	(4.2-5.1)



The difference between the 1993 IMR and 1996 IMR is statistically significant – the confidence intervals do not overlap. The same is true for the differences between the 1989 IMR and each annual IMR for 1993, 1996, and 2000. However, the difference between the 1996 and 2000 IMRs is not statistically significant, since their confidence intervals overlap.

GLOSSARY

Age-Adjusted Rate

A summary rate 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 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.

Age-adjusted rates are calculated by weighting the age-specific rates for a given year by the age distribution of a standard population. The weighted age-specific rates are then added to produce the adjusted rate for all ages combined. (Please see example below).

The 2000 US projected population is used as the standard population in this document for consistency with data published by the National Center for Health Statistics (NCHS). **Only rates using the same standard population can be compared.** All age-adjusted rates published in this report have been re-calculated using the 2000 US standard population. These rates should NOT be compared with age-adjusted rates previously published that used the 1940 US standard population.

Example: Calculation of 1999 Age-Adjusted Mortality Rate Massachusetts: All Causes of Death

A	B	C	D	E	F	G
Age group (in years)	# of deaths (1999)	Population (1998)	1940 US standard	2000 US standard	Age-adjusted rate (using 1940 standard) = $[(B/C)*D]*100,000$	Age-adjusted rate (using 2000 standard) = $[(B/C)*E]*100,000$
< 1	418	79,860	0.015343	0.013818	8.0	7.2
1-4	65	320,000	0.064718	0.055317	1.3	1.1
5-14	100	806,670	0.170355	0.145565	2.1	1.8
15-24	407	883,830	0.181677	0.138646	8.4	6.4
25-34	701	1,005,337	0.162066	0.135573	11.3	9.5
35-44	1,696	1,019,365	0.139237	0.162613	23.2	27.1
45-54	2,870	818,660	0.117811	0.134834	41.3	47.3
55-64	4,561	495,555	0.080294	0.087247	73.9	80.3
65-74	9,782	442,003	0.048426	0.066037	107.2	146.1
75-84	17,397	299,482	0.017303	0.044842	100.5	260.5
85+	17,765	120,501	0.002770	0.015508	40.8	228.6
Total					418.0	815.9

Age-Specific Rate

A rate for a specified age group. Age-specific death rates are calculated by dividing the number of deaths for a specific age group by its population for that year. The numerator and denominator refer to the same age group.

$$\text{Age-specific death rate (ages 25-34)} = \frac{\text{Number of deaths among residents ages 25-34 in a given year}}{\text{population ages 25-34 in that year}} \times 100,000$$

Community Health Network Areas (CHNA)

The Department of Public Health, in collaboration with health service providers, coalition members, and interested citizens, has designated 27 areas for community health planning. It is the Department's intention to foster in each of these areas the development of Community Health Networks – consortia of health care providers, human service agencies, schools, churches, youth, parents, elders, advocacy groups, and individual consumers -- to address the health needs of the community. CHNAs mobilize around key health issues impacting the community, promote prevention efforts, enhance access to care, provide opportunities for more collaboration among agencies, and create a client-centered, outcome-oriented health service delivery system. CHNAs also promote efficiency in service delivery by working to reduce duplication and overlap, and by identifying gaps in service. These community coalitions participate in monitoring outcomes and progress of strategies and responses to those health needs. To determine which cities and towns make up a particular CHNA, please see Table A8, which provides the CHNA code for each city and town based on the geographic definitions established in 1997.

Comparability Modified Rate

A rate designed to assist in the analysis of mortality trends between revisions of the International Classification of Diseases (ICD). A comparability-modified rate is calculated by multiplying the cause-specific comparability ratio by the cause-specific rate for years 1994-1998. Comparability modified rates should be used to compare trends between causes of death in 1994-1998 with causes of death in 1999 forward.

Comparability Ratio (CR)

A factor used to adjust mortality statistics for causes of death classified in ICD-9 to be comparable with mortality statistics classified in ICD-10. It is calculated by dividing the number of deaths for a selected cause of death classified by the new revision (i.e. ICD-10) by the number of deaths for a selected cause of death classified by the old revision (i.e. ICD-9).

More specifically, the CRs used in this report were calculated by the National Center for Health Statistics (NCHS) based on a national sample of death records. Death records for 1996 were double coded, once according to ICD-9 and again according to ICD-10. Secondly, the leading causes of death were grouped according to ICD-10 titles, using the ICD-10 codes for data coded in ICD-10, and the most similar ICD-9 titles for data coded in ICD-9. Finally, the number of deaths coded in ICD-10 were divided by the number of deaths in ICD-9 to produce a CR for the cause of death.

A CR of 1.00 indicates that the same number of deaths was assigned to a cause of death whether ICD-9 or ICD-10 was used.

A CR of less than 1.00 results from 1) a decrease in the number of deaths assigned to a cause in ICD-10 compared with ICD-9 or 2) the cause described in ICD-10 is only a part of the ICD-9 title to which it is being compared.

A CR of more than 1.00 results from 1) an increase in the assignments of deaths to a cause in ICD-10 compared with ICD-9 or 2) the ICD-10 title is broader than the ICD-9 title to which it is being compared.

Preliminary comparability ratios supplied by the National Center for Health Statistics (NCHS) in February 2001 are used in this report (see Table A4 and A5).

See also, comparability modified rate.

Crude Death Rate

An estimate of the proportion of a population that died during the year. The numerator is the number of persons who died during the year and the denominator is the size of the population. The death rate in a population is calculated by the formula:

$$\text{Crude death rate} = \frac{\text{Number of resident deaths in a year}}{\text{Number of residents}} \times 100,000$$

Death Certificate

A vital record can be signed by a licensed physician doctor (which includes ME's) or a Nurse Practitioner. Starting in 2016 Physician Assistants (PA) could also sign. Some of the data elements found on the death certificate are cause of death, decedent's name, gender, birth date, place of residence, and place of occurrence. (A copy of the Massachusetts death certificate used is in the Appendix). In a properly completed death certificate, the immediate cause of death is recorded on line 29a. The other mentioned causes are written on lines 29 b-d. The underlying cause of death is the disease or injury that initiated the events leading to the death. All causes of death are data entered and processed by a software program supplied by NCHS. This software assigns the appropriate ICD-10 codes. Trained nosologists review the ICD-10 codes assigned.

