The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
250 Washington Street, Boston, MA 02108-4619

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February 22, 2022

Steven T. James
House Clerk
State House Room 145
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 2018 calendar year.

Sincerely,

Margret R. Cooke
Commissioner
Department of Public Health

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

CHARLES D. BAKER
GOVERNOR

KARYN POLITO
LT. GOVERNOR

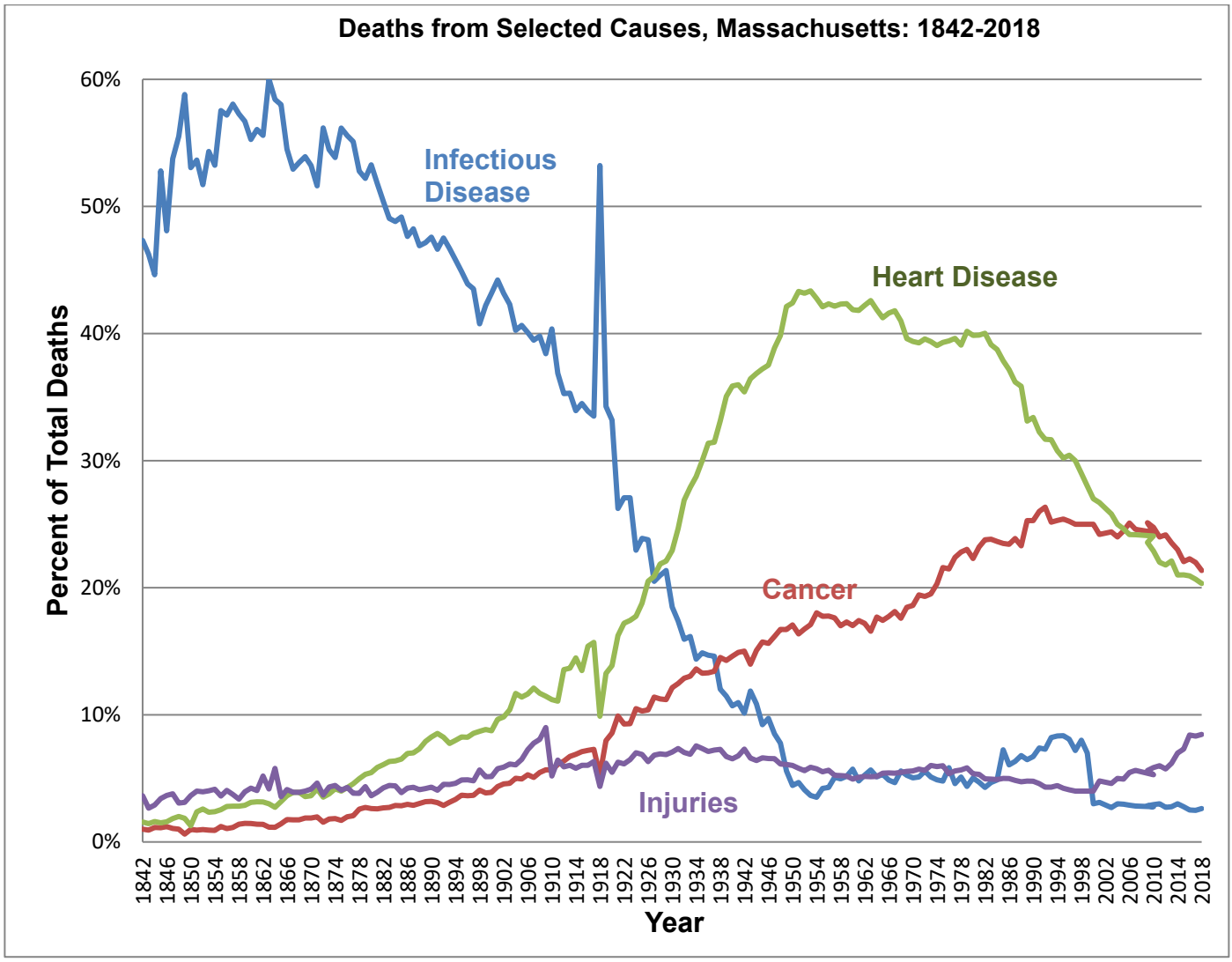
MARYLOU SUDDERS
SECRETARY

MARGRET R. COOKE
COMMISSIONER

Massachusetts Deaths 2018

February 2022

Massachusetts Deaths 2018



Office of Population Health

Massachusetts Department of Public Health

February 2022

Massachusetts Deaths 2018

Charles D. Baker, Governor
Marylou Sudders, Secretary of Health and Human Services
Margret R Cooke, Commissioner of Public Health

Abigail R. Averbach
Assistant Commissioner and Director
Office of Population Health

Karin Barrett
Registrar
Registry of Vital Records and Statistics

Massachusetts Department of Public Health

February 2022

Acknowledgments

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Data in this report have been collected through the efforts of the Registry of Vital Records and Statistics staff, including: Michael Baker, Pamela Corbin, June Deloney, Alex Forman, Marsha Grabau, Annette Luc, Denise O'Gara, Margaret Riley, Jennifer Smith, and Monica Smith.

To obtain additional copies of this report, contact:

Massachusetts Department of Public Health
Registry of Vital Records and Statistics
150 Mt. Vernon Street 1st Floor
Dorchester, MA 02125
(617) 740-2670

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: https://www.mass.gov/orgs/population-health-information-tool-phit.

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2018 Massachusetts Deaths Highlights

- From 2017 to 2018, the age-adjusted mortality rate for Massachusetts residents decreased from 675.7 deaths per 100,000 to 662.8 deaths per 100,000. The age-adjusted mortality rates for White non-Hispanic, Black non-Hispanic , Asian non-Hispanic, Hispanic, and female residents did not change significantly, but the decrease in the rate for male residents was significant (Table 1).
- The average life expectancy of Massachusetts residents was 80.8 years in 2018 (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 88.8 years from birth, on average, while the life expectancies for White non-Hispanic women and Black non-Hispanic women were 82.7 and 84.0 years, respectively (Table 3).
- In 2018, the premature mortality rate (which only includes deaths that occur before age 75) remained higher for Black non-Hispanic residents (335.1 deaths per 100,000) than for White non-Hispanic (285.5), Hispanic (242.6), and Asian non-Hispanic (127.1) 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. This is most notable in the 25-34 year age group where residents with a high school education or less have a five times higher death rate than those with more than a high school education. (Table 5).
- Cancer was the leading cause of death for Massachusetts residents in 2018 (Table 6). The rate of cancer deaths was highest for White non-Hispanic residents (146.8 per 100,000) and lowest for Asian non-Hispanic residents (96.6 per 100,000) (Table 9). Lung cancer remained the leading cancerous cause of death (Table 11).
- In 2018, Black non-Hispanic, Asian non-Hispanic and Hispanic residents died from cancer at younger ages when compared to White non-Hispanic residents (Figure 11). Black non-Hispanic, Hispanic, and Asian non-Hispanic residents died from heart disease at younger ages when compared to White non-Hispanic residents (Figure 9).
- In 2018, the rate of heart disease deaths remained higher for White non-Hispanic men and women than for any other racial/ethnic group (Table 10).
- Poisonings, which include opioid overdoses, continued to be the largest cause of injury deaths in 2018, the injury death rate due to poisoning was 33.8 per 100,000 in 2017 and 34.1 per 100,000 in 2018 (Table 18). For all leading causes of injury death, rates were higher for men than for women, with the greatest disparity in poisoning deaths (55.9 per 100,000 for men and 13.6 per 100,000 for women).
- The rate of suicide deaths for White non-Hispanic residents (11.5 per 100,000) was almost double the corresponding rates for other groups (6.1 per 100,000 for Black non-Hispanics, 3.6 per 100,000 for Asian non-Hispanics, and 4.3 per 100,000 for Hispanics) (Table 23).
- In 2018, the rate of infant mortality for Black non-Hispanic residents (8.7 per 1,000 live births) was over two times higher than the corresponding rate for White non-Hispanic residents (3.7 per 1,000 live births) (Table 30).
- Certain conditions originating in the perinatal period was the leading cause of all infant deaths in 2018, both overall (59.8%) and for each race (Tables 31 & 32). Specifically, disorders relating to short gestation and low birthweight accounted for 23.0% of all infant deaths (Table 31).

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 2018 (Annual Report Vital Statistics of Massachusetts-Deaths, Public Document #1 2018). The publication of this report was delayed due to both staffing vacancies and the reallocation of available staff in order to provide timely data for COVID-19 mortality reporting. Public Document #1 information on 2018 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 events[1]. 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 2018 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 2018 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

[1] This report uses death record data prepared on 11/12/2019. 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 11/12/2019.

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 information on the 2018 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.

   - **Population Source.** State, County, and Small Area Population Estimates 2011-2020, version 2018, Massachusetts Department of Public Health, Bureau of Environmental Health. Population estimates used for years following the decennial census were developed by the University of Massachusetts Donahue Institute (UMDI) in partnership with the Massachusetts Department of Public Health, Bureau of Environmental Health. Detailed population estimates at fine levels of geography are prone to estimation error. Estimated error was best described by age and population size and was used to adjust final population numbers, however a margin of error exists for all estimates.

5. **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 2018. Boston, MA: Office of Population Health, Registry of Vital Records and Statistics, Massachusetts Department of Public Health. February 2022.

[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 2018 the death worksheet still used the name "Cape Verdean".

Table 1. Trends in Mortality Characteristics, Massachusetts: 2008-2018

Year		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Resident deaths	Number	53,341	51,915	52,420	53,536	53,169	54,609	55,159	57,785	56,953	58,844	59,169
	Crude rate[1,2,3]	820.9	787.4	800.6	812.7	807.1	815.9	817.7	850.5	836.1	849.7	848.1
	Age-adjusted rate[4]	703.5	675.1	672.7	674.0	669.2	664.1	662.5	684.6	668.9	675.7	662.8
Race/ethnicity of decedent [5,6]												
White non-Hispanic	Number	49,059	47,520	48,010	48,844	48,430	49,486	49,621	51,688	50,654	52,038	52,196
	Percent[7]	92.0	91.5	91.6	91.2	91.1	90.6	90.0	89.4	88.9	88.4	88.2
	Age-adjusted rate[4]	710.7	682.8	684.4	686.9	681.0	680.9	679.5	703.3	687.9	697.1	686.8
Black non-Hispanic	Number	2,222	2,288	2,278	2,333	2,318	2,446	2,390	2,349	2,504	2,636	2,717
	Percent[7]	4.2	4.4	4.3	4.4	4.4	4.5	4.3	4.1	4.4	4.5	4.6
	Age-adjusted rate[4]	805.8	812.2	702.6	707.6	701.8	675.5	630.4	589.5	612.4	641.6	625.4
Asian non-Hispanic	Number	692	697	759	806	811	816	938	1,091	1,028	1,165	1,222
	Percent[7]	1.3	1.3	1.4	1.5	1.5	1.5	1.7	1.9	1.8	2.0	2.1
	Age-adjusted rate[4]	372.5	353.1	364.8	375.2	372.4	320.5	344.7	371.8	324.7	361.1	351.8
Hispanic	Number	1,275	1,337	1,308	1,477	1,487	1,548	1,702	2,037	2,126	2,372	2,377
	Percent[7]	2.4	2.6	2.5	2.8	2.8	2.8	3.1	3.5	3.7	4.0	4.0
	Age-adjusted rate[4]	458.2	439.8	443.9	468.9	484.9	444.9	447.9	493.0	473.2	505.7	480.4
Gender of decedent[6]												
Female	Number	28,246	27,356	27,368	27,983	27,883	28,558	28,289	29,880	28,952	29,665	29,891
	Age-adjusted rate[4]	595.9	572.8	567.2	572.8	571.1	569.5	557.9	581.2	560.2	563.2	555.1
Male	Number	25,095	24,557	25,051	25,553	25,280	26,051	26,867	27,905	28,000	29,178	29,276
	Age-adjusted rate[4]	852.2	822.1	811.9	808.5	797.9	786.5	795.9	814.7	804.9	817.9	798.3
Age of decedent												
<1 year	Number	381	366	319	310	309	298	321	310	283	263	291
1-14 years	Number	119	118	113	114	99	118	129	119	115	122	111
15-24 years	Number	421	440	453	471	419	449	441	519	526	501	416
25-44 years	Number	1,906	1,974	1,823	1,870	1,880	1,993	2,234	2,475	2,742	2,788	2,751
45-64 years	Number	8,426	8,688	8,753	8,808	8,791	9,013	9,214	9,348	9,270	9,516	9,350
65-74 years	Number	7,425	7,380	7,423	7,616	7,891	8,259	8,678	9,038	9,332	9,719	9,918
75-84 years	Number	14,970	13,943	13,639	13,598	13,272	13,182	12,784	13,299	12,870	13,272	13,806
85+ years	Number	19,692	19,004	19,888	20,747	20,506	21,296	21,356	22,677	21,813	22,663	22,526

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: 2003-2018

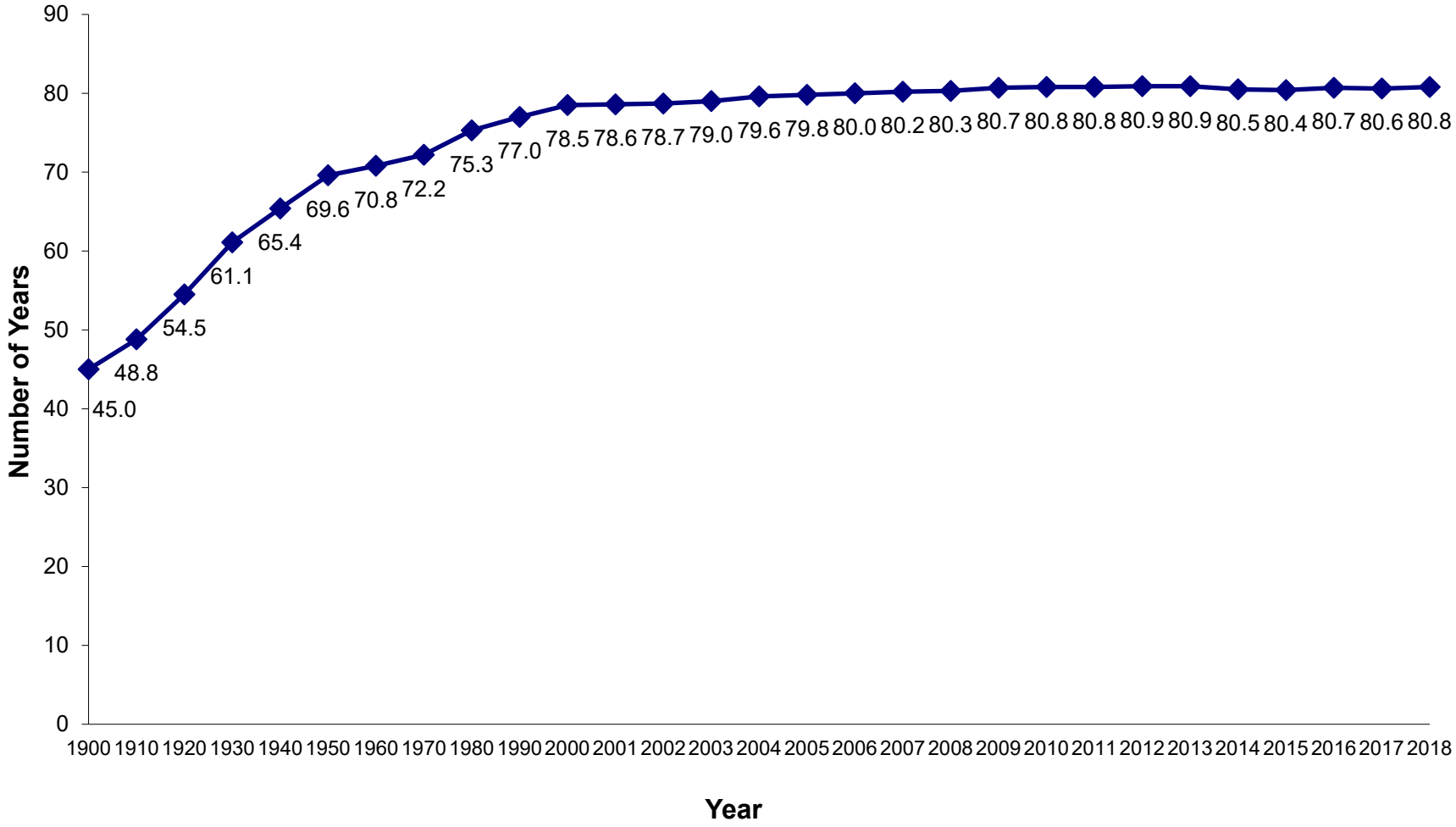
Year	Age-Adjusted Rates[1,2]	Heart Disease		Cancer		Stroke	
		MA	US[3]	MA	US[3]	MA	US[3]
2003	Rate	196.6	232.3	193.0	190.1	45.0	53.5
	% of Total	26.0	28.0	24.1	22.7	6.0	6.5
2004	Rate	182.8	217.0	188.4	185.8	42.5	50.0
	% of Total	25.3	27.2	24.5	23.1	6.0	6.3
2005	Rate	172.2	211.0	184.9	183.8	38.1	46.6
	% 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	165.5	149.8	155.8	27.9	37.3
	% of Total	20.9	23.1	22.3	21.8	4.3	5.2
2017	Rate	134.5	165.0	149.1	152.5	26.5	37.6
	% of Total	20.7	23.0	22.0	21.3	4.0	5.2
2018	Rate	131.1	163.6	142.5	149.1	27.1	37.1
	% of Total	20.3	23.1	21.4	21.1	4.2	5.2

Table 2 (continued). Selected Leading Causes of Death, Age-Adjusted Rates, Massachusetts and United States: 2003-2018

Year	Age-Adjusted Rates[1,2]	Influenza/Pneumonia		Unintentional Injuries		All Causes	
		MA	US[3]	MA	US[3]	MA	US[3]
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	13.5	53.6	47.4	668.9	728.8
	% of Total	2.2	1.9	6.8	5.9		
2017	Rate	15.8	14.3	52.6	49.4	675.7	731.9
	% of Total	2.4	2.0	6.7	6.0		
2018	Rate	15.8	14.9	52.8	48	662.8	723.6
	% of Total	2.4	2.1	6.7	5.9		

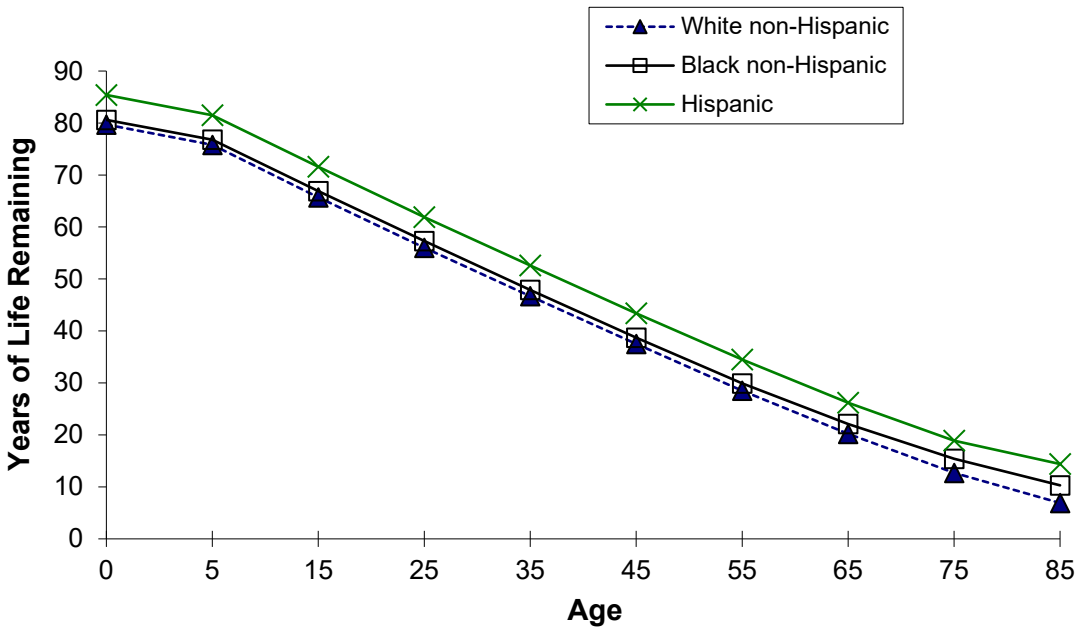
Note: Cause of death: the disease or injury that initiated the events leading to death or the circumstances of the unintentional or intentional injury that resulted in the death.
1. Data coded according to ICD-10. ICD-10 codes used in this publication are listed in the Appendix. 2. Rates are age-adjusted per 100,000 residents using the 2000 US standard population. 3. US data for 2018 obtained from NCHS Data Brief Mortality in the United States, 2018. Percentages for the specific causes of death were not available.

Figure 1. Life Expectancy at Birth, Massachusetts: 1900-2018



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 Remaining[1] at Different Ages by Race and Hispanic Ethnicity[2], Massachusetts: 2018



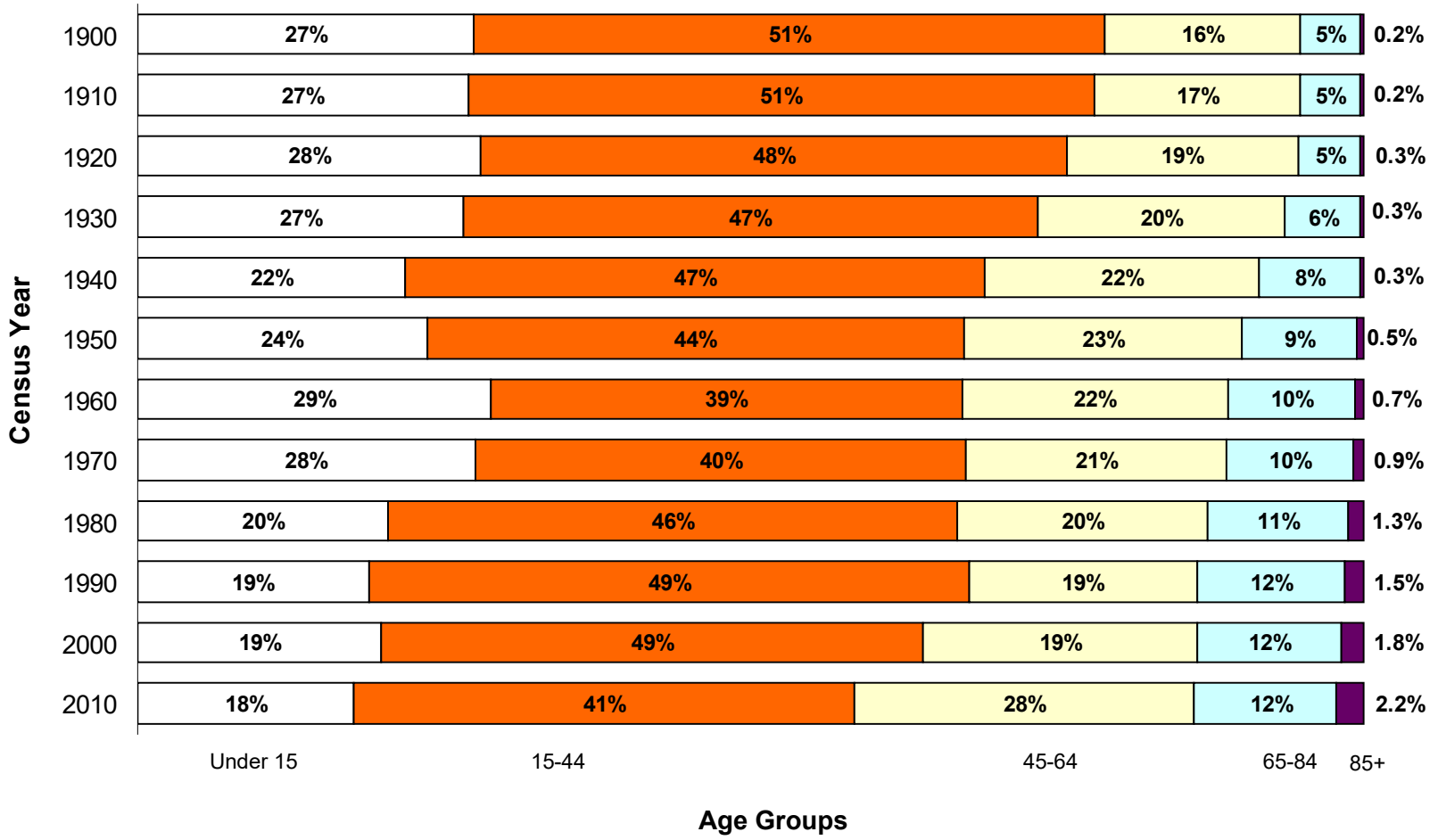
1. Years of Life Remaining calculated using the Greville Abridged Life Table Method (source: Dublin LI. Length of Life - A Study of the Life Table. Ronald Press Co. New York. 1949). 2. Population estimates are from 2018 bridged population file, MARS (Modified Age, Race/Ethnicity, and Sex) file. Please see the technical notes for more information on race and ethnicity.

Table 3. Years of Life Remaining[1] by Race and Hispanic Ethnicity[2] and Gender, Massachusetts: 2018

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	80.8	83.2	82.7	84.0	88.8	78.2	77.8	77.4	83.1
1 year old	80.1	82.5	82.0	83.7	88.1	77.5	77.1	77.3	82.5
5 years old	76.2	78.5	78.0	79.8	84.2	73.6	73.1	73.4	78.6
15 years old	66.2	68.6	68.1	69.9	74.3	63.7	63.3	63.6	68.6
25 years old	56.5	58.7	58.3	60.1	64.4	54.0	53.6	54.1	59.0
35 years old	47.1	49.2	48.7	50.3	54.9	44.9	44.5	45.1	50.0
45 years old	37.8	39.7	39.3	41.0	45.4	35.8	35.5	35.9	41.0
55 years old	28.9	30.5	30.1	32.0	36.1	27.0	26.8	27.3	32.5
65 years old	20.5	21.8	21.4	23.7	27.2	19.0	18.8	20.0	24.8
75 years old	12.9	13.8	13.5	16.4	19.5	11.8	11.5	13.8	18.0
85 years old	7.2	7.6	7.3	10.5	14.1	6.5	6.2	9.8	14.9

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 2018 bridged population file, MARS (Modified Age, Race/Ethnicity, and Sex) file. Please see the technical notes for more information on race and ethnicity..

