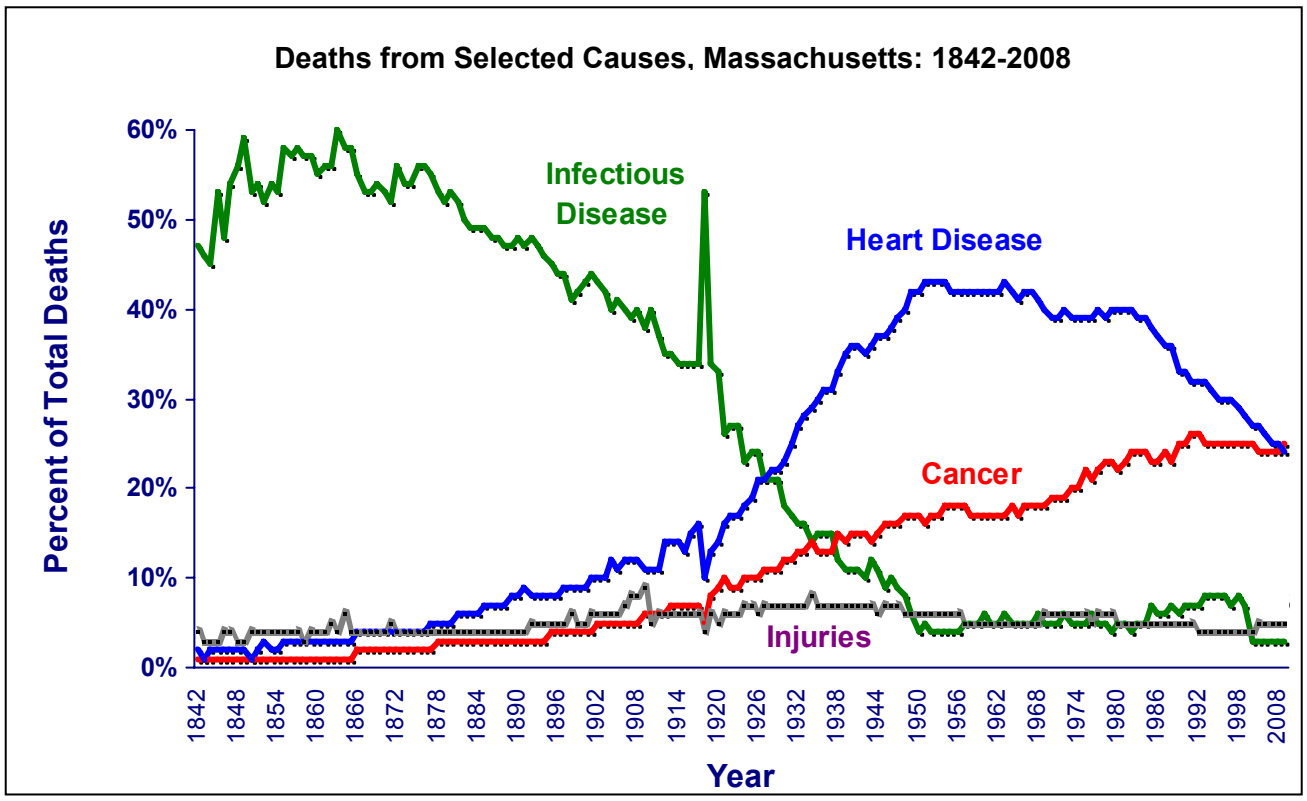
Massachusetts Deaths 2008



Bureau of Health Information, Statistics, Research, and Evaluation

Massachusetts Department of Public Health

August 2010

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Note to Readers

Please review the information below before reading the report.

1. **Amenable Mortality.** In previous reports, we have presented premature mortality (defined as deaths from all causes to persons who are less than 75 years old). This year we have added a new section on "amenable mortality," which is a subcategory of premature mortality. Amenable mortality is defined as "deaths from certain causes that should not occur in the presence of timely and effective health care".[1] These causes include infectious diseases of childhood; diseases for which there are immunizations; cancers, such as leukemia, which have effective treatments; and cancers that have effective screening, such as prostate and breast cancers[2]. One difference between amenable mortality and premature mortality is that the causes of amenable mortality do not include *injuries*.

   Amenable mortality was developed to assess the quality of health care systems, but, more recently, it has been used to identify areas with deficiencies in access, quality, efficiency and equity in health care. One way we use amenable mortality rates in this report is to explore disparities among race and ethnicity groups. With the implementation of health care reform in Massachusetts in January 2007, amenable mortality may be a useful measure of the impact of increased access to medical care.

2. **Mortality by Poverty Level.** Two new sections that present deaths by area poverty levels have been added: "Premature Mortality by Poverty Level" and "Infant Mortality by Poverty Level". Premature mortality, deaths before age 75 years, and infant mortality (infant deaths per 1000 live births) were calculated for census tract poverty levels.[3]

3. **Population Sources.** Two sources of population estimates were used to calculate population-based rates in *Massachusetts Deaths 2008*:
   - State and County Death Rates
     We used the 2008 Modified Age, Race/Ethnicity, and Sex (MARS) estimates, from the National Center for Health Statistics (NCHS) and the Census Bureau Population Estimates Program. These population estimates are stratified by single year of age, sex, race, and Hispanic ethnicity. We converted this file into the five mutually exclusive categories used by the Department: White Non-Hispanic, Black Non-Hispanic, Asian Non-Hispanic, American Indian/Alaska Native Non-Hispanic, and Hispanic. These estimates are not available for geographic levels below the county[4].

   - City and town death rates
     We used internal estimates based upon NCHS and Census Bureau population estimates for 2005, which are the most up-to-date estimates available by age,

[1] For a list of causes of death considered amenable to health care, see Table A13.
[2] E. Nolte and M. McKee, *Does Healthcare Save Lives? Avoidable Mortality Revisited* (London: Nuffield Trust, 2004).
[3] Poverty is determined by federally mandated guidelines for individual poverty. US Census Bureau, Census 2000, Summary File 3, Table PCT049.
[4] National Center for Health Statistics. Postcensal estimates of the resident population of the United States for July 1, 2000-July 1, 2008, by year, county, age, bridged race, Hispanic origin, and sex (Vintage 2008). Prepared under a collaborative arrangement with the US Census Bureau; released May 14, 2009. Available from: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm as of September 2, 2009

race, and sex at the sub-county level. If the population in your community increased from 2007 to 2008, the rates listed may **overestimate** the actual rate. If the population in your community declined from 2007 to 2008, the rates given in the publication may **underestimate** the actual rate. As soon as new population data are available, revised rates will be posted on MassCHIP, the Department's online database (http://masschip.state.ma.us).

4. **Rate, Proportion, and Number comparisons.** The comparison of rates, proportions, and numbers made in this year's report is based on tests of statistical significance. Comparative words, for example, "higher", "lower", "increase", and "decrease" are used only when the statistics being compared are statistically different (i.e., statistically significant) at the $P \leq .05$ level. Occasionally, we will indicate that a value is "approaching significance" when it is very close to meeting the test criteria. Please see the Appendix for a discussion of how statistical significance is determined.

5. **Comparisons with National Death Statistics.** Because US death statistics for 2008 were not available at the time of publication of this report, we are using the national statistics from 2007. Although a direct comparison cannot be made between statistics from different years, we are presenting the US statistics for 2007 to give a sense how Massachusetts statistics differ from those of the US .

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

7. **Race and Ethnicity.** In the text, the race categories, White, Black, American Indian, Asian, and Hispanic are mutually exclusive, for example, when we refer to White residents, this means White non-Hispanic residents.

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Massachusetts Deaths 2008. Boston, MA: Division of Research and Epidemiology, Bureau of Health Information, Statistics, Research, and Evaluation, Massachusetts Department of Public Health. August 2010.

Highlights

- The age-adjusted death rate for Massachusetts was 703.5 in 2008, which was not statistically different from the death rate of 704.4 in 2007. The death rate had been declining until the mid-2000s, but in the most recent years the death rate has stabilized.

- More than half of the mortality rates for leading causes are lower in Massachusetts than in the US, including heart disease, stroke, unintentional injuries, homicide, suicide, chronic lower respiratory disease, and diabetes. The age-adjusted death rate for influenza and pneumonia and nephritis were higher in MA than the US. Rates for cancer, Alzheimer's disease, and septicemia were about the same as those of the US.

- In 2008, there was a decrease of 17% in the number of deaths among young adults ages 15-24 years (down 85 deaths) and an increase of 5% among persons ages 85 years and older (up 876 deaths). The decrease in deaths among young adults was due to a decrease (approaching statistical significance) in unintentional injuries, mainly motor vehicle-related. The increase in deaths among the oldest old was driven by an increase in chronic respiratory disease deaths and a slight increase in unintentional injury deaths.

- In 2008, cancer continues to be the leading cause[5] of death in Massachusetts, followed by heart disease. As in previous years, cancer and heart disease combined accounted for almost half of all deaths, and more women continued to die from heart disease than men did. In 2008, deaths due to bladder cancer increased by 22% from the previous year.

- In 2008, the 10 leading causes of death remained unchanged from 2007, but death rates for two leading causes changed from the previous year. The death rate for diabetes has decreased by 12%, from 16.6 to 14.6, and for chronic lower respiratory disease increased by 9%, from 31.5 to 34.5 deaths per 100,000.

- Life expectancy continues at an all time high in Massachusetts, at 80.4 years in 2008. A girl born in Massachusetts could expect to live to be 83, and a boy could expect to live to be 78 years old.

- The infant mortality rate for those living in areas with the greatest poverty (≥ 20% below poverty) was 8.0 deaths per 1000 live births–almost 3 times higher than the rate of 3.0 for those living in areas with the least poverty (<5% below poverty).

- Poisonings, most of which are drug overdoses continued to be the leading cause of injury deaths (965 in 2007 vs. 867 in 2008). Opioids, including heroin, oxycodone, morphine, codeine, and methadone, continue to be the agent most associated with poisoning deaths (69%). This year there was a drop in the number of opioid deaths—43 fewer deaths, from 637 to 594. While this change did not achieve statistical significance, it is important to note that this drop may reflect the effectiveness of the Departments focused efforts to reduced opioid overdoses, including the Opioid Overdose Prevention and Reversal Program[6], which began in 2008.

[5] The National Center for Health Statistics (NCHS) publishes a list of 113 selected causes of death from which we select 57 causes and order them by their number of deaths.
[6] For more information about this program:
http://www.mass.gov/?pageID=eohhs2pressrelease&L=4&L0=Home&L1=Government&L2=Departments+and+Di

- Alcohol has emerged as the second most common agent associated with poisoning deaths at 26%. The number of alcohol-associated deaths has risen twelve-fold from only 18 in 2000 to 228 in 2008, when the counts were greater than cocaine-associated deaths.

- Fall-related deaths have continued to increase at an average of 18% per year since 2004. Falls continue to be the second cause of injury death in Massachusetts. The majority of fall-related deaths occurred among persons ages 65 and older (81%) and fall death rates were highest among residents ages 85 years and older.

- Disparities by gender, race, ethnicity, education, poverty, and geography persist:
  - Hispanics, Blacks, and Asians had a higher proportion of deaths occurring at younger ages than Whites had. Thirty-three percent of White deaths occurred at 74 years and younger; whereas, 72% of Hispanic deaths; 61% of Black deaths, and 54% of Asian deaths occurred at ages 74 years and younger.
  - The Homicide rate for Blacks continued to be more than 21 times higher than that of Whites, and the homicide rate for Hispanics was more than 7 times higher.
  - The death rate for those with a high school education or less was almost 3 times higher than the rate for those with 13 years of education or more.
  - Fall River, New Bedford, Springfield, Brockton, Lowell, and Worcester had the highest premature mortality rates (deaths that occur before the age of 75 years of age per 100,000) among the state's 30 largest communities.
  - The age-adjusted premature mortality rate for those living in areas with the greatest poverty (≥ 20% below poverty) was 682.8 deaths per 100,000–almost 3 times higher than the rate of 241.8 for those living areas of least poverty (<5% below poverty).

- The overall premature mortality rate, deaths before age 75, decreased 5% from 2007, from 295.4 to 282.7 deaths per 100,000, mainly driven by the 5% decline in the premature mortality rate among Whites (from 293.5 to 280.1 deaths per 100,000).

- In 2008, 10% of all deaths were amenable mortality (5,255), that is, deaths from certain causes that should not occur in the presence of timely and effective health care. For persons under 75 years of age, 28% of deaths were amenable mortality. Another way of saying this is that 28% of premature deaths were amenable to health care.