International Classification of Diseases, Ninth Revision (ICD-9)

The International Classification of Diseases (ICD) classifies mortality information for statistical purposes. The ICD was first used in 1900 and has since been revised about every 10 years, with the exception of the ICD-9, which was in use between 1979-1998. Mortality data in this report was coded using ICD-10 codes, though a comparison between these ICD-10 codes and their corresponding ICD-9 codes is presented in Tables A1-A6.

Because of coding changes between the Ninth and Tenth revision, caution should be used when comparing data coded under ICD-9 and ICD-10.

International Classification of Diseases, Tenth Revision (ICD-10)

Since 1999, the tenth revision of the International Classification of Diseases has been used to code mortality data. For a list of ICD-10 codes used in the publication, please see Tables A1, A4, and A5.

Because of coding changes between the Ninth and Tenth revision, caution should be used when comparing data coded under ICD-9 and ICD-10.

Life Expectancy at Birth

Life expectancy at birth is based on the expected age at death for a newborn infant, based upon the actual experience of mortality of the population in Massachusetts.

NCHS

National Center for Health Statistics (US Department of Health and Human Services, Centers for Disease Control and Prevention).

Occurrence Death

Occurrence deaths include all deaths that occur within the state, including deaths of nonresidents. An interstate exchange agreement among the 50 states, Washington, DC, Canada, the US Virgin Islands, and Guam provides for exchanges of copies of birth and death records. These out-of-state records are used for statistical purposes only and allow each state or province to track the births and deaths of residents.

Opioid

The term opioid designates a class of drugs derived naturally from the opium poppy (opium, morphine, codeine), synthesized or derived from a natural opiate (heroin, oxycodone, hydrocodone), or manufactured synthetically with a chemical structure similar to opium (fentanyl, methadone). (Opioid Overdose Response Strategies in Massachusetts, MDPH, 2014)

This report combines all opioid overdoses since classification of specific drugs can be difficult. For example, many deaths related to heroin cannot be specifically coded as such due to the fast metabolism of heroin into morphine, as well as, the possible interaction of multiple drugs.

Other and Unspecified Narcotics (T40.6)

The Injury Surveillance Workgroup (ISW7) Consensus Recommendations for national and state poisoning surveillance (Safe States Alliance, 2012) states that this category is intended for other and unspecified drugs classified pharmacologically as narcotics (opioids/opiates). However, in practice it may also be used for drugs classified legally as narcotics such as cocaine. The proportion of this category made up by opioids/opiates varies by jurisdiction, so inclusion of this code depends on more detailed analysis of death certificate text and/or medical examiner records. Reviews in Massachusetts indicate that most deaths classified as T40.6 were opioid-related overdose deaths. For that reason, we include T40.6 in our opioid-related definition.

Premature Mortality Rate

Premature mortality rate (PMR) measures the rate of premature death, that is, death before the age of 75 years, and it is given as a rate per 100,000 and it is adjusted to the 2000 US population. PMR is considered the best single measure to reflect the health status of a population.

Resident Death

The death of a person whose usual place of residence or permanent address (as reported by the informant) is in one of the 351 cities or towns of Massachusetts, regardless of where the death took place. Unless otherwise noted, all data in this publication are resident data. An interstate exchange agreement among the 50 states, Washington, DC, Canada, the US Virgin Islands, and Guam provides for exchange of copies of birth and death records. These records are used for statistical purposes only and allow each state or province to track the births and deaths of residents.

Underlying Cause of Death

The disease or injury that initiated the series of events leading to death, or the circumstances of the unintentional or intentional injury that resulted in the death. The underlying cause of death is used for all analyses published in this report except for diabetes mortality.

Table A1. ICD-10 and ICD-9 Codes Used in this Publication

(Sorted by ICD-10 Codes)

Cause of Death	ICD-10 Code	ICD-9 Code
Infectious and Parasitic Diseases	A00-B99	001-139
Septicemia	A40-A41	038
Human Immunodeficiency Virus (HIV) disease	B20-B24	042-044
Cancer (Malignant Neoplasms)	C00-C97	140-208
of esophagus	C15	150
of stomach	C16	151
of colon, rectum, rectum and anus	C18-C21	153-154, 159.9
of pancreas	C25	157
of trachea, bronchus and lung	C33-C34	162
of female breast	C50	174
of cervix uteri	C53	180
of corpus uteri and uterus, part unspecified	C54-C55	179,182
of ovary	C56	183.0
of prostate	C61	185
of kidney and renal pelvis	C64-C65	189.0-189.1
of bladder	C67	188
of meninges, brain & other parts of central nervous system	C70-C72	191-192
Hodgkin Disease	C81	201
Non-Hodgkin lymphoma	C82-C85	200, 202 (except 202.4)
Leukemia	C91-C95	202.4, 204-208
Multiple myeloma and immunoproliferative neoplasms	C88, C90	203
Diabetes Mellitus	E10-E14	250
Alzheimer's Disease	G30	331.0
Heart Disease	I00-I09, I11, I13, I20-I51	390-398, 402, 404~29
Stroke (Cerebrovascular Disease)	I60-I69	430-38
Influenza and Pneumonia	J10-J18	480~87
Chronic Lower Respiratory Diseases¹	J40-J47	490~96
Chronic Liver Disease and Cirrhosis	K70, K73-K74	571
Nephritis	N00-N07, N17-N19, N25-N27	580-589
Congenital Malformations, Deformations, and Chromosomal Abnormalities	Q00-Q99	740-759
Certain Conditions Originating in the Perinatal Period (Perinatal Conditions)	P00-P96	760-779
Ill-defined Conditions	R00-R99	780-797, 798.1-798.9, 799
Sudden infant death syndrome (SIDS)	R95	798.0
External Causes of Injuries and Poisonings (intentional, unintentional and of undetermined intent)	V01-Y89	E800-E999
Accidents (Unintentional Injuries)	V01-X59, Y85-Y86	E800-E949
Motor Vehicle-related injuries	V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0-V88.8, V89.0, V89.2	E810-E825
Unintentional non-transport injuries	W00-X59, Y86	E850-E869, E880-E928, E929.2-E929.9
Suicide	X60-X84, Y87.0	E950-E959
Homicide	X85-Y09, Y87.1	E960-E969
Injuries of undetermined intent	Y10-Y34, Y87.2, Y89.9	E980-E989

1. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title).