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: 1842-2018

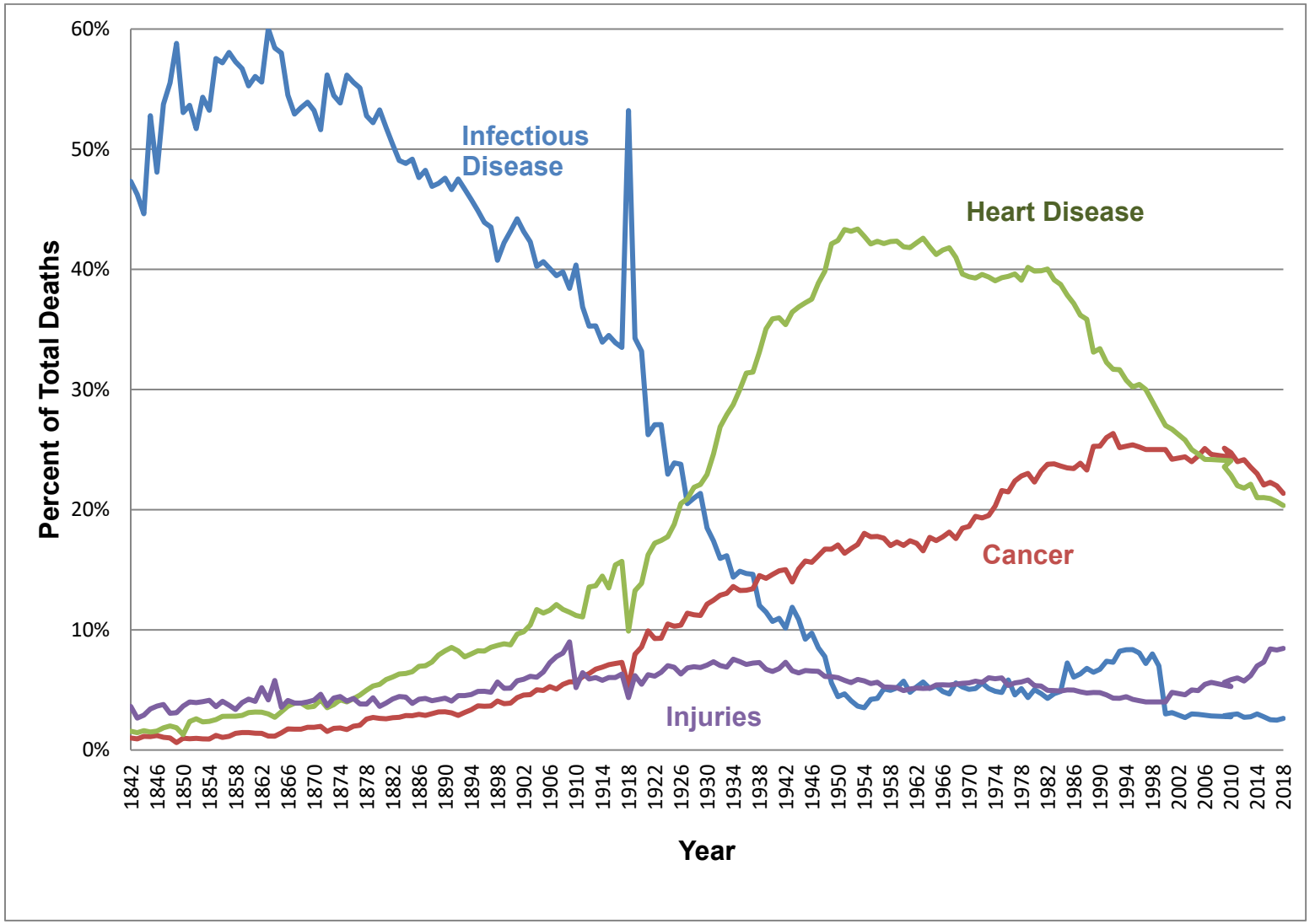
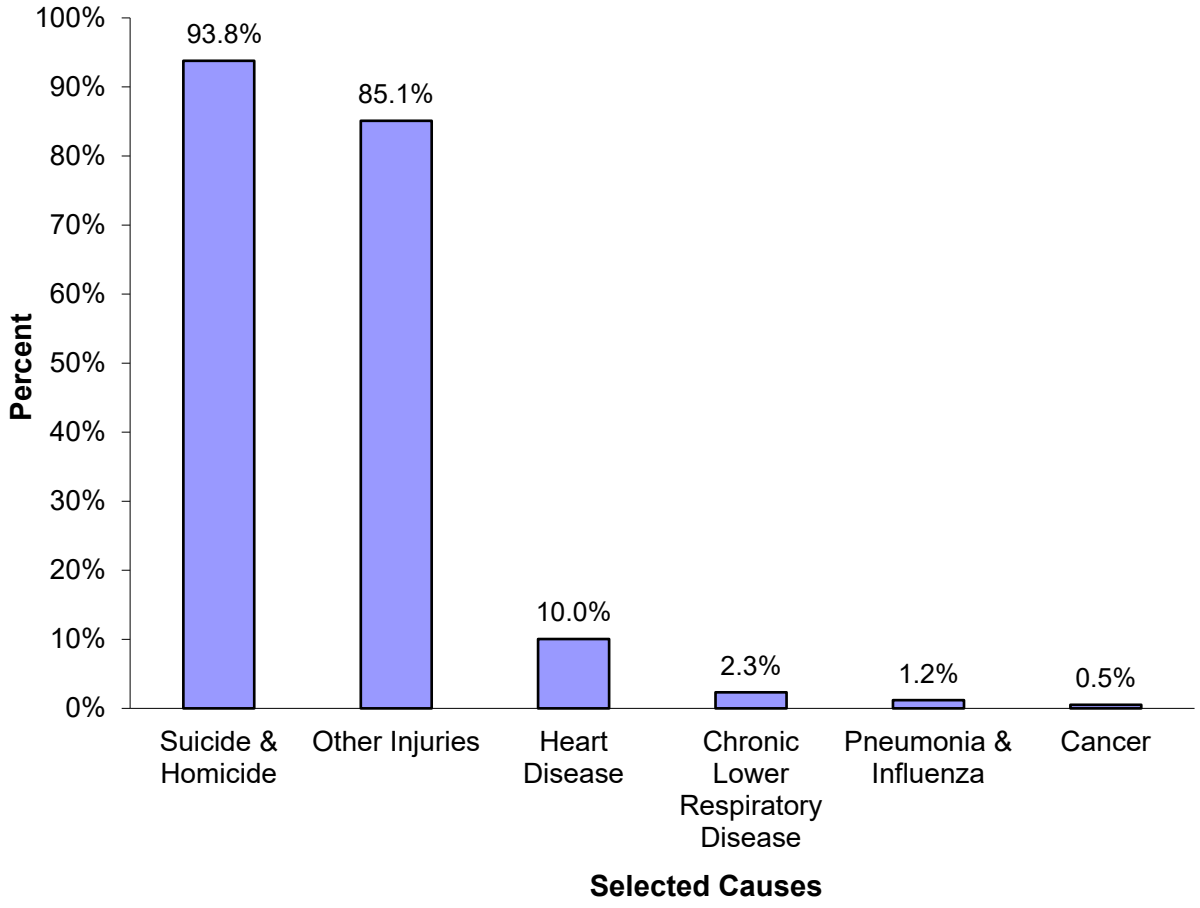


Table 4. Distribution of Deaths by Place of Occurrence, Massachusetts: 2014-2018

Type of Place where Death Occurred	2014		2015		2016		2017		2018	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Hospital (inpatient/outpatient)	20,534	37%	21,397	37%	20,579	36%	21,343	36%	21,502	36%
Dead on Arrival	641	1%	602	1%	732	1%	644	1%	681	1%
Nursing Home	15,353	28%	16,099	28%	14,800	26%	15,003	26%	14,606	25%
Hospice	--[1]	--[1]	2,628	5%	3,137	6%	3,321	6%	3,525	6%
Assisted Living Facility or Rest Home	--[2]	--[2]	1,251	2%	1,332	2%	1,646	3%	1,864	3%
At Home	15,096	27%	14,419	25%	14,925	26%	15,361	26%	15,552	26%
Other	3,499	6%	1,382	2%	1,446	3%	1,520	3%	1,438	2%
Unknown	36	0.07%	7	0.01%	2	0%	6	0%	1	0%

1. Prior to 2015, these deaths were included in the “Other” category. 2. Prior to 2015 these deaths were included in the Residence category.

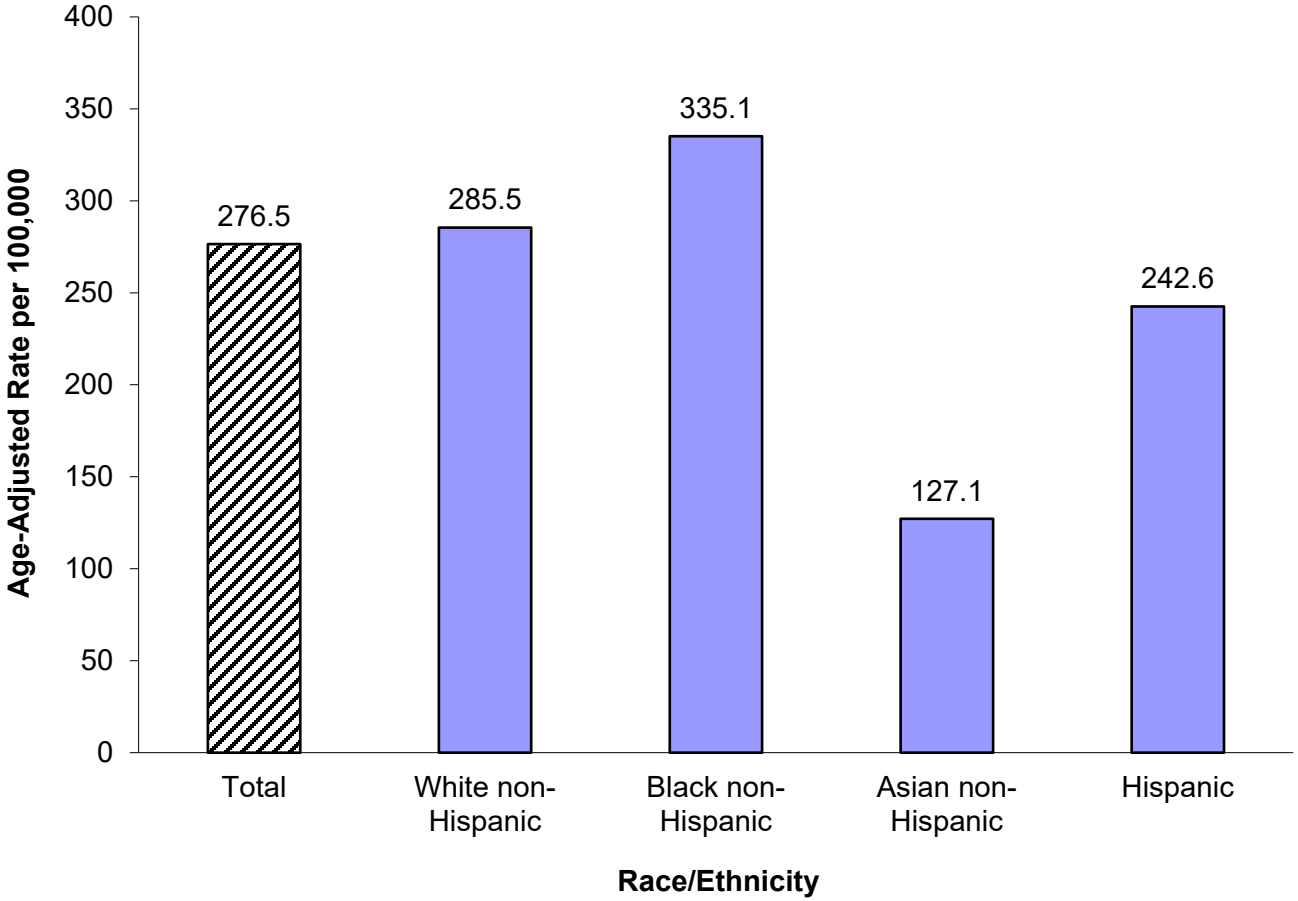
Figure 5. Proportion of Deaths Certified by Medical Examiner for Selected Causes of Death, Massachusetts: 2018



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.

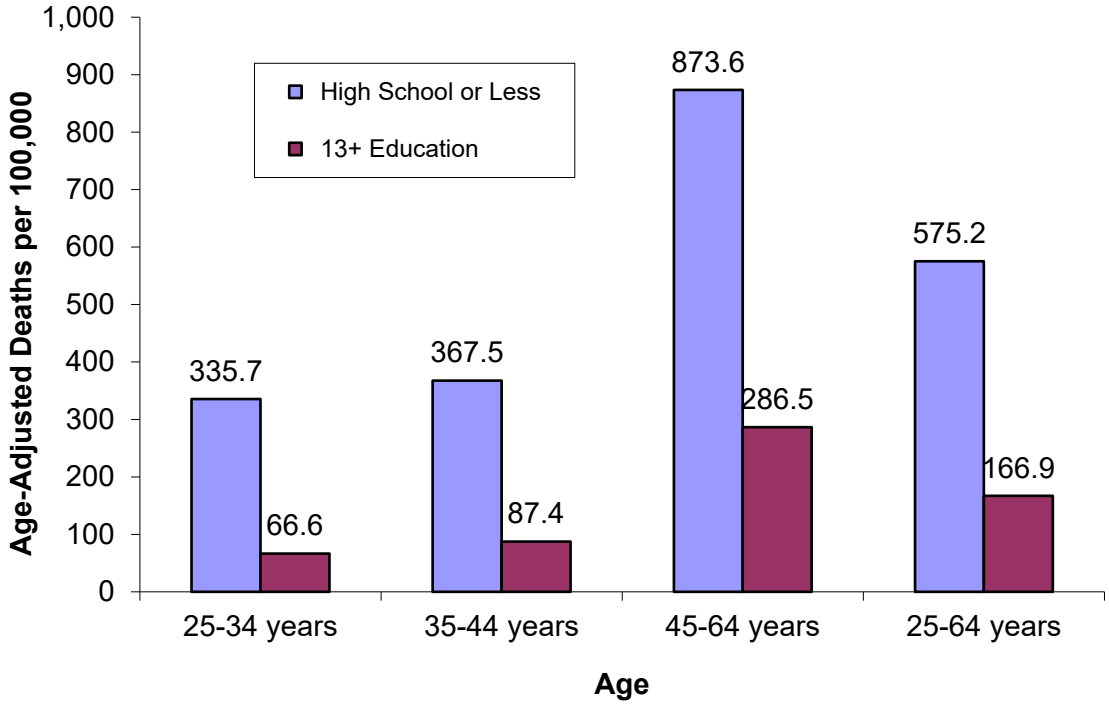
Figure 6. Premature Mortality Rate (PMR) by Race and Hispanic Ethnicity, Massachusetts: 2018



Notes: 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. Please see the technical notes for more information on race and ethnicity.

Table 5. Age-Specific and Age-Adjusted Death Rates for Ages 25-64 Years by Educational Attainment, Massachusetts: 2018

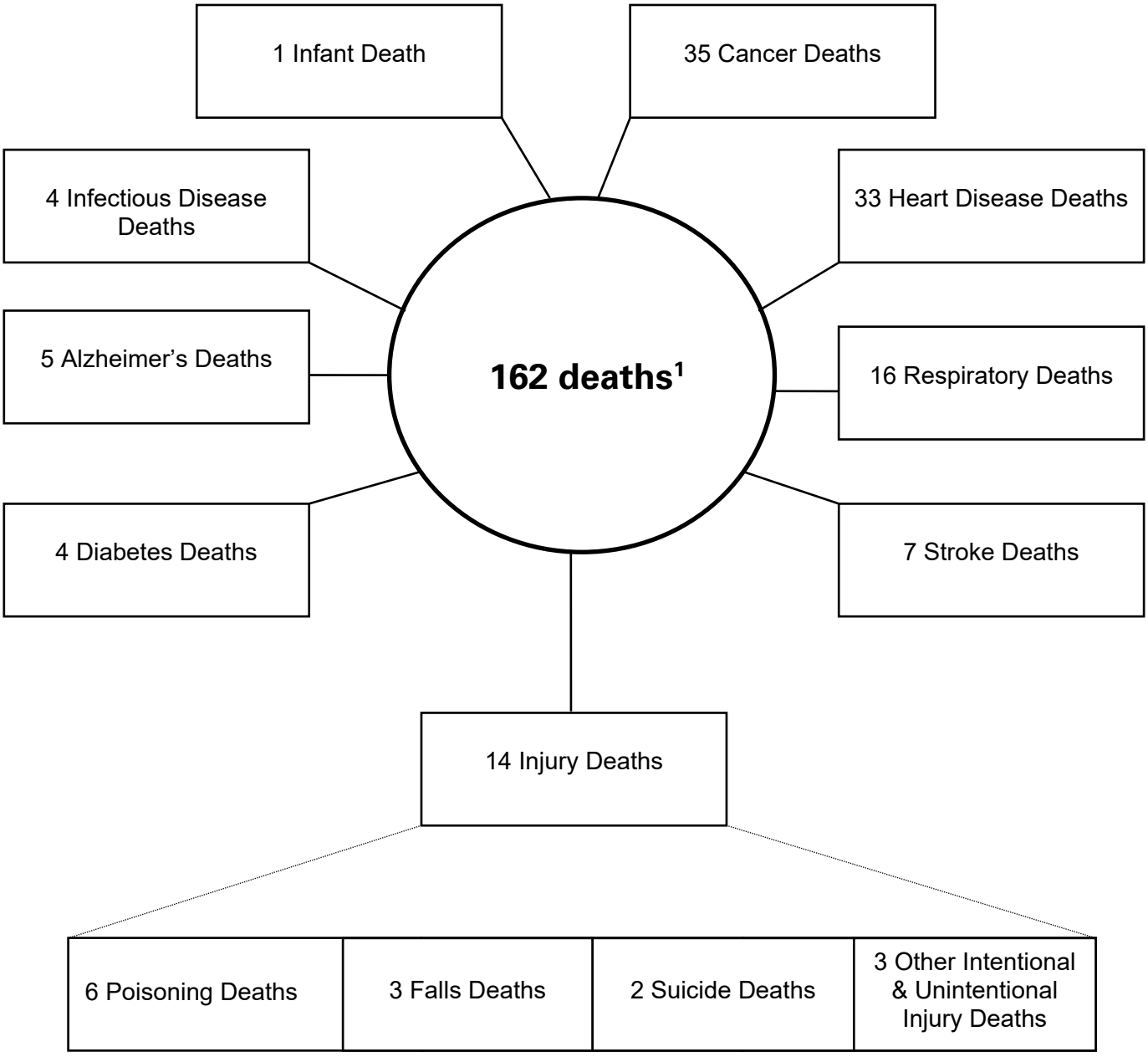
	Age-Specific Rates			Age-Adjusted Rates
Years of School Completed	**25-34 years**	**35-44 years**	**45-64 years**	**25-64 years**
High School or Less	335.7	367.5	873.6	**575.2**
13+ Education	66.6	87.4	286.5	**166.9**



Source: C15001: SEX BY AGE BY EDUCATIONAL ATTAINMENT FOR THE POPULATION 18 YEARS AND OVER
Universe: Population 18 Years And Over. 2014 American Community Survey Estimates.

Figure 7. Daily Mortality Statistics, Massachusetts: 2018

Every day in 2018, in Massachusetts there were on average:



1. Includes 43 deaths due to other causes.

Table 6. Top Ten Leading Underlying Causes of Death by Age, Massachusetts: 2018

	Age Groups (number of deaths)								
Rank	**<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] (67)	Cancer (23)	Unintentional Injuries (197)	Unintentional Injuries (1403)	Cancer (2805)	Cancer (3370)	Cancer (3471)	Heart Disease (5802)	**Cancer (12638)**
2	Congenital Malformations (61)	Unintentional Injuries (19)	Suicide (80)	Cancer (247)	Heart Disease (1548)	Heart Disease (1801)	Heart Disease (2682)	Cancer (2699)	**Heart Disease (12036)**
3	SIDS (21)	Congenital Malform (12)	Homicide (43)	Suicide (222)	Unintentional Injuries (1082)	Chronic Lower Respiratory Disease (595)	Chronic Lower Respiratory Disease (876)	Alzheimer's Disease (1246)	**Unintentional Injuries (3973)**
4	Pregnancy Complications (19)	Ill-Defined Conditions-signs and symptoms (10)	Cancer (23)	Heart Disease (184)	Chronic Liver Disease (389)	Stroke (335)	Stroke (648)	Stroke (1230)	**Chronic Lower Respiratory Disease (2765)**
5	Complications of Placenta (13)	Heart Disease (8)	Heart Disease (10)	Homicide (82)	Chronic Lower Respiratory Disease (319)	Diabetes (323)	Alzheimer's Disease (431)	Chronic Lower Respiratory Disease (959)	**Stroke (2467)**
6	Neonatal Hemorrhage (8)	Chronic Lower Respiratory Disease (4)	Ill-Defined Conditions-signs and symptoms (9)	Chronic Liver Disease (64)	Diabetes (315)	Unintentional Injuries (280)	Influenza & Pneumonia (361)	Influenza & Pneumonia (730)	**Alzheimer"s Disease (1825)**
7	Bacterial Sepsis of Newborn (7)	Other Infections (3)	Congenital Malform (6)	Ill-Defined Conditions-signs and symptoms (49)	Suicide (312)	Septicemia (216)	Nephritis (350)	Unintentional Injuries (647)	**Influenza & Pneumonia (1441)**
8	Intrauterine Hypoxia (6)	Homicide (3)	Diabetes (5)	Diabetes (45)	Stroke (228)	Nephritis (213)	Unintentional Injuries (342)	Nephritis (492)	**Diabetes (1392)**
9	Necrotizing Entercolitis (6)	Perinatal Conditions (2)	Influenza & Pneumonia (4)	Septicemia (27)	Septicemia (148)	Influenza & Pneumonia (205)	Diabetes (335)	Ill-Defined Conditions-signs and symptoms (463)	**Nephritis (1175)**
10	Respiratory Distress (4)	Suicide (2)	Injuries of Undetermined Intent (3)	Stroke (22)	Influenza & Pneumonia (121)	Chronic Liver Disease (190)	Septicemia (279)	Diabetes (369)	**Septicemia (976)**
All Causes	**291**	**111**	**416**	**2,751**	**9,350**	**9,918**	**13,806**	**22,526**	**59,169**

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. Ill-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: 2018

		Total		Female		Male	
Age	Cause of Death[1]	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]
1-14	**TOTAL**	**111**	**10.3**	**53**	**10.1**	**58**	**10.6**
	Cancer	23	2.1	15	2.9	8	1.5
	Unintentional Injuries	19	1.8	7	1.3	12	2.2
	Ill Defined Conditions	12	1.1	5	1.0	7	1.3
	Stroke	10	0.9	5	1.0	5	0.9
15-24	**TOTAL**	**416**	**42**	**126**	**25.6**	**290**	**58.9**
	Unintentional Injuries	197	20.0	66	13.4	131	26.6
	Suicide	80	8.1	24	4.9	56	11.4
	Homicide	43	4.4	6	1.2	37	7.5
	Cancer	23	2.3	11	2.2	12	2.4
25-44	**TOTAL**	**2,751**	**150.4**	**901**	**98.0**	**1,850**	**203.3**
	Unintentional Injuries	1,403	76.7	372	40.5	1,031	113.3
	Cancer	247	13.5	144	15.7	103	11.3
	Suicide	222	12.1	51	5.5	171	18.8
	Heart Disease	184	10.1	54	5.9	130	14.3
45-64	**TOTAL**	**9,350**	**499.3**	**3,547**	**366.2**	**5,803**	**641.8**
	Cancer	2,805	149.8	1,339	138.3	1,466	162.1
	Heart Disease	1,548	82.7	413	42.6	1,135	125.5
	Unintentional Injuries	1,082	57.8	304	31.4	778	86.0
	Chronic Liver Disease	389	20.8	134	13.8	255	28.2
65+[3]	**TOTAL**	**46,250**	**4038.8**	**25,134**	**3,874.7**	**21,115**	**4,253.0**
	Heart Disease	10,285	898.1	5,285	814.7	5,000	1,007.1
	Cancer	9,540	833.1	4,587	707.1	4,953	997.6
	Chronic Lower Respiratory Disease	2,430	212.2	1,400	215.8	1,030	207.5
	Stroke	2,213	193.3	1,357	209.2	855	172.2

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.

Table 8. Leading Underlying Causes of Death, Numbers and Age-Specific Rates (Ages 65 and Older) by Gender, Massachusetts: 2018

		Total		Female		Male	
Age	**Cause of Death[1]**	**Number**	**Rate[2]**	**Number**	**Rate[2]**	**Number**	**Rate[2]**
65-74	**TOTAL**	**9,918**	**1,497.7**	**4,257**	**1,195.1**	**5,660**	**1,849.5**
	Cancer	3,370	508.9	1,516	425.6	1,854	605.8
	Heart Disease	1,801	272.0	623	174.9	1,178	384.9
	Chronic Lower Respiratory Disease	595	89.8	309	86.8	286	93.5
	Stroke	335	50.6	161	45.2	173	56.5
75-84	**TOTAL**	**13,806**	**4,294.6**	**6,661**	**3,601.0**	**7,145**	**5,234.6**
	Cancer	3,471	1,079.7	1,628	880.1	1,843	1,350.2
	Heart Disease	2,682	834.3	1,144	618.5	1,538	1,126.8
	Chronic Lower Respiratory Disease	876	272.5	484	261.7	392	287.2
	Stroke	648	201.6	344	186.0	304	222.7
85+	**TOTAL**	**22,526**	**13,952.1**	**14,216**	**13,224.8**	**8,310**	**15,401.2**
	Heart Disease	5,802	3593.6	3,518	3,272.7	2,284	4,233.0
	Cancer	2,699	1671.7	1,443	1,342.4	1,256	2,327.8
	Alzheimers Disease	1,246	771.7	944	878.2	302	559.7
	Stroke	1,230	761.8	852	792.6	378	700.6

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.