- The amenable mortality rate declined 6% since health care reform was implemented. When the amenable mortality rate for 2008 is compared with that of 2006, the state rate went down from 84.0 (deaths per 100,000 population) to 77.4. This decline was only for Whites. There has been no change in the amenable mortality rate for Blacks, Hispanics, and Asians since 2006.

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Introduction

This report presents detailed data on the number and characteristics of Massachusetts deaths in 2008. The data presented in this report can be used to monitor and evaluate the status and long-term trends in mortality and health of the population in Massachusetts. Furthermore, this report can be used to identify the groups within the Massachusetts population that are at greatest risk for death from specific diseases and injuries and to inform policies and programs directed toward these groups. It is important to note that variation in death rates among demographic groups, such as racial and ethnic groups, may reflect group differences such as socio-economic status, access to health care, and the prevalence of specific risk factors.

Methods

Data on mortality are based on information retrieved from death certificates filed with the Massachusetts Registry of Vital Records and Statistics. Physicians and medical examiners assign the cause of death through a system that allows for the possibility of multiple causes. Demographic information on the certificates, such as age, race, Hispanic ethnicity, gender, educational attainment, marital status, and occupation, is recorded by the funeral director based on information provided by an informant, usually a family member, or, in the absence of an informant, based on observation or omitted. Resident data include all deaths that occur to residents of the Commonwealth, regardless of where the deaths occur. In Massachusetts, a resident is a person with a permanent address in one of the 351 cities and towns. Occurrence data include all deaths that occur within the state, whether to residents or nonresidents. All data in this publication are for Massachusetts residents unless otherwise stated. There is an exchange agreement among the 50 states, District of Columbia, Puerto Rico, US Virgin Islands, Guam, and Canadian provinces that provides for the exchange of copies of death records for persons dying in a state other than their state of residence. These records are used for statistical purposes only, and they allow each state or province to track the deaths of its residents.

The data in this publication refer to the underlying cause of death as generated by the Super Mortality Medical Indexing, Classification, and Retrieval system (Super MICAR), unless specifically noted. This is a computer software algorithm developed by the National Center for Health Statistics and used by all US jurisdictions so that the assignment of cause of death codes is consistent.

Throughout this report, both the number of deaths and age-adjusted rates are presented. The number of deaths is presented to highlight the overall public health burden of disease in the state. Disease rates are presented to allow for comparisons among groups so that we can better target our programs. With the exception of infant mortality, all mortality rates were age-adjusted to the 2000 US Standard Population and are reported per 100,000 population.

Data on the cause and intent of injury deaths is generated through information listed in the cause and manner of death fields on official death certificates. Due to Massachusetts General Laws (MGL) reporting requirements, nearly all death certificates for individuals dying from an injury are completed by the Massachusetts Office of the Chief Medical Examiner (OCME). Policy changes affecting the classification of these deaths at the OCME can therefore affect the injury death data reported.

In May 2005, there was a change in OCME policy regarding the classification of fatal poisonings (which includes acute intoxications and overdoses) where there is no evidence of

suicide or homicide. The new policy states that fatal poisonings should be certified as "accidents", that is unintentional events, rather than "undetermined" (old policy) if there is no evidence of suicide or homicide. This new policy brings Massachusetts policy in line with the policies in most other states. Prior to this policy change (affecting poisoning deaths in 2004 and at least 10 years prior); the manner of death in these cases was listed as "undetermined". Because of this new policy, only 4% of all injuries in 2007 (3% in 2006) were classified as injuries of undetermined intent[7], compared with an average of 20% before 2005.

Comparison of rates is based on tests of statistical significance. Comparative words, for example, "higher," "lower," "increase," and "decrease" are used only when the rates being compared are statistically different at $P \leq .05$ level.

Results

Number of Deaths and Age-Adjusted Death Rates

In 2008, 53,341 Massachusetts residents died, which was 651 more deaths than there were in 2007, but this difference was not statistically significant (Table 1). For persons 85 years and older, the number of deaths increased by 876, but the rate did not increase significantly.

The age-adjusted death rate in 2008, 703.5 deaths per 100,000, remains at an all time low. In 2008, there were no statistically significant changes in the death rate by gender from the previous year. Compared with the rates in 1998, the male rate has declined by 15%, and the female rate has declined by 12%.

Age-adjusted death rates varied greatly by race and Hispanic ethnicity in Massachusetts in 2008, as they have historically. Blacks had the highest death rate, which was 1.13 times the death rate of Whites (805.8 vs. 710.7 deaths per 100,000). The rate for Asians was the lowest for all groups at 372.5 followed by Hispanics (458.2 deaths per 100,000). In 2008, there were no significant changes in death rates by race and Hispanic ethnicity from the previous year.

The true death rates for both Asians and Hispanics may be higher than the rates presented in this report for several reasons. There are well-known difficulties in calculating accurate mortality rates for Massachusetts' smaller populations such as Asians, Native Americans and Hispanics[8,9]. Evaluation studies since the early 1990s have demonstrated inaccuracy in mortality statistics for these race and ethnicity groups[10,11]. Race and ethnicity are collected differently for death certificates than in the census. They are self-reported in the decennial Census count, which is the denominator of the mortality rates; whereas, race, and ethnicity on death certificates are collected by the funeral director from an informant or by observation. Use caution when interpreting race and ethnicity in mortality data because the potential

[7] Injury death of undetermined intent means that the medical examiner lacked sufficient evidence to classify the deaths as homicide, suicide, or accidental.

[8] Rosenberg HM, Maurer JD, Sorlie PD, et al. Quality of death rates by race and Hispanic origin: A summary of current research, 1999. National Center for Health Statistics. Vital Health Stat 2 (128). 1999.

[9] Arias E. Quality of race and Hispanic origin reporting on death certificates in the United States. Presented at the 2004 NCHS Data Users Conference. Washington, DC, July 14, 2004. Available at: http://www.cdc.gov/nchs/ppt/duc2004/arias.pps.

[10] US Centers for Disease Control and Prevention, National Center for Health Statistics. Vital and Health Statistics (Series 2, Number 128), Quality of Death Rates by Race and Hispanic Origin: A Summary of Current Research, 1999. US Department of Health and Human Services.

[11] Sorlie, P. D., Rogot, E., & Johnson, N. J. (1992). Validity of the Death Certificate. Epidemiology, 3(2), 181-184.

undercounts in population data and misclassification on death certificates may result in inaccuracies in mortality statistics. (For example, see page 17 regarding Life Expectancy).

In 2008, cancer was the leading cause of death[12] in Massachusetts, surpassing heart disease for the third year in a row. There were 156 more cancer deaths than heart disease deaths. Compared with 2007, there was a significant decline in the numbers of diabetes deaths (1,084 v. 1,216) and a significant increase in chronic lower respiratory disease deaths (2,565 vs. 2,325).

In 2008, the age-adjusted death rates for the top ten leading causes of death remained stable, except for diabetes, which decreased by 12% (from 16.5 in 2007 to 14.6 2008) and chronic lower respiratory disease which increased by 9% (from 31.5 in 2007 to 34.5 in 2008) (Table 9).

A Comparison of Massachusetts and US Indicators

In 2008, certain Massachusetts mortality indicators were better than those for the US and the ranking of the leading causes differed (Table 2). According to preliminary US death statistics for 2007[13] (Note: 2008 data were not available at the time of release of this report):

- The 2008 Massachusetts overall age-adjusted death rate was 8% lower than the 2007 United States rate (703.5 vs. 760.2 deaths per 100,000), and has been consistently lower than that of the US from 1990 to the present.

- In 2008, life expectancy at birth continued to be higher in Massachusetts as compared with the US (80.4 years vs. 77.9 years).

- The top 10 causes of death in Massachusetts were the same as those of the US, but they were not in the same rank order. Cancer was the leading cause of death in Massachusetts, and heart disease was the second; whereas, heart disease was the leading cause of death in the United States and cancer was the second.

- The next four leading causes of death were in the same order for both Massachusetts and the US: stroke, chronic lower respiratory disease, unintentional injuries, and Alzheimer's disease. However, influenza and pneumonia was the seventh leading cause of death followed by nephritis and diabetes in Massachusetts; whereas, for the US, diabetes, influenza and pneumonia, and nephritis were the seventh, eighth, and ninth leading causes of death, respectively. The tenth leading cause of death for both the US and Massachusetts was septicemia.

- Massachusetts death rates were lower than those of the US for heart disease, stroke, chronic lower respiratory disease, unintentional injuries, chronic liver disease, HIV/AIDS, and diabetes. The age-adjusted death rate for cancer and Alzheimer's disease were about the same as that of the US despite Massachusetts' older population.

[12] The National Center for Health Statistics (NCHS) publishes a list of 113 selected causes of death from which we select 57 causes and order them by their number of deaths.

[13] Xu J, Kochanek KD, Murphy SL, and Tejada-Vera B. Deaths: Final Data for 2007. National Vital Statistics Reports; vol 58, no 19. Hyattsville, MD: National Center for Health Statistics. May 2010.

- The homicide rate in Massachusetts (2.6 deaths per 100,000) was 58% lower than the US homicide rate (6.1 deaths per 100,000). The Massachusetts rate for suicides (7.3) was 35% below the US rate (11.3).

- The rate of all firearm-related deaths in Massachusetts was one-third the rate of firearm-related deaths in the United States (3.3 deaths per 100,000 compared with 10.2 per 100,000).

- The infant mortality rate (IMR) in Massachusetts (5.0 deaths per 1,000 live births) was 26% lower than that of the US (6.8 deaths per 1,000 live births). Infant mortality has remained stable in Massachusetts since 1996.

Life Expectancy

In 2008, the Massachusetts life expectancy at birth remained at a record high of 80.4 years compared with 80.2 years in 2007. Figure 1 shows the trend toward longer life expectancy for Massachusetts residents in the last century. A person born in Massachusetts in 2008 could expect to live, on average, an additional 35 years than a person born in 1900 (80.4 years vs. 45.0 years).

In 2008, a woman born in Massachusetts could expect to live, on average, until the age of 83, and a man could expect to live until the age of 78. This difference in life expectancy between the sexes is, in part, because men tend to die younger from injuries (such as unintentional injuries, homicide, and suicide) than women do. At age 65, men could expect to live an average of 18 more years, while women could expect to live 21 more years (Table 3).

Life expectancy varied by race and ethnicity, and gender (Figure 2 and Table 2). At birth, White women could expect to live 83 years; Black women, 81 years; Hispanic women, 91 years; White men, 78 years; Black men 74 years; and Hispanic men, 85 years. Hispanics showed an exceptionally long life expectancy of 88.1 years, which was almost 10% higher than that of Whites and 14% higher than that of Blacks. This high life expectancy may be a result of the misclassification of Hispanics as non-Hispanic. When we used a combination of positive Hispanic ethnicity on the death certificate, Hispanic surname matching[14], and Hispanic countries of birth to ascertain Hispanic deaths, we ascertained 387 additional deaths (1,662 v. 1,275). When we included these additional deaths in the calculation of Hispanic life expectancy, we found that overall, male, and female life expectancies were reduced by approximately 7 years each. (Male from 85 to 78; female from 91 to 84; and overall from 88 to 81 years). This experiment provides evidence that the exceptionally high Hispanic life expectancy may be explained, in part, by the misclassification of Hispanics on death certificates.

The age composition of the Massachusetts population is reflected in the changes in life expectancy and historical trends. From 1900 to 2008, the proportion of Massachusetts residents ages 45 and older increased by 91%, from 21% to 40% of the population and the proportion of persons ages 85 and older increased from 0.2% to 2.2% (Figure 3). Although persons ages 85 and over make up only 2% of the Massachusetts population, they continued to have the highest number of deaths in the state in the year 2008 (Table 1).

[14] DP Smith, BS Bradshaw, Rethinking the Hispanic paradox: death rates and life expectancy for US non-Hispanic White and Hispanic populations. Am J Public Health. 2006 September; 96(9): 1686–1692.

Massachusetts has a rich history of collecting and reporting vital statistics, as demonstrated by Figure 4, which presents historical mortality trend data from 1842 to the present. In 1842, infectious diseases were the leading causes of death in Massachusetts, accounting for 47% of all deaths; 4% were due to intentional and unintentional injuries, 2% were attributed to heart disease, and 1% of all deaths were due to cancer. In 2008, in a reversal of rank order, 24% of the deaths in Massachusetts were due to cancer, 24% to heart disease, 5% to intentional and unintentional injuries, and 3% were due to infectious diseases.

Place of Occurrence

Of the 53,341 deaths in 2008, 22,301 (42%) occurred in hospitals – 34% of persons who died were patients in (or admitted to) hospitals, and 8% died in emergency departments; 16,098 (30%) died in nursing homes, 12,490 (23%) died at home, and 585 (1%) were pronounced dead on arrival at emergency departments. These percentages have been consistent for the last 5 years (Table 4).