Table A2. ICD-10 Injury Codes Used in this Publication

Cause of Death	ICD-10 Code
Suicide	X60-X84, Y87.0
Poisoning	X60-X69
Hanging, strangulation or suffocation	X70
Firearm	X72-X74
Other and unspecified	Residual
Homicide	X85-Y09, Y87.1
Firearm	X93-X95
Cut or pierce	X99
Other and unspecified	Residual
Unintentional Injuries (Accidents)	V01-X59, Y85-Y86
Falls	W00-W19
Hanging, strangulation or suffocation	W75-W84
Drowning or submersion	W65-W74
Smoke, fire and flames and contact with heat and hot substances	X00-X19
Poisoning	X40-X49
Firearm	W32-W34
Motor Vehicle-related	V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0-V88.8, V89.0, V89.2
Injury to pedestrian	V02-V04, V09.0, V09
Injury to pedal cyclist	V12-V14, V19.0, V19.2, V19.4, V19.5, V19.6
Injury to motorcyclist	V20-V29
Injury to occupant	V30-V79, V80.3, V80.4, V80.5, V81.0, V81.1, V82.0, V82.1, V83-V86
Other and unspecified	Residual
Other and unspecified	Residual
Events of Undetermined Intent	Y10-Y34, Y87.2, Y89.9
Poisoning	Y10-Y19
Drowning or submersion	Y21
Other and unspecified	Residual
Legal Intervention	Y35-Y36, Y89.0, Y89.1
Firearm	Y35.0
Adverse Effects	Y40-Y59, Y60-Y84, Y88
Drugs	Y40-Y59, Y88.0
Medical Care	Y60-Y84, Y88.1, Y88.2, Y88.3

Table A3. ICD-10 Codes for Selected Healthy People 2020 Mortality Objectives¹ Used in this Publication (Sorted by Objective Number)	
Cause of Death	ICD-10 Code
Cancer (All Sites)	C00-C97
Lung cancer	C33-C34
Female breast cancer	C50
Uterine Cervix cancer	C53
Colorectal cancer	C18-C21
Oropharyngeal cancer	C00-C14
Prostate cancer	C61
Malignant melanoma	C43
Coronary Heart Disease	I11, I20-I25
COPD	J40-J44
Stroke	I60-I69
HIV Infection	B20-B24
Firearm-related Deaths	W32-W34, X72-X74, Y22-Y24, Y35.0, X93-X95
Poisoning	X40-X49, X60-X69, X85-X90, Y10-Y19, Y35.2
Hanging, Strangulation or Suffocation	W75-W84, X70, X91, Y20
Unintentional Injuries (Accidents)	V01-X59, Y85-Y86
Motor Vehicle-related	V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0-V88.8, V89.0, V89.2
Residential Fire Deaths	X00, X02
Falls	W00-W19, X80, Y01, Y30
Drownings	W65-W74, X71, X92, Y21
Homicides	X85-Y09, Y87.1
Birth Defects	Q00-Q99
Congenital Heart and Vascular Defects	Q20-Q24
Sudden Infant Death Syndrome (SIDS)	R95
Suicide	X60-X84, Y87.0
Asthma	J45-J46
Motor-vehicle crash deaths	V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0-V88.8, V89.0, V89.2
Cirrhosis	K74
Drug Induced Deaths	F11.0-F11.5, F11.7-F11.9, F12.0-F12.5, F12.7-F12.9, F13.0-F13.5, F13.7-F13.9, F14.0-F14.5, F14.7-F14.9, F15.0-F15.5, F15.7-F15.9, F16.0-F16.5, F16.7-F16.9, F17.0, F17.3-F17.5, F17.7-F17.9, F18.0-F18.5, F18.7-F18.9, F19.0-F19.5, F19.7-F19.9, X40-X44, X60-64, X85, Y10-Y14

1. These Healthy People 2020 objectives use underlying cause of death data.

Table A4. Preliminary Comparability Ratios

Cause of Death	ICD-10 Code	ICD-9 Code (most similar title)	Comparability Ratio
Infectious and Parasitic Diseases	A00-B99		NA
Septicemia	A40-A41	038	1.1949
Human Immunodeficiency Virus (HIV) disease	B20-B24	042-044	1.0637 ¹ and 1.1448 ²
Cancer (Malignant Neoplasms)	C00-C97	140-208	1.0068
of esophagus	C15	150	0.9965
of stomach	C16	151	1.0063
of colon, rectum, rectum and anus	C18-C21	153-154	0.9993
of pancreas	C25	157	0.9980
of trachea, bronchus and lung	C33-C34	162	0.9837
of breast	C50	174-175	1.0056
of cervix uteri	C53	180	0.9871
of corpus uteri and uterus, part unspecified	C54-C55	179,182	1.0260
of ovary	C56	183.0	0.9954
of prostate	C61	185	1.0134
of kidney and renal pelvis	C64-C65	189.0-189.1	1.0000
of bladder	C67	188	0.9968
of meninges, brain & other parts of central nervous system	C70-C72	191-192	0.9691
Hodgkin Disease	C81	201	0.9855
Non-Hodgkin lymphoma	C82-C85	200, 202	0.9781
Leukemia	C91-C95	204-208	1.0119
Multiple myeloma and immunoproliferative neoplasms	C88, C90	203	1.0383
Diabetes Mellitus	E10-E14	250	1.0082
Alzheimer's Disease	G30	331.0	1.5536
Heart Disease	I00-I09, I11, I13, I20-I51	390-398, 402, 404, 410-429	0.9858
Stroke (Cerebrovascular Disease)	I60-I69	430-434, 436-438	1.0588
Influenza and Pneumonia	J10-J18	480-487	0.6982
Chronic Lower Respiratory Diseases	J40-J47	490-494,496	1.0478
Chronic Liver Disease and Cirrhosis	K70, K73-K74	571	1.0367
Nephritis	N00-N07, N17-N19, N25-N27	580-589	1.2320
Congenital Malformations, Deformations, and Chromosomal Abnormalities	Q00-Q99	740-759	0.8470
Certain Conditions Originating in the Perinatal Period (Perinatal Conditions)	P00-P96	760-771.2, 771.4-779	1.0658
External Causes of Injuries and Poisonings (intentional, unintentional and of undetermined intent)	V01-Y89	E800-E999	NA
Accidents (Unintentional Injuries)	V01-X59, Y85-Y86	E800-E869, E880-E929	1.0305
Motor Vehicle-related injuries	V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0-V88.8, V89.0, V89.2	E810-E825	0.9754 ³
Non-transport injuries	W00-X59, Y86	E850-E869, E880-E928, E929.2-E929.9	1.0763
Suicide	X60-X84, Y87.0	E950-E959	0.9962
Homicide	X85-Y09, Y87.1	E960-E969	0.9983
Injuries of undetermined intent	Y10-Y34, Y87.2, Y89.9	E980-E989	*

Source: National Center for Health Statistics, Preliminary Comparability Study. February 2001. NA: not available *: not reliable

Note. Please refer to Appendix for an example of how to apply comparability ratios.