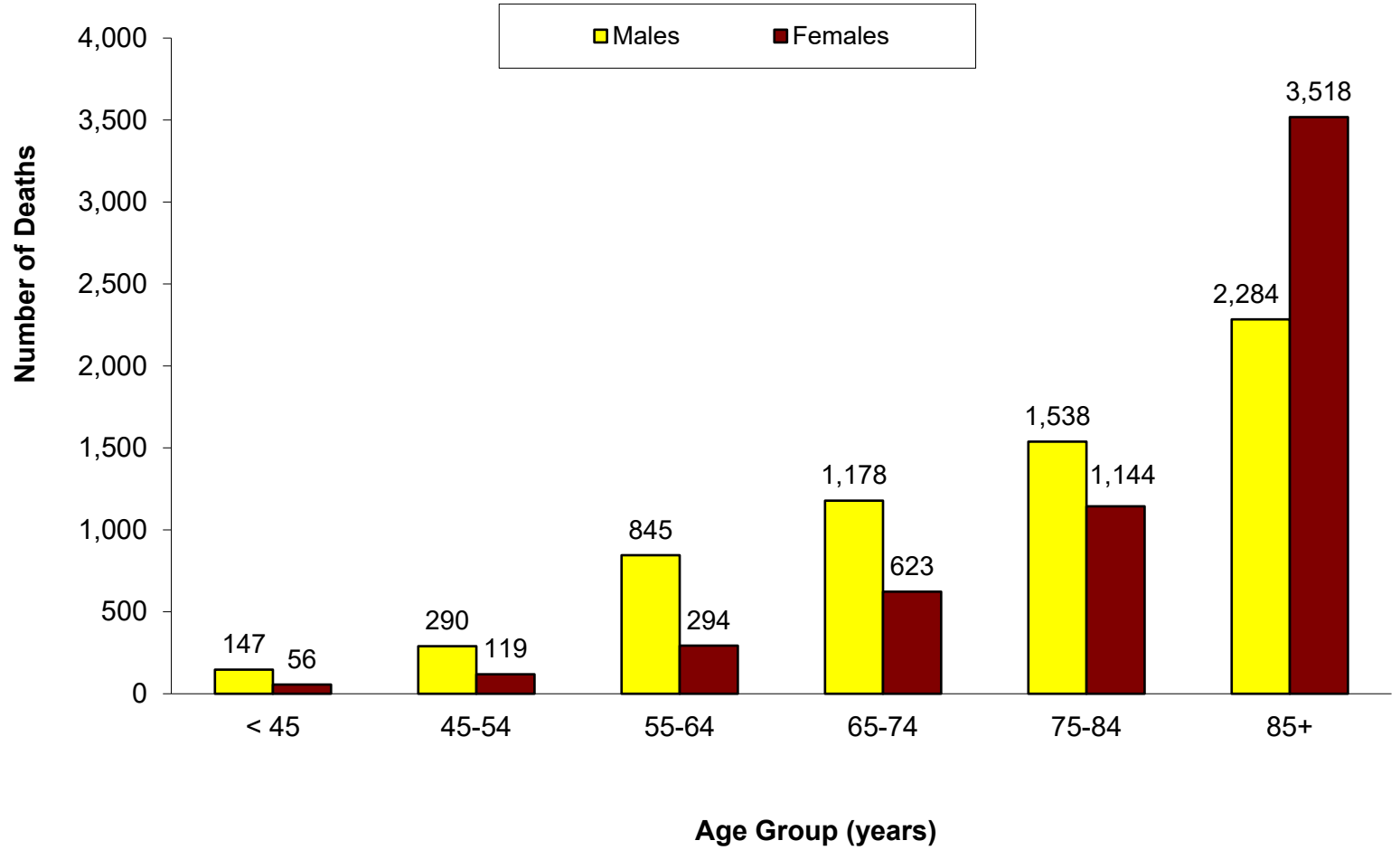
Table 9. Leading Causes of Death[1] and Age-Adjusted Rates by Race and Hispanic Ethnicity, Massachusetts: 2018

White non-Hispanic[2]			Black non-Hispanic[2]			Asian non-Hispanic[2]			Hispanic[2]		
Cause[3]	**#**	**Rate[4]**	**Cause[3]**	**#**	**Rate[4]**	**Cause[3]**	**#**	**Rate[4]**	**Cause[3]**	**#**	**Rate[4]**
Total	**52,196**	**686.8**	**Total**	**2,717**	**625.4**	**Total**	**1,222**	**351.8**	**Total**	**2,377**	**480.4**
Cancer	11,086	146.8	Cancer	585	136.5	Cancer	350	96.6	Cancer	476	99.1
Heart Disease	10,898	136.5	Heart Disease	505	120.2	Heart Disease	196	57.9	Unintentional Injuries[5]	360	46.9
Unintentional Injuries[5]	3,296	58.6	Unintentional Injuries[5]	164	33.2	Stroke	84	25.8	Heart Disease	311	75.0
Chronic Lower Respiratory Disease	2,577	33.2	Diabetes	118	27.9	Unintentional Injuries[5]	82	21.1	Diabetes	104	23.0
Stroke	2,157	26.9	Stroke	108	26.9	Diabetes	39	10.9	Stroke	82	20.8
Alzheimer's Disease	1,708	20.5	Nephritis	98	24.8	Nephritis	37	11.7	Chronic Lower Respiratory Disease	62	15.5
Influenza & Pneumonia	1,313	16.4	Chronic Lower Respiratory Disease	85	19.7	Influenza & Pneumonia	24	7.4	Chronic liver disease	53	10.1
Diabetes	1,112	14.7	Hypertension	60	14.1	Chronic Lower Respiratory Disease	24	7.7	Influenza & Pneumonia	50	12.5
Nephritis	979	12.4	Homicide	56	9.9	Alzheimer's Disease	23	7.9	Ill-Defined Conditions-signs and symptoms	50	7.4
Septicemia	859	11.3	Septicemia	55	13.0	Hypertension	23	7.4	Nephritis	49	12.3

Total		
Cause[3]	**#**	**Rate[4]**
Total	**59,169**	**662.8**
Cancer	12,638	142.5
Heart Disease	12,036	131.1
Unintentional Injuries[5]	3,973	52.8
Chronic Lower Respiratory Disease	2,765	30.9
Stroke	2,467	27.0
Alzheimer's Disease	1,825	19.4
Influenza & Pneumonia	1,441	15.7
Diabetes	1,392	15.7
Nephritis	1,175	13.1
Septicemia	976	11.1

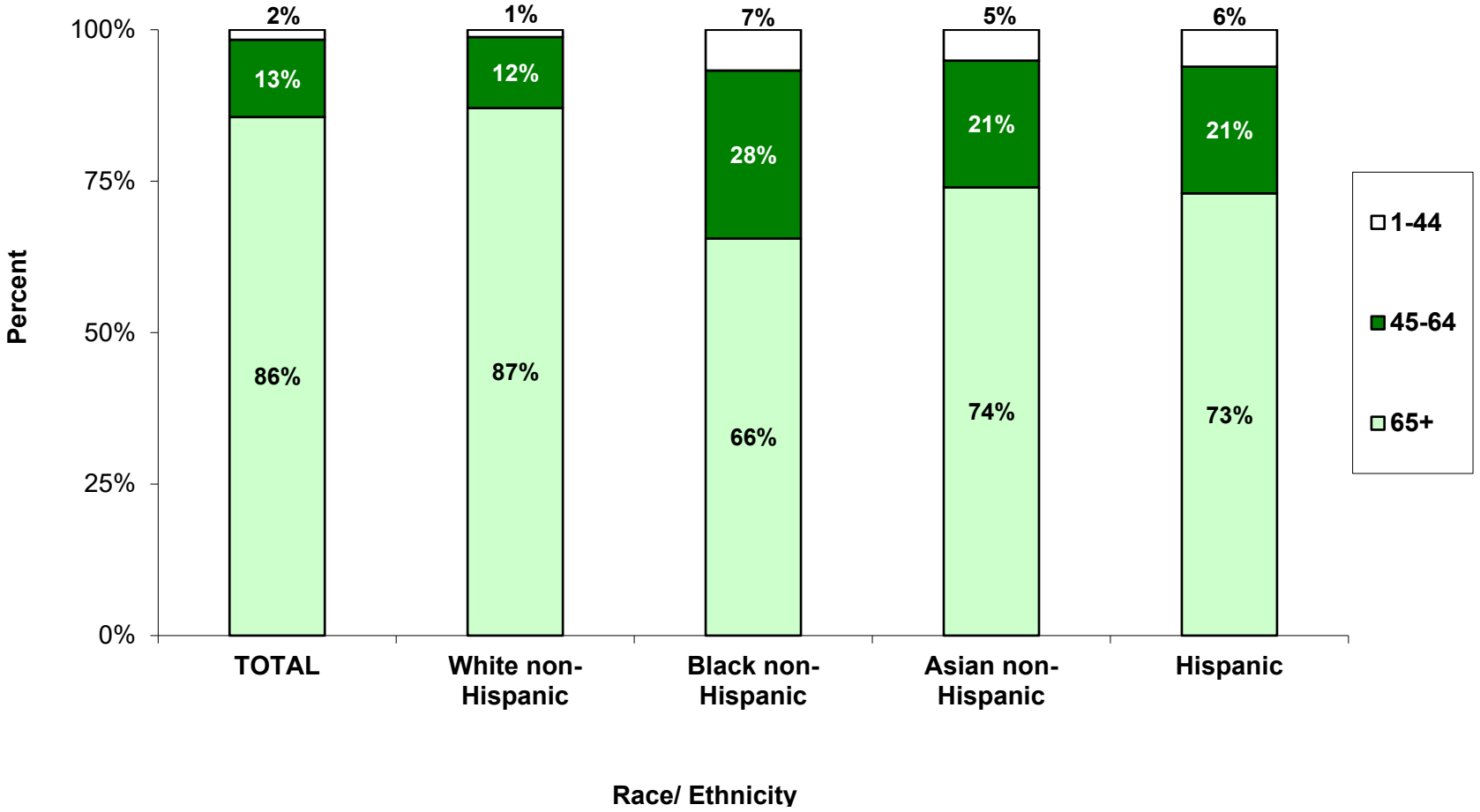
1. Ranking based on number of deaths. 2. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see the technical notes for more information on race and ethnicity 3. Underlying Cause of Death based 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 include injuries such as motor vehicle-related and other transportation related deaths, falls, fires, and drownings that were not intended to occur.

Figure 8. Number of Heart Disease Deaths by Age Group and Gender, Massachusetts: 2018



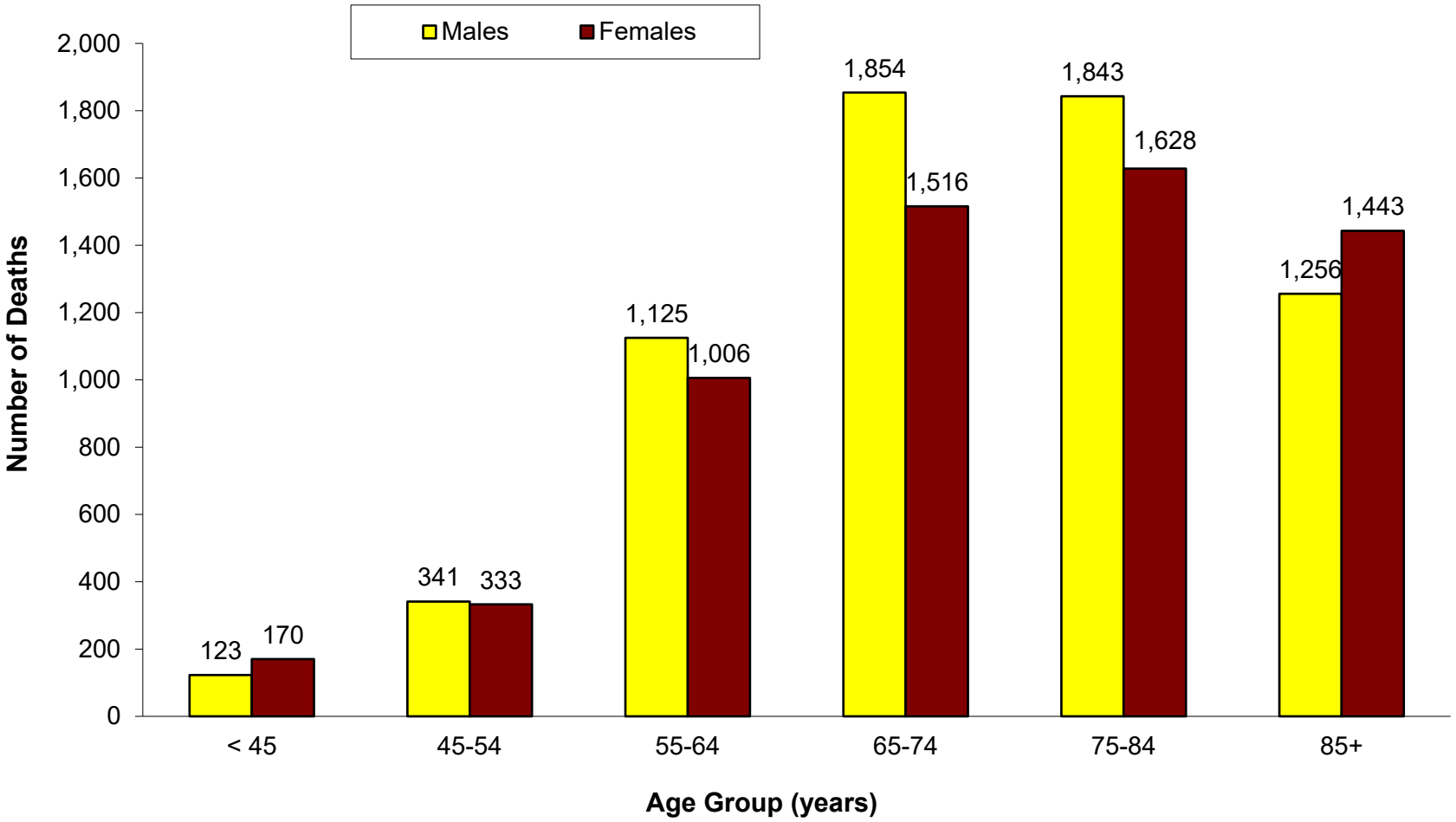
Note: The ICD-10 codes used for heart disease deaths were I00-I09, I11, I13, and I20-I51.

Figure 9. Age Distribution by Race and Hispanic Ethnicity for Heart Disease Deaths, Massachusetts: 2018



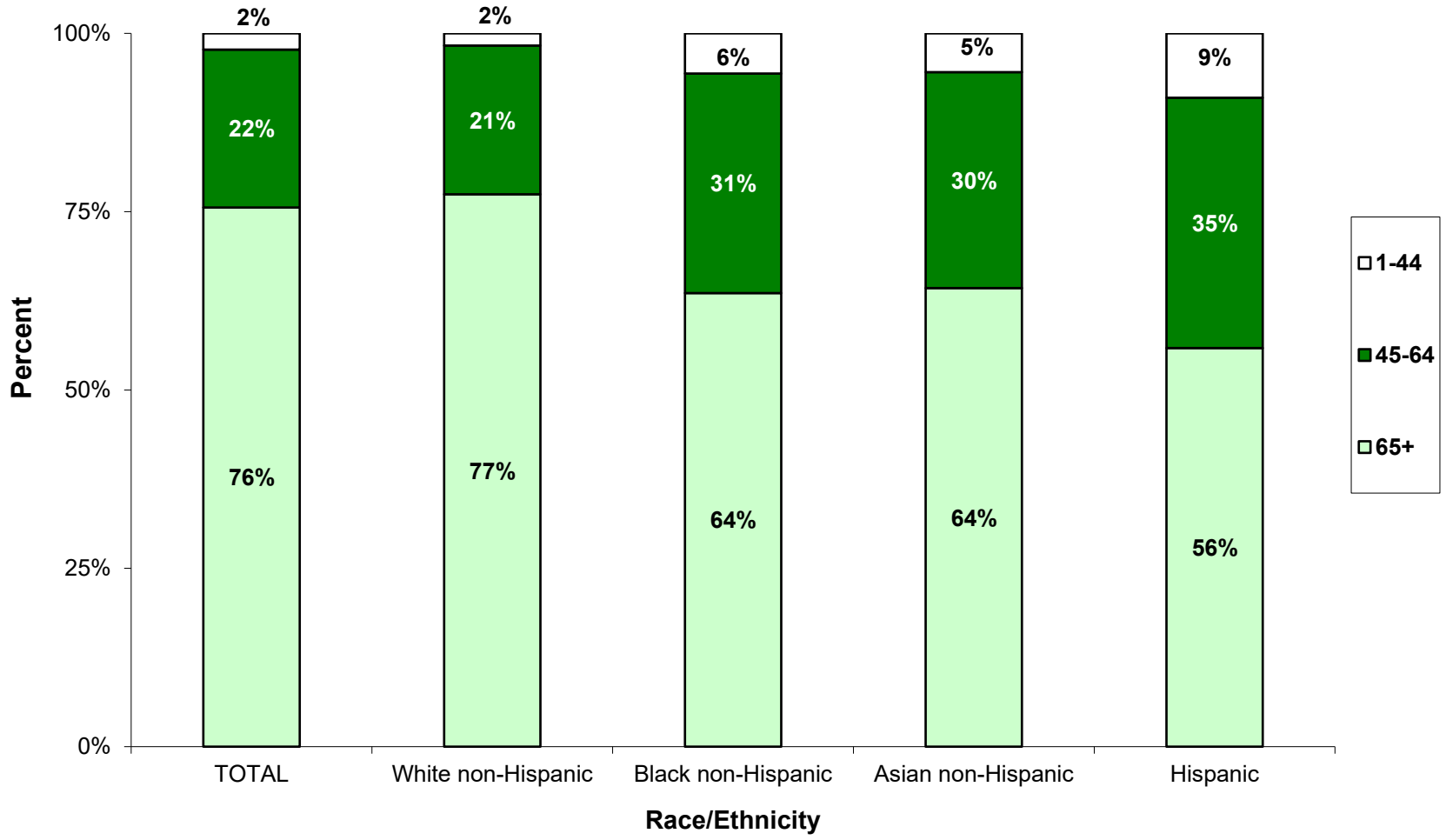
Notes: The ICD-10 codes used for heart disease deaths were I00-I09, I11, I13, and I20-I51. Please see the technical notes for more information on race and ethnicity

Figure 10. Number of Cancer Deaths by Age Group and Gender, Massachusetts: 2018



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: 2018



Notes: The ICD-10 codes used for cancer deaths were C00-C97. Please see the technical notes for more information on race and ethnicity

Table 10. Heart Disease and Cancer Deaths by Race and Hispanic Ethnicity and Gender, Age-Adjusted Rates[1], Massachusetts: 2005-2018

Heart Disease

Year	White non-Hispanic[2] Male	White non-Hispanic[2] Female	White non-Hispanic[2] Total	Black non-Hispanic[2] Male	Black non-Hispanic[2] Female	Black non-Hispanic[2] Total
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
2017	187.3	104.1	139.4	148.2	101.9	122.2
2018	179.2	104.6	136.5	150.0	96.7	120.2

Year	Asian non-Hispanic[2] Male	Asian non-Hispanic[2] Female	Asian non-Hispanic[2] Total	Hispanic[2] Male	Hispanic[2] Female	Hispanic[2] Total
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
2017	74.6	52.9	63.1	107.0	71.5	86.1
2018	76.5	42.0	57.9	93.2	60.6	75.0

Table 10 (continued). Heart Disease and Cancer Deaths by Race and Hispanic Ethnicity and Gender, Age-Adjusted Rates, Massachusetts: 2005-2018

Cancer

	White non-Hispanic[2]			Black non-Hispanic[2]		
Year	Male	Female	Total	Male	Female	Total
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
2017	181.7	133.3	153.2	192.0	116.5	145.2
2018	178.1	125.1	146.8	169.6	115.0	136.5

	Asian non-Hispanic[2]			Hispanic[2]		
Year	Male	Female	Total	Male	Female	Total
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
2017	123.4	83.8	101.4	116.3	86.3	98.0
2018	113.2	83.8	96.6	116.7	88.0	99.1

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 the technical notes for more information on race and ethnicity.

Table 11. Number and Age-Adjusted Rates of Cancer Deaths by Selected Causes and Gender, Massachusetts: 2018

Cause of Death[1]	ICD-10 Code	Total		Female		Male	
		#	Rate[2,3]	#	Rate[2]	#	Rate[2]
Total Cancer Deaths	**C00-C97**	**12,638**	**142.5**	**6,096**	**121.7**	**6,542**	**172.7**
Bladder	C67	410	4.6	110	2.0	300	8.2
Brain and nervous system	C70-C72	376	4.4	178	3.9	198	5.1
Cervix	C53	39	0.8	39	0.8	NA	NA
Colorectal	C18-C21	1,005	11.4	471	9.2	534	14.2
Esophagus	C15	389	4.3	68	1.3	321	8.2
Female breast	C50	773	15.7	773	15.7	NA	NA
Hodgkin's disease	C81	15	0.2	7	0.1	8	0.2
Kidney and other urinary organs	C64, C65	223	2.5	84	1.6	139	3.6
Leukemia	C91-C95	502	5.8	222	4.4	280	7.8
Lung	C33, C34	2,984	33.6	1,522	30.5	1,462	38.2
Melanoma of the skin	C43	181	2.0	66	1.3	115	3.2
Multiple myeloma	C88, C90	277	3.1	116	2.2	161	4.3
Non-Hodgkin's lymphoma	C82-C85	472	5.4	222	4.3	250	6.8
Ovary	C56	303	6.1	303	6.1	NA	NA
Pancreas	C25	1,002	11.3	486	9.6	516	13.4
Prostate	C61	648	18.1	NA	NA	648	18.1
Stomach	C16	235	2.7	96	2.0	139	3.7
Uterus	C54, C55	259	5.2	259	5.2	NA	NA
All other cancers	Residual	2,545	28.6	1,074	21.5	1,471	37.7

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.

Table 12. Selected Causes of Cancer Deaths by Age, Massachusetts: 2018

Age	Cause of death[1]	ICD-10 Code	Number	Age-specific rate[2]
1 – 14 years	**Total**		**23**	**2.1**
	Brain and nervous system	C70-C72	9	0.8
	Leukemia	C91-C95	3	-[3]
	Lung	C33, C34	1	-[3]
	Kidney and other urinary organs	C64, C65	1	-[3]
15 - 24 years	**Total**		**23**	**2.3**
	Brain and nervous system	C70-C72	5	0.5
	Leukemia	C91-C95	5	0.5
	Female breast[4]	C50	2	-[3]
	Non-Hodgkin's lymphoma	C82-C85	1	-[3]
25 – 44 years	**Total**		**247**	**13.5**
	Colorectal	C18-C21	35	1.9
	Female breast[4]	C50	34	3.7
	Brain and nervous system	C70-C72	27	1.5
	Lung	C33, C34	23	1.3
45 – 64 years	**Total**		**2,805**	**149.8**
	Lung	C33, C34	634	33.9
	Colorectal	C18-C21	264	14.1
	Female breast[4]	C50	230	23.7
	Pancreas	C25	206	11.0
65 + years	**Total**		**9,540**	**833.1**
	Lung	C33, C34	2,326	203.1
	Pancreas	C25	789	68.9
	Colorectal	C18-C21	706	61.7
	Prostate[5]	C61	600	120.9
65-74 years	**Total**		**3,370**	**508.9**
	Lung	C33, C34	917	138.5
	Pancreas	C25	293	44.2
	Colorectal	C18-C21	200	30.2
	Female breast[4]	C50	177	49.7
75-84 years	**Total**		**3,471**	**1,079.7**
	Lung	C33, C34	930	289.3
	Pancreas	C25	295	91.8
	Colorectal	C18-C21	228	70.9
	Prostate[5]	C61	215	157.5
85+ years	**Total**		**2,699**	**1,671.7**
	Lung	C33, C34	479	296.7
	Colorectal	C18-C21	278	172.2
	Prostate[5]	C61	253	468.9
	Pancreas	C25	201	124.5

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: 2018

White non-Hispanic[1]			Black non-Hispanic[1]			Asian non-Hispanic[1]			Hispanic[1]		
Cause[2]	**#**	**Rate[3]**	**Cause[2]**	**#**	**Rate[3]**	**Cause[2]**	**#**	**Rate[3]**	**Cause[2]**	**#**	**Rate[3]**
Lung	2,706	35.8	Lung	100	23.4	Lung	77	20.6	Lung	67	14.7
Colorectal	881	11.8	Pancreas	65	16.2	Pancreas	30	8.9	Female Breast[4]	46	15.6
Pancreas	863	11.4	Prostate[5]	48	34.2	Female Breast[4]	25	11.6	Colorectal	43	10.0
Female Breast[4]	648	15.5	Female Breast[4]	47	18.4	Colorectal	23	6.2	Pancreas	32	6.6
Prostate[5]	551	17.7	Colorectal	45	10.1	Stomach	14	4.0	Prostate[5]	32	21.2
Total Cancer	**11,086**	**146.8**	**Total Cancer**	**585**	**136.5**	**Total Cancer**	**350**	**96.6**	**Total Cancer**	**476**	**99.1**

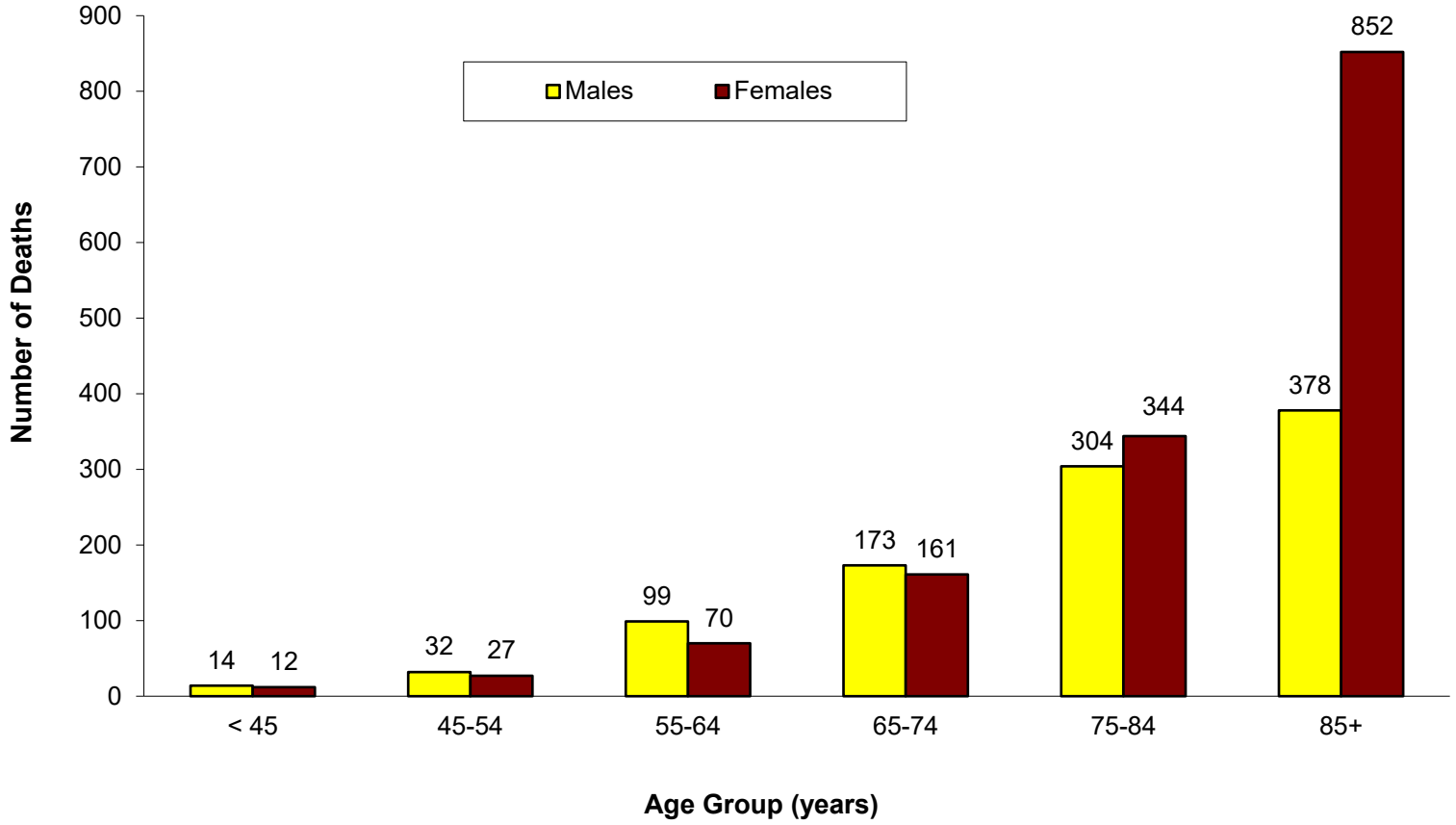
1. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see the technical notes for more information on race and ethnicity. 2. ICD-10 codes used. Please see the ICD-10 codes listing in the Appendix 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: 2018

Cause of Death	ICD-10 Code	Total			Female			Male		
		#	%	Rate[1]	#	%	Rate[1]	#	%	Rate[1]
Total Stroke Deaths	**I60-I69**	**2,467**	**100%**	**27**	**1,466**	**100%**	**26**	**1,000**	**100%**	**27.9**
Subarachnoid hemorrhage	I60	112	4.5%	1.3	63	4.3%	1.3	49	4.9%	1.3
Intracerebral and other intracranial hemorrhage	I61-I62	507	20.6%	5.7	277	18.9%	5.3	230	23.0%	6.4
Cerebral infarction	I63	286	11.6%	3.1	177	12.1%	3.1	109	10.9%	2.9
Stroke, not specified	I64	1,038	42.1%	11.2	639	43.6%	10.9	398	39.8%	11.3
Other	I67, I69	524	21.2%	5.7	310	21.1%	5.4	214	21.4%	6.0

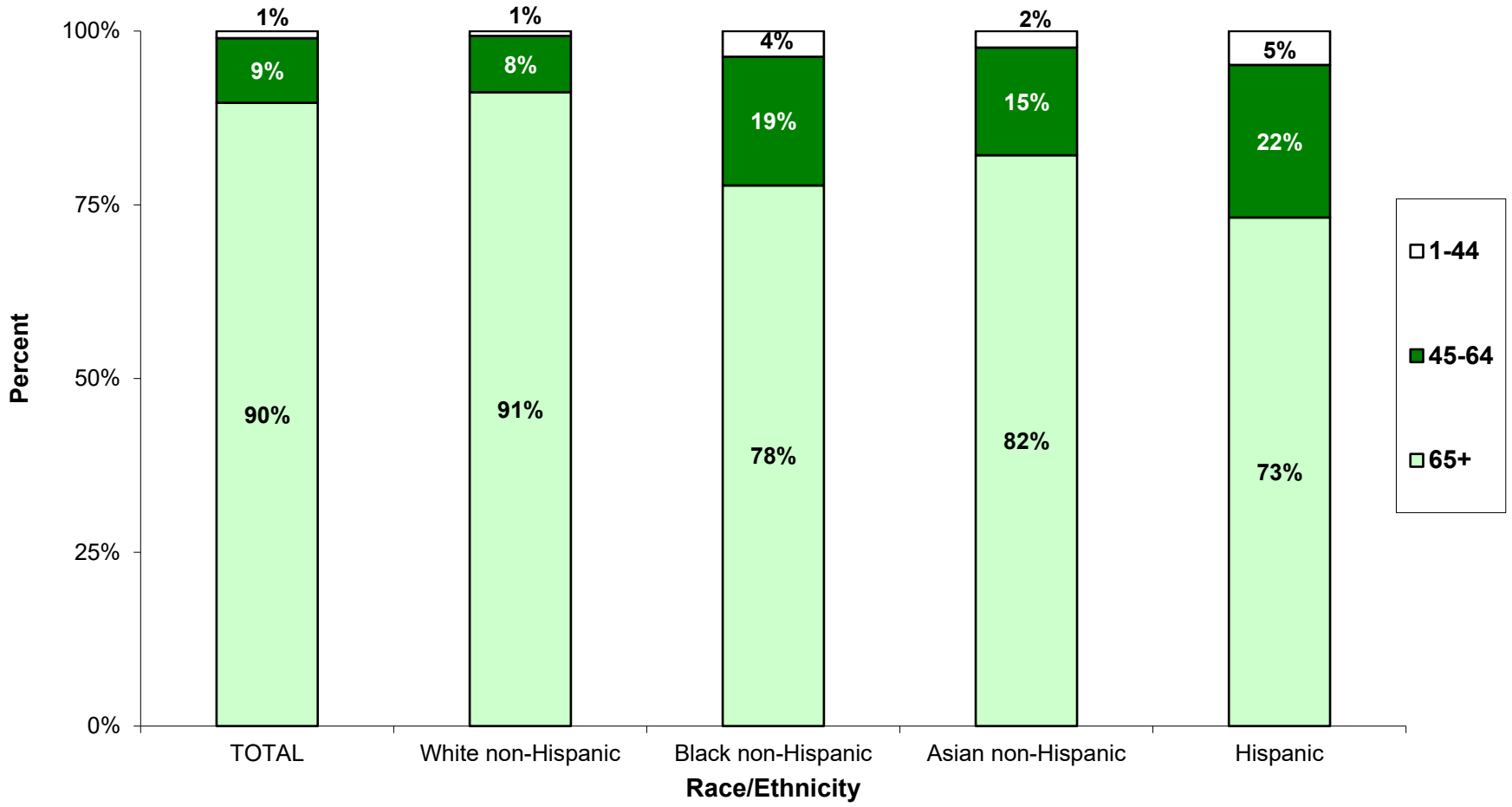
1. All rates are age-adjusted to the 2000 US Standard Population. Rates are per 100,000 population.