Medical Examiner Certified Deaths[15]

There are 19 circumstances in which a death is referred to the Medical Examiner's Office (not all of these deaths occur under suspicious circumstances or because of violence). Please refer to the Appendix for a list of these circumstances. The total number of deaths certified by medical examiners was 5,008 in 2008 (9.4%) compared with 5,457 in 2007(10.4%). In 2008, there was a decline in the number of injury deaths certified by medical examiners (2,473 vs. 2,697).

Of those deaths certified by medical examiners, 32% were reported as a result of natural causes (non-injury related). Almost all homicide and suicide deaths were certified by medical examiners in 2008 compared with only 11% of heart disease deaths and less than 1% of cancer deaths (Figure 5).

Premature Mortality

A good summary measure of the impact of death on different groups in the population is premature mortality[16,17]. The premature mortality rate (PMR) measures the rate of deaths that occur before the age of 75 years of age per 100,000, age-adjusted to the 2000 US Standard Population under 75 years of age. PMR is considered an excellent, single measure of the health status of a population.

The reason PMR is an excellent measure of health status is that the vast majority of deaths to persons ages 75 years and older are due to chronic conditions associated with aging. By examining deaths to persons younger than 75 years, it is possible to identify many issues that are responsive to systematic public health approaches to health promotion and disease prevention. An attractive feature of PMR analyses is that it moves away from considering single causes or single risk factors of death to taking a broader community perspective. PMR may be related to socioeconomic status, and its correlates such as environmental conditions, housing, education, and stress, higher rates of smoking, substance abuse, violence, obesity, and lack of access to care.

In 2008, the age-adjusted premature mortality rate continued to vary by race and Hispanic ethnicity and by geography (Figure 6, Maps 1-8). The overall PMR decreased from 2007,

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[15] Massachusetts General Laws, Chapter 38, Section 3. http://www.mass.gov/legis/laws/mgl/38-3.htm.

[16] Carstairs V, Morris R. *Deprivation and Health in Scotland*. Aberdeen, Scotland: Aberdeen University Press, 1991.

[17] Patricia Martens, et al. The Health and Health Care Use of Registered First Nations People Living in Manitoba: A Population-Based Study. http://www.umanitoba.ca/centres/mchp/reports/reports_02/rfn.htm

from 295.4 to 282.7 deaths per 100,000, mainly driven by a decline among Whites (from 293.5 to 280.1 deaths per 100,000). Blacks had the highest PMR, experiencing 1.5 times the rate of premature deaths as Whites (414.8 vs. 280.1 deaths per 100,000). Asians (159.0) and Hispanics (252.1) had the lowest PMR, but the PMR for Hispanics was higher than that of Asians.

Residents of the Boston and Western regions of the state had higher PMR than that at the state overall (352.2 and 343.2 v 282.7 premature deaths per 100,000), while residents from the Metro West region (234.2) experienced lower PMR than residents of any other region. Among the 30 largest cities of the state, Fall River, New Bedford and Springfield had the highest PMR, while Brookline, Newton and Cambridge had the lowest PMR (Table 35). For a complete list of PMR for all cities in the state, please see Table 36.

Educational Attainment[18]

Mortality is inversely associated with educational attainment, that is, the average risk of death decreases markedly with increasing educational attainment. The age-adjusted death rate for those with a high school education or less was 513.5 per 100,000 population - almost 3 times higher than the rate of 188.4 for those with 13 years of education or more (Table 5). This is true for each race and ethnicity group. However, among the more educated, there is enormous variation by race: the rate for more educated Blacks was almost twice as high as the rate for more educated Whites (347.2 vs. 183.2 deaths per 100,000).

Daily Mortality Statistics

On an average day in 2008, 146 Massachusetts residents died (Figure 7). Approximately 36 of these deaths were due to cancer, 35 to heart disease, 15 to respiratory diseases, 8 to injuries, 7 to stroke, 5 to Alzheimer's disease, 3 to diabetes, 1 was an infant death, 1 was an HIV/AIDS death, and 36 were due to other causes.

Leading Causes of Death

Cause-of-death ranking[19] (leading causes of death) is a useful tool for illustrating the relative burden of cause-specific mortality. The rankings denote the most frequently occurring causes of death among those causes *eligible to be ranked*. NCHS publishes a list of 113 selected causes of death from which we select 57 causes and order them by their number of deaths. The main point to remember about the leading causes of death is that they are causes that are ranked according to their ***number***, and not their mortality ***rate***.

Unlike mortality rates, rankings do not convey cause-specific mortality risk or the absolute burden of causes of death. The rank of a specific cause—its mortality burden relative to other causes—may decline over time even if its mortality rate has not changed, or its rank may remain the same over time even if its mortality rate is rising or declining.

The top 10 leading causes of death in Massachusetts in 2008 were: (1) cancer, (2) heart disease, (3) stroke, (4) chronic lower respiratory disease, (5) unintentional injuries, (6) Alzheimer's disease, (7) influenza and pneumonia, (8) nephritis, (9) diabetes, and (10) septicemia (Table 6). This ranking remained the same from 2007.

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[18] **Note that 2000 denominator figures are used since these are the latest number available for population by age and education.** Rates are shown only for ages 25-64 years because persons under age 25 may not have completed their education.

[19] Heron MP. Deaths: Leading causes for 2004. National vital statistics reports; vol 56 no 5.Hyattsville, MD: National Center for Health Statistics. 2007.

Cancer continued to be the top leading cause of death in Massachusetts, out-ranking heart disease for the third year. The number of chronic lower respiratory disease deaths increased by 10%, from 2,325 deaths in 2007 to 2,565 deaths in 2008. The top ten leading causes of deaths together accounted for 74% of deaths in 2008, and heart disease and cancer accounted for almost half of all deaths (48%).

In Tables 6 and 7, we present the leading causes of death by age groups. Injuries (all intents) was the leading cause of death for persons between the ages of 1 to 44 years and account for 43% of all deaths in this age group. Unintentional injuries, which include motor vehicle-related deaths, drug overdoses, falls, fires, and drowning, accounted for the highest percentage of injury deaths (66%). The remainder of injury deaths were intentional: suicide (21%) and homicide (13%). Unintentional injuries accounted for 31% of all deaths among persons ages 1 to 44 years, 32% of male deaths, and 19% of females in this age group.

For persons ages 1 to 14 years, cancer and unintentional injuries were the leading causes of death. For females in this age group, cancer was the leading cause of death, while for males in this age group, unintentional injuries continued as the leading cause of death.

Unintentional injuries was the first leading cause of death for individuals 15-24 years old, and it accounted for 43% of deaths. Both males and females in this age group had unintentional injuries as the first leading cause of death, as deaths to unintentional injuries accounted for 44% of all male deaths and 40% of all female deaths in this age group. Homicide ranked second for males in this age group, while suicide ranked second for females ages 15 to 24. The rank for suicides was third for male ages 15-24 years, with males experiencing more than twice the number of female suicides (30 v. 14).

For person ages 15-44, unintentional injuries was the leading cause of death for males and overall deaths, while the second leading cause for females in this age group. The first leading cause of death for females in this age group was cancer. The third leading cause of death for males in this age group in 2008 was suicide while heart disease for females.

Cancer and heart disease were the leading causes of death for both males and females ages 45 to 64 years. Among persons ages 65 years and older, heart disease was the leading cause of death overall and for females but, cancer was the leading cause of death for males, and heart disease was the second; however, their rates are not significantly different. Stroke was the third leading cause of death overall and for both males and females for persons ages 65 and older.

The leading causes of death for persons 65 years and older are shown in Table 8. Among persons ages 65-74 years and 75-84 years, cancer was the leading cause of death, and heart disease was the second leading cause of death of both males and females.

For persons ages 85 years and older, heart disease was the leading cause of death for both males and females; cancer was the second, and stroke the third. Alzheimer's disease was the fourth leading cause of deaths for both male and females ages 85 years and older, and the age adjusted death rate for Alzheimer's disease increased marginally overall and for males in 2008.

Patterns by Race and Ethnicity

The leading cause of death was cancer overall and for all race and Hispanic ethnic groups except for Whites, for whom heart disease was the leading cause of death in 2008 (Table 9). In addition to cancer and heart disease, stroke, unintentional injuries, nephritis, and diabetes

were in the top 10 leading causes of death for all race and ethnicity groups. However, there were differences among the race and ethnicity groups in the rank of the leading causes of death they have in common. Whites and Asians had nine of the top 10 causes in common, and Blacks and Hispanics shared nine of the 10.

The age-adjusted death rate for all race and Hispanic ethnic groups remained stable, compared with previous year, except for Asians, for whom their death rate increased marginally by 9% from 2007, mainly driven by the increase in the death rate among male Asians which increased marginally by 4% from 2007. Blacks continued to have the highest death rate in 2008. Among 10 leading causes of death, the age-adjusted death rates for Blacks were higher than that of all other racial groups, for nephritis and stroke. Additionally, the death rate for Blacks was higher than that of Whites and Asian for HIV/AIDS and diabetes.

In 2008, diabetes continued to be the fourth leading cause of death for Hispanics while perinatal conditions and nephritis moved up one position as the fifth and seventh leading causes of death for this group, respectively. Hispanics and Asians had lower cancer and heart disease rates than did Whites and Blacks, while stroke rates for these groups were significantly lower than that of Blacks only. Alzheimer's was a top leading cause only for Whites and Asians, and the death rate for this cause increased marginally among all Whites and White men between 2007 and 2008.

Cancer

In 2008, for the third year, cancer ranked first in the number of all deaths, in the deaths of all men, and in the number of deaths of all women except for White women in Massachusetts. The overall age-adjusted cancer mortality rate was 177.8 per 100,000 compared with 179.2 in 2007. In 2008, there were 12,996 cancer deaths, accounting for 24% of all deaths and approximately 3 out of 4 cancer deaths in Massachusetts occurred to persons ages 65 years and older.

Cancer mortality occurred more frequently among younger persons of minority populations. Fifty-two percent of cancer deaths occurred at ages under 65 years among Hispanics, followed by 41% among Blacks, and 40% among Asians; while this age group accounted only for 27% of all cancer deaths among Whites (Figure 11).

Among all cancer deaths, lung cancer ranked first (27% of cancer deaths), colorectal second (9% of cancer deaths), and female breast cancer third (7% of cancer deaths) in the number of cancer deaths (Table 11). The second cause of cancer deaths was breast cancer for females (891 deaths) and prostate cancer for males (622 deaths).

Leading types of cancer deaths varied by racial and Hispanic ethnic groups. Lung cancer ranked first in the number of cancer deaths and colorectal cancer ranked second for all racial groups. Among women, the breast cancer mortality rate was less half the lung cancer mortality rate (41.4 for lung vs. 21.1 deaths per 100,000). The overall cancer death rate for men was 44% higher than the rate for women (218.5 vs. 151.6 per 100,000) (Table 11). Men also had higher cancer death rates for site-specific cancers including: bladder, colorectal, esophagus, leukemia, lung, non-Hodgkin lymphoma, pancreas, and stomach among others.

Leading types of cancer deaths were different by age. In 2008, the smallest number of cancer deaths was seen among persons under the age of 45 years (341 deaths, Table 12). Leukemia ranked first in the number of cancer deaths for persons ages 15-24 years. Among cancers affecting both men and women, lung cancer ranked first in the number of cancer

deaths for persons ages 25 years and older. Female breast cancer (328 deaths) ranked second in the number of cancer deaths among all persons ages 25 to 64. Lung cancer ranked first, and colorectal cancer ranked second in the number of cancer deaths among persons ages 45 and older.

In 2008, bladder cancer deaths increased by 22% from the previous year (349 deaths in 2007 vs. 427 deaths in 2008) while other type of cancers remained stable. This increase was solely among Whites.

Heart Disease

Heart disease accounted for 24% of all deaths in Massachusetts in 2007 (12,840 out of 53,341 total). Heart disease deaths occur predominantly among the older population and in 2008, 85% of all heart disease deaths occurred among people ages 65 years and older (Figure 8).

Heart disease deaths occur predominantly among the older population, and in 2008, 85% of all heart disease deaths occurred among people 65 years and older. The proportion of deaths that were from heart disease varied by race and ethnicity in this age group: it was 87% among Whites, 82% among Asians, 63% among Blacks, and 58% among Hispanics (Figure 9).