1. Comparability Modified number and rate based on preliminary comparability ratios (CR) from NCHS based on 1996 data (February 2001). 2. Comparability Modified number and rate based on preliminary comparability ratios (CR) from NCHS based on 1998 data (revised June 2001). 3. This is the revised comparability ratio for motor vehicle-related injuries, effective May 2001.

Table A5. Preliminary Comparability Ratios: Causes of Infant Death

Cause of Death	ICD-10 Code	ICD-9 Code (most similar title)	Comparability Ratio
Certain Infectious and Parasitic Diseases	A00-B99	001-033, 034.1-134, 136-139, 771.3	0.7339
Septicemia	A40-A41	038	1.3802
Human Immunodeficiency Virus (HIV) disease	B20-B24	042-044	1.0455
Cancer (Malignant Neoplasms)	C00-C97	140-208	1.0435
Influenza and Pneumonia	J10-J18	480-487	0.7624
Certain Conditions Originating in the Perinatal Period (Perinatal Conditions)	P00-P96	760-771.2, 771.4-779	1.0581
Newborn affected by maternal complications of pregnancy	P01	761	1.0295
Newborn affected by complications of placenta, cord and membranes	P02	762	1.0470
Disorders relating to short gestation and low birthweight	P07	765	1.1060
Intrauterine hypoxia and birth asphyxia	P20-P21	768	1.4477
Respiratory distress of newborn	P22	769	1.0257
Other respiratory conditions originating in perinatal period	P23-P28	770	0.8455
Infections specific to the perinatal period	P35-P39	771.0-771.2, 771.4-771.8	1.0199
Neonatal hemorrhage	P50-P52, P54	772	1.4369
Congenital Malformations, Deformations, and Chromosomal Abnormalities	Q00-Q99	740-759	0.9064
Anencephaly and similar malformations	Q00	740	1.0000
Congenital malformations of heart	Q20-Q24	745-746	0.9951
Congenital malformations of respiratory system	Q30-Q34	748	0.6322
Congenital malformations of digestive system	Q35-Q45	749-751	*
Congenital malformations of genitourinary system	Q50-Q64	752-753	0.9432
Congenital malformations of musculoskeletal system	Q65-Q85	754-757	0.8650
Sudden Infant Death Syndrome (SIDS)	R95	798.0	1.0362
External Causes of Injuries and Poisonings (intentional, unintentional and of undetermined intent)	V01-Y89	E800-E999	NA
Accidents (Unintentional Injuries)	V01-X59	E800-E869, E880-E929	1.0246
Motor Vehicle-related injuries	V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0-V88.8, V89.0, V89.2	E810-E825	0.9167
Homicide	X85-Y09	E960-E969	0.9481
Injuries of undetermined intent	Y10-Y34, Y87.2, Y89.9	E980-E989	*

Source: National Center for Health Statistics, Preliminary Comparability Study. February 2001. NA: not available *: not reliable
Note: Please refer to Appendix for an example of how to apply comparability ratios.

Table A6. Causes of Death Considered Amenable to Health Care

Cause of Death Considered Amenable to Health Care	Age	ICD-10 Code
Intestinal infections	0-14	A00-A09
Tuberculosis	0-74	A15-A19, B90
Other infectious (Diphtheria, Tetanus, Poliomyelitis)	0-74	A36, A35, A80, A40-A41
Whooping cough	0-14	A37
Measles	1 to 14	B05
Malignant neoplasm of colon and rectum	0-74	C18-C21
Malignant neoplasm of skin,	0-74	C44
Malignant neoplasm of breast,	0-74	C50
Malignant neoplasm of cervix uteri	0-74	C53
Malignant neoplasm of cervix uteri and body of the uterus	0-44	C54, C55
Malignant neoplasm of testis	0-74	C62
Hodgkin's disease	0-74	C81
Leukemia	0-44	C91-C95
Diseases of the thyroid	0-74	E00-E07
Diabetes mellitus	0-49	E10-E14
Epilepsy	0-74	G40-G41
Chronic rheumatic heart disease	0-74	I05-I09
Hypertensive disease	0-74	I10-I13, I15
Ischemic heart disease	0-74	I20-I25
Cerebrovascular disease	0-74	I60-I69
All respiratory diseases (excl. pneumonia/influenza)	1 to 14	J00-J09, J20-J99
Influenza	0-74	J10-J11
Pneumonia	0-74	J12-J18
Peptic ulcer	0-74	K25-K27
Appendicitis	0-74	K35-K38
Abdominal hernia	0-74	K40-K46
Cholelithiasis & cholecystitis	0-74	K80-K81
Nephritis and nephrosis	0-74	N00-N07, N17-N19, N25-N27
Benign prostatic hyperplasia	0-74	N40
Misadventures to patients during surgical and medical care	All	Y60-Y69, Y83-Y84
Maternal deaths	All	O00-O99
Congenital cardiovascular anomalies	0-74	Q20-Q28
Perinatal deaths, all causes excluding stillbirths	All	P00-P96

Note: Amenable causes are from E. Nolte and M. McKee, *Does Healthcare Save Lives? Avoidable Mortality Revisited* (London: Nuffield Trust, 2004). Available at <http://researchonline.lshtm.ac.uk/15535/1/does-healthcare-save-lives-mar04.pdf> and E. Nolte and M. McKee, In Amenable Mortality—Deaths Avoidable Through Health Care—Progress In The US Lags That of Three European Countries, *Health Affairs* 31(9), 2114-2122. Available at <https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2011.0851>

Table A7. Population Estimates for Massachusetts Community Health Network Areas (CHNA) and Counties: 2010 and 2016