Figure 12. Number of Stroke Deaths by Age Group and Gender, Massachusetts: 2018



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: 2018



Notes: The ICD-10 codes used for stroke deaths were I60-I69. Please see the technical notes for more information on race and ethnicity

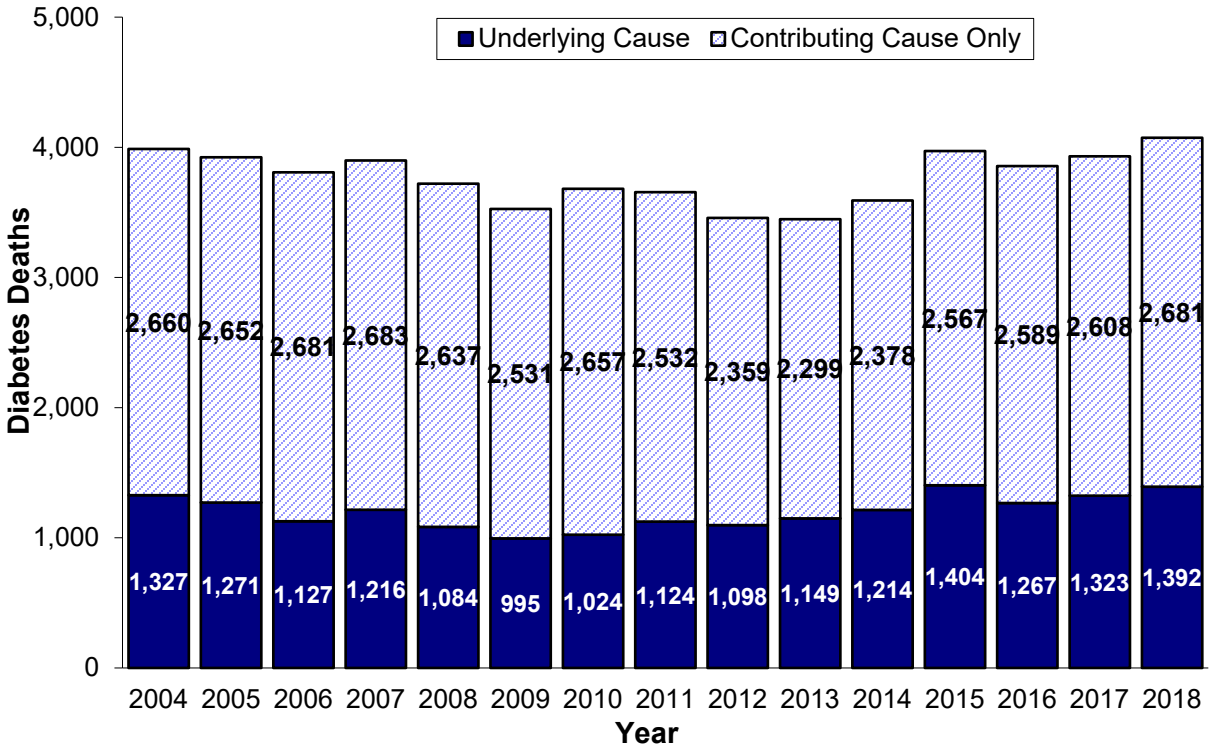
Table 15. Stroke Deaths by Race and Hispanic Ethnicity and Gender, Age-Adjusted Rates[1], Massachusetts: 2005-2018

Year	White non-Hispanic[2] Male	White non-Hispanic[2] Female	White non-Hispanic[2] Total	Black non-Hispanic[2] Male	Black non-Hispanic[2] Female	Black non-Hispanic[2] Total
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
2017	26.4	25.3	26.0	39.4	27.3	32.9
2018	27.5	26.2	26.9	33.2	22.0	26.9

Year	Asian non-Hispanic[2] Male	Asian non-Hispanic[2] Female	Asian non-Hispanic[2] Total	Hispanic[2] Male	Hispanic[2] Female	Hispanic[2] Total
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
2017	32.0	28.4	30.0	18.0	19.8	19.7
2018	26.1	24.6	25.8	19.5	21.1	20.8

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 the technical more information on race and ethnicity.

Figure 14. Diabetes Deaths, Massachusetts: 2004-2018



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

Table 16. Diabetes Deaths by Gender, Massachusetts: 2018

	Proportion of all Deaths (%)[1]			Number		
Cause of Death	Males	Females	Total	Males	Females	Total
Underlying	2.7%	2.0%	2.4%	782	610	1,392
Contributing/Associated	4.9%	4.2%	4.5%	1,439	1,242	2,681
Total Diabetes-Related	**7.6%**	**6.2%**	**6.9%**	**2,221**	**1,852**	**4,073**

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

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

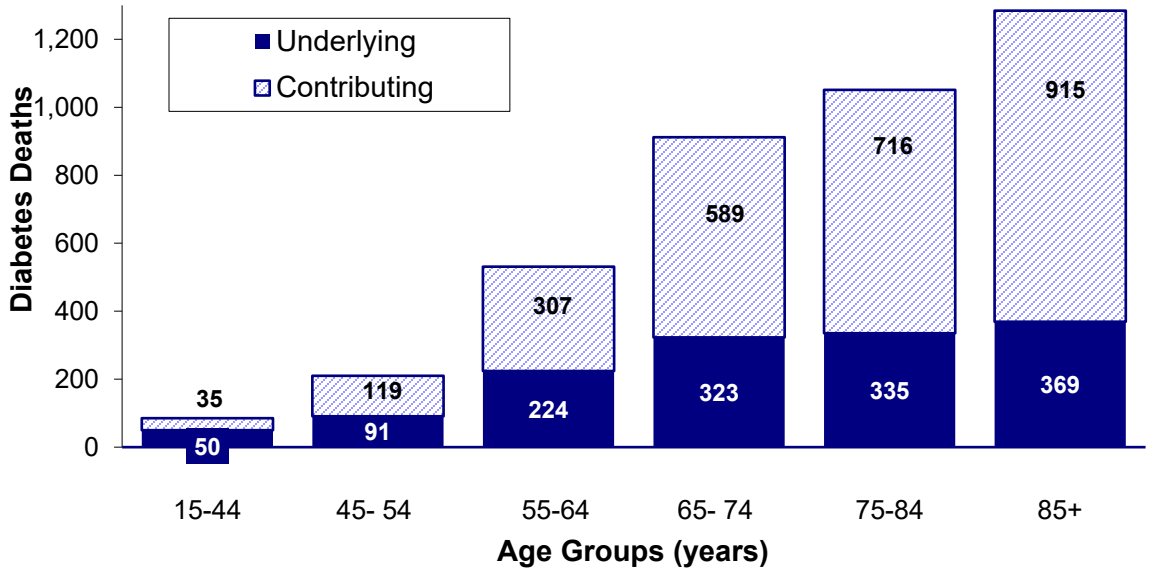
Table 17. Diabetes Deaths by Race and Hispanic Ethnicity, Massachusetts: 2018

Cause of Death	Race/Hispanic Ethnicity				
	White non-Hispanic	Black non-Hispanic	Hispanic	Asian non-Hispanic	Total
	Number				
Underlying	1,112	118	104	39	1,392
Contributing/Associated	2,225	198	150	68	2,681
Total Diabetes-Related	3,337	316	254	107	4,073
Total Deaths (All Causes)	***52,196***	***2,717***	***2,377***	***1,222***	***59,169***
	Proportion of all deaths (%)				
Underlying	2.1	4.3	4.4	3.2	2.4
Contributing/Associated	4.3	7.3	6.3	5.6	4.5
Total Diabetes-Related	***6.4***	***11.6***	***10.7***	***8.8***	***6.9***
	Death Rates[1]				
Underlying	14.7	27.9	23	10.9	*15.7*
Contributing/Associated	28.7	47.6	34.6	21.5	*29.8*
Total Diabetes-Related	***43.4***	***75.4***	***57.6***	***32.4***	***45.6***

Note: The ICD-10 codes used for diabetes deaths were E10-E14. Please see the technical notes for more information on race and ethnicity.

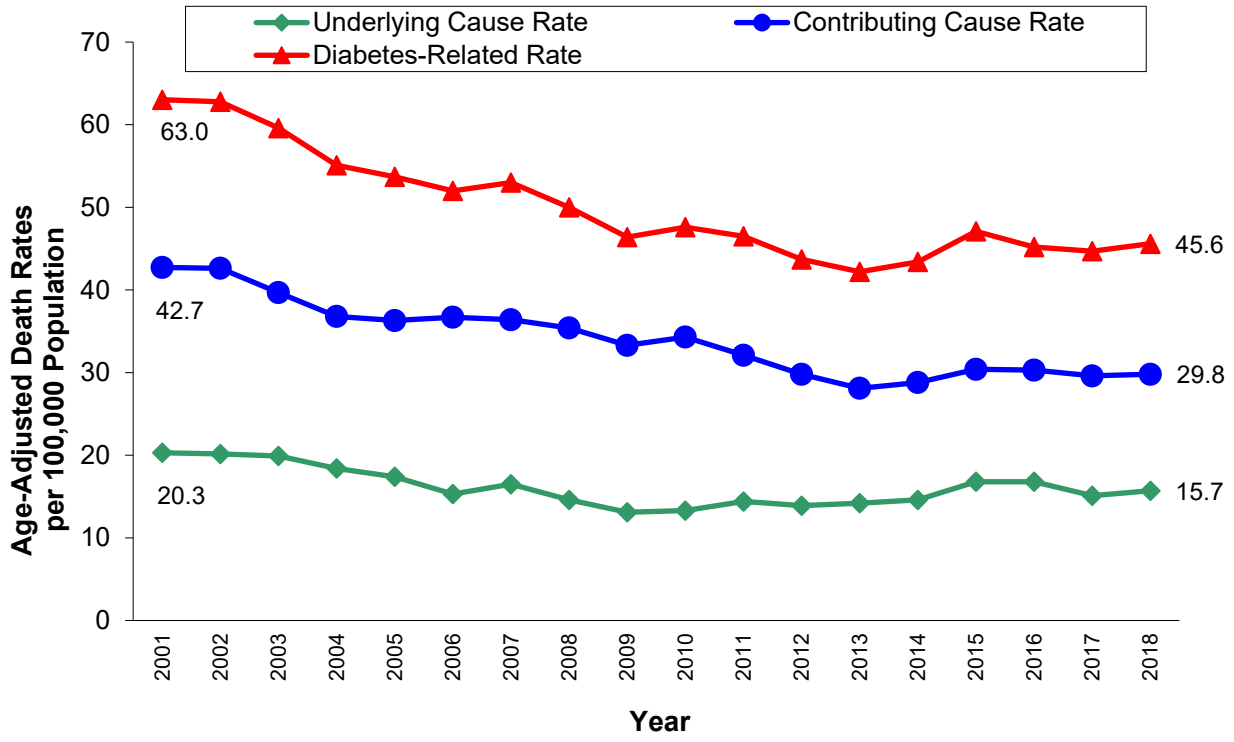
1. Rates are per 100,000 age-adjusted to the 2000 U.S. standard population.

Figure 15. Age Distribution of Diabetes Deaths, Massachusetts: 2018



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

Figure 16. Diabetes Death Rates, Massachusetts: 2001-2018



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: 2018

	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	**5,006**	**66.6**	**2,346**	**34.1**	**943**	**10.4**	**506**	**6.5**	**401**	**5.3**	**258**	**3.5**	**552**	**6.8**
< 1	6	8.3	0	0.0	0	0.0	0	0.0	1	-[6]	0	0.0	5	6.9
1-14	27	2.5	1	-[6]	1	-[6]	3	-[6]	7	0.7	0	0.0	15	1.4
15-24	324	32.9	135	13.7	9	0.9	39	4.0	59	6.0	47	4.8	35	3.6
25-44	1,728	94.5	1,255	68.6	31	1.7	140	7.7	126	6.9	85	4.6	91	5.0
45-64	1,453	77.6	854	45.6	101	5.4	172	9.2	107	5.7	72	3.8	147	7.8
65-74	383	57.8	80	12.1	106	16.0	48	7.2	41	6.2	23	3.5	85	12.8
75-84	405	126.0	15	4.7	220	68.4	39	12.1	38	11.8	22	6.8	71	22.1
85+	680	421.2	6	3.7	475	294.2	65	40.3	22	13.6	9	5.6	103	63.8
All Females	**1,631**	**38.8**	**684**	**19.3**	**475**	**8.5**	**132**	**3.1**	**120**	**3.0**	**22**	**0.6**	**198**	**4.3**
< 1	4	-[6]	0	0.0	0	0.0	0	0.0	1	-[6]	0	0.0	3	-[6]
1-14	12	2.3	1	-[6]	1	-[6]	2	-[6]	2	-[6]	0	0.0	6	1.1
15-24	98	19.9	51	10.4	3	-[6]	10	2.0	20	4.1	5	1.0	9	1.8
25-44	441	48.0	348	37.9	6	0.7	31	3.4	30	3.3	3	-[6]	23	2.5
45-64	412	42.5	250	25.8	36	3.7	43	4.4	34	3.5	10	1.0	39	4.0
65-74	127	35.7	24	6.7	48	13.5	14	3.9	12	3.4	2	-[6]	27	7.6
75-84	169	91.4	8	4.3	102	55.1	7	3.8	13	7.0	2	-[6]	37	20.0
85+	368	342.3	2	-[6]	279	259.5	25	23.3	8	7.4	0	0.0	54	50.2
All Males	**3,375**	**97.2**	**1,662**	**49.3**	**468**	**13.2**	**374**	**10.5**	**281**	**7.9**	**236**	**6.6**	**354**	**9.7**
< 1	2	-[6]	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	-[6]
1-14	15	2.7	0	0.0	0	0.0	1	-[6]	5	0.9	0	0.0	9	1.6
15-24	226	45.9	84	17.1	6	1.2	29	5.9	39	7.9	42	8.5	26	5.3
25-44	1,287	141.4	907	99.7	25	2.7	109	12.0	96	10.5	82	9.0	68	7.5
45-64	1,041	115.1	604	66.8	65	7.2	129	14.3	73	8.1	62	6.9	108	11.9
65-74	256	83.7	56	18.3	58	19.0	34	11.1	29	9.5	21	6.9	58	19.0
75-84	236	172.9	7	5.1	118	86.4	32	23.4	25	18.3	20	14.7	34	24.9
85+	312	578.2	4	-[6]	196	363.3	40	74.1	14	25.9	9	16.7	49	90.8

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[7]: Numbers and Age Adjusted Rates, Massachusetts: 2018

	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]
White non-Hispanic	**4,076**	**72.5**	**1,889**	**39.3**	**856**	**11.0**	**437**	**7.5**	**319**	**5.7**	**149**	**2.5**	**426**	**6.5**
Females	1,410	44.2	573	23.2	444	9.1	115	3.6	96	3.2	18	0.6	164	4.4
Males	2,666	103.4	1,316	55.9	412	13.6	322	12.0	223	8.5	131	4.5	262	9.0
Black non-Hispanic	**260**	**50.5**	**110**	**21.3**	**16**	**3.7**	**19**	**3.8**	**19**	**3.8**	**50**	**8.7**	**46**	**9.3**
Females	59	23.2	31	12.3	5	2.1	6	2.1	4	-[6]	1	-[6]	12	4.8
Males	201	80.7	79	31.1	11	5.5	13	6.0	15	6.5	49	17.1	34	14.4
Asian non-Hispanic	**107**	**25.6**	**24**	**4.1**	**38**	**11.6**	**15**	**3.4**	**9**	**1.9**	**4**	-[6]	**17**	**3.9**
Females	32	14.4	5	1.6	14	7.6	5	2.2	3	-[6]	0	0	5	2.0
Males	75	39.7	19	7.0	24	17.1	10	4.8	6	3.0	4	-[6]	12	6.2
Hispanic	**460**	**59.1**	**280**	**34.2**	**27**	**5.9**	**23**	**3.6**	**40**	**4.7**	**41**	**4.2**	**49**	**6.6**
Females	101	25.9	57	13.0	10	4.2	2	-[6]	16	3.8	3	-[6]	13	4.0
Males	359	94.1	223	56.4	17	7.9	21	7.5	24	5.4	38	7.7	36	9.2

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. 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. 7. Please see the technical notes for more information on race and ethnicity.

Table 20. Unintentional Injury Deaths by Gender, Age: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2018

	All Unintentional[1]		Poisonings		Falls		Motor Vehicle-Related	
	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]
All Persons	**3,973**	**52.8**	**2,181**	**31.9**	**906**	**9.9**	**401**	**5.3**
<1	3	-[3]	0	0.0	0	0.0	1	-[3]
1-14	19	1.8	0	0.0	1	-[3]	7	0.7
15-24	197	20.0	120	12.2	0	0.0	59	6.0
25-44	1403	76.7	1218	66.6	14	0.8	126	6.9
45-64	1082	57.8	777	41.5	92	4.9	107	5.7
65-74	280	42.3	57	8.6	105	15.9	41	6.2
75-84	342	106.4	7	2.2	220	68.4	38	11.8
85+	647	400.7	2	-[3]	474	293.6	22	13.6
All Females	**1367**	**32.0**	**606**	**17.4**	**464**	**8.2**	**120**	**3.0**
<1	2	-[3]	0	0.0	0	0.0	1	-[3]
1-14	7	1.3	0	0.0	1	-[3]	2	-[3]
15-24	66	13.4	42	8.5	0	0.0	20	4.1
25-44	372	40.5	331	36.0	4	-[3]	30	3.3
45-64	304	31.4	214	22.1	30	3.1	34	3.5
65-74	97	27.2	14	3.9	48	13.5	12	3.4
75-84	155	83.8	4	-[3]	102	55.1	13	7.0
85+	364	338.6	1	-[3]	279	259.5	8	7.4
All Males	**2,606**	**75.5**	**1575**	**46.9**	**442**	**12.4**	**281**	**7.9**
<1	1	-[3]	0	0.0	0	0.0	0	0.0
1-14	12	2.2	0	0.0	0	0.0	5	0.9
15-24	131	26.6	78	15.8	0	0.0	39	7.9
25-44	1031	113.3	887	97.5	10	1.1	96	10.5
45-64	778	86.0	563	62.3	62	6.9	73	8.1
65-74	183	59.8	43	14.1	57	18.6	29	9.5
75-84	187	137.0	3	-[3]	118	86.4	25	18.3
85+	283	524.5	1	-[3]	195	361.4	14	25.9

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. 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[4]: Numbers and Age-Adjusted Rates, Massachusetts: 2018

	All Unintentional[1]		Poisonings		Falls		Motor Vehicle-Related	
	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]
White non-Hispanic	**3,296**	**58.6**	**1743**	**36.8**	**828**	**10.4**	**319**	**5.7**
Females	1,191	36.6	506	21.0	434	8.8	96	3.2
Males	2,105	82.5	1237	52.9	394	12.8	223	8.5
Black non-Hispanic	**164**	**33.2**	**105**	**20.3**	**13**	**3.2**	**19**	**3.8**
Females	43	17.5	29	11.6	5	2.1	4	-[3]
Males	121	51.3	76	29.9	8	4.5	15	6.5
Asian non-Hispanic	**82**	**21.1**	**21**	**3.6**	**35**	**11.0**	**9**	**1.9**
Females	26	12.7	3	-[3]	14	7.6	3	-[3]
Males	56	31.6	18	6.6	21	15.6	6	3.0
Hispanic	**360**	**46.9**	**272**	**33.2**	**25**	**5.6**	**40**	**4.7**
Females	82	21.8	52	12.0	9	3.9	16	3.8
Males	278	73.2	220	55.5	16	7.7	24	5.4

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. 4. Please see the technical notes for more information on race and ethnicity.

Table 22. Intentional Injury Deaths by Gender, Age: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2018

	All Intentional[1]		Suicide		Homicide	
	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]
All Persons	**900**	**12.2**	**741**	**9.9**	**159**	**2.3**
<1	2	-[3]	0	0.0	2	-[3]
1-14	5	0.5	2	-[3]	3	-[3]
15-24	123	12.5	80	8.1	43	4.4
25-44	304	16.6	222	12.1	82	4.5
45-64	332	17.7	312	16.7	20	1.1
65-74	74	11.2	69	10.4	5	0.8
75-84	42	13.1	39	12.1	3	-[3]
85+	18	11.1	17	10.5	1	-[3]
All Females	**212**	**5.5**	**182**	**4.7**	**30**	**0.8**
<1	2	-[3]	0	0.0	2	-[3]
1-14	2	-[3]	1	-[3]	1	-[3]
15-24	30	6.1	24	4.9	6	1.2
25-44	63	6.9	51	5.5	12	1.3
45-64	89	9.2	83	8.6	6	0.6
65-74	19	5.3	18	5.1	1	-[3]
75-84	6	3.2	4	-[3]	2	-[3]
85+	1	-[3]	1	-[3]	0	0.0
All Males	**688**	**19.4**	**559**	**15.6**	**129**	**3.8**
<1	0	0.0	0	0.0	0	0.0
1-14	3	-[3]	1	-[3]	2	-[3]
15-24	93	18.9	56	11.4	37	7.5
25-44	241	26.5	171	18.8	70	7.7
45-64	243	26.9	229	25.3	14	1.5
65-74	55	18.0	51	16.7	4	-[3]
75-84	36	26.4	35	25.6	1	-[3]
85+	17	31.5	16	29.7	1	-[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[4]: Numbers and Age-Adjusted Rates, Massachusetts: 2018

	All Intentional[1]		Suicide		Homicide	
	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]
White non-Hispanic	**673**	**12.2**	**637**	**11.5**	**36**	**0.8**
Females	175	6.3	160	5.7	15	0.6
Males	498	18.7	477	17.8	21	0.9
Black non-Hispanic	**89**	**16.0**	**33**	**6.1**	**56**	**9.9**
Females	13	4.6	9	3.0	4	1.6
Males	76	27.6	24	9.4	52	18.2
Asian non-Hispanic	**23**	**4.0**	**20**	**3.6**	**3**	-[3]
Females	6	1.7	5	1.7	1	-[3]
Males	17	6.7	15	6.0	2	-[3]
Hispanic	**83**	**9.8**	**34**	**4.3**	**49**	**5.5**
Females	14	3.1	5	1.1	9	2.0
Males	69	17.0	29	7.9	40	9.1

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. 4. Please see the technical notes for more information on race and ethnicity.

Table 24. Injury Deaths by Intent, Method and Gender: Numbers and Age-Adjusted Rates, Massachusetts: 2018

Type of Injury[1]	All Injury Deaths		Female		Male	
	Number	Rate[2]	Number	Rate[2]	Number	Ra
Unintentional Injuries (Accidents)	**3,973**	**52.8**	**1,367**	**32.0**	**2,606**	**75.5**
Motor vehicle-related	401	5.3	120	3.0	281	7.9
Injury to pedestrian	92	1.2	36	0.9	56	1.6
Injury to pedal cyclist	3	-[3]	0	0	3	-[3]
Injury to motorcyclist	55	0.8	5	0.1	50	1.4
Injury to occupant	28	0.4	8	0.2	20	0.6
Other and unspecified	223	3.0	71	1.8	152	4.2
Poisoning	2,181	31.9	606	17.4	1,575	46.9
Falls	906	9.9	464	8.2	442	12.4
Hanging, strangulation or suffocation	147	1.6	47	0.8	100	2.7
Cut or pierce	0	0	0	0	0	0
Firearm	1	-[3]	0	0	1	-[3]
Drowning and submersion	70	0.9	16	0.4	54	1.5
Smoke, fire and flames	39	0.5	19	0.4	20	0.5
Other and unspecified	212	2.4	95	1.8	117	3.1
Suicide	**741**	**9.9**	**182**	**4.7**	**559**	**15.6**
Poisoning	135	1.8	61	1.5	74	2.1
Hanging, strangulation or suffocation	356	4.9	83	2.2	273	7.7
Firearm	148	1.9	11	0.3	137	3.7
Other and unspecified	102	1.4	27	0.7	75	2.1
Homicide	**159**	**2.3**	**30**	**0.8**	**129**	**3.8**
Firearm	104	1.5	9	0.2	95	2.8
Cut or pierce	24	0.4	8	0.3	16	0.5
Other and unspecified	31	0.4	13	0.3	18	0.5
Injury Deaths of Undetermined Intent	**53**	**0.7**	**26**	**0.7**	**27**	**0.8**
Poisoning	29	0.4	17	0.4	12	0.4
Other and unspecified	24	0.3	9	0.3	15	0.4
Legal Intervention	**3**	-[3]	**0**	0	**3**	-[3]
Firearm	2	-[3]	0	0	2	-[3]
Other and unspecified	1	-[3]	0	0	1	-[3]
Adverse Effects	**77**	**0.9**	**26**	**0.6**	**51**	**1.4**
Medical care	71	0.8	22	0.5	49	1.3
Drugs	6	0.1	4	-[3]	2	-[3]
ALL INJURIES	**5,006**	**66.6**	**1,631**	**38.8**	**3,375**	**97.2**

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; rates are adjusted to the 2000 US standard population. 3. Calculations based on values 1-4 are excluded.

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Table 25. HIV/AIDS[1] Deaths by Place of Occurrence, Massachusetts: 2001-2018

Year		Total[2]	Place of Occurrence			
			At Home	Hospital	Out of State	Hospice/Nursing Home/Other
2001	#	249	47	164	4	34
	%	100.0	18.9	65.9	--[3]	13.7
2002	#	229	33	156	4	36
	%	100.0	14.4	68.1	--[3]	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	--[3]	14.7
2005	#	180	28	122	1	30
	%	100.0	15.6	67.8	--[3]	16.7
2006	#	179	22	122	2	33
	%	100.0	12.3	68.2	--[3]	18.4
2007	#	143	15	98	2	28
	%	100.0	10.5	68.5	--[3]	19.6
2008	#	143	27	92	1	23
	%	100.0	18.9	64.3	--[3]	16.1
2009	#	124	25	76	1	22
	%	100.0	20.2	61.3	--[3]	17.7
2010	#	119	22	68	1	28
	%	100.0	18.5	57.1	--[3]	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
2017	#	79	19	45	0	15
	%	100.00	24.1	57.0	0.0	19.0
2018	#	70	9	43	0	18
	%	100.00	12.9	61.4	0.0	25.7

1. AIDS: Acquired Immune Deficiency Syndrome, HIV: Human Immunodeficiency Virus. 2. 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.