While the number of women who died of heart disease was higher than that of men (6,682 vs. 6,158), men had a higher death rate of heart disease than women had (217.1 for men vs. 133.1 deaths for women, per 100,000) (Figure 8 and Figure 21). In 2008, White women were the only racial group where heart disease continued as the leading cause of death. Although women experienced more than twice as many heart disease deaths than men at ages 85 and older (3,892 women vs. 2,054 men) (Figure 8), the female death rate for ages 85 years and older was lower than that of men (3,866.6 vs. 4,839.2) (Table 8). The overall heart disease death rate for men was 61% higher than the rate for women (211.4 vs. 131.5 per 100,000).

In 2008, the heart disease death rate remained stable from 2007 (164.5 vs. 165.7 per 100,000), but it has decreased by 24% since 2000 (164.5 vs. 216.7 per 100,000). In 2008, heart disease death rates remained stable from 2007 for males, females, and for all racial and ethnic groups, but rates have declined for all since 2000 (Table 10).

In 2008, 20% of heart disease deaths were from Acute MI, 41% from “Other forms of Ischemic Heart Disease”, 34% from “Other Heart Disease”, and 4% were hypertensive heart disease (data not shown).

Stroke

Despite declines in the number of deaths from stroke, it remained the third leading cause of death in Massachusetts in 2008, after cancer and heart disease. In 2008, there were 2,636 stroke deaths, yielding an age-adjusted rate of 33.7 deaths per 100,000 persons. This rate has declined by 34% since 2000 (33.7 vs. 50.9 deaths per 100,000) (Table 2).
In 2008, the death rate for stroke was similar to the rate in 2007 (33.7 vs. 35.0 deaths per 100,000). In 2008, stroke death rates remained stable from 2007 for males, females, and for all racial and ethnic groups, but rates have declined for all since 2000. Blacks continued to have a higher stroke death rate than Whites (45.5 vs. 33.6 per 100,000) and the disproportion of stroke deaths occurring among young Blacks compared to Whites continued (Table 15).

Stroke deaths increased with increasing age (Figure 12), and occurred more frequently among younger people of minority groups than in Whites. Forty-five percent of stroke deaths among Hispanics occurred at ages under 65 years, followed by 26% among Blacks, and 21% among Asians. However, this age group accounted for only 8% of all stroke deaths among Whites (Figure 13).

In 2008, 24% of strokes were deaths from hemorrhage (21% from intracerebral hemorrhage and 3% from subarachnoid hemorrhage) (Table 14). Cerebral infarction accounted for about 6% for all stroke deaths in 2008. For 52% of all stroke deaths, the type was not specified.

Diabetes

In order to accurately capture the mortality burden of diabetes in Massachusetts, in this report, diabetes mortality is presented in two ways: 1) the underlying cause of death; and 2) mentioned as a contributing cause or as the underlying cause of death which will be referred to as "diabetes-related" deaths. In 2008, diabetes was either the underlying or a contributing cause of death (i.e., a diabetes-related cause of death) for 3,721, or 7.0% of all deaths in Massachusetts. In one-third of these deaths, diabetes was recorded as the underlying cause of death (Figure 14). Diabetes was also listed as a contributing cause of death on an additional 2,637 deaths.

As an underlying cause of death, diabetes ranked ninth, but when considering all mentioned conditions, diabetes-related deaths ranked third as a cause of death for both females and males and for all racial and ethnicity groups. Blacks and Hispanics died from diabetes-related causes at higher rates than Whites did. In 2008, the diabetes-related age-adjusted death rate for Blacks was 92.7 deaths per 100,000, which is twice the rate for Whites (48.2). The rate for Hispanics was 65.9 deaths per 100,000, which is 37% higher than the White is rate (Figure 15).

Diabetes as the underlying cause of death was found in 558 deaths among men and in 526 deaths among females (Table 16). Diabetes-related deaths accounted for 7.4% of all deaths among males and 6.6% of all deaths among females. Hispanics (12.1%) and Blacks (10.7%) had a higher proportion of diabetes-related deaths than that of Whites (6.7%) (Table 17).

Figure 16 illustrates that diabetes-related deaths rise with age. The rise is particularly rapid from age 45 years to age 84. In 2008, 81% of diabetes-related deaths occurred to individuals aged 65 years and older. Figure 16 compares the number of deaths from diabetes as a contributory cause and underlying cause by age group. There were more diabetes-related deaths as a contributing cause among adults ages 45 years and older. In 2008, the diabetes-related death rate has remained stable from 2007, but has declined by 19% since 2000 (Figure 17).

Injuries

In 2008, there were 2,820 injury deaths among Massachusetts residents. By combining injuries of all intents (unintentional, suicide, homicide, injuries of undetermined intent), injuries become the third leading cause of death in 2008 among residents of all ages and the leading cause of death among residents 1-44 years of age. The leading causes of injury deaths in order of percentages were: poisonings[20] (31%), the majority of which were drug overdoses, falls (18%), motor vehicle-related deaths (13%), "hanging, strangulation or

[20] Poisoning refers to the damaging physiologic effects of ingestion, inhalation, or other exposure to a range of pharmaceuticals, illicit drugs, and chemicals, including pesticides, heavy metals, gases/vapors, and common household substances such as bleach and ammonia.

suffocation" (12%), and firearm-related deaths (8%) (Table 18). The vast majority (72%) of injury deaths was unintentional or "accidental"; 18% were suicides; 6% were homicides; and 3% were of undetermined intent. The following subsections provide details on the leading causes, intents and selected demographic differences in these events:

Injuries by Age Groups
The causes and intents of injury deaths vary substantially by age group (Table 18, Table 20, and Table 22).

- There were five injury deaths among infants under 1 year of age. Suffocation (choking/hanging/strangulation) (N=2) was the leading cause of injury death.
- There were 32 injury deaths among children under 15 years of age. Suffocation (choking/hanging/strangulation) (N=10) was the leading cause of injury death in children ages 1-14 years.
- Motor vehicle-related deaths were the leading cause of injury and overall death in persons ages 15-24 years, accounting for 26% (n=96) of all motor vehicle-related deaths and 33% of the injury deaths in this age group. Homicide accounted for 21% (n=63) of the injury deaths in persons 15-24 years.
- Fifty-seven percent (57%) of all injury deaths occurred among persons ages 25 to 64 years. The majority (48%) of injury death in this age group was due to poisoning; this age group accounted for 88% of all poisoning deaths in 2008. Twenty-four percent (24%) of all injury deaths in this age group in 2008 were due to suicide.
- Persons ages 65 years and older accounted for 31% of all injury deaths; 81% of all fall deaths were in this age group; and, 44% of all pedestrian deaths were in this age group.

Injuries by Sex and Race and Hispanic Ethnicity
For all types of injuries in Massachusetts, age-specific death rates for males were higher than those of females for all age groups (Table 18 and Table 19):

- Males were 2.6 times more likely to die from an injury than females, and nearly 13 times more likely to die from a firearm injury than females in Massachusetts.
- Black males had the highest death rate from firearms: 23.5 deaths per 100,000 compared to 4.3 deaths per 100,000 White males.
- The leading cause of injury deaths varied by race and Hispanic ethnicity. Poisonings was the leading cause of injury deaths for Whites and Hispanics, while firearm-related was the leading cause for Blacks.

Injuries by Intent

Unintentional or "Accidental" Injury
In 2008, there were 2029 unintentional injury deaths among Massachusetts residents, accounting for 72% of all injury deaths. In 2008, the leading causes of unintentional injury deaths were poisonings (36%), which includes drug overdoses, falls (24%), and motor vehicle-related deaths (18%) (Table 20).

Men had more than twice the death rate as women for unintentional injuries (41.2 vs. 17.4) (Table 20). The unintentional injury death rates for men were higher than that of women by certain race and ethnicity: 2.4 times higher among Whites, 2.9 times higher among Blacks, and 4.4 times higher among Hispanics. White men had the highest unintentional injury death rate to falls (9.2 deaths per 100,000 population) (Table 21).

Suicides
In 2008, there were 499 suicides compared with 504 in 2007 (this decrease was not statistically significant) (Table 22). The suicide rate for Massachusetts in 2008 was relatively stable from 2007 (7.3 deaths per 100,000 in 2008, compared with 7.5 in 2007). The trend analysis shows that after a continued decline of 3% per year since 1994, suicide rates have been increasing by 3% per year since 2002.

The majority of suicides (77%) occurred among persons ages 25-64 years. Suicide rates were highest for persons ages 25-64 years (10.9 deaths per 100,000). For men, suicide rates were highest for ages 65 years and older (14.6 deaths per 100,000). Males make up 78% of all suicides.

Whites accounted for 91% of all suicides in 2008, and continued to have the highest suicide rate: 8.2 deaths per 100,000. The suicide rates for all racial and ethnicity groups remained stable from 2007 (Table 23). The leading causes of suicide deaths were "hanging, strangulation, or suffocation" (45%), followed by firearm (23%), and poisoning (20%) (Table 24).

Homicides
In 2008, there were 166 homicides compared with 183 in 2007 (this decrease was not statistically significant) (Table 22). The majority (82%) of homicides occurred among persons ages 15-44 years; 86% of the homicides among men and 58% of the homicides among females were among persons ages 15-44 years (Table 22). The trend analysis shows that after a continued decline of 15% per year since 1994, homicide rates have been increasing by 4% per year since 1998.

Most homicides occurred among Black men (42%), who also had the highest homicide rate (29.6 deaths per 100,000), which was 25 times higher than that of White men (1.2 deaths per 100,000) (Table 23). The leading cause of homicides was firearms (58%) followed by cut or pierce (29%) (Table 24). In 2008, homicides were among the 10 leading causes of death for Blacks and for Hispanics (as the seventh cause for Blacks and the eight cause for Hispanics). Homicides were the 31st cause of death for Whites. There were no statistical changes in homicide rates by race and Hispanic ethnicity from the previous year.

Injuries by the Leading Three Causes:

Poisonings
Poisonings, which include drug overdoses, accounted for 867 (31%) of all injury deaths in 2008 (Table 25). Table 26 presents poisonings deaths by intents (unintentional, undetermined, and suicide) and leading agents such as opioids and alcohol. Most poisoning deaths (88%) were classified as unintentional or of undetermined intent (see method notes page 14) and 12% were suicides. Sixty-nine percent of the poisoning deaths were associated with an opioid, which includes drugs such as heroin, oxycodone, morphine, codeine and methadone, and 26% were associated with alcohol. This year there was a drop in the number of opioid deaths—43 fewer deaths, from 637 to 594. While this change did not achieve statistical significance, it is important to note that this drop may reflect the effectiveness of the Departments focused efforts to reduced opioid overdoses, including the Opioid Overdose Prevention and Reversal Program[21], which began in 2008.

[21] For more information about this program: http://www.mass.gov/?pageID=eohhs2pressrelease&L=4&L0=Home&L1=Government&L2=Departments+and+Divisions&L3=Department+of+Public+Health&sid=Eeohhs2&b=pressrelease&f=100223_narcan_pilot&csid=Eeohhs2

The percentage of deaths with alcohol as an agent rose significantly from 5% of poisoning deaths in 2006, to 18% in 2007, and to 26% in 2008, when it out numbered cocaine-associated deaths (note: these groups are not necessarily mutually exclusive as some deaths may involve more than one agent).

Falls
In 2008, there were 496 fall-related deaths, which have increased at an average of 18% per year since 2004. Fall-related deaths were the second leading cause of all injury and unintentional injury deaths (they were the third leading cause in 2007). The vast majority (81%) of these deaths occurred among older adults ages 65 years. Fall death rates were highest among residents ages 85 years and older (141.9 deaths per 100,000) compared with elders in other age subgroups (rates among those ages 65-74 years and ages 75-84 years were 15.4 and 43.8 deaths per 100,000, respectively). Fall death rates among males were higher than females for all age groups (Tables 18- 21 and Table 25). The number of fall deaths involving beds increased from 10 in 2007 to 28 in 2008 (data not shown).

Motor-Vehicle Related
In 2008, there were 373 motor vehicle-related injury deaths compared with 437 deaths in 2007. Pedestrians accounted for 19%; motorcyclists accounted for 12%; occupants accounted for 9% of all unintentional motor vehicle-related deaths; and other or unspecified persons accounted for 58% (Note: this category may include a substantial number of occupant deaths) (Table 25). Motor vehicle-related deaths were the third leading cause of all injury and unintentional injury deaths. Motor vehicle-related deaths rates were highest among residents ages 75+ years (13.7 deaths per 100,000 for ages 75 to 84, and 18.2 deaths per 100,000 for ages 85+).

HIV/AIDS
In 2008, there were 143 Massachusetts residents who died from HIV/AIDS, which was the same as in 2007, the lowest annual number of HIV/AIDS deaths in Massachusetts since the peak of the epidemic in 1994 (981 HIV/AIDS deaths). The death rate for HIV/AIDS deaths was 2.0 in 2008, which was the same as in 2007. The proportion of HIV/AIDS deaths for persons ages 45 years and older is 3.7 times what it was at the peak of the epidemic in 1994 (73% vs. 20%) (Table 28). In 2008, more than half of HIV/AIDS deaths occurred among persons ages 50 years and older and 19% were among persons ages 60 years and older.