CHNA	POPULATION ¹	COUNTY	POPULATION ²
1. Community Health Network of Berkshire County	131,219	Barnstable	214,276
2. Upper Valley Health Web (Franklin County)	87,130	Berkshire	126,903
3. Partnership for Health in Hampshire County (Northampton)	155,900	Bristol	558,324
4. The Community Health Connection (Springfield)	296,850	Dukes	17,246
5. Community Health Network of Southern Worcester County	119,539	Essex	779,018
6. Community Partners for Health (Milford)	166,824	Franklin	70,382
7. Community Health Network of Greater Metro West (Framingham)	388,909	Hampden	468,467
8. Common Pathways (Worcester)	309,013	Hampshire	161,816
9. Community Health Network of North Central Massachusetts	262,652	Middlesex	1,589,774
10. Greater Lowell Community Health Network	275,404	Nantucket	11,008
11. Greater Lawrence Community Health Network	194,172	Norfolk	697,181
12. Greater Haverhill Community Health Network	148,563	Plymouth	513,565
13. Community Health Network North (Beverly/Gloucester)	115,782	Suffolk	784,230
14. North Shore Community Health Network	284,642	Worcester	819,589
15. Northwest Suburban Health Alliance	215,757		
16. North Suburban Health Alliance (Medford/Malden/Melrose)	270,281	STATE	6,811,779
17. Greater Cambridge/Somerville Community Health Network	280,404		
18. West Suburban Health Network (Newton/Waltham)	258,843		
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	780,755		
20. Blue Hills Community Health Alliance (Greater Quincy)	377,279		
21. Community Health Network of Chicopee, Holyoke, Ludlow, Westfield	160,892		
22. Greater Brockton Community Health Network	236,778		
23. South Shore Community Health Network (Plymouth)	190,549		
24. Greater Attleboro-Taunton Health & Education Response	256,322		
25. Partners for Healthier Communities (Fall River)	138,419		
26. Greater New Bedford Community Health Network	202,156		
27. Cape Cod and Islands Health Network	242,595		

1. The Massachusetts Department of Public Health Race Allocated Census 2010 Estimates (MRACE 2010), which are population estimates based upon the Census 2010 Summary File 1, was used to calculate city and town rates.

2. National Center for Health Statistics. Postcensal estimates of the resident population of the United States for April 1, 2010-July 1, 2016, by year, county, single-year of age (0, 1, 2, ..., 85 years and over), bridged race, Hispanic origin, and sex (Vintage 2016). Prepared under a collaborative arrangement with the U.S. Census Bureau. Available from: http://www.cdc.gov/nchs/nvss/bridged_race.htm as of June 27, 2017.

Table A8. Population Estimates for Massachusetts Communities, 2010

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Abington	Plymouth	22	15,985	Concord	Middlesex	15	17,668
Acton	Middlesex	15	21,924	Conway	Franklin	2	1,897
Acushnet	Bristol	26	10,303	Cummington	Hampshire	3	872
Adams	Berkshire	1	8,485	Dalton	Berkshire	1	6,756
Agawam	Hampden	4	28,438	Danvers	Essex	14	26,493
Alford	Berkshire	1	494	Dartmouth	Bristol	26	34,032
Amesbury	Essex	12	16,283	Dedham	Norfolk	18	24,729
Amherst	Hampshire	3	37,819	Deerfield	Franklin	2	5,125
Andover	Essex	11	33,201	Dennis	Barnstable	27	14,207
Aquinnah (Gay Head)	Dukes	27	311	Dighton	Bristol	24	7,086
Arlington	Middlesex	17	42,844	Douglas	Worcester	6	8,471
Ashburnham	Worcester	9	6,081	Dover	Norfolk	18	5,589
Ashby	Middlesex	9	3,074	Dracut	Middlesex	10	29,457
Ashfield	Franklin	2	1,737	Dudley	Worcester	5	11,390
Ashland	Middlesex	7	16,593	Dunstable	Middlesex	10	3,179
Athol	Worcester	2	11,584	Duxbury	Plymouth	23	15,059
Attleboro	Bristol	24	43,593	East Bridgewater	Plymouth	22	13,794
Auburn	Worcester	8	16,188	East Brookfield	Worcester	5	2,183
Avon	Norfolk	22	4,356	East Longmeadow	Hampden	4	15,720
Ayer	Middlesex	9	7,427	Eastham	Barnstable	27	4,956
Barnstable	Barnstable	27	45,193	Easthampton	Hampshire	3	16,053
Barre	Worcester	9	5,398	Easton	Bristol	22	23,112
Becket	Berkshire	1	1,779	Edgartown	Dukes	27	4,067
Bedford	Middlesex	15	13,320	Egremont	Berkshire	1	1,225
Belchertown	Hampshire	3	14,649	Erving	Franklin	2	1,800
Bellingham	Norfolk	6	16,332	Essex	Essex	13	3,504
Belmont	Middlesex	17	24,729	Everett	Middlesex	16	41,667
Berkley	Bristol	24	6,411	Fairhaven	Bristol	26	15,873
Berlin	Worcester	9	2,866	Fall River	Bristol	25	88,857
Bernardston	Franklin	2	2,129	Falmouth	Barnstable	27	31,531
Beverly	Essex	13	39,502	Fitchburg	Worcester	9	40,318
Billerica	Middlesex	10	40,243	Florida	Berkshire	1	752
Blackstone	Worcester	6	9,026	Foxborough	Norfolk	7	16,865
Blandford	Hampden	4	1,233	Framingham	Middlesex	7	68,318
Bolton	Worcester	9	4,897	Franklin	Norfolk	6	31,635
Boston	Suffolk	19	617,594	Freetown	Bristol	26	8,870
Bourne	Barnstable	27	19,754	Gardner	Worcester	9	20,228
Boxborough	Middlesex	15	4,996	Georgetown	Essex	12	8,183
Boxford	Essex	12	7,965	Gill	Franklin	2	1,500
Boylston	Worcester	8	4,355	Gloucester	Essex	13	28,789
Braintree	Norfolk	20	35,744	Goshen	Hampshire	3	1,054
Brewster	Barnstable	27	9,820	Gosnold	Dukes	27	75
Bridgewater	Plymouth	22	26,563	Grafton	Worcester	8	17,765
Brimfield	Hampden	5	3,609	Granby	Hampshire	3	6,240
Brockton	Plymouth	22	93,810	Granville	Hampden	4	1,566
Brookfield	Worcester	5	3,390	Great Barrington	Berkshire	1	7,104
Brookline	Norfolk	19	58,732	Greenfield	Franklin	2	17,456
Buckland	Franklin	2	1,902	Groton	Middlesex	9	10,646
Burlington	Middlesex	15	24,498	Groveland	Essex	12	6,459
Cambridge	Middlesex	17	105,162	Hadley	Hampshire	3	5,250
Canton	Norfolk	20	21,561	Halifax	Plymouth	23	7,518
Carlisle	Middlesex	15	4,852	Hamilton	Essex	13	7,764
Carver	Plymouth	23	11,509	Hampden	Hampden	4	5,139
Charlemont	Franklin	2	1,266	Hancock	Berkshire	1	717
Charlton	Worcester	5	12,981	Hanover	Plymouth	23	13,879
Chatham	Barnstable	27	6,125	Hanson	Plymouth	23	10,209
Chelmsford	Middlesex	10	33,802	Hardwick	Worcester	9	2,990
Chelsea	Suffolk	19	35,177	Harvard	Worcester	9	6,520
Cheshire	Berkshire	1	3,235	Harwich	Barnstable	27	12,243
Chester	Hampden	21	1,337	Hatfield	Hampshire	3	3,279
Chesterfield	Hampshire	3	1,222	Haverhill	Essex	12	60,879
Chicopee	Hampden	21	55,298	Hawley	Franklin	2	337
Chilmark	Dukes	27	866	Heath	Franklin	2	706
Clarksburg	Berkshire	1	1,702	Hingham	Plymouth	20	22,157
Clinton	Worcester	9	13,606	Hinsdale	Berkshire	1	2,032
Cohasset	Norfolk	20	7,542	Holbrook	Norfolk	22	10,791
Colrain	Franklin	2	1,671	Holden	Worcester	8	17,346