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Table 26. HIV/AIDS1 Deaths[2] by Age, Massachusetts: 2001-2018								
Year		Age (in years)						
		<15	15-24	25-34	35-44	45-54	55-64	65+
2001	#	1	2	25	111	91	16	3
	%	--[3]	--[3]	10	44.6	36.5	6.4	--[3]
2002	#	1	1	10	91	92	26	8
	%	--[3]	--[3]	4.4	39.7	40.2	11.4	3.5
2003	#	1	3	14	94	83	22	9
	%	--[3]	--[3]	6.2	41.6	36.6	9.7	4
2004	#	0	2	9	79	93	22	6
	%	0	--[3]	4.3	37.4	44.1	10.4	2.8
2005	#	0	1	6	64	76	25	8
	%	0	--[3]	3.3	35.6	42.2	13.9	4.4
2006	#	0	1	6	71	73	22	6
	%	0	--[3]	3.4	39.7	40.8	12.3	3.4
2007	#	0	0	5	34	68	31	5
	%	0	0	3.5	32.7	47.6	21.7	3.5
2008	#	0	1	6	32	54	34	16
	%	0	--[3]	4.2	22.4	37.8	23.8	11.2
2009	#	0	0	6	25	52	32	9
	%	0	0	4.8	20.2	41.9	25.8	7.3
2010	#	0	1	4	24	47	38	5
	%	0	--[3]	3	20.2	39.5	31.9	4.2
2011	#	0	2	1	19	37	21	11
	%	0	--[3]	3	20.9	40.7	23.1	12.1
2012	#	0	0	2	16	40	33	9
	%	0	0	3	16	40	33	9
2013	#	0	2	3	3	28	39	11
	%	0	--[3]	3	3	32.6	45.3	12.8
2014	#	0	1	6	9	23	33	8
	%	0	--[3]	7.5	11.3	28.8	41.3	10
2015	#	0	0	4	7	29	31	21
	%	0	0	--[3]	7.6	31.5	33.7	22.8
2016	#	0	0	2	5	26	25	17
	%	0	0	--[3]	6.7	34.7	33.3	22.7
2017	#	0	1	2	5	15	28	28
	%	0	--[3]	--[3]	6.3	19	35.4	35.4
2018	#	1	0	2	5	18	28	16
	%	--[3]	0	--[3]	7.1	25.7	40.0	229

1. AIDS: Acquired Immune Deficiency Syndrome, HIV: Human Immunodeficiency Virus. 2. 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/AIDS[1] Deaths[2] by Gender, Race and Hispanic Ethnicity, Massachusetts: 2002-2018

Year		Gender		Race and Ethnicity			
		Male	Female	White non-Hispanic[3]	Black non-Hispanic[3]	Other[4]	Hispanic[3]
2002	#	163	66	108	68	1	52
	%	71.2	28.8	47.1	29.7	--[5]	22.7
2003	#	150	76	113	58	2	53
	%	66.4	33.6	50.0	25.7	--[5]	23.5
2004	#	151	60	976	55	4	55
	%	71.6	28.4	46.0	26.1	--[5]	26.1
2005	#	122	58	75	56	4	45
	%	67.8	32.2	41.7	31.1	--[5]	25.0
2006	#	122	57	91	49	2	37
	%	68.2	31.8	50.8	27.4	--[5]	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	--[5]	21.8
2011	#	64	27	36	30	1	24
	%	70.3	29.7	39.6	33.0	--[5]	26.4
2012	#	62	38	50	26	1	23
	%	62.0	38.0	50.0	26.0	--[5]	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	--[5]	20.0
2015	#	74	18	41	28	2	21
	%	80.4	19.6	44.6	30.4	--[5]	22.8
2016	#	49	26	36	23	5	11
	%	65.3	34.7	48.0	30.7	6.7	14.7
2017	#	49	30	31	16	2	30
	%	62.0	38.0	39.2	20.3	--[5]	38.0
2018	#	44	26	35	22	1	12
	%	62.9	37.1	50.7	31.9	--[5]	17.4

1. AIDS: Acquired Immune Deficiency Syndrome, HIV: Human Immunodeficiency Virus. 2. 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. 3. 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 for a more information on race and ethnicity. 4. The "Other" category represents Asian non-Hispanics, American Indian non-Hispanics, and other non-Hispanics. 5. Calculations based on values 1-4 are excluded.

Table 27. HIV/AIDS[1] Deaths by Gender, Race and Hispanic Ethnicity: Numbers, Percent and Age-Adjusted Rates, Massachusetts: 2005-2018

	White non-Hispanic[2]			Black non-Hispanic[2]			Hispanic[2]		
Year	**#**	**Percent**	**Rate[3]**	**#**	**Percent**	**Rate[3]**	**#**	**Percent**	**Rate[3]**
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
2017	31	41%	0.4	16	21%	3.8	30	39%	1.9
2018	35	51%	0.5	22	32%	4.4	12	17%	1.8
MALE									
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
2017	22	45%	0.7	12	24%	8.8	15	31%	6.6
2018	25	57%	0.7	12	27%	5.7	7	16%	2.5
FEMALE									
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
2017	9	32%	0.2	4	14%	--[4]	15	54%	2.3
2018	10	40%	0.2	10	40%	3.6	5	20%	1.3

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 the Technical for a more informationon race and ethnicity. 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/AIDS[1] Deaths by Race, Hispanic Ethnicity, and Gender of Persons Ages 25-44, Massachusetts: 2005-2018

	White non-Hispanic[2]		Black non-Hispanic[2]		Hispanic[2]	
Year	#	Rate[3]	#	Rate[3]	#	Rate[3]
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]
2017	1	--[4]	1	--[4]	3	--[4]
2018	1	--[4]	2	--[4]	2	--[4]
MALE						
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]
2017	0	--[4]	1	--[4]	2	--[4]
2018	1	--[4]	2	--[4]	1	--[4]
FEMALE						
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
2017	1	--[4]	0	0.0	1	--[4]
2018	0	0.0	0	0.0	1	--[4]

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 the Technical notes for more information on race and ethnicity. 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: 2008-2018

INFANT MORTALITY (less than one year of age)

	State Total[1]		White[5] non-Hispanic		Black[5] non-Hispanic		Hispanic[5]		Asian[5] non-Hispanic		Other[2]	
Year	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]
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
2017	263	3.7	109	2.6	49	6.6	71	5.1	19	2.9	12	17.1
2018	291	4.3	148	3.7	62	8.7	63	4.6	9	1.4	4	--[4]

NEONATAL MORTALITY (birth to 27 days)

	State Total[1]		White[5] non-Hispanic		Black[5] non-Hispanic		Hispanic[5]		Asian, [5] non-Hispanic		Other[2]	
Year	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]
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
2017	180	2.5	70	1.7	32	4.3	52	3.7	11	1.7	12	17.1
2018	224	2.7	107	2.7	54	7.6	49	3.6	6	0.9	4	5.5

POST NEONATAL MORTALITY (28-365 days)

	State Total[1]		White[5] non-Hispanic		Black[5] non-Hispanic		Hispanic[5]		Asian[5] non-Hispanic		Other[2]	
Year	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]
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
2017	83	1.2	39	0.9	17	2.3	19	1.4	8	1.2	0	0.0
2018	67	1.0	41	1.0	8	1.1	14	1.0	3	--[4]	0	0.0

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. 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 for more information on race and ethnicity.

Table 31. Infant, Neonatal, and Post Neonatal Deaths by Cause, Massachusetts: 2018

Cause of Death[1]	ICD-10 Code	Infant (<1 year) #	Infant (<1 year) %	Neonatal (<28 days) #	Neonatal (<28 days) %	Post Neonatal (28-365 days) #	Post Neonatal (28-365 days) %
TOTAL		**291**	**100.0**	**224**	**100.0**	**67**	**100.0**
Infectious and parasitic diseases	**A00-B99**	**4**	--[2]	**0**	**0.0**	**4**	--[2]
Cancer	**C00-C97**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**
Diseases of the blood and blood forming organs (anemia)	**D50-D89**	**3**	--[2]	**1**	--[2]	**2**	--[2]
Diseases of nervous system and ear	**G00-G98, H60-H93**	**4**	--[2]	**0**	**0.0**	**4**	--[2]
Diseases of the respiratory system	**J00-J98**	**3**	--[2]	**0**	**0.0**	**3**	--[2]
Diseases of digestive system	**K00-K92**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**
Congenital malformations	**Q00-Q99**	**61**	**21.0**	**47**	**21.0**	**14**	**20.9**
Congenital malformations of nervous system	Q00-Q07	6	2.1	5	2.2	1	--[2]
Anencephalus and similar malformations	Q00	3	--[2]	3	--[2]	0	0.0
Congenital malformations of heart	Q20-Q24	12	4.1	6	2.7	6	9.0
Other congenital malformations of circulatory system	Q25-Q28	8	2.7	7	3.1	1	--[2]
Congenital malformations of respiratory system	Q30-Q34	8	2.7	6	2.7	2	--[2]
Congenital malformations of genitourinary system	Q50-Q64	9	3.1	9	4.0	0	0.0
Congenital malformations of musculoskeletal system	Q65-Q85	5	1.7	2	--[2]	3	--[2]
Chromosomal abnormalities	Q90-Q99	9	3.1	8	3.6	1	--[2]
Certain conditions originating in the perinatal period	**P00-P96**	**174**	**59.8**	**168**	**75.0**	**6**	**9.0**
Newborn affected by maternal conditions which may be unrelated to present pregnancy	P00	4	--[2]	4	--[2]	0	0.0
Newborn affected by maternal complications of pregnancy	P01	19	6.5	19	8.5	0	0.0
Newborn affected by complications of placenta, cord and membrane	P02	13	4.5	12	5.4	1	--[2]
Newborn affected by other complications of labor and delivery	P03	0	0.0	0	0.0	0	0.0
Disorders relating to short gestation and low birthweight	P07	67	23.0	66	29.5	1	--[2]
Intrauterine hypoxia and birth asphyxia	P20-P21	6	2.1	6	2.7	0	0.0
Respiratory distress of newborn	P22	4	--[2]	4	--[2]	0	0.0
Other respiratory conditions of newborn	P23-P28	11	3.8	9	4.0	2	--[2]
Infections specific to the perinatal period	P35-P39	8	2.7	8	3.6	0	0.0
Neonatal hemorrhage	P50-P52, P54	8	2.7	8	3.6	0	0.0
Other and ill-defined conditions originating in the perinatal period	P90-P96	9	3.1	9	4.0	0	0.0
Symptoms, signs, and ill-defined conditions	**R00-R99**	**31**	**10.7**	**6**	**2.7**	**25**	**37.3**
Sudden Infant Death Syndrome (SIDS)	R95	21	7.2	4	--[2]	17	25.3
Unintentional injuries	**V01-X59**	**3**	--[2]	**1**	**0.0**	**2**	--[2]
Homicide	**X85-Y09**	**2**	--[2]	**0**	**0.0**	**2**	--[2]
All other causes	**Residual**	**7**	**2.4**	**2**	--[2]	**5**	**7.5**

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[1] Deaths by Major Causes[2], Race and Hispanic Ethnicity[4], Massachusetts: 2018

		White non-Hispanic		Black non-Hispanic		Asian non-Hispanic		Hispanic	
Cause of Death[2]	**ICD-10 Code**	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**
TOTAL		**148**	**100.0%**	**62**	**100.0%**	**9**	**100.0%**	**63**	**100.0%**
Certain conditions originating in the perinatal period	P00- P96	83	56.1%	46	74.2%	6	36.8%	35	55.6%
Congenital malformations	Q00-Q99	32	21.6%	8	12.9%	2	-[3]	15	23.8%
Symptoms, signs, and ill-defined conditions	R00-R99	20	13.5%	2	-[3]	0	0.0%	9	14.3%
SIDS	R95	13	8.8%	1	-[3]	0	0.0%	7	11.1%
Unintentional Injuries	V01-X59	1	-[3]	0	0.0%	0	0.0%	2	-[3]
Homicide	X85-Y09	0	0.0%	0	0.0%	1	-[3]	0	0.0%
All other causes	Residual	12	8.1%	6	9.7%	0	0.0%	2	-[3]

1. Deaths less than 1 year of age. 2. Deaths are coded according to ICD-10. 3. Calculations based on values 1-4 are excluded. 4. 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 for more information on race and ethnicity.

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 2015[2]	MA 2016[2]	MA 2017[2]	MA 2018[2]	TARGET STATUS
Overall Cancer	161.4	171.0	152.8	149.8	149.1	142.5	√
Lung Cancer	45.5	47.3	39.0	37.3	35.2	33.6	√
Female Breast Cancer (per 100,000 females)	20.7	19.1	17.7	16.8	18.5	15.7	√
Uterine Cervical Cancer (per 100,000 females)	2.2	4.3	1.1	1.1	1.1	0.8	√
Colorectal Cancer	14.5	14.9	12.0	11.6	11.5	11.4	√
Oropharyngeal Cancer	2.3	3.0	2.4	2.1	2.4	2.3	√
Prostate Cancer (per 100,000 males)	21.8	21.2	17.9	18.6	18.1	18.1	√
Malignant Melanoma	2.4	3.1	3.1	3.1	3.1	3.1	●
COPD, Ages 45+	102.6	84.4	90.9	86.2	90.8	88.1	√
Coronary Heart Disease	103.4	96.5	80.8	76.9	74.5	72.4	√
Stroke	34.8	31.2	45.5	53.6	52.6	52.8	●
Cirrhosis	8.2	5.4	4.1	4.3	4.8	5.1	√
Drug-Induced Deaths	11.3	12.5	29.0	35.8	34.9	34.8	●
HIV/AIDS	3.3	1.6	1.1	0.9	0.9	0.8	√
Injury Deaths	53.7	43.3	58.0	66.2	66.4	66.6	**O**
Residential Fire Deaths	0.9	0.2	0.5	0.5	0.5	0.4	√
Falls	7.2	6.9	8.7	8.5	9.6	10.4	●
Falls, Ages 65+	47.0	48.1	59.4	57.5	65.3	63.6	●
Firearm-Related	9.3	4.0	3.0	3.4	3.7	3.5	√
Poisonings	13.2	12.5	28.4	35.4	33.8	34.1	●
Unintentional or Undetermined Intent Injuries	11.1	10.9	26.3	33.1	32.0	31.9	●
Poisonings, Ages 35-54	25.6	22.8	46.5	58.1	58.4	58.9	●
Unintentional or Undetermined Intent Injuries, Ages 35-54	21.6	20.0	46.5	58.1	58.4	58.9	●
Unintentional Injuries	36.4	28.3	45.5	53.6	52.6	52.8	●
Motor Vehicle Crashes	12.4	5.4	5.4	6.3	5.7	5.4	√
Drowning	1.1	1.2	1.0	1.2	0.9	1.2	**O**
Hanging, Strangulation or Suffocation	1.8	5.8	6.3	5.9	6.8	6.5	●
Homicide	5.5	3.2	2.2	2.1	2.7	2.3	√
Suicide	10.2	8.7	9.0	8.8	9.5	9.9	√
Infant and Child Health							
Infant Deaths (per 1,000 live births)	6.0	4.4	4.3	4.0	3.7	4.3	√
Neonatal Deaths (per 1,000 live births)	4.1	3.3	3.3	3.0	2.5	3.3	√
Post Neonatal Deaths (per 1,000 live births)	2.0	1.1	1.0	1.0	1.2	1.0	√
Birth Defects (per 1,000 live births)	1.3	0.7	0.5	0.7	0.8	0.8	√
Congenital Heart Defects (per 1,000 live births)	0.3	0.1	0.1	0.1	0.2	0.2	√
Sudden Infant Death Syndrome (SIDS) (per 1,000 live births)	0.5	0.5	0.3	0.2	0.3	0.3	√
Child/Adolescent/Young Adults Death Rates							
1-4 years old	26.5	13.6	16.7	14.2	15.4	16.1	√
5-9 years old	12.4	7.3	9.1	8.8	8.9	9.7	√
10-14 years old	14.8	8.6	9.1	10.4	10.7	6.7	√
15-19 years old	54.3	30.9	31.1	30.4	32.5	23.4	√
20-24 years old	88.3	65.2	76.1	77.7	67.9	59.3	√
Asthma Deaths (per million)							
Ages 35-64 Years	4.9	6.3	10.3	12.6	11.4	8.5	●
Ages 65+ Years	21.5	29.9	45.9	36.3	30.5	29.7	●

✓ = YES, met target O = 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 (PMR) for the Largest 30 Communities, Massachusetts: 2018 (Sorted by PMR)

Largest 30 Communities[1]	Number of Premature Deaths	PMR[2] (per 100,000)
Fall River	474	462.8*
Springfield	722	461.1*
New Bedford	488	446.7*
Taunton	298	435.8*
Pittsfield	235	434.0*
Brockton	459	431.5*
Worcester	809	419.5*
Lowell	484	412.6*
Chicopee	273	391.4*
Lynn	404	386.9*
Haverhill	295	373.9*
Barnstable	209	328.6
Lawrence	255	309.9
Attleboro	167	304.0
Weymouth	221	301.3
Peabody	196	278.5
Methuen	177	275.6
Quincy	324	272.4
Malden	197	272.0
Boston	1774	270.2
Revere	180	268.6
Plymouth	225	260.3
Framingham	186	228.1*
Waltham	147	216.3*
Cambridge	207	214.5*
Medford	146	211.1*
Somerville	135	202.6*
Arlington	108	181.8*
Brookline	84	124.7*
Newton	135	116.8*
STATE	**22,837**	**270.6**

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. 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 (PMR) by Community, Massachusetts: 2018		
City/Town	**Premature Deaths (#)**	**PMR**[1] (per 100,000 population)
STATE	**22,837**	**270.6**
Abington	54	249.8
Acton	39	136.2
Acushnet	42	301.8
Adams	32	316.0
Agawam	128	352.2
Alford	1	-[2]
Amesbury	63	298.0
Amherst	44	200.8
Andover	63	148.0
Aquinnah	0	0
Arlington	108	181.8
Ashburnham	21	251.1
Ashby	10	188.6
Ashfield	7	291.7
Ashland	40	163.7
Athol	65	444.6
Attleboro	169	307.1
Auburn	67	341.8
Avon	19	362.5
Ayer	34	370.8
Barnstable	209	328.6
Barre	24	340.2
Becket	11	488.9
Bedford	32	157.3
Belchertown	65	337.1
Bellingham	53	253.7
Belmont	50	153.9
Berkley	23	251.4
Berlin	7	162.0
Bernardston	8	283.4
Beverly	144	269.8
Billerica	130	243.9
Blackstone	30	274.8
Blandford	10	521.9
Bolton	5	104.5
Boston	1,774	270.2
Bourne	82	303.5
Boxborough	8	128.5
Boxford	15	134.5
Boylston	12	185.9
Braintree	124	266.6
Brewster	44	281.9
Bridgewater	77	231.3
Brimfield	21	445.7
Brockton	459	431.5
Brookfield	17	321.1

Table 35 (continued). Premature Mortality Rates by Community, Massachusetts: 2018

City/Town	Premature Deaths (#)	PMR[1] (per 100,000 population)
Brookline	84	124.7
Buckland	5	241.0
Burlington	72	216.8
Cambridge	207	214.5
Canton	74	269.8
Carlisle	4	-[2]
Carver	60	319.8
Charlemont	6	337.6
Charlton	34	196.8
Chatham	24	276.4
Chelmsford	98	200.6
Chelsea	104	307.0
Cheshire	19	464.9
Chester	6	461.5
Chesterfield	4	-[2]
Chicopee	273	391.4
Chilmark	5	471.7
Clarksburg	7	359.7
Clinton	69	435.8
Cohasset	21	249.8
Colrain	5	152.7
Concord	33	122.4
Conway	5	111.9
Cummington	5	310.1
Dalton	20	207.8
Danvers	112	304.6
Dartmouth	104	242.7
Dedham	80	243.4
Deerfield	18	188.2
Dennis	84	518.0
Dighton	27	282.2
Douglas	23	202.6
Dover	10	155.2
Dracut	131	325.2
Dudley	38	311.1
Dunstable	7	172.5
Duxbury	34	152.7
East Bridgewater	54	280.9
East Brookfield	5	147.8
East Longmeadow	46	214.1
Eastham	24	281.3
Easthampton	64	286.7
Easton	65	238.5
Edgartown	20	294.9
Egremont	1	-[2]
Erving	7	232.3
Essex	9	190.1
Everett	130	273.1
Fairhaven	72	331.5

Table 35 (continued). Premature Mortality Rates by Community, Massachusetts: 2018

City/Town	Premature Deaths (#)	PMR[1] (per 100,000 population)
Fall River	474	462.8
Falmouth	127	306.1
Fitchburg	205	447.2
Florida	4	-[2]
Foxborough	59	265.1
Framingham	186	228.1
Franklin	76	201.8
Freetown	28	221.7
Gardner	98	393.4
Georgetown	23	224.1
Gill	5	235.3
Gloucester	129	321.4
Goshen	3	-[2]
Gosnold	0	0
Grafton	63	281.1
Granby	13	180.5
Granville	6	211.7
Great Barrington	37	395.1
Greenfield	77	361.2
Groton	18	137.4
Groveland	17	175.4
Hadley	25	384.7
Halifax	42	384.4
Hamilton	11	120.2
Hampden	31	493.4
Hancock	1	-[2]
Hanover	41	221.8
Hanson	40	308.2
Hardwick	15	325.1
Harvard	12	146.2
Harwich	49	266.5
Hatfield	10	209.1
Haverhill	295	373.9
Hawley	0	0
Heath	5	294.2
Hingham	40	143.0
Hinsdale	10	288.3
Holbrook	68	513.5
Holden	64	264.9
Holland	6	131.4
Holliston	28	170.1
Holyoke	171	389.1
Hopedale	17	226.8
Hopkinton	30	158.4
Hubbardston	16	247.6
Hudson	65	250.9
Hull	59	387.8
Huntington	5	193.9

Table 35 (continued). Premature Mortality Rates by Community, Massachusetts: 2018

City/Town	Premature Deaths (#)	PMR[1] (per 100,000 population)
Ipswich	46	232.4
Kingston	47	291.6
Lakeville	39	266.5
Lancaster	15	142.2
Lanesborough	13	248.2
Lawrence	255	309.9
Lee	23	279.0
Leicester	40	277.7
Lenox	14	164.4
Leominster	169	344.6
Leverett	3	-[2]
Lexington	67	147.3
Leyden	4	-[2]
Lincoln	8	108
Littleton	21	176.3
Longmeadow	30	144
Lowell	484	412.6
Ludlow	83	337.3
Lunenburg	40	297.0
Lynn	404	386.9
Lynnfield	29	226.4
Malden	197	272.0
Manchester	18	267.4
Mansfield	67	238.9
Marblehead	49	175.4
Marion	10	163.0
Marlborough	119	242.4
Marshfield	95	277.2
Mashpee	76	330.2
Mattapoisett	28	366.1
Maynard	26	198.8
Medfield	21	164.3
Medford	146	211.1
Medway	30	204.1
Melrose	85	224.9
Mendon	23	400.3
Merrimac	23	250.0
Methuen	177	275.6
Middleborough	109	284.7
Middlefield	1	-[2]
Middleton	15	126.7
Milford	78	224.1
Millbury	55	305.6
Millis	19	172.3
Millville	10	243.6
Milton	71	211.9
Monroe	0	0
Monson	29	216.5
Montague	54	450.0

Table 35 (continued). Premature Mortality Rates by Community, Massachusetts: 2018

City/Town	Premature Deaths (#)	PMR[1] (per 100,000 population)
Monterey	0	0
Montgomery	3	-[2]
Mount Washington	0	0
Nahant	19	327.6
Nantucket	28	208.3
Natick	87	193.3
Needham	58	160.5
New Ashford	3	-[2]
New Bedford	488	446.7
New Braintree	5	267.9
New Marlborough	5	183.3
New Salem	3	-[2]
Newbury	20	195.8
Newburyport	64	264.4
Newton	135	116.8
Norfolk	23	133.8
North Adams	74	465.3
North Andover	69	185.9
North Attleboro	101	288.2
North Brookfield	13	205.8
North Reading	45	235.7
Northampton	118	318.3
Northborough	31	182.8
Northbridge	60	307.0
Northfield	17	380.5
Norton	58	242.8
Norwell	33	246.1
Norwood	101	275.6
Oak Bluffs	12	167.2
Oakham	6	203.9
Orange	41	386.0
Orleans	32	397.4
Otis	8	187.5
Oxford	59	312.0
Palmer	57	384.5
Paxton	19	305.9
Peabody	196	278.5
Pelham	4	-[2]
Pembroke	74	291.2
Pepperell	42	257.3
Peru	3	-[2]
Petersham	3	-[2]
Phillipston	7	277.1
Pittsfield	235	434
Plainfield	2	-[2]
Plainville	35	320.5
Plymouth	225	260.3
Plympton	11	293.4
Princeton	10	220.9

Table 35 (continued). Premature Mortality Rates by Community, Massachusetts: 2018

City/Town	Premature Deaths (#)	PMR[1] (per 100,000 population)
Provincetown	11	144.9
Quincy	324	272.4
Randolph	121	296.5
Raynham	46	239.7
Reading	65	189.9
Rehoboth	30	184.4
Revere	180	268.6
Richmond	6	169.5
Rochester	18	231.8
Rockland	82	376.3
Rockport	23	283.3
Rowe	0	0
Rowley	20	253.3
Royalston	5	297.8
Russell	12	597.9
Rutland	25	245.0
Salem	154	297.1
Salisbury	39	288.2
Sandisfield	4	-[2]
Sandwich	77	269.6
Saugus	112	281.8
Savoy	3	-[2]
Scituate	51	190.8
Seekonk	35	184.9
Sharon	31	126.9
Sheffield	22	370.2
Shelburne	8	268.3
Sherborn	8	137.1
Shirley	27	270.6
Shrewsbury	90	198.9
Shutesbury	3	-[2]
Somerset	76	307.2
Somerville	135	202.6
South Hadley	47	235.1
Southampton	18	204.9
Southborough	23	180.7
Southbridge	84	416.9
Southwick	37	306.2
Spencer	61	409.5
Springfield	722	461.1
Sterling	23	235.2
Stockbridge	11	332.3
Stoneham	74	258.3
Stoughton	109	332.0
Stow	11	124.0
Sturbridge	27	208.4
Sudbury	30	156.5
Sunderland	9	190.5
Sutton	23	230.1

Table 35 (continued). Premature Mortality Rates by Community, Massachusetts: 2018

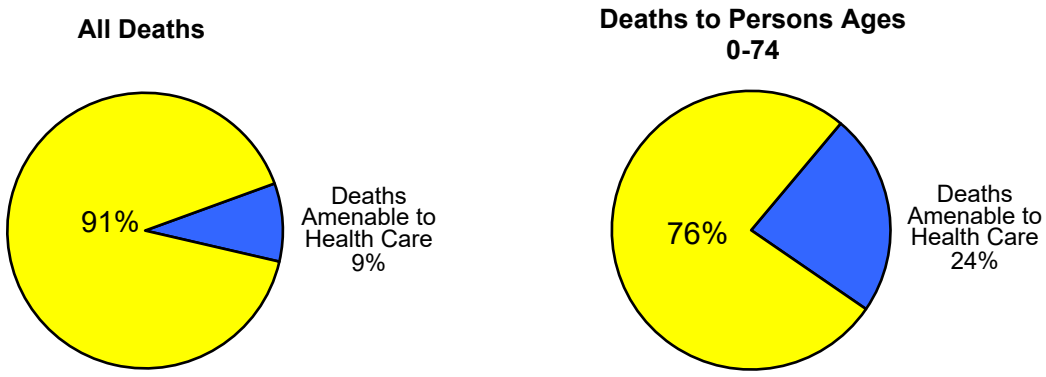
City/Town	Premature Deaths (#)	PMR[1] (per 100,000 population)
Swampscott	47	257.2
Swansea	62	301.4
Taunton	298	435.8
Templeton	28	261.5
Tewksbury	107	249.2
Tisbury	16	283.1
Tolland	5	701.0
Topsfield	9	98.8
Townsend	35	280.6
Truro	9	148.5
Tyngsborough	49	338.7
Tyringham	2	-[2]
Unknown	0	0
Upton	13	128.3
Uxbridge	53	251.6
Wakefield	75	226.0
Wales	14	610.2
Walpole	64	195.6
Waltham	147	216.3
Ware	44	323.2
Wareham	131	396.6
Warren	20	304.5
Warwick	0	0
Washington	0	0
Watertown	104	241.2
Wayland	30	162.9
Webster	87	408.5
Wellesley	40	125.1
Wellfleet	12	222.0
Wendell	2	-[2]
Wenham	9	292.9
West Boylston	28	268.2
West Bridgewater	29	272.2
West Brookfield	19	466.5
West Newbury	6	75.6
West Springfield	116	329.4
West Stockbridge	2	-[2]
West Tisbury	6	100.1
Westborough	50	228.0
Westfield	185	394.1
Westford	53	202.1
Westhampton	2	-[2]
Westminster	31	332.0
Weston	11	77.0
Westport	71	293.3
Westwood	27	141.2
Weymouth	221	301.3
Whately	4	-[2]
Whitman	57	347.3

Table 35 (continued). Premature Mortality Rates by Community, Massachusetts: 2018

City/Town	Premature Deaths (#)	PMR[1] (per 100,000 population)
Williamsburg	8	212.5
Williamstown	25	286.2
Wilmington	57	204.1
Winchendon	47	381.0
Winchester	36	145.6
Windsor	2	-[2]
Winthrop	70	293.2
Woburn	129	262.0
Worcester	809	419.5
Worthington	6	199.6
Wrentham	42	269.5
Yarmouth	113	317.0

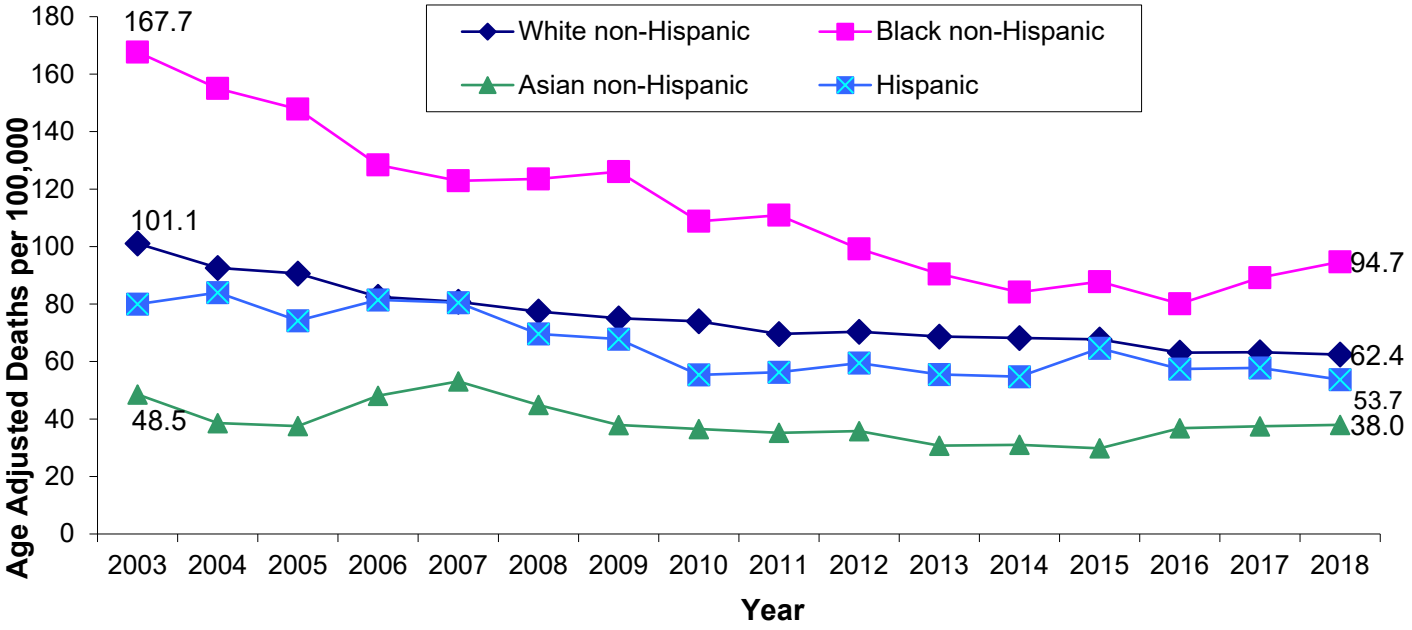
1. Premature mortality rates (PMR) are age-adjusted to the 2000 US Standard Population for persons ages 0-74 years.
2. Age-adjusted rates based on values 1-4 are excluded.