The proportion of HIV/AIDS deaths among women has almost doubled since 1994 (29% vs. 19%) (Table 29). Disparities continued in the HIV/AIDS death rate among race and ethnicity groups. In 2008, there were no statistical changes in the HIV/AIDS death rate by race and Hispanic ethnicity from the previous year. Yet, Blacks are dying at a rate more than 9 times that of Whites (10.6 vs. 1.2 deaths per 100,000) (Table 30). For Hispanics, the HIV/AIDS death rate was 6.9 times higher than that of Whites (8.3 vs. 1.2 deaths per 100,000).

Infant Deaths
In 2008, there were 381 infant deaths (deaths of infants less than one year of age) and 76,969 live births among Massachusetts residents, which meant that the infant mortality rate (IMR) was 5.0 deaths per 1,000 live births. The 2008 IMR was similar to the 2007 rate (4.9 deaths per 1,000 live births), and it has decreased by 29% since 1990, from 7.0 deaths per 1,000 live births to 5.0 deaths per 1,000 live births (Table 31).

In 2008, Blacks continued to have the highest IMR among all race and ethnicity groups at 11.9 deaths per 1,000 live births compared to 10.2 deaths per 1,000 live births in 2007 (Figure 8). The White IMR was 3.9 in 2007 and 3.7 in 2008. The IMR for Asians was 3.1 in

2007 and 2.7 in 2008. The Hispanic IMR was 7.4 in 2007 and 7.9 in 2008. None of these changes was statistically significant.

In 2008, 76% of infant deaths occur in the first month of life. The leading causes of infant death were conditions arising in the perinatal period (62% of all infant deaths) followed by congenital malformations (15% of all infant deaths) (Table 32). The leading causes of death in the neonatal period were disorders relating to short gestation and low birthweight, while Sudden Infant Death Syndrome (SIDS) was the leading cause of death in the post neonatal period (28-364 days).

The distribution of the leading causes of infant death varied among race and ethnicity groups. Fifty-eight percent of all Hispanic infant deaths and Black infant deaths were due to conditions arising in the perinatal period compared with 68.8% of all White infant deaths and 50.0% of Asian infant deaths (Table 33).

Deaths in the 30 Largest Massachusetts Cities and Towns

The premature mortality rate (PMR) measures the rate of premature death, that is, deaths that occur before the age of 75 years per 100,000, and is age-adjusted to the 2000 US Standard Population under 75 years of age.

Though strictly a mortality measure, the premature mortality rate has been found to be highly correlated with morbidity indicators, which measure the level of "sickness" rather than death for a given population. Therefore, it is expected that populations with high PMRs would also tend to report poorer general health status, a greater number of symptoms, and more illness both at the subjective self-reported level and the objective illness level[22]. PMR analyses make it clear that community health status is related to many factors. Health care is certainly one of these factors, but not the only factor. PMR may be related to socioeconomic status and its correlates, such as higher rates of smoking, substance abuse, violence, obesity, stress, pollution, and lack of access to care. However, there are other possible reasons for high PMRs: specific sub-populations of younger persons at risk for motor vehicle-related deaths in rural areas and heart attack deaths in persons ages 45 to 64 years in suburban areas.

Among the 30 largest communities, fifteen had higher PMRs than the state in 2008. The four communities with the lowest PMRs in 2007 also had the lowest in 2008: Framingham (234.7), Cambridge (219.9), Newton (167.4), and Brookline (142.3) (Table 35). [Please note that Table 36 presents PMR for all cities/towns in the Commonwealth, and Table 46 presents selected causes of death for all cities/towns].

Mortality by Poverty Level

Traditionally, disparities in mortality were thought to be due to differences in health care access and individual risk behaviors. More recently, economic, environmental, and social factors have been recognized as influencing disparities in mortality. Together, these factors are referred to as the *social determinants of health*. If we are to understand disparities in mortality, we must begin to examine the social determinants of health. Starting with this year's report, we have examined premature mortality and infant mortality rates by census tract poverty[23].

[22] Eyles J, Birch S. A population needs-based approach to health care resource allocation and planning in Ontario: A link between policy goals and practice. *Can J Public Health* 1993; 84 (2): 112-117.

[23] Geocoded death data were linked to 2000 Census data by census tract of decedent's residence. Population counts by census tract and age were derived from Summary File 1 of the US 2000 Census. Poverty levels for census tracts were derived from Summary Files 3. We used the methodology from the Harvard School of Public

The age-adjusted death rate for those living in the most economically deprived areas (≥20% of its population below poverty) was 682.8 deaths per 100,000 population under 75 years of age–almost 3 times higher than the rate of 241.8 for those living in most affluent areas[24] (<5% below poverty) (Figure 18).

We have also included infant mortality by census tract poverty. The infant mortality rate for those living in the most economically deprived areas (≥20% below poverty) was 8.0 deaths per 1000 live births - almost 3 times higher than the rate of 3.0 for those living in most affluent areas (<5% below poverty) (Figure 19).

Healthy People 2010 Mortality-Related Objectives

In 2008, Massachusetts achieved or moved closer to meeting over one-half of the Healthy People 2010 mortality objectives. Out of 40 objectives presented, Massachusetts 2008 death data indicated that the state has already met 21 of the 2010 target goals, including those for female breast cancer, cervical cancer, oropharyngeal cancer, prostate cancer, coronary heart disease, stroke, homicide, firearm-related, motor vehicle crashes, postneonatal, birth defects, congenital malformations, death rates for children ages 1-4, children ages 5-9, children ages 10-14, children ages 15-19, asthma death rates for children under age 5, asthma death rates for children ages 5-14, asthma death rates for persons ages 15-34, asthma death rates for persons ages 35-64, and asthma death rates for persons ages 65 years and older (Table 34).

For six objectives, the 2008 Massachusetts indicators were within 25% of the target goals. These objectives included overall cancer mortality, lung cancer, colorectal cancer, drownings, infant mortality rate, and death rates for persons ages 20-24.

However, Massachusetts still needs to improve in the following 13 areas: malignant melanoma mortality, HIV/AIDS deaths, cirrhosis deaths, drug-induced deaths, poisoning deaths, “hanging, strangulation, or suffocation” deaths, unintentional injuries, fire deaths, fall deaths, suicides, neonatal mortality rate, maternal deaths, and SIDS. Although these rates were greater than 25% from the target goals, most were still lower than the rates for the United States overall.

Amenable Mortality

Certain causes[25] of premature deaths (deaths before age 75), are referred to as “amenable”, that is, they may not have occurred in the presence of timely and effective health care. This concept was developed in the 1970s in the United States and has been implemented by many countries as a tool to track changes over time and assess the performance of health care systems. Categories that are considered amenable to health care include; bacterial infections, treatable cancers, diabetes, cardiovascular and cerebrovascular disease, Ischemic heart disease (50%) and complications of common surgical procedures[26].

Health Geocoding Project methodology web page, especially in choosing the four levels of poverty by census tract. For more information see: http://www.hsph.harvard.edu/thegeocodingproject/webpage/monograph/methods.htm. Accessed 7/14/2010.

[24] For a discussion of how the Census Bureau determines poverty see the following web page: http://factfinder.census.gov/servlet/MetadataBrowserServlet?type=subject&id=POVERTYSF3&dsspName=DEC_2000_SF3&back=update&_lang=en. Accessed 7/14/2010.

[25] For a list of causes considered amenable to health care, see Table A13.

[26] Nolte E and McKee CM. Measuring the Health of Nations: Updating An Earlier Analysis. *Health Affairs*; 2008; 27(1): 58-71.

In 2008, deaths amenable to health care accounted for 10% of deaths overall. Moreover, they accounted for 28% of all premature deaths (Figure 20). When the amenable mortality for 2000 is compared with that of 2008, it has declined for the state overall, and for Whites, but there have been no statistically significant changes for other groups (Figure 21). When amenable mortality for 2006 is compared with amenable mortality for 2008, there has been a significant decline for the state as a whole (from 84.0 deaths per 100,000 persons ages less than 75 in 2006 to 78.7 in 2008), and for Whites (from 82.5 deaths per 100,000 persons ages less than 75 in 2006 to 77.4 in 2008), but, there has been no change for other groups. In the future, amenable mortality may be a useful indicator of the success of the reform in health care access.

Table 1. Trends in Mortality Characteristics, Massachusetts: 1998-2008

Year		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Resident deaths[1]												
	Number	55,204	55,763	56,591	56,733	56,881	56,194	54,419	53,776	53,293	52,690	53,341
	Crude rate[2,3,4]	877.5	881.9	889.5	887.1	887.0	875.2	848.1	840.4	827.9	816.9	820.9
	Age-adjusted rate[5]	808.8	808.8	812.2	803.4	793.8	772.6	739.3	720.6	717.6	704.4	703.5
Race/ethnicity of decedent [6,7]												
White non-Hispanic	Number	51,829	52,282	52,959	52,792	52,839	52,050	50,439	49,639	49,132	48,518	49,059
	Percent[8]	93.9	93.8	93.6	93.1	92.9	92.6	92.7	92.3	92.2	92.1	92.0
	Age-adjusted rate	808.5	808.7	814.5	804.4	796.0	775.2	744.7	725.0	723.3	711.1	710.7
Black non-Hispanic	Number	1,969	2,018	2,109	2,226	2,275	2,378	2,225	2,263	2,233	2,211	2,222
	Percent	3.6	3.6	3.7	3.9	4.0	4.2	4.1	4.2	4.2	4.2	4.2
	Age-adjusted rate	1,076.6	995.2	933.5	951.0	935.6	949.1	866.2	865.8	838.4	820.5	805.8
Asian non-Hispanic	Number	413	449	467	510	531	579	531	570	635	610	692
	Percent	0.7	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.2	1.2	1.3
	Age-adjusted rate	500.7	422.4	401.4	396.9	397.6	411.9	353.7	345.0	379.0	342.0	372.5
Hispanic	Number	924	975	1,014	1,059	1,166	1,121	1,115	1,230	1,194	1,264	1,275
	Percent	1.7	1.7	1.8	1.9	2.0	2.0	2.1	2.3	2.2	2.4	2.4
	Age-adjusted rate	463.8	507.8	585.2	556.5	591.0	520.6	482.1	500.4	479.9	477.7	458.2
Gender of decedent [7]												
Female	Number	29,568	29,786	30,465	30,780	30,427	30,053	29,067	28,695	28,508	27,851	28,246
	Age-adjusted rate	678.0	676.9	688.8	689.5	674.4	659.3	632.3	617.8	612.7	596.3	595.9
Male	Number	25,635	25,977	26,126	25,953	26,454	26,141	25,352	25,079	24,785	24,838	25,095
	Age-adjusted rate	1,000.8	1,001.6	988.7	957.6	955.1	923.3	878.0	852.5	858.9	853.3	852.2
Age of decedent [7]												
<1 year	Number	414	418	377	407	397	383	376	391	369	380	381
1-14 years	Number	128	165	181	169	167	149	137	113	124	128	119
15-24 years	Number	413	407	403	444	460	490	517	489	471	505	421
25-44 years	Number	2,373	2,397	2,375	2,571	2,490	2,484	2,247	2,173	1,953	2,023	1,906
45-64 years	Number	7,501	7,431	7,841	8,004	8,344	8,476	8,347	8,355	8,660	8,560	8,426
65-74 years	Number	10,216	9,782	9,746	9,323	8,922	8,611	8,126	7,905	7,572	7,494	7,425
75-84 years	Number	16,946	17,397	17,554	17,416	17,262	16,973	16,342	15,632	15,333	14,781	14,970
85+ years	Number	17,213	17,765	18,113	18,395	18,838	18,627	18,327	18,718	18,811	18,816	19,692

1. Deaths presented in all tables and figures are resident deaths. 2. Deaths per 100,000 residents. 3. See Glossary for further definition of terms and rates. 4. Rate calculations are based on resident population estimates from MISER for 1994-1995 (released in September 1999), 1996-1997 (released in November 1999), and 1998 (released in September 2000). Resident death data for 2000-2006 are calculated using the Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2000-2006 (MMARS00-06), released October 2006. Population estimates from the National Center for Health Statistics for 2008 were used to calculate death rates at the state level 5. Rates are age-adjusted per 100,000 residents using the 2000 US standard population. 6. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in race categories. Please see the Technical Notes in the Appendix for a more detailed explanation. 7. Column sum may not equal total because the race, gender or age of some decedents was unknown. 8. Percent of all resident deaths in that year.