Table A8 (continued). Population Estimates for Massachusetts Communities, 2010

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Holland	Hampden	5	2,481	New Marlborough	Berkshire	1	1,509
Holliston	Middlesex	7	13,547	New Salem	Franklin	2	990
Holyoke	Hampden	21	39,880	Newbury	Essex	12	6,666
Hopedale	Worcester	6	5,911	Newburyport	Essex	12	17,416
Hopkinton	Middlesex	7	14,925	Newton	Middlesex	18	85,146
Hubbardston	Worcester	9	4,382	Norfolk	Norfolk	7	11,227
Hudson	Middlesex	7	19,063	North Adams	Berkshire	1	13,708
Hull	Plymouth	20	10,293	North Andover	Essex	11	28,352
Huntington	Hampshire	21	2,180	North Attleboro	Bristol	24	28,712
Ipswich	Essex	13	13,175	North Brookfield	Worcester	5	4,680
Kingston	Plymouth	23	12,629	North Reading	Middlesex	16	14,892
Lakeville	Plymouth	24	10,602	Northampton	Hampshire	3	28,549
Lancaster	Worcester	9	8,055	Northborough	Worcester	7	14,155
Lanesborough	Berkshire	1	3,091	Northbridge	Worcester	6	15,707
Lawrence	Essex	11	76,377	Northfield	Franklin	2	3,032
Lee	Berkshire	1	5,943	Norton	Bristol	24	19,031
Leicester	Worcester	8	10,970	Norwell	Plymouth	20	10,506
Lenox	Berkshire	1	5,025	Norwood	Norfolk	20	28,602
Leominster	Worcester	9	40,759	Oak Bluffs	Dukes	27	4,527
Leverett	Franklin	2	1,851	Oakham	Worcester	9	1,902
Lexington	Middlesex	15	31,394	Orange	Franklin	2	7,839
Leyden	Franklin	2	711	Orleans	Barnstable	27	5,890
Lincoln	Middlesex	15	6,362	Otis	Berkshire	1	1,612
Littleton	Middlesex	15	8,924	Oxford	Worcester	5	13,709
Longmeadow	Hampden	4	15,784	Palmer	Hampden	4	12,140
Lowell	Middlesex	10	106,519	Paxton	Worcester	8	4,806
Ludlow	Hampden	21	21,103	Peabody	Essex	14	51,251
Lunenburg	Worcester	9	10,086	Pelham	Hampshire	3	1,321
Lynn	Essex	14	90,329	Pembroke	Plymouth	23	17,837
Lynnfield	Essex	14	11,596	Pepperell	Middlesex	9	11,497
Malden	Middlesex	16	59,450	Peru	Berkshire	1	847
Manchester	Essex	13	5,136	Petersham	Worcester	2	1,234
Mansfield	Bristol	24	23,184	Phillipston	Worcester	2	1,682
Marblehead	Essex	14	19,808	Pittsfield	Berkshire	1	44,737
Marion	Plymouth	26	4,907	Plainfield	Hampshire	3	648
Marlborough	Middlesex	7	38,499	Plainville	Norfolk	7	8,264
Marshfield	Plymouth	23	25,132	Plymouth	Plymouth	23	56,468
Mashpee	Barnstable	27	14,006	Plympton	Plymouth	23	2,820
Mattapoisett	Plymouth	26	6,045	Princeton	Worcester	9	3,413
Maynard	Middlesex	7	10,106	Provincetown	Barnstable	27	2,942
Medfield	Norfolk	7	12,024	Quincy	Norfolk	20	92,271
Medford	Middlesex	16	56,173	Randolph	Norfolk	20	32,112
Medway	Norfolk	6	12,752	Raynham	Bristol	24	13,383
Melrose	Middlesex	16	26,983	Reading	Middlesex	16	24,747
Mendon	Worcester	6	5,839	Rehoboth	Bristol	24	11,608
Merrimac	Essex	12	6,338	Revere	Suffolk	19	51,755
Methuen	Essex	11	47,255	Richmond	Berkshire	1	1,475
Middleborough	Plymouth	24	23,116	Rochester	Plymouth	26	5,232
Middlefield	Hampshire	3	521	Rockland	Plymouth	23	17,489
Middleton	Essex	11	8,987	Rockport	Essex	13	6,952
Milford	Worcester	6	27,999	Rowe	Franklin	2	393
Millbury	Worcester	8	13,261	Rowley	Essex	12	5,856
Millis	Norfolk	7	7,891	Royalston	Worcester	2	1,258
Millville	Worcester	6	3,190	Russell	Hampden	4	1,775
Milton	Norfolk	20	27,003	Rutland	Worcester	9	7,973
Monroe	Franklin	2	121	Salem	Essex	14	41,340
Monson	Hampden	4	8,560	Salisbury	Essex	12	8,283
Montague	Franklin	2	8,437	Sandisfield	Berkshire	1	915
Monterey	Berkshire	1	961	Sandwich	Barnstable	27	20,675
Montgomery	Hampden	4	838	Saugus	Essex	14	26,628
Mt. Washington	Berkshire	1	167	Savoy	Berkshire	1	692
Nahant	Essex	14	3,410	Scituate	Plymouth	20	18,133
Nantucket	Nantucket	27	10,172	Seekonk	Bristol	24	13,722
Natick	Middlesex	7	33,006	Sharon	Norfolk	20	17,612
Needham	Norfolk	18	28,886	Sheffield	Berkshire	1	3,257
New Ashford	Berkshire	1	228	Shelburne	Franklin	2	1,893
New Bedford	Bristol	26	95,072	Sherborn	Middlesex	7	4,119
New Braintree	Worcester	9	999	Shirley	Middlesex	9	7,211