Figure 17. Percent of Deaths Amenable to Health Care[1], Massachusetts: 2018



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 Mortality[1] by Race and Hispanic Ethnicity[2], Massachusetts: 2003-2018



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 the Technical notes for more information on race and ethnicity.

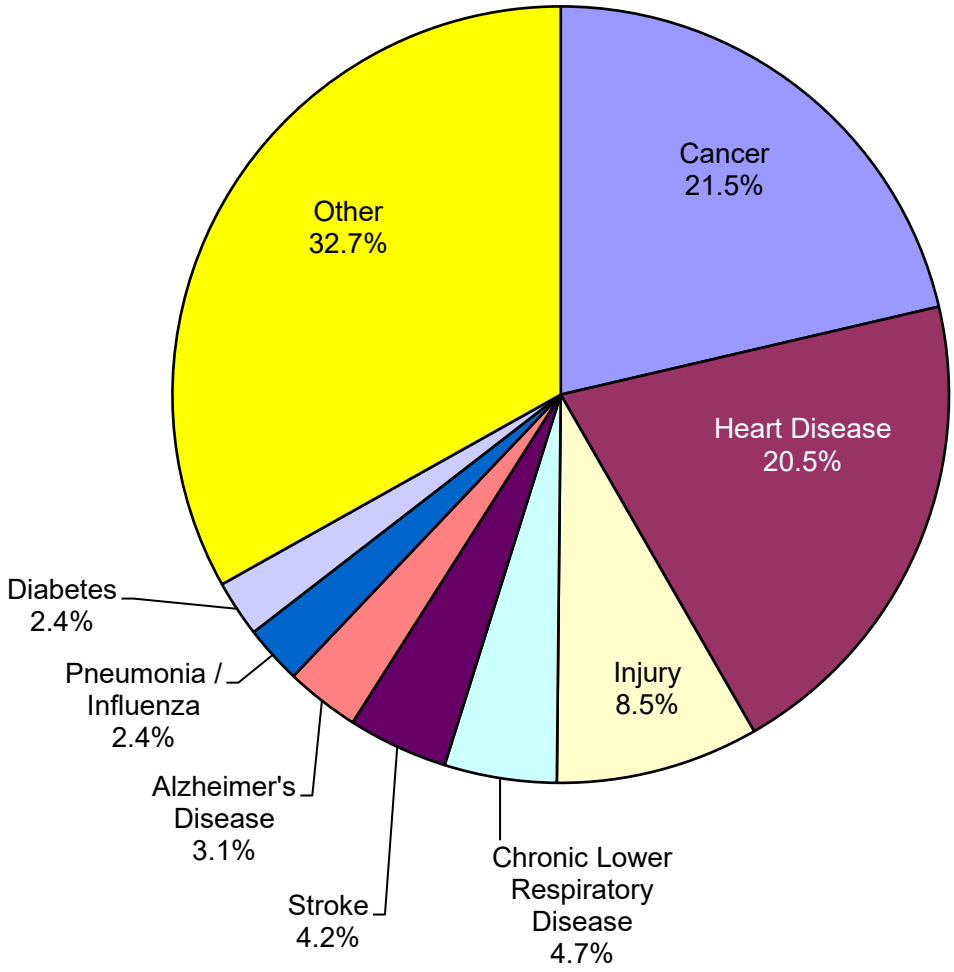
APPENDIX

Additional Tables & Figures

Technical Notes

Glossary

Figure 19. Percent Distribution of Leading Underlying Causes of Death, Massachusetts: 2018



Note: Total Number of Deaths = 59,169
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: 2018

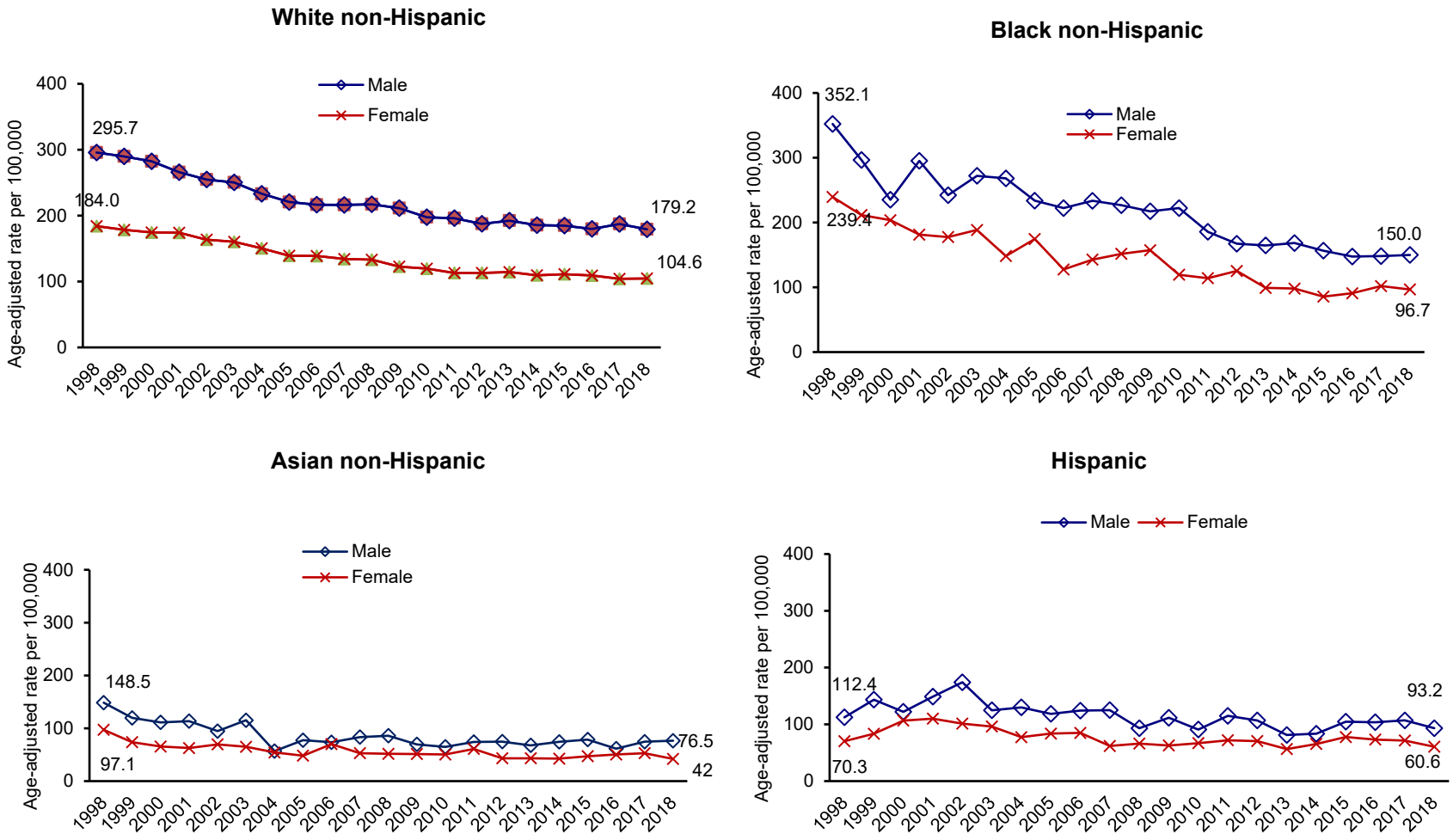
	Total		White non-Hispanic[1]		Black non-Hispanic[1]		Asian non-Hispanic[1]		Hispanic[1]	
Selected Causes[2]	**#**	**Rate[3]**	**#**	**Rate[3]**	**#**	**Rate[3]**	**#**	**Rate[3]**	**#**	**Rate[3]**
Age: 1-14, TOTAL	**111**	**10.3**	**46**	**7.2**	**24**	**25.5**	**7**	**9.2**	**30**	**14.6**
Cancer	23	2.1	15	2.3	2	-[6]	2	-[6]	4	-[6]
Unintentional Injuries[4]	19	1.8	6	0.9	6	6.4	0	0	7	3.4
Congenital malformations	12	1.1	5	0.8	0	0	2	-[6]	5	2.4
Ill defined conditions	10	0.9	4	-[6]	1	-[6]	0	0	3	-[6]
Age: 15-24, TOTAL	**416**	**42.3**	**267**	**41.7**	**49**	**60.5**	**18**	**22.5**	**66**	**42.2**
Unintentional Injuries[4]	197	20.0	146	22.8	9	11.1	4	-[6]	32	20.5
Suicide	80	8.1	59	9.2	5	6.2	9	11.2	4	-[6]
Homicide	43	4.4	6	0.9	19	23.5	0	0	15	9.6
Cancer	23	2.3	12	1.9	4	-[6]	1	-[6]	4	-[6]
Age: 25-44, TOTAL	**2,751**	**150.4**	**1,995**	**165.2**	**221**	**144.8**	**69**	**38.1**	**389**	**144.0**
Unintentional Injuries[4]	1,403	76.7	1,108	91.8	53	34.7	20	11.0	188	69.6
Cancer	247	13.5	162	13.4	27	17.7	16	8.8	35	13.0
Suicide	222	12.1	170	14.1	18	11.8	6	3.3	19	7.0
Heart Disease	184	10.1	125	10.4	29	19.0	5	2.8	18	6.7
Age: 45-64, TOTAL	**9,350**	**499.3**	**7,641**	**521.3**	**714**	**598.7**	**241**	**230.8**	**623**	**404.0**
Cancer	2,805	149.8	2,313	157.8	180	150.9	106	101.5	167	108.3
Heart Disease	1,548	82.7	1,275	87.0	140	117.4	41	39.3	65	42.2
Unintentional Injuries[4]	1,082	57.8	879	60.0	67	56.2	12	11.5	104	67.4
Chronic liver disease	389	20.8	327	22.3	22	18.4	6	5.7	32	20.8
Age: 65+, TOTAL	**46,250**	**4,038.8**	**42,099**	**4,255.9**	**1,647**	**3,240.8**	**878**	**2,019.2**	**1,206**	**2,335.2**
Heart Disease	10,285	898.1	9,490	959.4	331	651.3	145	333.5	227	439.6
Cancer	9,540	833.1	8,584	867.8	372	732.0	225	517.5	266	515.1
Chronic lower respiratory disease[5]	2,430	212.2	2,293	231.8	55	108.2	22	50.6	47	91.0
Stroke	2,213	193.3	1,967	198.8	84	165.3	69	158.7	60	116.2

Table 36 (continued). Number and Age-Specific Rates for Leading Underlying Causes of Death by Race and Hispanic Ethnicity, Massachusetts: 2018

	Total		White non-Hispanic[1]		Black non-Hispanic[1]		Asian non-Hispanic[1]		Hispanic[1]	
Selected Causes[2]	**#**	**Rate[3]**	**#**	**Rate[3]**	**#**	**Rate[3]**	**#**	**Rate[3]**	**#**	**Rate[3]**
Age: 65-74, TOTAL	**9,918**	**1,497.7**	**8,667**	**1,533.7**	**556**	**1,786.5**	**198**	**754.8**	**401**	**1,211.3**
Cancer	3,370	508.9	2,965	524.7	161	517.3	82	312.6	127	383.6
Heart Disease	1,801	272.0	1,577	279.1	110	353.4	26	99.1	75	226.5
Chronic Lower Respiratory Disease[5]	595	89.8	553	97.9	22	70.7	3	11.4	13	39.3
Stroke	335	50.6	271	48.0	30	96.4	12	45.7	13	39.3
Age: 75-84, TOTAL	**13,806**	**4,294.6**	**12,356**	**4,429.6**	**547**	**3,873.1**	**320**	**2,531.0**	**452**	**3,355.8**
Cancer	3,471	1,079.7	3,114	1,116.4	143	1,012.5	98	775.1	86	638.5
Heart Disease	2,682	834.3	2,414	865.4	101	715.1	48	379.7	80	593.9
Chronic Lower Respiratory Disease[5]	876	272.5	823	295.0	17	120.4	9	71.2	24	178.2
Stroke	648	201.6	556	199.3	28	198.3	29	229.4	28	207.9
Age: 85+, TOTAL	**22,526**	**13,952.1**	**21,076**	**14,518.3**	**544**	**9,756.1**	**360**	**7,815.7**	**353**	**6,965.6**
Heart Disease	5,802	3,593.6	5,499	3,788.0	120	2,152.1	71	1,541.4	72	1,420.7
Cancer	2,699	1,671.7	2,505	1,725.6	68	1,219.5	45	977.0	53	1,045.8
Alzheimers	1,246	771.7	1,178	811.5	25	448.3	17	369.1	19	374.9
Stroke	1,230	761.8	1,140	785.3	26	466.3	28	607.9	19	374.9

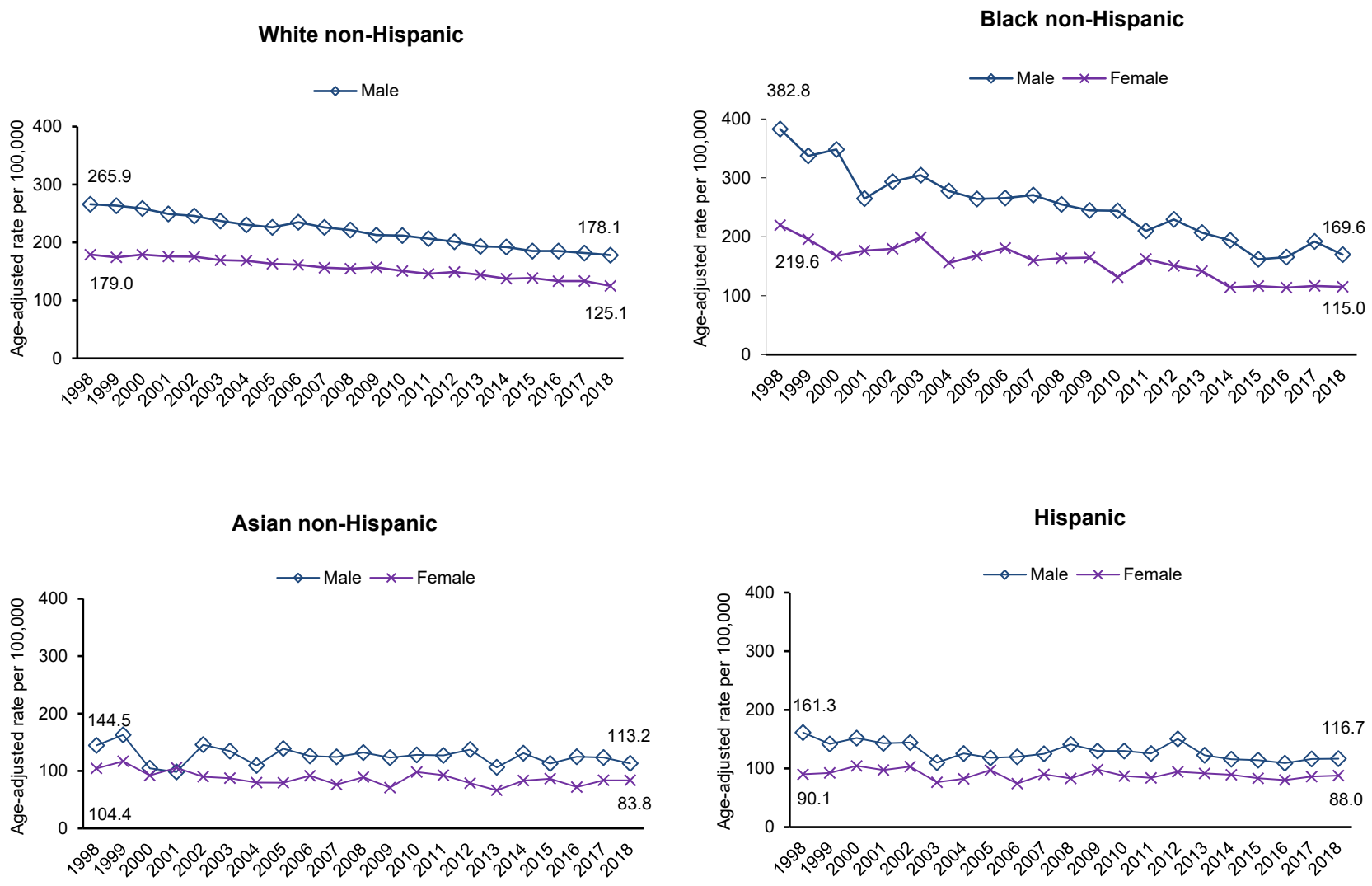
1. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see the Technical Notes for more information on race and ethnicity. 2. Deaths are coded according to ICD-10. Please see Appendix for a list 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 Rates[1] by Race and Hispanic Ethnicity[3] and Gender, Massachusetts: 1998-2018[2]



1. Rates are per 100,000 population, age-adjusted to the 2010 U.S. Standard Population. 2. For 1998 the comparability-modified rates were used. 3. 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 for more information on race and ethnicity.

Figure 21. Cancer Death Rates[1] by Race and Hispanic Ethnicity[3] and Gender, Massachusetts: 1998-2018[2]



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. 3. 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 for more information on race and ethnicity.

Table 37. Premature Mortality[1] Rates (PMR) by Community Health Network Area (CHNA), Massachusetts: 2018

CHNA (Name and Number)	Number of Deaths	PMR[2] (per 100,000 population)
Massachusetts	**22,837**	**270.6**
1. Community Health Network of Berkshire	598	347.1
2. Upper Valley Health Web (Franklin County)	376	304.8
3. Partnership for Health in Hampshire County (Northampton)	483	265.4
4. The Community Health Connection (Springfield)	1,282	374.9
5. Community Health Network of Southern Worcester County	505	326.4
6. Community Partners for Health (Milford)	489	223.5
7. Community Health Network of Greater Metro West (Framingham)	1,027	204.2
8. Common Pathways (Worcester)	1,247	345.8
9. Community Health Network of North Central Massachusetts	1,037	309.4
10. Greater Lowell Community Health Network	1,059	305.3
11. Greater Lawrence Community Health Network	579	249.2
12. Greater Haverhill Community Health Network	585	289.5
13. Community Health Network North (Beverly/Gloucester)	398	249.1
14. North Shore Community Health Network	1,122	305.9
15. Northwest Suburban Health Alliance	506	176.1
16. North Suburban Health Alliance (Medford/Malden/Melrose)	817	237.1
17. Greater Cambridge/Somerville Community Health Network	604	201.1
18. West Suburban Health Network (Newton/Waltham)	508	155.8
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	2,212	260.0
20. Blue Hills Community Health Alliance (Greater Quincy)	1,271	255.9
21. Community Health Network of Chicopee, Holyoke, Ludlow, Westfield	723	378.1
22. Greater Brockton Community Health Network	991	346.6
23. South Shore Community Health Network	751	277.4
24. Greater Attleboro-Taunton Health & Education Response	1,002	297.9
25. Partners for Healthier Communities (Fall River)	683	399.3
26. Greater New Bedford Community Health Network	921	359.9
27. Cape Cod and Islands Health Network	1,060	297.9

1. Premature mortality is death before 75 years of age. 2. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population for persons ages 0-74 years.

Table 38. Premature Mortality[1] Rates by County, Massachusetts: 2018

County	Number of Deaths	PMR[2] (per 100,000 population)
Massachusetts	**22,837**	**270.6**
Barnstable	973	311.2
Berkshire	598	347.1
Bristol	2,336	341.5
Dukes	59	222.6
Essex	2,684	279.2
Franklin	296	290.0
Hampden	2,041	377.0
Hampshire	488	264.2
Middlesex	4,105	217.4
Nantucket	28	208.3
Norfolk	2,005	234.0
Plymouth	1,999	300.6
Suffolk	2,128	271.0
Worcester	3,096	314.3

1. Premature mortality is death before 75 years of age. 2. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population for persons ages 0-74 years.

Table 39. Selected Causes of Death by Community, Massachusetts: 2018

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[4]
Massachusetts	**59,169**	**662.8**	**12,036**	**12,638**	**2,984**	**773**	**2,467**	**2,765**	**1,392**	**1,441**	**401**	**159**	**741**	**1,991**
Abington	133	761.7	28	25	6	2	5	12	1	4	1	0	1	11
Acton	132	476.7	30	27	3	1	3	9	4	3	0	1	0	4
Acushnet	109	731	28	19	6	2	2	7	2	4	0	0	5	2
Adams	104	795.4	26	19	7	0	7	3	3	1	2	0	0	7
Agawam	351	701.3	65	74	16	3	14	11	9	8	1	0	5	12
Alford	3	-[3]	1	1	0	0	0	0	0	0	0	0	0	0
Amesbury	147	724.3	22	37	8	0	2	2	0	4	0	0	1	9
Amherst	170	567.3	41	29	3	2	10	3	2	6	0	0	1	2
Andover	240	515.2	53	57	12	5	5	12	3	2	1	0	2	2
Aquinnah	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arlington	348	515.9	70	84	15	4	26	10	9	5	0	0	2	3
Ashburnham	40	658.6	11	13	4	0	2	2	0	1	1	0	1	1
Ashby	22	664.7	5	5	0	0	0	1	0	1	0	0	0	0
Ashfield	12	503.1	5	3	0	0	0	0	0	0	0	0	0	1
Ashland	113	583.7	34	28	3	4	5	6	1	0	0	0	1	2
Athol	154	992.2	24	34	8	0	5	8	2	7	1	0	1	5
Attleboro	399	720.1	81	107	31	5	18	26	14	14	1	0	9	11
Auburn	208	784.7	47	38	7	3	3	20	7	7	2	0	4	6
Avon	53	916.7	7	15	3	1	2	3	3	2	1	1	0	2
Ayer	93	1,186.70	20	14	3	0	7	6	1	3	0	1	0	2
Barnstable	593	764.8	123	144	38	8	38	27	9	10	7	1	9	17
Barre	49	722.6	11	9	0	0	2	5	1	3	2	0	0	3
Becket	16	840.1	4	2	0	1	3	0	1	0	1	0	0	2
Bedford	128	477	26	34	6	0	3	0	1	1	0	0	0	3
Belchertown	127	765.7	21	32	10	4	3	4	2	4	3	0	2	7
Bellingham	118	617.9	25	29	6	1	3	5	2	1	2	0	1	8
Belmont	181	488	35	34	5	3	12	6	2	5	2	0	2	2
Berkley	37	547	13	11	1	1	1	0	0	0	0	0	1	1
Berlin	23	431.4	5	6	1	0	1	2	0	0	1	0	0	0
Bernardston	25	772.1	6	4	2	0	1	3	0	1	0	0	0	0

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2018														
CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[4]
Beverly	422	751.9	91	88	18	5	16	17	8	18	3	0	3	7
Billerica	338	681.5	54	80	26	4	9	24	5	5	3	0	3	13
Blackstone	66	635.4	9	16	1	3	6	7	2	0	1	0	2	3
Blandford	13	683.1	4	1	1	0	2	1	0	0	0	0	1	0
Bolton	19	427.3	3	7	2	1	0	0	0	1	0	0	0	1
Boston	3,831	606.2	684	921	198	60	155	122	135	79	18	53	58	180
Bourne	265	789.5	51	51	15	2	13	9	6	3	2	0	5	3
Boxborough	29	555.6	6	5	0	0	2	2	1	1	0	0	1	0
Boxford	54	529.9	9	14	2	1	4	1	0	1	0	0	0	0
Boylston	38	649.2	8	11	1	0	3	1	1	0	0	0	0	1
Braintree	416	720.1	70	91	26	10	20	18	10	17	3	0	3	10
Brewster	163	653.1	42	39	8	1	9	9	4	2	2	0	5	2
Bridgewater	177	604.4	37	53	18	3	7	10	4	7	0	0	2	5
Brimfield	32	689.5	5	6	0	0	2	1	2	0	1	0	2	2
Brockton	876	852.2	180	171	48	11	49	40	20	26	13	11	10	35
Brookfield	33	748.4	10	6	2	0	0	2	0	2	0	0	0	2
Brookline	293	388	65	70	12	5	12	7	4	6	2	0	6	2
Buckland	13	536.9	2	1	0	0	0	0	2	0	1	0	0	0
Burlington	256	596.3	48	56	10	2	10	10	6	5	1	0	4	3
Cambridge	545	571	113	127	27	6	24	14	17	9	4	2	11	11
Canton	243	633.7	57	54	13	4	17	5	5	8	2	0	1	4
Carlisle	19	399.2	8	6	1	0	0	0	0	0	0	0	0	1
Carver	137	857.7	39	38	10	3	4	10	2	4	2	0	0	1
Charlemont	11	572.1	3	5	3	0	2	0	0	0	0	0	0	0
Charlton	111	480.1	34	14	3	0	5	3	2	3	1	0	2	1
Chatham	119	675.6	29	14	4	0	11	4	2	2	0	0	2	1
Chelmsford	319	557.4	56	80	15	3	19	14	11	7	2	0	4	3
Chelsea	248	811.7	46	47	16	4	9	14	10	4	1	0	0	10
Cheshire	32	762.7	3	7	0	0	3	1	1	1	0	0	1	3
Chester	16	1,122.80	5	2	0	0	0	0	1	0	0	0	1	1
Chesterfield	9	818.4	2	1	1	0	1	0	0	0	0	0	0	0
Chicopee	630	837.5	143	122	37	5	20	36	24	10	1	0	5	31
Chilmark	11	704.4	2	2	0	0	0	0	0	0	1	0	0	0
Clarksburg	19	901.1	5	4	0	1	0	2	0	1	0	0	0	0