Table 2. Five Leading Causes of Death[1], Comparability Unmodified and Comparability Modified Age-Adjusted Rates, Massachusetts and United States: 1998-2008

Year[2]		Heart Disease				Cancer				Stroke			
		MA		US		MA		US		MA		US	
		Comparability Unmodified[3]	Comparability Modified[4]	**Comparability Unmodified[3]**	Comparability Modified[4]	**Comparability Unmodified[3]**	Comparability Modified[4]	**Comparability Unmodified[3]**	Comparability Modified[4]	**Comparability Unmodified[3]**	Comparability Modified[4]	**Comparability Unmodified[3]**	Comparability Modified[4]
1998	Rate	231.0	227.7	272.4	273.9	209.0	210.4	202.4	204.4	47.1	49.7	59.5	63.1
	% of Total	29.0		31.6		25.0		23.0		6.0		6.8	
1999	Rate	222.1		265.9		206.6		201.6		50.2		61.4	
	% of Total	27.9		30.3		24.8		23.0		6.4		7.0	
2000	Rate	216.7		258.2		206.1		200.9		50.9		60.9	
	% of Total	27.1		29.5		24.8		23.0		6.4		6.9	
2001	Rate	211.0		247.7		200.0		195.8		46.7		57.9	
	% of Total	26.7		28.9		24.2		22.9		6.2		6.8	
2002	Rate	201.1		240.4		200.1		194.0		48.1		56.3	
	% of Total	26.0		28.4		24.0		22.8		6.0		6.7	
2003	Rate	196.6		232.3		193.0		190.1		45.0		53.5	
	% of Total	26.0		28.0		24.1		22.7		6.0		6.5	
2004	Rate	182.8		217.0		188.4		185.8		42.5		50.0	
	% of Total	25.3		27.2		24.5		23.1		6.0		6.3	
2005	Rate	172.2		211.0		184.9		183.8		38.1		46.6	
	% of Total	24.6		26.6		24.5		22.8		5.5		5.9	
2006	Rate	168.8		199.4		186.3		180.8		36.7		43.6	
	% of Total	24.2		25.9		25.1		23.1		5.4		5.7	
2007	Rate	165.7		199.4		179.2		180.8		35.0		43.6	
	% of Total	24.2		25.9		24.6		23.1		5.1		5.7	
2008	Rate	165.5[5]		190.9[6]		177.8[5]		178.4[6]		33.7[5]		42.2[6]	
	% of Total	24.1		25.4		24.4		23.2		4.9		5.6	

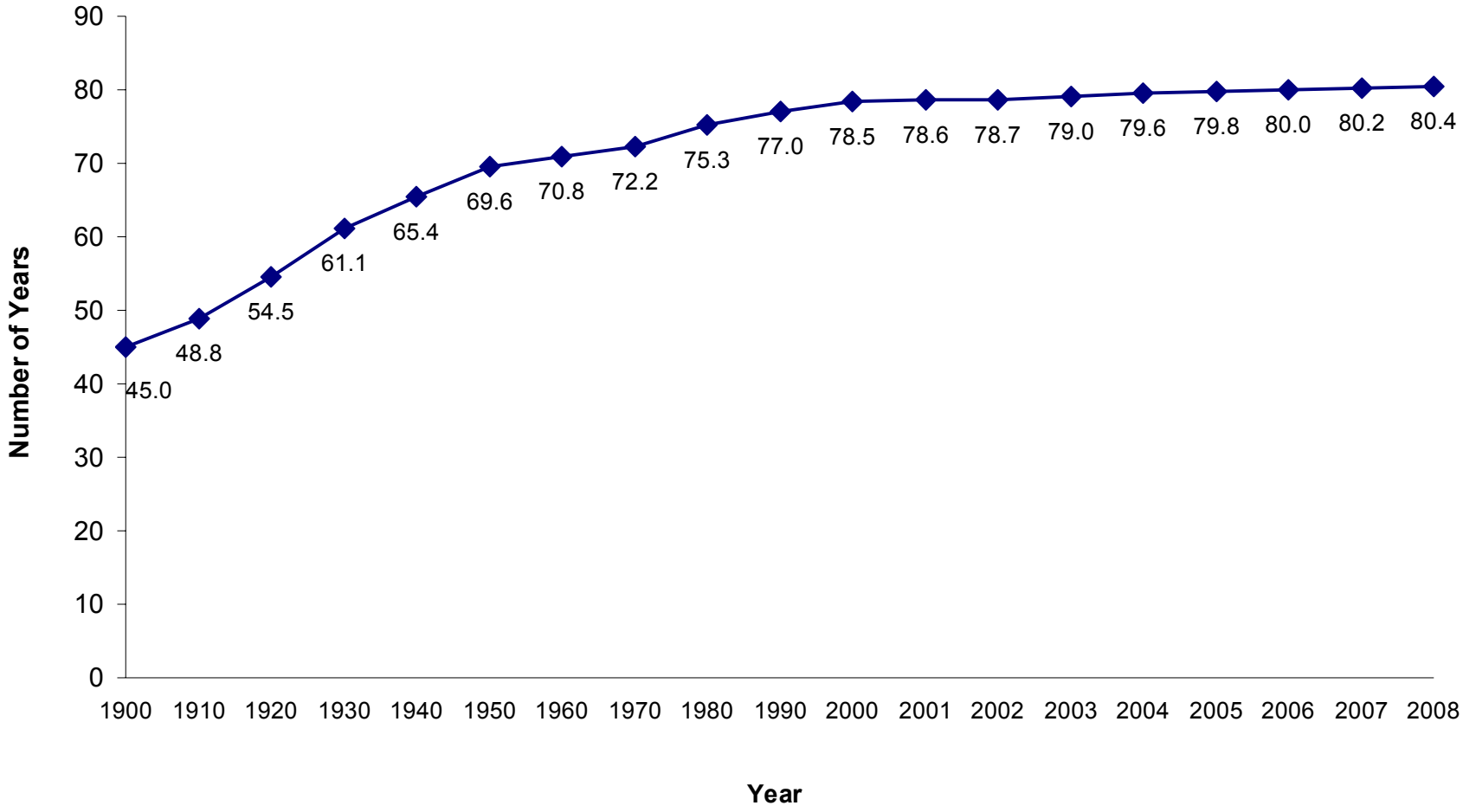
1. Cause of death: the disease or injury that initiated the events leading to death; or the circumstances of the unintentional or intentional injury that resulted in the death. 2. 1990-1998 data coded according to ICD-9. 1999-2007 data coded according to ICD-10. ICD-9 and ICD-10 codes used in this publication are listed in the Appendix. 3. Comparability unmodified rate: this rate has not been modified to account for changes from ICD-9 to ICD-10. 4. Comparability Modified Rate: this rate is adjusted using the preliminary comparability ratio (CR) from NCHS, February 2001 in order to account for changes from ICD-9 to ICD-10. Please see Appendix for a more detailed explanation and for a list of CR used in this report. 5. When comparing data over time between 1998 through 2008, use the comparability modified rates for year 1998. MA population denominators are from the NCHS Modified Age, Race/Ethnicity, & Sex Estimates 2008, released September 5, 2008. 6. US data for 2007 obtained from NCHS. Deaths: Final Data for 2007, Volume 58, Number 19, May 2010.

Table 2 (continued). Five Leading Causes of Death[1], Comparability Unmodified and Comparability Modified Age-Adjusted Rates, Massachusetts and United States: 1998-2008

Year[2]		Influenza/Pneumonia				Unintentional Injuries				All Causes	
		MA		US		MA		US		MA	US
		Comparability Unmodified[3]	Comparability Modified[4]	Comparability Unmodified[3]	Comparability Modified[4]	**Comparability Unmodified[3]**	Comparability Modified[4]	Comparability Unmodified[3]	Comparability Modified[4]		
1998	Rate	40.2	28.1	34.6	24.2	19.9	19.8	35.0	36.1	808.8	875.4
	% of Total	5.2		3.9		2.3		4.2			
1999	Rate	30.3		23.4		19.3		35.9		808.8	881.9
	% of Total	3.9		2.7		2.3		4.1			
2000	Rate	29.1		23.7		20.2		35.6		812.2	872.0
	% of Total	3.7		2.8		2.4		3.9			
2001	Rate	24.0		21.8		21.9		34.3		803.5	855.0
	% of Total	3.1		2.6		2.6		4.0			
2002	Rate	27.3		22.7		20.5		35.3		793.8	846.8
	% of Total	4.0		2.7		2.0		4.2			
2003	Rate	26.0		22.0		20.1[7]		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		17.7		30.5		38.5		704.4	776.4
	% of Total	2.9		2.3		4.0		4.9			
2008	Rate	20.0[7]		16.2[8]		28.6[7]		40.0[8]		703.5	760.2[8]
	% of Total	3.0		2.2		3.8		5.1			

1. 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. 2. 1994-1998 data coded according to ICD-9. 1999-2006 data coded according to ICD-10. ICD-9 and ICD-10 codes used in this publication are listed in the Appendix. 3. Comparability unmodified rate: this rate has not been modified to account for changes from ICD-9 to ICD-10. 4. Comparability Modified Rate: this rate is adjusted using the preliminary comparability ratio (CR) from NCHS, February 2001 in order to account for changes from ICD-9 to ICD-10. Please see Appendix for a more detailed explanation and for a list of CR used in this report. 5. All rates are age-adjusted per 100,000 residents using the 2000 US standard population. US data for years 1994-1998 obtained from Compressed Mortality File on CDC Wonder, February 2001. 6. NA: comparability ratio is not applicable for years prior to 1994. 7. When comparing data over time between 1998 through 2008, please use the comparability modified rate for year 1998. MA population denominators are from the NCHS Modified Age, Race/Ethnicity, & Sex Estimates 2008, released September 5, 2008. 8. US data for 2007 obtained from NCHS. Deaths: Final Data for 2007, Volume 58, Number 19, May 2010.

Figure 1. Life Expectancy at Birth, Massachusetts: 1900-2008



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
Population estimates are from the NCHS Modified Age, Race/Ethnicity, & Sex Estimates 2007, released September 5, 2008.

Figure 2. Expected Years of Life Remaining at Different Ages by Race and Hispanic Ethnicity, Massachusetts: 2008