Table A8 (continued). Population Estimates for Massachusetts Communities, 2010

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Shrewsbury	Worcester	8	35,608	Warwick	Franklin	2	780
Shutesbury	Franklin	2	1,771	Washington	Berkshire	1	538
Somerset	Bristol	25	18,165	Watertown	Middlesex	17	31,915
Somerville	Middlesex	17	75,754	Wayland	Middlesex	7	12,994
South Hadley	Hampshire	3	17,514	Webster	Worcester	5	16,767
Southampton	Hampshire	3	5,792	Wellesley	Norfolk	18	27,982
Southborough	Worcester	7	9,767	Wellfleet	Barnstable	27	2,750
Southbridge	Worcester	5	16,719	Wendell	Franklin	2	848
Southwick	Hampden	4	9,502	Wenham	Essex	13	4,875
Spencer	Worcester	5	11,688	West Boylston	Worcester	8	7,669
Springfield	Hampden	4	153,060	West Bridgewater	Plymouth	22	6,916
Sterling	Worcester	9	7,808	West Brookfield	Worcester	5	3,701
Stockbridge	Berkshire	1	1,947	West Newbury	Essex	12	4,235
Stoneham	Middlesex	16	21,437	West Springfield	Hampden	4	28,391
Stoughton	Norfolk	22	26,962	West Stockbridge	Berkshire	1	1,306
Stow	Middlesex	7	6,590	West Tisbury	Dukes	27	2,740
Sturbridge	Worcester	5	9,268	Westborough	Worcester	7	18,272
Sudbury	Middlesex	7	17,659	Westfield	Hampden	21	41,094
Sunderland	Franklin	2	3,684	Westford	Middlesex	10	21,951
Sutton	Worcester	6	8,963	Westhampton	Hampshire	3	1,607
Swampscott	Essex	14	13,787	Westminster	Worcester	9	7,277
Swansea	Bristol	25	15,865	Weston	Middlesex	18	11,261
Taunton	Bristol	24	55,874	Westport	Bristol	25	15,532
Templeton	Worcester	9	8,013	Westwood	Norfolk	18	14,618
Tewksbury	Middlesex	10	28,961	Weymouth	Norfolk	20	53,743
Tisbury	Dukes	27	3,949	Whately	Franklin	2	1,496
Tolland	Hampden	4	485	Whitman	Plymouth	22	14,489
Topsfield	Essex	13	6,085	Wilbraham	Hampden	4	14,219
Townsend	Middlesex	9	8,926	Williamsburg	Hampshire	3	2,482
Truro	Barnstable	27	2,003	Williamstown	Berkshire	1	7,754
Tyngsborough	Middlesex	10	11,292	Wilmington	Middlesex	15	22,325
Tyringham	Berkshire	1	327	Winchendon	Worcester	9	10,300
Upton	Worcester	6	7,542	Winchester	Middlesex	15	21,374
Uxbridge	Worcester	6	13,457	Windsor	Berkshire	1	899
Wakefield	Middlesex	16	24,932	Winthrop	Suffolk	19	17,497
Wales	Hampden	5	1,838	Woburn	Middlesex	15	38,120
Walpole	Norfolk	7	24,070	Worcester	Worcester	8	181,045
Waltham	Middlesex	18	60,632	Worthington	Hampshire	3	1,156
Ware	Hampshire	3	9,872	Wrentham	Norfolk	7	10,955
Wareham	Plymouth	26	21,822	Yarmouth	Barnstable	27	23,793
Warren	Worcester	5	5,135				

1. The Massachusetts Department of Public Health Race Allocated Census 2010 Estimates (MRACE 2010), which are population estimates based upon the Census 2010 Summary File 1, was used to calculate city and town rates.


Table A9. 2016 Massachusetts Population Estimates¹ By Age Group, Gender, Race and Hispanic Ethnicity (mutually exclusive)

AGE	GENDER	TOTAL	WHITE Non- Hispanic²	BLACK Non- Hispanic²	ASIAN Non- Hispanic²	HISPANIC²
Under 1	Male	36,748	22,794	3,262	2,847	7,765
	Female	35,109	21,725	3,100	2,637	7,566
	Total	71,857	44,519	6,362	5,484	15,331
1 TO 4	Male	147,501	90,701	15,358	11,463	29,613
	Female	142,018	87,165	14,456	11,185	28,850
	Total	289,519	177,866	29,814	22,648	58,463
5 TO 14	Male	391,327	256,692	37,707	28,426	67,571
	Female	374,712	245,262	35,084	28,066	65,375
	Total	766,039	501,954	72,791	56,492	132,946
15 TO 24	Male	478,607	325,150	43,137	35,631	73,454
	Female	476,331	324,347	42,635	39,382	68,812
	Total	954,938	649,497	85,772	75,013	142,266
25 TO 34	Male	476,869	321,805	40,713	43,894	69,287
	Female	475,460	321,196	40,502	48,109	64,577
	Total	952,329	643,001	81,215	92,003	133,864
35 TO 44	Male	403,734	279,908	32,366	36,125	54,517
	Female	421,279	288,984	34,534	40,525	56,397
	Total	825,013	568,892	66,900	76,650	110,914
45 TO 54	Male	466,997	364,454	31,464	28,631	41,349
	Female	494,119	381,736	34,758	30,960	45,510
	Total	961,116	746,190	66,222	59,591	86,859
55 TO 64	Male	440,593	369,865	25,285	18,938	25,513
	Female	476,411	395,220	28,576	21,769	29,715
	Total	917,004	765,085	53,861	40,707	55,228
65 TO 74	Male	283,498	247,039	12,718	10,816	12,356
	Female	329,033	282,938	16,592	12,762	16,178
	Total	612,531	529,977	29,310	23,578	28,534
75 TO 84	Male	127,716	112,326	5,106	5,242	4,783
	Female	174,911	152,668	8,456	6,343	7,165
	Total	302,627	264,994	13,562	11,585	11,948
85 +	Male	52,061	47,218	1,617	1,618	1,505
	Female	106,745	97,730	3,700	2,382	2,803
	Total	158,806	144,948	5,317	4,000	4,308
ALL AGES	Male	3,305,651	2,437,952	248,733	223,631	387,713
	Female	3,506,128	2,598,971	262,393	244,120	392,948
	Total	6,811,779	5,036,923	511,126	467,751	780,661

1. National Center for Health Statistics. Postcensal estimates of the resident population of the United States for April 1, 2010-July 1, 2016, by year, county, single-year of age (0, 1, 2, ..., 85 years and over), bridged race, Hispanic origin, and sex (Vintage 2016). Prepared under a collaborative arrangement with the U.S. Census Bureau. Available from: http://www.cdc.gov/nchs/nvss/bridged_race.htm as of June 27, 2017.