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2018														
CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[4]
Clinton	149	981.3	33	27	4	2	5	3	6	4	0	0	1	5
Cohasset	71	592.5	16	14	0	2	4	4	1	3	0	0	1	2
Colrain	17	711.3	2	2	0	0	1	1	0	1	0	0	0	0
Concord	161	361.6	24	37	7	1	8	6	7	2	2	0	0	2
Conway	9	417.8	3	3	0	0	0	0	1	0	0	0	0	0
Cummington	11	828.5	2	4	2	0	1	0	0	0	0	0	0	0
Dalton	77	642.1	17	12	2	2	3	3	1	1	3	0	0	0
Danvers	370	743	79	51	8	1	12	16	5	11	0	0	5	8
Dartmouth	333	599	88	68	20	1	8	15	6	7	3	0	4	4
Dedham	312	592.7	70	64	19	6	10	13	4	6	2	0	5	5
Deerfield	53	696.4	11	12	3	1	4	0	1	0	1	0	0	1
Dennis	225	837.2	52	57	12	3	9	4	4	5	0	2	0	14
Dighton	72	832.1	18	13	5	0	3	7	8	1	0	1	0	2
Douglas	51	719.6	9	13	2	0	1	4	3	5	0	0	1	2
Dover	27	486.5	7	5	0	1	3	1	0	0	0	0	1	0
Dracut	312	837.1	57	76	14	4	11	22	8	7	1	0	2	10
Dudley	93	755.9	22	20	6	1	3	5	1	3	0	0	2	5
Dunstable	18	591.3	3	6	1	1	1	0	0	0	0	0	1	1
Duxbury	130	473.4	32	30	6	1	6	5	1	1	0	0	2	0
East Bridgewater	125	708	32	26	7	2	4	7	2	3	2	0	0	6
East Brookfield	18	679.1	4	4	0	1	0	1	0	1	1	0	0	0
East Longmeadow	209	592.6	42	43	11	6	13	5	2	9	1	0	1	1
Eastham	73	596.3	13	25	8	0	2	0	2	2	0	0	0	0
Easthampton	183	787.3	41	31	8	1	5	8	8	7	3	0	3	6
Easton	179	650.6	35	35	5	4	5	5	5	3	2	0	4	5
Edgartown	47	852.4	9	13	4	0	1	3	0	0	0	0	1	1
Egremont	16	675.8	3	4	0	0	0	1	1	0	0	0	0	0
Erving	14	521.6	4	3	0	0	0	2	0	0	0	0	0	0
Essex	27	585.5	6	6	0	0	0	0	1	0	0	0	0	1
Everett	284	637.1	57	59	18	2	8	11	8	4	2	1	2	15
Fairhaven	215	733.9	40	35	10	2	8	8	5	4	1	0	4	4
Fall River	1,026	886.8	222	188	59	13	33	55	27	36	5	2	6	55
Falmouth	450	688.3	109	92	22	2	21	18	6	6	2	1	5	11
Fitchburg	451	968.4	82	88	17	0	18	26	13	11	0	2	1	15

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2018														
CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[4]
Florida	9	780	1	2	0	0	1	1	0	1	0	0	0	0
Foxborough	141	657.5	30	35	9	3	10	7	3	7	2	0	5	4
Framingham	550	557.5	143	98	18	8	24	21	14	17	3	0	11	20
Franklin	213	639.2	44	49	9	1	10	6	3	6	4	0	6	7
Freetown	67	682	10	19	5	3	1	5	3	3	0	0	0	4
Gardner	223	781.9	31	46	10	3	29	12	1	12	0	0	1	12
Georgetown	61	746.7	11	11	6	1	1	5	2	0	0	0	3	2
Gill	12	624.9	3	3	0	0	0	1	0	1	0	0	0	0
Gloucester	328	711.6	60	71	13	7	12	16	11	5	0	0	5	17
Goshen	8	675.7	3	0	0	0	0	0	0	1	0	0	0	0
Gosnold	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grafton	129	642.5	25	28	4	4	4	6	2	3	2	0	4	3
Granby	43	613.3	13	7	1	1	0	3	0	2	0	0	0	1
Granville	8	312.7	3	2	0	0	0	0	0	0	0	0	0	0
Great Barrington	91	839	14	25	4	2	4	6	3	0	2	0	4	2
Greenfield	207	766.9	53	33	4	0	6	4	3	6	3	0	3	11
Groton	63	498.1	14	21	3	3	3	1	1	2	1	0	0	0
Groveland	59	531.8	15	10	1	1	3	5	1	0	0	0	2	0
Hadley	70	701.6	17	11	0	1	3	2	1	3	0	0	0	2
Halifax	80	824.6	16	17	2	1	3	6	1	0	0	0	1	3
Hamilton	34	387.1	4	8	2	0	1	1	3	1	0	0	1	1
Hampden	71	895.2	9	13	4	0	2	2	2	2	2	0	3	4
Hancock	5	394.7	2	2	0	0	0	0	0	0	0	0	0	0
Hanover	109	624.3	22	28	5	1	3	4	3	4	1	1	1	2
Hanson	96	904	24	19	7	4	2	3	4	1	0	0	0	3
Hardwick	27	689.3	4	8	1	1	0	3	1	0	0	0	0	1
Harvard	24	386.3	6	6	1	0	2	1	1	0	0	0	1	1
Harwich	193	688.3	41	45	8	2	11	5	3	3	2	0	2	2
Hatfield	31	617.3	4	7	2	0	1	2	0	0	0	0	1	1
Haverhill	663	864.9	146	121	27	5	22	38	16	25	10	1	8	25
Hawley	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heath	14	957.1	3	6	1	0	0	1	0	0	0	0	0	0
Hingham	311	517.1	71	61	10	4	11	15	4	5	0	0	1	2

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2018														
CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[4]
Hinsdale	18	505.3	3	5	0	0	2	1	0	0	0	1	0	0
Holbrook	128	969.2	25	35	9	2	7	4	4	7	4	0	1	8
Holden	150	606	28	34	4	3	4	10	2	5	2	0	2	3
Holland	22	975.3	3	6	0	0	0	0	1	0	0	1	0	0
Holliston	98	603.1	25	24	4	1	2	3	0	2	0	1	1	1
Holyoke	428	805.5	102	77	16	3	16	20	5	11	2	2	3	14
Hopedale	53	630.1	11	10	2	1	3	4	1	2	1	0	0	1
Hopkinton	94	776.3	21	22	2	0	2	13	2	1	0	0	1	3
Hubbardston	30	630.5	5	10	1	1	2	1	1	2	0	0	0	2
Hudson	181	693.2	45	44	9	3	3	6	3	3	1	0	1	6
Hull	122	901.1	15	39	13	3	3	7	4	2	0	0	3	5
Huntington	19	879.4	2	5	2	0	1	0	1	0	1	0	0	1
Ipswich	141	602.5	33	39	4	2	5	3	7	4	1	0	0	5
Kingston	139	690	28	31	6	2	4	6	2	4	0	0	4	2
Lakeville	85	669.6	19	29	6	1	3	3	0	0	0	0	3	2
Lancaster	47	489.4	9	10	2	1	0	5	1	1	0	0	1	0
Lanesborough	28	583.6	11	6	1	0	1	3	0	1	0	0	0	0
Lawrence	521	752.9	99	91	17	12	21	23	11	17	6	5	4	48
Lee	74	689.6	17	16	5	2	4	5	1	1	1	0	1	2
Leicester	103	748.6	23	18	6	0	4	5	3	2	0	1	1	6
Lenox	98	581.8	24	18	4	1	3	0	1	4	0	0	1	0
Leominster	424	762.5	73	84	29	3	28	35	5	9	2	0	5	12
Leverett	12	533.1	4	2	1	0	1	0	0	1	1	0	0	0
Lexington	253	403.4	53	57	8	6	15	6	5	3	2	0	3	3
Leyden	6	565.7	1	2	1	0	0	1	1	1	0	0	0	0
Lincoln	74	1,423.40	11	19	2	1	8	2	1	1	0	0	1	0
Littleton	77	558.3	15	8	5	0	3	5	3	4	0	0	2	1
Longmeadow	169	540.1	44	27	5	4	11	8	2	6	2	0	1	2
Lowell	904	834.3	151	172	40	11	36	49	24	21	8	3	23	64
Ludlow	216	702.8	39	45	15	0	11	9	4	2	1	3	5	7
Lunenburg	98	772.1	17	30	4	1	6	3	1	1	0	0	2	3
Lynn	765	790.1	161	149	40	10	26	38	28	11	3	2	8	51
Lynnfield	109	612.6	24	21	1	1	5	2	1	2	1	0	1	5
Malden	423	638.8	78	104	27	7	16	16	17	10	0	0	8	19

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2018														
CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[4]
Manchester	47	606.9	9	10	2	0	2	7	0	1	0	0	0	0
Mansfield	174	741.7	38	42	8	8	6	9	4	4	0	0	2	3
Marblehead	181	610	32	37	13	2	13	6	6	8	1	0	2	3
Marion	49	508.3	8	7	1	2	3	1	1	2	0	0	1	1
Marlborough	325	611.4	70	60	13	8	17	18	11	7	1	1	2	14
Marshfield	218	680.6	39	46	7	2	9	14	5	6	1	1	6	8
Mashpee	197	664.2	43	44	13	3	7	4	4	1	3	0	6	2
Mattapoisett	59	650.3	12	12	4	0	3	3	0	1	0	0	3	5
Maynard	61	518.3	15	18	9	0	1	0	2	1	1	0	1	1
Medfield	61	444.7	17	12	2	0	3	0	0	1	1	0	3	2
Medford	483	610.8	90	88	18	7	23	27	12	8	1	0	1	7
Medway	81	551	13	13	5	1	2	4	0	1	1	0	0	3
Melrose	255	623.6	65	57	15	3	7	11	9	8	3	0	1	8
Mendon	46	883.6	6	10	3	1	0	2	0	1	2	0	1	2
Merrimac	54	671.3	10	12	3	3	1	4	2	1	0	0	1	1
Methuen	437	658.2	93	110	22	6	11	21	7	15	0	1	1	18
Middleborough	256	647.6	47	51	11	5	6	23	5	6	1	0	3	6
Middlefield	3	-[3]	1	0	0	0	0	0	0	0	0	0	0	0
Middleton	59	452.6	12	9	3	1	8	2	0	1	1	0	1	2
Milford	248	688.6	58	53	15	2	8	10	6	10	2	0	0	6
Millbury	146	809.8	36	25	8	0	6	12	0	3	0	0	3	7
Millis	53	603.9	9	6	1	1	2	4	2	2	0	0	1	2
Millville	22	755.3	5	8	3	3	2	1	1	1	0	0	0	0
Milton	227	545.1	43	49	10	5	18	10	9	4	0	0	0	7
Monroe	1	-[3]	0	0	0	0	0	0	0	0	0	0	0	0
Monson	68	651.9	9	16	5	2	3	5	0	3	1	0	2	2
Montague	115	925.8	29	33	5	3	6	3	1	6	2	0	1	2
Monterey	3	-[3]	0	0	0	0	0	0	0	0	0	0	0	0
Montgomery	5	486.9	2	0	0	0	0	0	0	0	1	1	1	0
Mount Washington	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nahant	52	779.6	14	11	2	0	0	4	2	2	0	0	1	0
Nantucket	77	611.4	16	17	1	1	5	3	4	7	0	0	1	1
Natick	303	661.5	73	63	17	4	7	17	9	5	2	0	4	4
Needham	274	545.7	57	55	12	5	20	8	9	8	2	0	1	2

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2018														
CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[4]
New Ashford	4	-[3]	2	0	0	0	0	0	0	0	0	0	0	0
New Bedford	1,033	842.2	194	192	58	11	35	53	28	26	11	3	12	54
New Braintree	11	758.1	2	2	0	0	0	0	0	0	1	0	0	0
New Marlborough	17	673.2	2	4	0	1	0	2	0	0	0	0	0	1
New Salem	4	-[3]	1	0	0	0	0	1	0	0	0	0	1	0
Newbury	47	559.9	12	12	1	2	1	4	1	0	0	0	1	2
Newburyport	220	752.9	39	37	7	6	13	12	6	2	0	0	5	4
Newton	595	432.7	123	129	22	3	33	18	12	12	1	1	5	4
Norfolk	49	458.5	10	11	3	0	2	1	1	0	0	0	2	2
North Adams	175	939.3	34	32	11	2	5	10	5	9	4	1	1	2
North Andover	271	611.8	63	58	12	4	10	9	5	8	2	0	2	1
North Attleboro	225	729.8	52	46	13	2	9	13	8	4	2	0	5	4
North Brookfield	36	635.5	6	15	4	1	1	4	0	2	0	0	0	0
North Reading	105	555.2	18	26	6	0	4	4	1	1	2	0	0	5
Northampton	284	735.5	58	65	15	4	11	9	6	9	2	2	5	9
Northborough	124	606	21	22	3	2	9	6	0	3	0	0	0	1
Northbridge	169	725.4	31	32	10	2	6	7	4	4	2	0	0	6
Northfield	35	789.4	8	10	4	0	0	1	0	2	0	0	1	1
Norton	135	614.4	30	27	6	1	5	12	2	1	3	0	1	4
Norwell	87	513.9	15	19	5	1	0	2	4	2	1	0	0	1
Norwood	309	635.3	72	48	9	2	12	18	5	10	4	1	7	6
Oak Bluffs	47	515.3	11	9	4	0	2	3	0	0	1	0	2	0
Oakham	15	723.3	6	2	0	0	0	0	1	0	1	0	0	1
Orange	85	837.5	23	16	4	0	5	6	1	3	0	0	0	4
Orleans	102	680.2	24	23	4	2	9	2	1	2	0	0	0	5
Otis	20	673.5	5	4	1	0	4	1	0	0	0	0	0	0
Oxford	115	745.3	16	31	6	3	2	8	6	2	0	0	1	1
Palmer	141	918.5	31	27	11	3	4	5	3	3	1	1	3	8
Paxton	32	538.4	8	7	0	0	1	0	1	1	1	1	0	1
Peabody	759	642.4	171	132	30	6	44	27	11	22	1	2	8	13
Pelham	9	446.6	1	1	0	0	2	0	0	0	0	0	0	0
Pembroke	144	718.2	24	41	9	5	3	6	6	2	1	0	1	0
Pepperell	77	582.4	13	26	6	2	2	4	2	2	2	0	1	2
Peru	6	796.1	3	1	0	0	0	0	0	0	0	0	0	0

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2018														
CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[4]
Petersham	11	706	4	1	1	0	1	0	1	0	0	0	0	0
Phillipston	14	918.2	0	2	0	0	2	2	0	1	0	0	0	0
Pittsfield	567	852	126	109	30	10	22	38	17	12	3	2	6	19
Plainfield	3	-[3]	1	2	1	0	0	0	0	0	0	0	0	0
Plainville	73	721.3	20	18	5	1	2	9	1	2	0	0	3	0
Plymouth	565	657.1	97	117	25	5	17	38	9	15	4	0	9	20
Plympton	23	606.5	5	8	3	1	0	0	0	1	2	0	0	0
Princeton	17	442.9	2	2	0	0	1	2	0	2	1	0	0	1
Provincetown	35	623.9	9	7	3	0	5	3	0	1	0	0	0	0
Quincy	848	634.2	165	191	66	13	32	30	15	27	5	1	6	39
Randolph	282	708.5	66	44	12	2	12	12	14	8	2	0	3	10
Raynham	152	794.9	23	33	8	2	7	6	4	5	1	0	2	3
Reading	211	568.7	54	42	7	2	10	7	3	6	0	0	1	5
Rehoboth	75	552.6	10	21	5	1	2	4	1	1	1	0	0	3
Revere	457	594.8	86	109	34	4	11	23	14	11	6	2	1	15
Richmond	14	529.2	5	2	0	0	1	1	0	0	0	0	0	0
Rochester	46	743.4	5	13	4	1	1	5	0	3	1	0	0	1
Rockland	192	864.9	35	39	12	4	15	9	6	5	1	0	3	9
Rockport	76	629.3	16	17	5	0	2	6	0	1	0	0	3	2
Rowe	3	-[3]	1	1	1	0	0	0	0	0	0	0	0	0
Rowley	44	592.8	12	7	0	1	0	2	0	2	0	0	1	1
Royalston	11	809.4	3	1	0	0	0	1	1	0	0	0	0	0
Russell	16	861.4	0	6	4	0	0	1	0	0	0	0	2	1
Rutland	48	596.8	8	15	4	0	4	2	2	1	2	0	0	1
Salem	347	671	72	75	22	1	16	10	9	13	1	0	3	20
Salisbury	79	678.2	18	18	8	2	6	2	0	6	1	0	0	5
Sandisfield	6	471.6	1	1	0	0	0	0	0	1	1	0	0	0
Sandwich	188	640.9	29	49	11	2	8	10	2	3	0	0	3	6
Saugus	300	717.1	70	62	19	3	7	14	6	2	2	1	1	11
Savoy	6	750.8	0	2	1	0	0	0	2	0	0	0	0	0
Scituate	166	558.3	34	33	6	3	7	4	1	7	0	0	0	1
Seekonk	108	585	23	19	6	0	7	5	3	5	0	0	0	2
Sharon	103	465.4	23	30	7	2	3	5	0	2	0	0	2	0
Sheffield	45	770.1	12	16	2	1	0	2	2	0	1	0	1	0

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2018														
CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[4]
Shelburne	29	936.1	7	6	3	0	0	3	0	0	1	0	0	0
Sherborn	20	388.9	4	6	0	1	0	0	0	0	0	0	1	1
Shirley	55	703.6	14	20	4	0	0	4	1	1	0	0	3	0
Shrewsbury	280	539.8	59	61	11	6	15	8	7	5	1	1	5	7
Shutesbury	10	570.8	3	2	0	0	0	0	0	0	0	0	0	0
Somerset	252	704.5	60	60	14	1	12	15	4	8	2	0	2	5
Somerville	395	632.6	87	88	18	1	16	23	17	5	1	1	5	7
South Hadley	178	643.1	50	27	6	3	6	13	2	6	2	0	0	3
Southampton	51	784.4	11	16	3	0	3	1	1	0	0	0	0	0
Southborough	54	476.4	14	18	4	1	2	4	2	1	0	0	0	1
Southbridge	207	948	50	27	9	2	9	15	4	3	0	0	2	5
Southwick	110	758.4	22	25	8	0	0	9	5	0	3	0	2	4
Spencer	124	829	24	30	8	1	4	7	4	0	3	0	4	4
Springfield	1,347	892.1	266	267	68	26	48	66	43	21	18	16	13	80
Sterling	80	613.3	13	12	2	0	7	5	1	1	1	0	0	2
Stockbridge	24	645.6	5	7	1	0	3	0	0	0	0	0	0	1
Stoneham	235	634.1	32	56	12	3	13	17	3	6	0	0	3	6
Stoughton	280	721.8	52	52	15	1	11	19	5	4	7	0	6	15
Stow	46	484.1	9	10	0	0	3	1	0	0	1	0	0	0
Sturbridge	90	705.9	26	19	6	3	4	1	0	1	2	1	3	1
Sudbury	109	495	33	29	1	3	2	2	0	5	0	0	0	3
Sunderland	18	398.9	1	5	1	0	0	1	2	1	0	0	0	1
Sutton	59	698.5	11	14	1	0	2	1	0	2	1	0	2	2
Swampscott	132	549.3	23	37	8	1	4	2	2	5	0	0	2	4
Swansea	171	708.9	31	37	11	0	7	14	5	3	1	0	3	7
Taunton	600	831.8	107	129	31	11	26	22	9	12	4	1	12	35
Templeton	76	712.3	20	12	4	0	0	3	1	1	0	0	1	4
Tewksbury	301	683.9	48	75	22	4	11	18	6	10	0	0	4	8
Tisbury	45	843.4	7	10	0	0	3	2	1	0	0	0	2	3
Tolland	7	944.2	2	0	0	0	0	1	2	0	0	0	0	1
Topsfield	53	413.2	6	9	3	2	3	2	1	1	0	0	0	0
Townsend	67	712.4	14	24	6	2	4	3	0	2	0	0	0	2
Truro	20	444.6	5	4	0	0	0	3	0	0	0	0	0	0
Tyngsborough	87	756.7	15	28	8	0	2	5	0	5	1	0	1	5

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2018														
CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[4]
Tyringham	2	-[3]	1	0	0	0	0	0	0	0	0	0	0	0
Upton	34	417.2	2	9	2	1	1	2	0	2	0	0	0	2
Uxbridge	119	596	26	34	9	0	3	5	6	4	1	0	0	3
Wakefield	239	685.9	37	44	6	6	9	12	6	5	0	0	2	8
Wales	27	1,247.50	6	5	2	0	2	1	0	1	1	0	0	2
Walpole	213	568.3	36	47	15	2	11	12	6	6	1	0	4	10
Waltham	403	553.2	83	95	21	5	14	19	12	11	0	0	10	7
Ware	97	717.1	20	24	7	1	8	9	1	0	2	1	1	4
Wareham	281	830.3	59	69	23	7	9	24	7	5	0	1	3	15
Warren	47	874.7	8	13	3	0	1	4	1	0	1	0	0	1
Warwick	3	-[3]	0	0	0	0	0	0	0	0	0	0	0	0
Washington	4	-[3]	1	0	0	0	1	0	0	0	0	0	0	0
Watertown	278	628.7	60	76	18	1	11	9	13	5	0	0	5	3
Wayland	121	527.6	29	28	3	4	8	6	0	2	1	0	1	2
Webster	222	894	37	44	19	5	18	15	2	6	2	0	7	9
Wellesley	174	453.5	31	32	3	5	7	6	3	5	1	0	2	1
Wellfleet	33	553.6	8	8	2	1	2	5	0	0	0	0	2	0
Wendell	5	760.3	1	0	0	0	0	2	0	0	1	0	0	0
Wenham	23	501.9	3	6	1	0	0	1	1	2	0	0	0	2
West Boylston	83	540.3	17	17	3	1	1	3	0	3	1	1	2	4
West Bridgewater	91	702.1	24	20	3	0	1	8	1	0	0	0	1	2
West Brookfield	60	1,010.20	11	6	0	0	4	5	0	1	1	1	1	0
West Newbury	19	388.2	2	6	0	0	1	3	0	0	0	0	0	0
West Springfield	290	761.9	54	63	12	3	9	11	9	6	2	2	5	14
West Stockbridge	10	427.5	1	4	2	0	1	1	1	0	0	0	0	0
West Tisbury	20	495.7	2	8	0	0	2	0	0	0	0	0	0	0
Westborough	194	726.9	46	36	8	3	9	7	0	3	0	0	2	6
Westfield	429	838.5	86	90	31	4	13	28	10	14	0	1	10	18
Westford	155	765.4	29	36	10	4	7	4	3	2	1	0	2	2
Westhampton	10	452	2	2	1	0	0	1	0	0	0	0	0	0
Westminster	80	1,026.60	20	20	6	3	7	3	1	0	1	1	2	4
Weston	95	418.4	24	12	1	2	9	1	2	1	0	0	3	0
Westport	172	613.3	26	39	9	2	6	5	1	6	3	0	7	8

Table 39 (continued). Selected Causes of Death by Community, Massachusetts: 2018														
CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[4]
Weymouth	586	766.3	124	118	22	9	24	30	12	23	4	1	5	16
Whately	11	445.1	2	2	1	0	0	0	0	0	0	0	0	1
Whitman	119	851.3	19	39	12	3	6	8	3	4	0	0	3	4
Wilbraham	170	622.6	35	32	8	3	5	6	1	1	0	0	3	1
Williamsburg	21	588.9	3	3	0	0	0	5	1	0	0	0	0	1
Williamstown	83	610.7	17	10	1	0	7	7	1	0	1	0	0	1
Wilmington	180	575.9	45	27	7	3	8	8	3	1	1	0	2	6
Winchendon	105	958.2	16	28	8	1	8	8	4	5	3	0	2	5
Winchester	149	438.3	27	35	7	6	10	3	1	2	0	1	0	2
Windsor	6	532.2	2	1	0	0	0	1	1	0	0	0	0	0
Winthrop	194	731.7	35	42	9	0	8	4	3	9	2	0	4	7
Woburn	418	670.3	76	87	20	4	20	27	18	14	1	0	10	14
Worcester	1,770	898.9	343	354	90	15	56	83	48	55	15	7	14	97
Worthington	13	751.3	2	3	1	0	0	1	0	0	0	0	1	0
Wrentham	116	691.1	25	23	8	1	5	2	3	6	0	0	0	1
Yarmouth	393	699.3	84	79	17	4	18	16	5	7	5	0	4	7
Unknown	5	-	1	2	0	0	0	1	0	0	0	0	0	1

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. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (CLRD) (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title). 3. Rates based on 1 to 4 deaths are not calculated. 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 40. Selected Causes of Death by Community Health Network Area (CHNA), Massachusetts: 2018

CHNA Name	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioid-related[3]
Massachusetts	**59,169**	**662.8**	**12,036**	**12,638**	**2,984**	**773**	**2,467**	**2,765**	**1,392**	**1,441**	**401**	**159**	**741**	**1,991**
1. Community Health Network of Berkshire	1,582	746.6	348	316	72	23	75	89	41	33	19	4	15	40
2. Upper Valley Health Web (Franklin County)	914	733.9	207	192	43	4	34	41	16	31	11	0	7	27
3. Partnership for Health in Hampshire County (Northampton)	1,321	674.5	293	265	61	17	54	61	24	38	12	3	14	36
4. The Community Health Connection (Springfield)	2,975	778.8	588	596	153	50	111	131	78	59	32	20	42	130
5. Community Health Network of Southern Worcester County	1,237	770.5	262	246	68	17	55	72	23	25	13	3	24	33
6. Community Partners for Health (Milford)	1,279	644.3	250	290	68	16	47	58	28	39	17	0	13	45
7. Community Health Network of Greater Metro West (Framingham)	3,099	591.5	729	658	137	50	129	145	60	74	14	2	44	86
8. Common Pathways (Worcester)	2,939	775.0	594	593	134	32	97	148	71	84	24	11	35	135
9. Community Health Network of North Central Massachusetts	2,413	748.3	457	547	122	24	138	140	46	66	19	4	22	80
10. Greater Lowell Community Health Network	2,434	735.1	413	553	136	31	96	136	57	57	16	3	40	106
11. Greater Lawrence Community Health Network	1,528	648.1	320	325	66	28	55	67	26	43	10	6	10	71
12. Greater Haverhill Community Health Network	1,447	735.6	296	285	63	22	54	78	28	41	11	1	22	49
13. Community Health Network North (Beverly/Gloucester)	1,151	641.7	228	254	48	16	41	53	32	33	4	0	12	35
14. North Shore Community Health Network	3,015	695.8	646	575	143	25	127	119	70	76	9	5	31	115
15. Northwest Suburban Health Alliance	1,876	514.6	369	398	76	24	90	78	50	37	7	2	23	39
16. North Suburban Health Alliance (Medford/Malden/Melrose)	2,235	623.5	431	476	109	30	90	105	59	48	8	1	18	73
17. Greater Cambridge/Somerville Community Health Network	1,747	567.8	365	409	83	15	89	62	58	29	7	3	25	26
18. West Suburban Health Network (Newton/Waltham)	2,022	490.7	422	428	86	33	106	71	43	46	6	1	27	19
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	5,023	597.0	916	1,189	269	73	195	170	166	109	29	55	69	214
20. Blue Hills Community Health Alliance (Greater Quincy)	3,771	640.1	771	791	199	60	163	160	84	118	21	3	32	103
21. Community Health Network of Chicopee, Holyoke, Ludlow, Westfield	1,738	806.7	377	341	101	12	61	93	45	37	5	6	24	72
22. Greater Brockton Community Health Network	2,161	771.9	439	471	126	29	97	116	48	60	30	12	28	93
23. South Shore Community Health Network	1,833	687.4	361	414	92	29	66	101	39	43	12	2	27	48
24. Greater Attleboro-Taunton Health & Education Response	2,318	711.5	461	528	131	37	93	130	58	53	13	2	38	76
25. Partners for Healthier Communities	1,621	799.7	339	324	93	16	58	89	37	53	11	2	18	75
26. Greater New Bedford Community Health Network	2,192	752.2	444	434	131	29	70	121	52	55	16	4	32	90
27. Cape Cod and Islands Health Network	3,296	685.3	709	740	174	31	176	130	53	54	25	4	49	75

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. 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). 3. 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: 2018

County	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer	Stroke	CLRD[2]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Opioids-related[3]
Massachusetts	**59,169**	**662.8**	**12,036**	**12,638**	**2,984**	**773**	**2,467**	**2,765**	**1,392**	**1,441**	**401**	**159**	**741**	**1,991**
Barnstable	3,049	696.2	662	681	165	30	163	119	48	47	23	4	43	70
Berkshire	1,582	746.6	348	316	72	23	75	89	41	33	19	4	15	40
Bristol	5,534	747.1	1,129	1,140	311	70	201	286	139	147	40	7	79	216
Dukes	170	643.0	31	42	8	0	8	8	1	0	2	0	5	4
Essex	7,141	681.7	1,490	1,439	320	91	277	317	156	193	34	12	75	270
Franklin	724	697.1	176	154	34	4	26	30	12	23	10	0	6	22
Hampden	4,775	789.5	977	949	254	62	175	226	125	97	38	27	68	205
Hampshire	1,340	676.6	295	270	63	17	55	61	25	38	13	3	14	37
Middlesex	11,783	592.5	2,389	2,612	549	153	511	531	297	249	52	13	152	318
Nantucket	77	611.4	16	17	1	1	5	3	4	7	0	0	1	1
Norfolk	5,886	607.2	1,206	1,246	309	92	274	248	125	175	50	4	75	168
Plymouth	4,816	701.9	966	1,081	269	77	184	273	96	120	31	14	61	150
Suffolk	4,730	615.8	851	1,119	257	68	183	163	162	103	27	55	63	212
Worcester	7,560	748.5	1,499	1,572	372	85	330	410	161	209	62	16	84	278

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. 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). 3. 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.