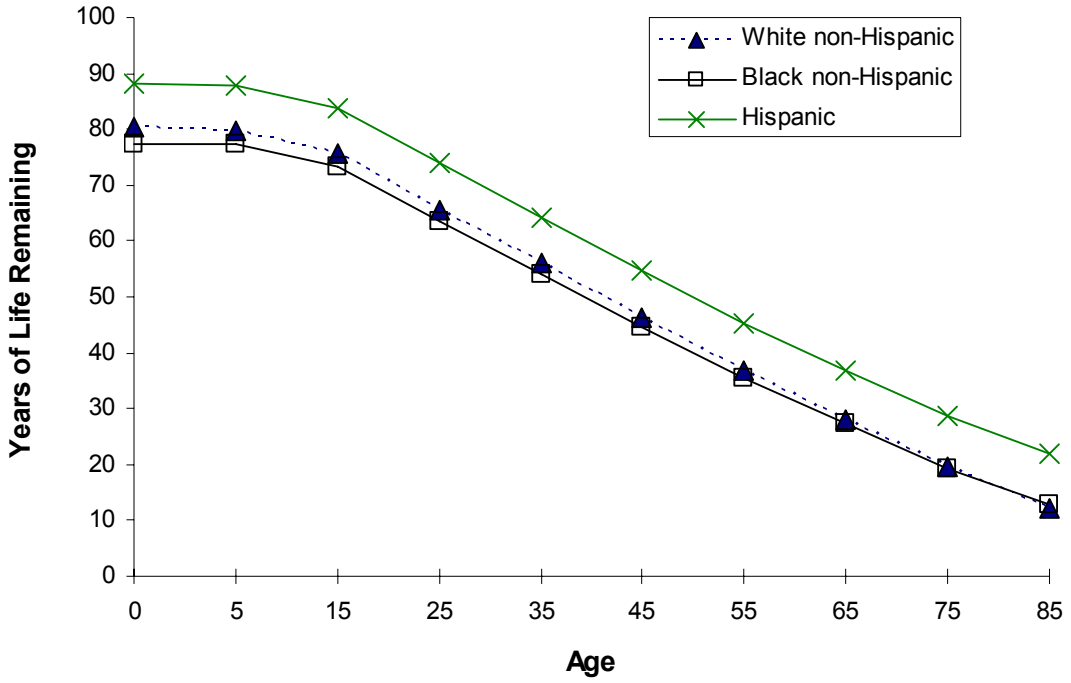
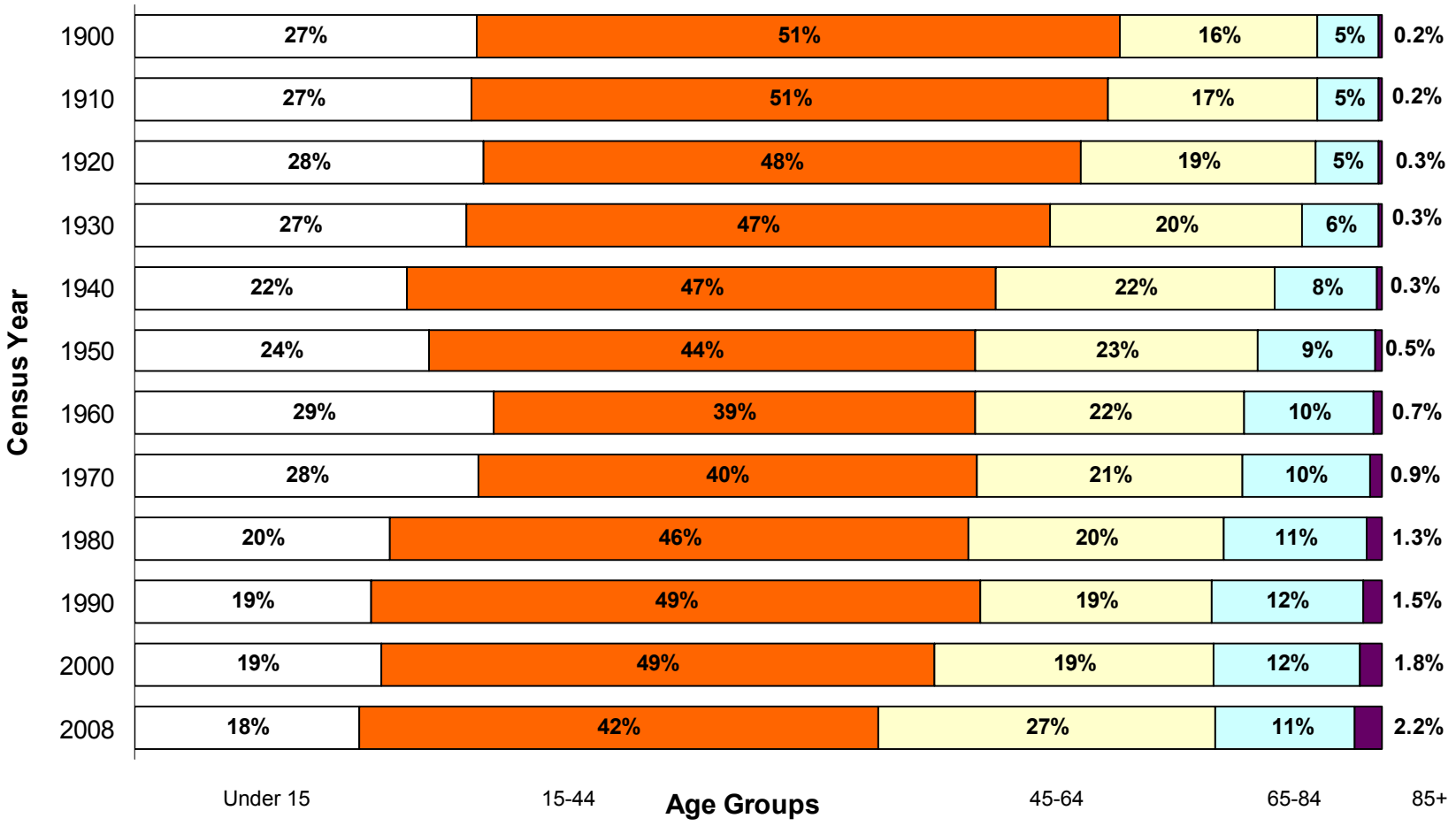


Table 3. Years of Life Remaining[1] by Race and Hispanic Ethnicity and Gender, Massachusetts: 2008

At Age:	All	Females	White non-Hispanic Females	Black non-Hispanic Females	Hispanic Females[2]	Males	White non-Hispanic Males	Black non-Hispanic Males	Hispanic Males[2]
Birth	80.4	82.7	82.6	80.5	91.2	77.8	78.0	73.9	84.8
1 year old	79.7	82.1	81.9	80.2	90.8	77.2	77.3	74.2	84.4
5 years old	75.8	78.1	77.9	76.3	86.9	73.3	73.3	70.2	80.5
15 years old	65.9	68.1	67.9	66.4	76.9	63.4	63.3	60.4	70.7
25 years old	56.1	58.3	58.1	56.6	67.0	53.8	53.6	51.2	61.3
35 years old	46.5	48.5	48.3	46.9	57.3	44.3	44.2	42.0	51.9
45 years old	37.1	38.9	38.7	37.8	47.7	35.0	34.9	32.9	42.7
55 years old	28.1	29.7	29.5	29.1	38.6	26.2	26.0	24.8	34.4
65 years old	19.7	21.0	20.8	20.9	29.9	18.1	17.9	17.4	26.9
75 years old	12.4	13.4	13.2	14.0	22.6	11.1	10.9	11.2	21.2
85 years old	7.3	7.7	7.6	8.4	17.8	6.4	6.2	7.3	18.3

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 the NCHS Modified Age, Race/Ethnicity, & Sex Estimates 2008, released May 21, 2010. 3. There are well-known difficulties in calculating accurate mortality rates for Massachusetts smaller populations such as Asians, Native Americans and Hispanics- please see the first entry in the "Results" section, *Number of Deaths and Age-Adjusted Death Rates.*

Figure 3. Changes in Age Composition of the Population, Massachusetts: 1900-2008



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 2008 are from the NCHS Modified Age, Race/Ethnicity, & Sex Estimates 2008..

Figure 4. Trends in Percentage of Deaths from Selected Causes, Massachusetts: 1842-2008

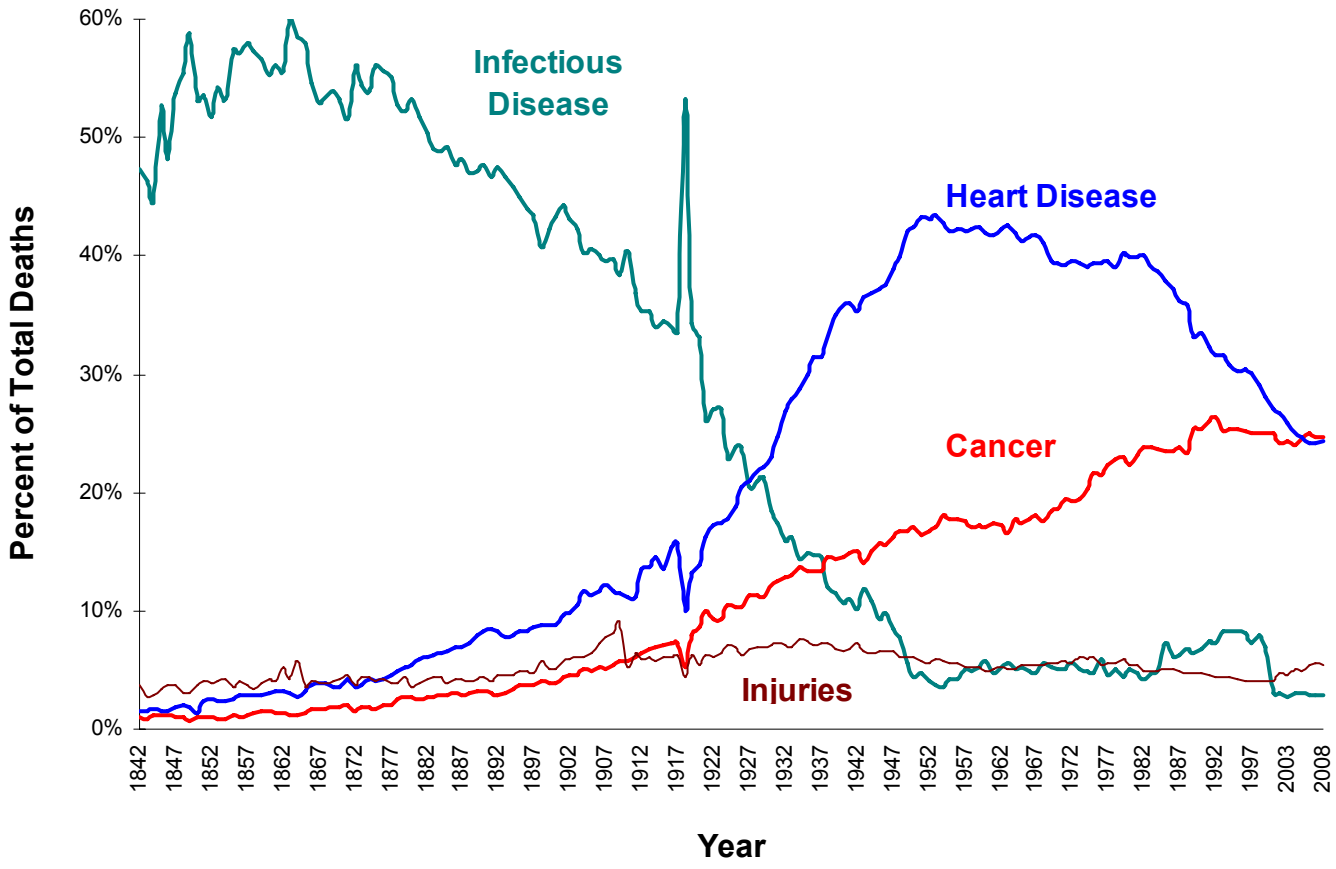
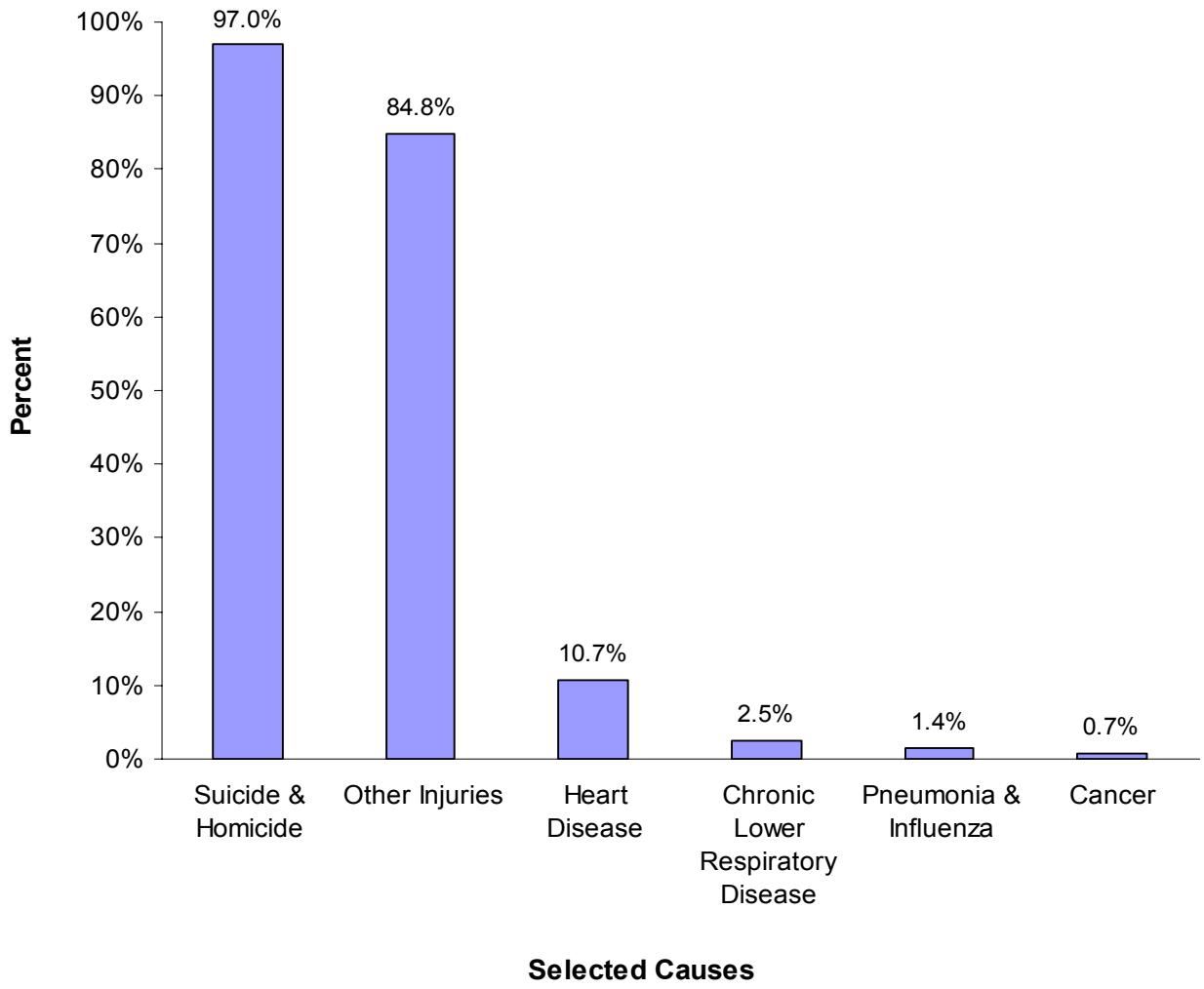