2. Persons of Hispanic ethnicity are NOT included in the race categories. These estimates are used to calculate population based rates published in this report.

Massachusetts Death Certificate: 2016

		 Commonwealth of Massachusetts Registry of Vital Records and Statistics CERTIFICATE OF DEATH		State File # Registered #
Form R-301 08012015				
DECEDENT	Place of Death			
	Date of Death		Age	Sex
	Current Name		SSN	
	Surname at Birth or Adoption			
	AKA			
	Date of Birth		Birthplace	
	Residence			
	Race		Education	
	Marital Status		Occupation/Industry	
	Last Spouse – Last, First, Middle (Surname at Birth or Adoption)		Decedent: U.S. Veteran (Most Recent)	
Mother/Parent Name – Last, First Middle (Surname at Birth or Adoption)		Birthplace		
Father/Parent Name – Last, First Middle (Surname at Birth or Adoption)		Birthplace		
MEDICAL CERTIFIER	Part I. Cause of Death – Sequentially list immediate cause then antecedent causes then underlying cause Interval between onset and death a. Immediate Cause (Final condition resulting in death) b. Due to or as a consequence of: c. Due to or as a consequence of: d. Due to or as a consequence of:			
	Part II. Other significant conditions contributing to death but not resulting in underlying cause		Manner of Death:	
			Time of Death:	
			Result of Injury:	
	Certifier		Lic #	
DISPOSITION	Addr.			
	Funeral Licensee/ Designee		Lic #	
	Facility/Addr.			
	Immediate Disposition			
	Date of Immediate Disposition			
Place/Address				
Date of Record				
Date of Amendment				

<i>If U.S. war veteran, specify war/conflict(s)</i>			
<i>Branch of military (most recent)</i>		<i>Rank/organization/outfit(most recent)</i>	
<i>Date entered(most recent)</i>	<i>Date Discharged (most recent)</i>	<i>Service Number(most recent)</i>	
<i>Place of Death Type</i>		<i>Date of Pronouncement</i>	<i>Time of Pronouncement</i>
<i>RN/NP/PA Pronouncement?</i>	<i>Name of RN/NP/PA Pronouncing Death</i>		<i>Lic #</i>
<i>RN/NP/PA Employing Agency or Institution</i>		<i>Name of Physician or Medical Examiner notified</i>	
<i>Was M.E. Notified?</i>	<i>Provider in charge of patient's care, if not certifier</i>		
<i>Autopsy Performed?</i>	<i>Findings available for Cause?</i>	<i>Tobacco contribute to death?</i>	<i>Pregnancy Status, if female</i>
<i>Date of Injury</i>	<i>Time of Injury</i>	<i>Injury at Work?</i>	<i>If Transportation Injury, specify:</i>
<i>Place of Injury</i>		<i>Location/Address of Injury:</i>	
<i>Describe How Injury Occurred</i>			
<i>Expanded Race:</i>			
<i>Ethnicity:</i>			
<i>Informant Name</i>		<i>Relationship</i>	
<i>Addr.</i>			
<i>Date Disposition Permit Issued:</i>		<i>Board of Health Agent</i>	
<i>State Tracking No.</i>		<i>Local Permit No.</i>	

Circumstance for Referral to the Office of the Chief Medical Examiner (OCME)

<http://www.mass.gov/legis/laws/mgl/38-3.htm>

CHAPTER 38. MEDICAL EXAMINERS AND INQUESTS

Chapter 38: Section 3. Duty to report deaths; failure to report

Section 3. It shall be the duty of any person having knowledge of a death which occurs under the circumstances enumerated in this paragraph immediately to notify the office of the chief medical examiner, or the medical examiner designated to the location where the death has occurred, of the known facts concerning the time, place, manner, circumstances and cause of such death:

- (1) death where criminal violence appears to have taken place, regardless of the time interval between the incident and death, and regardless of whether such violence appears to have been the immediate cause of death, or a contributory factor thereto;
- (2) death by accident or unintentional injury, regardless of time interval between the incident and death, and regardless of whether such injury appears to have been the immediate cause of death, or a contributory factor thereto;
- (3) suicide, regardless of the time interval between the incident and death;
- (4) death under suspicious or unusual circumstances;
- (5) death following an unlawful abortion;
- (6) death related to occupational illness or injury;
- (7) death in custody, in any jail or correctional facility, or in any mental health or mental retardation institution;
- (8) death where suspicion of abuse of a child, family or household member, elder person or disabled person exists;
- (9) death due to poison or acute or chronic use of drugs or alcohol;
- (10) skeletal remains;
- (11) death associated with diagnostic or therapeutic procedures;
- (12) sudden death when the decedent was in apparent good health;
- (13) death within twenty-four hours of admission to a hospital or nursing home;
- (14) death in any public or private conveyance;

(15) fetal death, as defined by section two hundred and two of chapter one hundred and eleven, where the period of gestation has been twenty weeks or more, or where fetal weight is three hundred and fifty grams or more;

(16) death of children under the age of 18 years from any cause;

(17) any person found dead;

(18) death in any emergency treatment facility, medical walk-in center, day care center, or under foster care; or

(19) deaths occurring under such other circumstances as the chief medical examiner shall prescribe in regulations promulgated pursuant to the provisions of chapter thirty A.

A physician, police officer, hospital administrator, licensed nurse, department of social services social worker, or licensed funeral director, within the commonwealth, who, having knowledge of such an unreported death, fails to notify the office of the chief medical examiner of such death shall be punished by a fine of not more than five hundred dollars. Such failure shall also be reported to the appropriate board of registration, where applicable.

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