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. Even though we bridge responses down to 6 categories (White NH, Black NH, Hispanic, Asian NH, American Indian / Alaska Native NH, and Other/Unknown not all categories are used in each table or figure that compares race and ethnicity data. There are well-known difficulties in calculating accurate mortality rates for smaller populations such as Asians, Native Americans and Hispanics. Please use caution when interpreting these numbers.

Decedent Race

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

Decedent Race

Enter race to appear on death certificate: _____

Decedent Ethnicity

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

POPULATION ESTIMATES

State, County, and Small Area Population Estimates 2011-2020, version 2018, Massachusetts Department of Public Health, Bureau of Environmental Health. Population estimates used for years following the decennial census were developed by the University of Massachusetts Donahue Institute (UMDI) in partnership with the Massachusetts Department of Public Health, Bureau of Environmental Health. Detailed population estimates at fine levels of geography are prone to estimation error. Estimated error was best described by age and population size and was used to adjust final population numbers, however a margin of error exists for all estimates.

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 Pneumonia[1] 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.

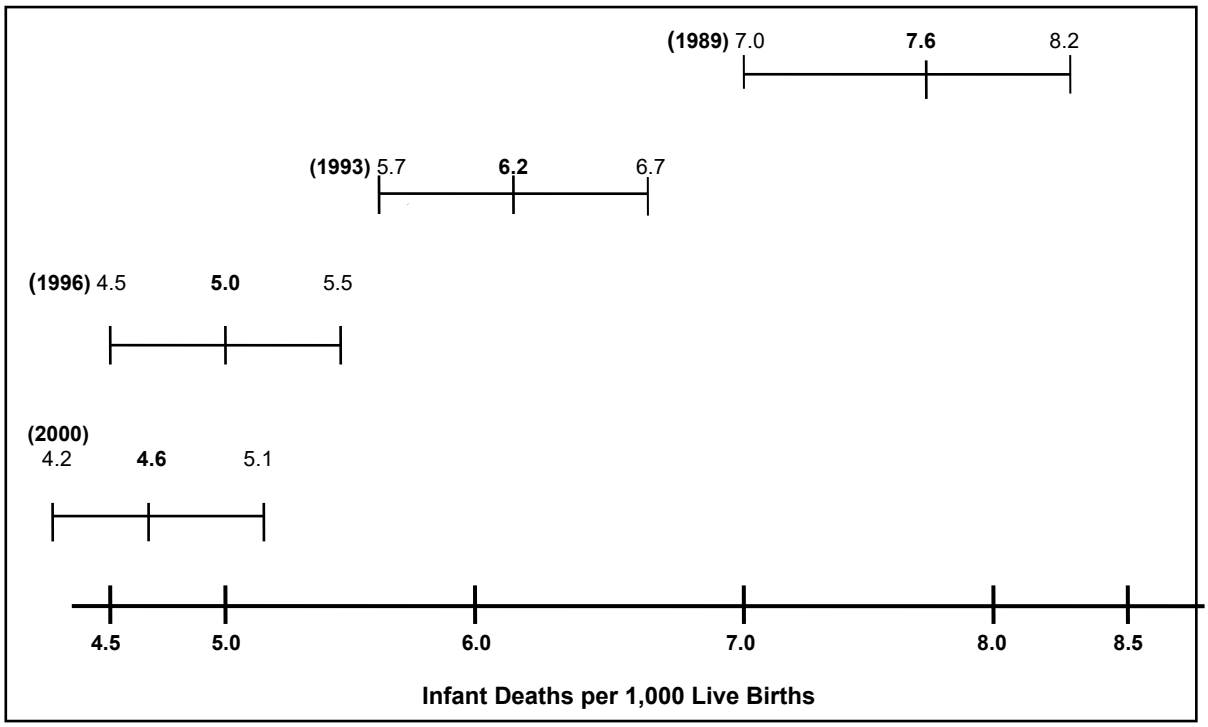
When two statistics are determined to differ significantly, they are referred to in the text as being "significantly" different, either lower or higher than the statistic of comparison.

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 (using1940 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 Diseases[1]	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 Objectives[1] 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[1] for Massachusetts Community Health Network Areas (CHNA) and Counties: 2018

CHNA	POPULATION[1]
1. Community Health Network of Berkshire County	127,740
2. Upper Valley Health Web (Franklin County)	88,020
3. Partnership for Health in Hampshire County (Northampton)	161,930
4. The Community Health Connection (Springfield)	304,597
5. Community Health Network of Southern Worcester County	124,060
6. Community Partners for Health (Milford)	179,126
7. Community Health Network of Greater Metro West (Framingham)	416,213
8. Common Pathways (Worcester)	329,127
9. Community Health Network of North Central Massachusetts	274,395
10. Greater Lowell Community Health Network	298,871
11. Greater Lawrence Community Health Network	219,144
12. Greater Haverhill Community Health Network	156,250
13. Community Health Network North (Beverly/Gloucester)	117,136
14. North Shore Community Health Network	307,486
15. Northwest Suburban Health Alliance	235,808
16. North Suburban Health Alliance (Medford/Malden/Melrose)	300,280
17. Greater Cambridge/Somerville Community Health Network	296,543
18. West Suburban Health Network (Newton/Waltham)	276,374
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	874,850
20. Blue Hills Community Health Alliance (Greater Quincy)	401,842
21. Community Health Network of Chicopee, Holyoke, Ludlow, Westfield	164,802
22. Greater Brockton Community Health Network	249,664
23. South Shore Community Health Network (Plymouth)	201,421
24. Greater Attleboro-Taunton Health & Education Response	272,211
25. Partners for Healthier Communities (Fall River)	140,914
26. Greater New Bedford Community Health Network	212,393
27. Cape Cod and Islands Health Network	245,503

COUNTY	POPULATION[1]
Barnstable	216,806
Berkshire	127,740
Bristol	570,972
Dukes	17,365
Essex	800,017
Franklin	71,814
Hampden	475,366
Hampshire	164,136
Middlesex	1,632,505
Nantucket	11,332
Norfolk	714,526
Plymouth	524,799
Suffolk	810,212
Worcester	839,112
STATE	**6,976,701**

1. State, County, and Small Area Population Estimates 2011-2020, version 2018, Massachusetts Department of Public Health, Bureau of Environmental Health. Population estimates used for years following the decennial census were developed by the University of Massachusetts Donahue Institute (UMDI) in partnership with the Massachusetts Department of Public Health, Bureau of Environmental Health. Detailed population estimates at fine levels of geography are prone to estimation error. Estimated error was best described by age and population size and was used to adjust final population numbers, however a margin of error exists for all estimates.

Table A8. Population Estimates[1] for Massachusetts Communities, 2018

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Abington	Plymouth	22	17,956	Concord	Middlesex	15	18,718
Acton	Middlesex	15	23,762	Conway	Franklin	2	1,934
Acushnet	Bristol	26	10,451	Cummington	Hampshire	3	796
Adams	Berkshire	1	8,277	Dalton	Berkshire	1	6,515
Agawam	Hampden	4	28,643	Danvers	Essex	14	28,598
Alford	Berkshire	1	466	Dartmouth	Bristol	26	36,850
Amesbury	Essex	12	16,654	Dedham	Norfolk	18	27,168
Amherst	Hampshire	3	40,493	Deerfield	Franklin	2	5,319
Andover	Essex	11	36,068	Dennis	Barnstable	27	13,220
Aquinnah (Gay Head)	Dukes	27	265	Dighton	Bristol	24	7,842
Arlington	Middlesex	17	46,009	Douglas	Worcester	6	9,395
Ashburnham	Worcester	9	6,273	Dover	Norfolk	18	5,203
Ashby	Middlesex	9	3,449	Dracut	Middlesex	10	32,358
Ashfield	Franklin	2	1,713	Dudley	Worcester	5	12,379
Ashland	Middlesex	7	19,533	Dunstable	Middlesex	10	3,326
Athol	Worcester	2	11,959	Duxbury	Plymouth	23	15,127
Attleboro	Bristol	24	46,472	East Bridgewater	Plymouth	22	14,749
Auburn	Worcester	8	16,485	East Brookfield	Worcester	5	2,236
Avon	Norfolk	22	4,367	East Longmeadow	Hampden	4	16,907
Ayer	Middlesex	9	8,077	Eastham	Barnstable	27	4,641
Barnstable	Barnstable	27	44,999	Easthampton	Hampshire	3	16,206
Barre	Worcester	9	5,551	Easton	Bristol	22	23,724
Becket	Berkshire	1	1,796	Edgartown	Dukes	27	4,091
Bedford	Middlesex	15	14,888	Egremont	Berkshire	1	1,096
Belchertown	Hampshire	3	15,917	Erving	Franklin	2	2,088
Bellingham	Norfolk	6	17,904	Essex	Essex	13	3,713
Belmont	Middlesex	17	27,356	Everett	Middlesex	16	48,778
Berkley	Bristol	24	6,773	Fairhaven	Bristol	26	16,024
Berlin	Worcester	9	3,186	Fall River	Bristol	25	89,811
Bernardston	Franklin	2	2,087	Falmouth	Barnstable	27	31,287
Beverly	Essex	13	41,331	Fitchburg	Worcester	9	42,351
Billerica	Middlesex	10	43,749	Florida	Berkshire	1	783
Blackstone	Worcester	6	9,041	Foxborough	Norfolk	7	18,108
Blandford	Hampden	4	1,212	Framingham	Middlesex	7	74,880
Bolton	Worcester	9	5,046	Franklin	Norfolk	6	33,915
Boston	Suffolk	19	692,314	Freetown	Bristol	26	9,043
Bourne	Barnstable	27	20,914	Gardner	Worcester	9	20,025
Boxborough	Middlesex	15	5,098	Georgetown	Essex	12	8,930
Boxford	Essex	12	7,710	Gill	Franklin	2	1,664
Boylston	Worcester	8	4,479	Gloucester	Essex	13	28,660
Braintree	Norfolk	20	39,531	Goshen	Hampshire	3	1,144
Brewster	Barnstable	27	9,907	Gosnold	Dukes	27	48
Bridgewater	Plymouth	22	28,477	Grafton	Worcester	8	19,980
Brimfield	Hampden	5	3,718	Granby	Hampshire	3	6,133
Brockton	Plymouth	22	98,742	Granville	Hampden	4	1,553
Brookfield	Worcester	5	3,653	Great Barrington	Berkshire	1	6,789
Brookline	Norfolk	19	64,638	Greenfield	Franklin	2	17,376
Buckland	Franklin	2	1,857	Groton	Middlesex	9	11,641
Burlington	Middlesex	15	27,689	Groveland	Essex	12	6,826
Cambridge	Middlesex	17	113,175	Hadley	Hampshire	3	5,742
Canton	Norfolk	20	23,102	Halifax	Plymouth	23	7,635
Carlisle	Middlesex	15	4,761	Hamilton	Essex	13	7,471
Carver	Plymouth	23	12,171	Hampden	Hampden	4	4,930
Charlemont	Franklin	2	1,190	Hancock	Berkshire	1	650
Charlton	Worcester	5	14,066	Hanover	Plymouth	23	14,320
Chatham	Barnstable	27	5,849	Hanson	Plymouth	23	10,702
Chelmsford	Middlesex	10	36,034	Hardwick	Worcester	9	3,302
Chelsea	Suffolk	19	37,881	Harvard	Worcester	9	6,917
Cheshire	Berkshire	1	2,976	Harwich	Barnstable	27	12,560
Chester	Hampden	21	1,354	Hatfield	Hampshire	3	3,242
Chesterfield	Hampshire	3	1,224	Haverhill	Essex	12	66,231
Chicopee	Hampden	21	57,239	Hawley	Franklin	2	293
Chilmark	Dukes	27	774	Heath	Franklin	2	603
Clarksburg	Berkshire	1	1,680	Hingham	Plymouth	20	23,827
Clinton	Worcester	9	14,069	Hinsdale	Berkshire	1	2,123
Cohasset	Norfolk	20	7,395	Holbrook	Norfolk	22	11,289
Colrain	Franklin	2	1,603	Holden	Worcester	8	18,860

Table A8 (continued). Population Estimates[1] for Massachusetts Communities, 2018

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Holland	Hampden	5	2,555	New Marlborough	Berkshire	1	1,527
Holliston	Middlesex	7	13,777	New Salem	Franklin	2	987
Holyoke	Hampden	21	41,412	Newbury	Essex	12	6,643
Hopedale	Worcester	6	5,673	Newburyport	Essex	12	17,799
Hopkinton	Middlesex	7	16,312	Newton	Middlesex	18	92,127
Hubbardston	Worcester	9	4,650	Norfolk	Norfolk	7	12,341
Hudson	Middlesex	7	20,980	North Adams	Berkshire	1	13,050
Hull	Plymouth	20	9,874	North Andover	Essex	11	30,298
Huntington	Hampshire	21	2,206	North Attleboro	Bristol	24	30,263
Ipswich	Essex	13	13,442	North Brookfield	Worcester	5	4,639
Kingston	Plymouth	23	13,557	North Reading	Middlesex	16	16,527
Lakeville	Plymouth	24	11,286	Northampton	Hampshire	3	29,261
Lancaster	Worcester	9	8,562	Northborough	Worcester	7	13,685
Lanesborough	Berkshire	1	3,041	Northbridge	Worcester	6	18,011
Lawrence	Essex	11	88,678	Northfield	Franklin	2	2,972
Lee	Berkshire	1	5,870	Norton	Bristol	24	19,870
Leicester	Worcester	8	11,260	Norwell	Plymouth	20	10,700
Lenox	Berkshire	1	4,871	Norwood	Norfolk	20	30,167
Leominster	Worcester	9	40,755	Oak Bluffs	Dukes	27	5,160
Leverett	Franklin	2	2,016	Oakham	Worcester	9	2,108
Lexington	Middlesex	15	34,091	Orange	Franklin	2	8,159
Leyden	Franklin	2	627	Orleans	Barnstable	27	5,641
Lincoln	Middlesex	15	8,646	Otis	Berkshire	1	1,854
Littleton	Middlesex	15	9,714	Oxford	Worcester	5	13,776
Longmeadow	Hampden	4	15,505	Palmer	Hampden	4	11,890
Lowell	Middlesex	10	117,417	Paxton	Worcester	8	4,942
Ludlow	Hampden	21	20,858	Peabody	Essex	14	55,961
Lunenburg	Worcester	9	10,403	Pelham	Hampshire	3	1,246
Lynn	Essex	14	101,420	Pembroke	Plymouth	23	18,695
Lynnfield	Essex	14	11,645	Pepperell	Middlesex	9	12,275
Malden	Middlesex	16	68,048	Peru	Berkshire	1	841
Manchester	Essex	13	4,938	Petersham	Worcester	2	1,264
Mansfield	Bristol	24	23,674	Phillipston	Worcester	2	1,710
Marblehead	Essex	14	19,228	Pittsfield	Berkshire	1	44,450
Marion	Plymouth	26	4,629	Plainfield	Hampshire	3	631
Marlborough	Middlesex	7	43,645	Plainville	Norfolk	7	9,120
Marshfield	Plymouth	23	25,899	Plymouth	Plymouth	23	62,264
Mashpee	Barnstable	27	15,372	Plympton	Plymouth	23	2,983
Mattapoisett	Plymouth	26	5,775	Princeton	Worcester	9	3,256
Maynard	Middlesex	7	10,428	Provincetown	Barnstable	27	2,622
Medfield	Norfolk	7	11,395	Quincy	Norfolk	20	101,564
Medford	Middlesex	16	61,038	Randolph	Norfolk	20	34,277
Medway	Norfolk	6	13,073	Raynham	Bristol	24	14,930
Melrose	Middlesex	16	28,973	Reading	Middlesex	16	27,535
Mendon	Worcester	6	5,789	Rehoboth	Bristol	24	12,611
Merrimac	Essex	12	6,381	Revere	Suffolk	19	61,179
Methuen	Essex	11	53,787	Richmond	Berkshire	1	1,328
Middleborough	Plymouth	24	26,964	Rochester	Plymouth	26	5,628
Middlefield	Hampshire	3	454	Rockland	Plymouth	23	18,068
Middleton	Essex	11	10,313	Rockport	Essex	13	6,547
Milford	Worcester	6	29,358	Rowe	Franklin	2	342
Millbury	Worcester	8	13,651	Rowley	Essex	12	6,168
Millis	Norfolk	7	7,893	Royalston	Worcester	2	1,273
Millville	Worcester	6	3,542	Russell	Hampden	4	1,882
Milton	Norfolk	20	28,677	Rutland	Worcester	9	9,005
Monroe	Franklin	2	99	Salem	Essex	14	45,206
Monson	Hampden	4	8,430	Salisbury	Essex	12	8,835
Montague	Franklin	2	8,546	Sandisfield	Berkshire	1	934
Monterey	Berkshire	1	932	Sandwich	Barnstable	27	21,030
Montgomery	Hampden	4	886	Saugus	Essex	14	28,461
Mt. Washington	Berkshire	1	136	Savoy	Berkshire	1	632
Nahant	Essex	14	3,267	Scituate	Plymouth	20	18,122
Nantucket	Nantucket	27	11,332	Seekonk	Bristol	24	13,998
Natick	Middlesex	7	36,083	Sharon	Norfolk	20	18,306
Needham	Norfolk	18	29,357	Sheffield	Berkshire	1	3,082
New Ashford	Berkshire	1	182	Shelburne	Franklin	2	1,845
New Bedford	Bristol	26	100,006	Sherborn	Middlesex	7	3,831
New Braintree	Worcester	9	1,057	Shirley	Middlesex	9	8,423

Table A8 (continued). Population Estimates[1] for Massachusetts Communities, 2018

TOWN NAME	COUNTY	CHNA	POPULATION
Shrewsbury	Worcester	8	39,565
Shutesbury	Franklin	2	1,752
Somerset	Bristol	25	18,502
Somerville	Middlesex	17	76,785
South Hadley	Hampshire	3	18,093
Southampton	Hampshire	3	5,995
Southborough	Worcester	7	9,719
Southbridge	Worcester	5	16,858
Southwick	Hampden	4	9,789
Spencer	Worcester	5	11,515
Springfield	Hampden	4	158,503
Sterling	Worcester	9	7,869
Stockbridge	Berkshire	1	1,742
Stoneham	Middlesex	16	22,333
Stoughton	Norfolk	22	27,700
Stow	Middlesex	7	7,208
Sturbridge	Worcester	5	10,436
Sudbury	Middlesex	7	17,915
Sunderland	Franklin	2	3,794
Sutton	Worcester	6	8,982
Swampscott	Essex	14	13,700
Swansea	Bristol	25	15,963
Taunton	Bristol	24	57,527
Templeton	Worcester	9	8,928
Tewksbury	Middlesex	10	30,837
Tisbury	Dukes	27	4,150
Tolland	Hampden	4	422
Topsfield	Essex	13	5,837
Townsend	Middlesex	9	9,146
Truro	Barnstable	27	1,972
Tyngsborough	Middlesex	10	11,986
Tyringham	Berkshire	1	251
Upton	Worcester	6	9,036
Uxbridge	Worcester	6	15,408
Wakefield	Middlesex	16	27,048
Wales	Hampden	5	1,901
Walpole	Norfolk	7	25,944
Waltham	Middlesex	18	66,908
Ware	Hampshire	3	10,134
Wareham	Plymouth	26	23,987
Warren	Worcester	5	5,415
Warwick	Franklin	2	750
Washington	Berkshire	1	457
Watertown	Middlesex	17	33,218
Wayland	Middlesex	7	13,276
Webster	Worcester	5	17,212
Wellesley	Norfolk	18	29,787
Wellfleet	Barnstable	27	2,755
Wendell	Franklin	2	730
Wenham	Essex	13	5,199
West Boylston	Worcester	8	7,843
West Bridgewater	Plymouth	22	7,242
West Brookfield	Worcester	5	3,702
West Newbury	Essex	12	4,072
West Springfield	Hampden	4	29,508
West Stockbridge	Berkshire	1	1,196
West Tisbury	Dukes	27	2,878
Westborough	Worcester	7	18,870
Westfield	Hampden	21	41,731
Westford	Middlesex	10	23,164
Westhampton	Hampshire	3	1,697
Westminster	Worcester	9	7,327
Weston	Middlesex	18	11,090
Westport	Bristol	25	16,638
Westwood	Norfolk	18	14,734
Weymouth	Norfolk	20	56,297
Whately	Franklin	2	1,466
Whitman	Plymouth	22	15,419
Wilbraham	Hampden	4	14,537
Williamsburg	Hampshire	3	2,462
Williamstown	Berkshire	1	7,359
Wilmington	Middlesex	15	24,416
Winchendon	Worcester	9	10,742
Winchester	Middlesex	15	22,360
Windsor	Berkshire	1	854
Winthrop	Suffolk	19	18,838
Woburn	Middlesex	15	41,664
Worcester	Worcester	8	192,064
Worthington	Hampshire	3	1,060
Wrentham	Norfolk	7	11,270
Yarmouth	Barnstable	27	24,035

1. State, County, and Small Area Population Estimates 2011-2020, version 2018, Massachusetts Department of Public Health, Bureau of Environmental Health. Population estimates used for years following the decennial census were developed by the University of Massachusetts Donahue Institute (UMDI) in partnership with the Massachusetts Department of Public Health, Bureau of Environmental Health. Detailed population estimates at fine levels of geography are prone to estimation error. Estimated error was best described by age and population size and was used to adjust final population numbers, however a margin of error exists for all estimates.

Table A9. 2018 Massachusetts Population Estimates[1] By Age Group, Gender, Race and Hispanic Ethnicity (mutually exclusive)

AGE	GENDER	TOTAL	WHITE Non-Hispanic[1]	BLACK Non-Hispanic[1]	ASIAN Non-Hispanic[1]	HISPANIC[1]
Under 1	Male	37,051	21,264	3,245	2,759	7,969
	Female	35,240	20,397	3,132	2,535	7,605
	Total	72,291	41,661	6,377	5,294	15,574
1 TO 4	Male	152,690	90,048	13,486	11,197	31,707
	Female	146,137	85,651	13,058	10,682	30,678
	Total	298,827	175,699	26,544	21,880	62,385
5 TO 14	Male	395,344	237,511	34,487	27,418	72,804
	Female	379,094	227,024	32,923	26,430	70,582
	Total	774,438	464,535	67,410	53,848	143,386
15 TO 24	Male	492,367	320,036	40,572	37,712	80,801
	Female	491,889	319,897	40,373	42,360	75,464
	Total	984,256	639,933	80,946	80,072	156,265
25 TO 34	Male	496,079	326,904	43,363	48,241	77,509
	Female	491,813	324,462	42,324	52,814	72,034
	Total	987,891	651,367	85,687	101,055	149,543
35 TO 44	Male	413,893	274,893	32,934	38,001	59,844
	Female	427,319	281,288	34,044	42,221	60,705
	Total	841,211	556,181	66,978	80,222	120,549
45 TO 54	Male	449,605	337,588	30,508	29,304	44,104
	Female	478,006	354,973	33,582	32,186	48,558
	Total	927,611	692,560	64,090	61,490	92,662
55 TO 64	Male	454,523	374,315	25,858	20,145	28,308
	Female	490,511	398,765	29,318	22,803	33,230
	Total	945,034	773,081	55,176	42,948	61,537
65 TO 74	Male	306,022	263,029	13,772	11,770	14,273
	Female	356,195	302,066	17,350	14,463	18,833
	Total	662,217	565,095	31,122	26,232	33,106
75 TO 84	Male	136,496	119,249	5,276	5,627	5,238
	Female	184,976	159,690	8,848	7,016	8,231
	Total	321,471	278,940	14,123	12,643	13,469
85 +	Male	53,957	48,143	1,785	1,861	1,755
	Female	107,495	97,025	3791.19	2,746	3,312
	Total	161,452	145,168	5,576	4,606	5,068
ALL AGES	**Male**	**3,388,027**	**2,412,980**	**245,286**	**234,035**	**424,312**
	Female	**3,588,674**	**2,571,238**	**258,742**	**256,256**	**429,232**
	Total	**6,976,701**	**4,984,218**	**504,028**	**490,291**	**853,544**

1. State, County, and Small Area Population Estimates 2011-2020, version 2018, Massachusetts Department of Public Health, Bureau of Environmental Health. Population estimates used for years following the decennial census were developed by the University of Massachusetts Donahue Institute (UMDI) in partnership with the Massachusetts Department of Public Health, Bureau of Environmental Health. Detailed population estimates at fine levels of geography are prone to estimation error. Estimated error was best described by age and population size and was used to adjust final population numbers, however a margin of error exists for all estimates.

Massachusetts Death Certificate: 2018

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
Surname at Birth or Adoption | SSN
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 #
Addr.

DISPOSITION

Funeral Licensee/ Designee | Lic #
Facility/Addr.
Immediate Disposition
Date of Immediate Disposition
Place/Address

Date of Record
Date of Amendment

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

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.

Massachusetts Deaths: 2018 Evaluation Form

TO OUR READERS:
In an attempt to better serve our users, we are enclosing this evaluation form. Please take the time to complete this questionnaire and return it to the address at the bottom of the page. Thank you.

What tables and charts do you find most useful?
What tables and charts do you find least useful?
Are there other tables and charts that you would like added to this publication? If yes, please describe them in detail.
Do you have other comments or suggestions?
Name (optional): **Address:** **(For those who received the publication by mail)** Is the mailing label address correct? If not, please correct the address. Thank you.

Please return your comments to:

Massachusetts Department of Public Health
Registry of Vital Records and Statistics
150 Mt. Vernon Street 1st Floor
Dorchester, MA 02125