Table 4. Distribution of Deaths by Place of Occurrence, Massachusetts: 2004-2008

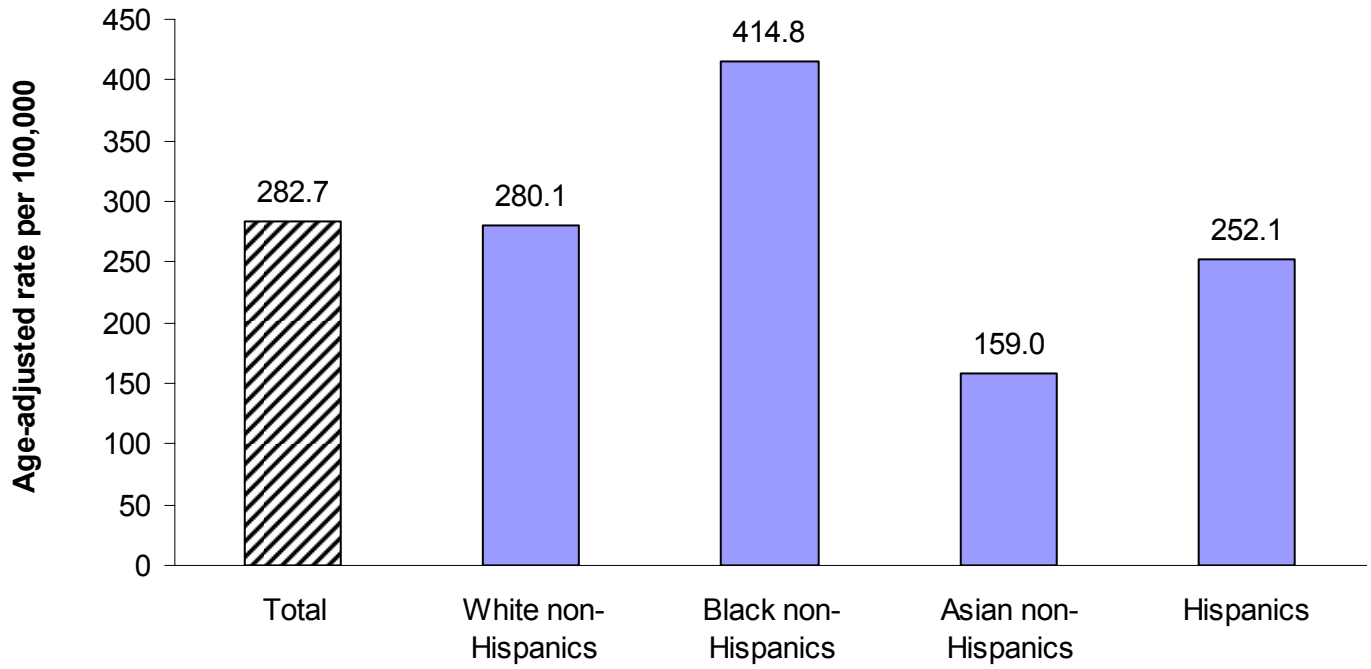
Type of Place where Death Occurred	2004		2005		2006		2007		2008	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Hospital (inpatient/outpatient)	23,558	43%	23,129	43%	22,512	42%	22,097	42%	22,301	42%
Dead on Arrival	936	2%	871	2%	692	1%	613	1%	585	1%
Nursing Home	16,511	30%	16,446	31%	16,205	30%	15,924	30%	16,098	30%
At Home	12,287	23%	12,004	22%	12,372	23%	12,524	24%	12,490	23%
Other	1,104	2%	1,311	2%	1,491	3%	1,498	3%	1,820	3%
Unknown	23	0.04%	15	0.03%	21	0.04%	34	0.1%	47	0.1%

Figure 5. Proportion of Deaths Certified by Medical Examiner for Selected Causes of Death, Massachusetts: 2008



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.

Figure 6. Premature Mortality Rate (PMR) by Race and Hispanic Ethnicity, Massachusetts: 2008

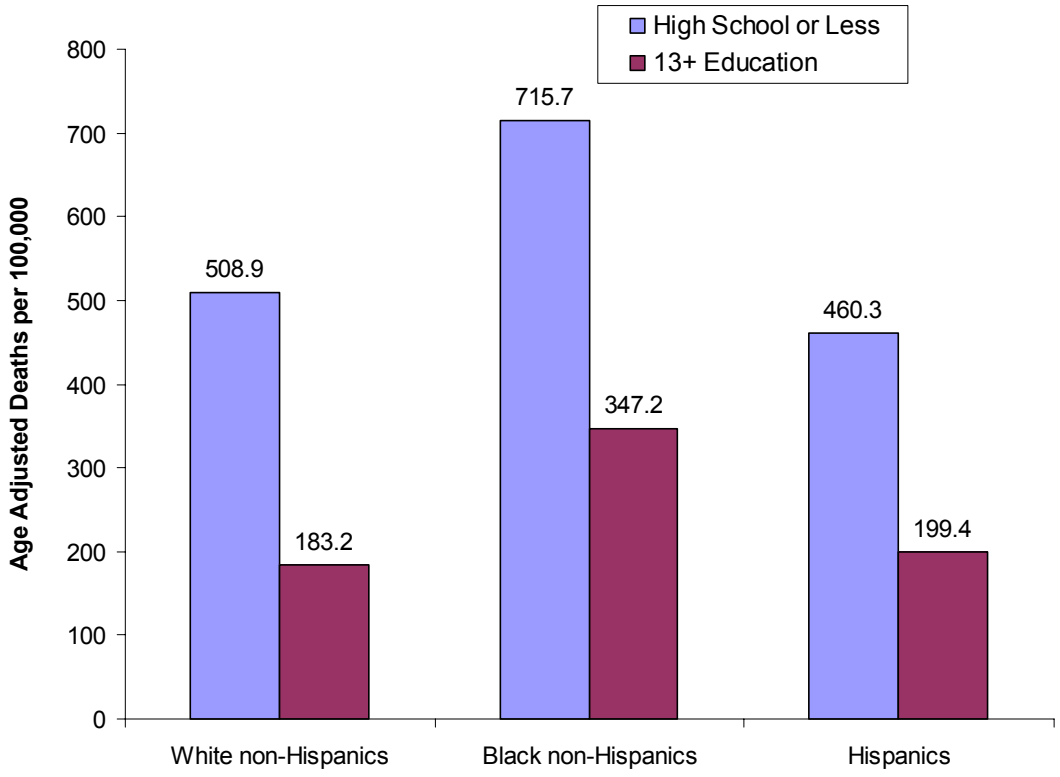


Premature Mortality Rate is defined as deaths that occur before the age of 75 years per 100,000, age-adjusted to the 2000 US standard population under 75 years of age.

Table 5. Age-Adjusted Death Rates for Ages 25-64 Years by Educational Attainment, Massachusetts: 2008

	Age-Specific Rates			Age-Adjusted Rates
	25-34 years	35-44 years	45-64 years	25-64 years
Years of school completed*				
High school or less	133.0	224.8	926.5	**513.5**
13+ Education	31.2	59.9	358.9	**188.4**

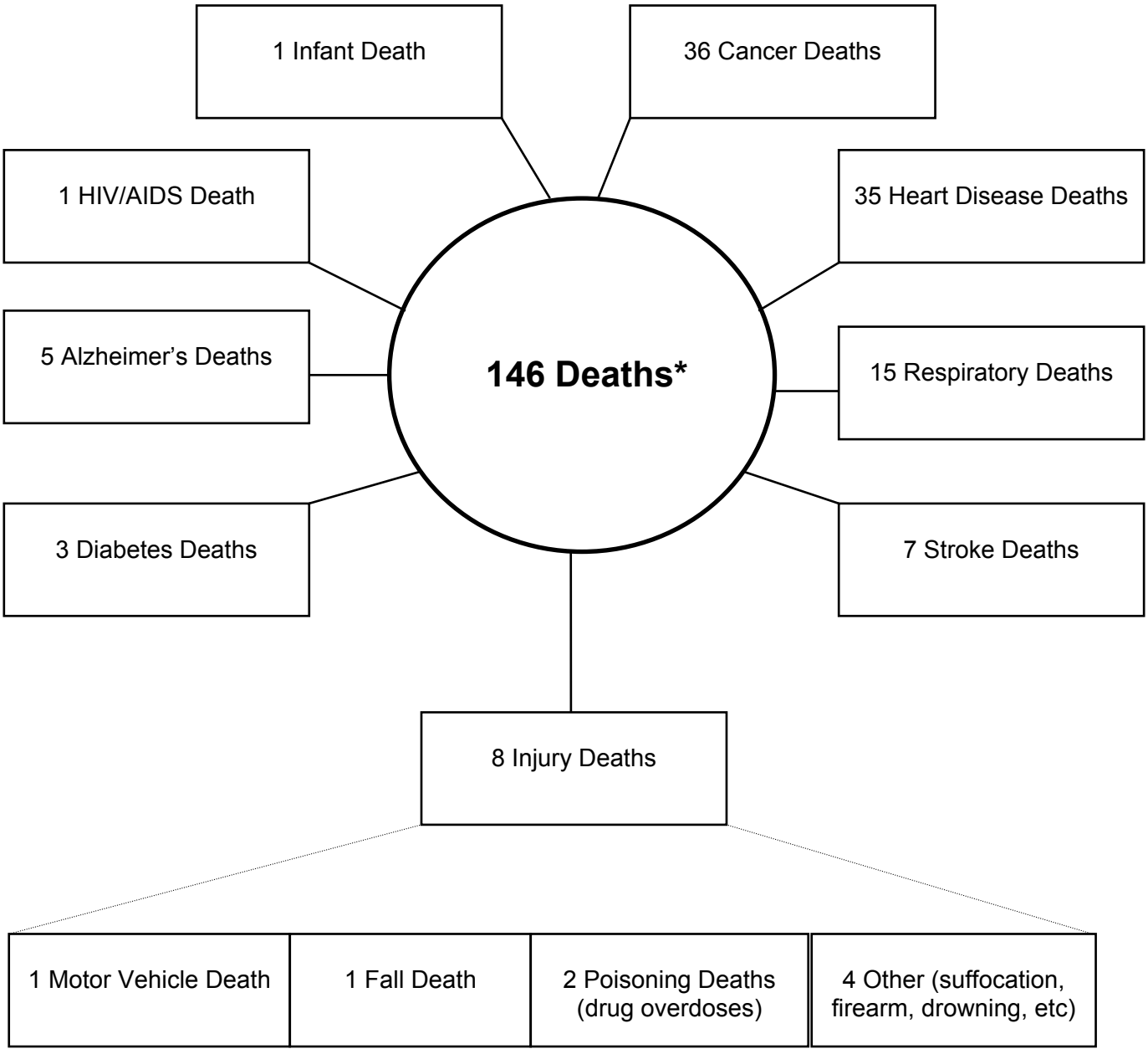
Age-Adjusted Death Rates by Education and Race and Hispanic Ethnicity Adults Ages 25-64, Massachusetts: 2008



*Note: For this table and figure, 2000 denominator figures are used since these are the latest numbers available for population by age and education. Rates are per 100,000 age-adjusted to the 2000 U.S. standard population.

Figure 7. Daily Mortality Statistics, Massachusetts: 2008

Every day in 2008, in Massachusetts there were on average:



*includes 35 deaths due to other causes

Table 6. Top Ten Leading Underlying Causes of Death by Age, Massachusetts: 2008

	Age Groups (number of deaths)								
Rank[1]	**<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 (95)	Cancer (28)	Unintentional Injuries (180)	Unintentional Injuries (482)	Cancer (3092)	Cancer (2933)	Cancer (4119)	Heart Disease (5946)	**Cancer (12996)**
2	Congenital malformations (58)	Unintentional Injuries (24)	Homicide (63)	Cancer (289)	Heart Disease (1606)	Heart Disease (1485)	Heart Disease (3531)	Cancer (2508)	**Heart Disease (12840)**
3	Pregnancy Complications (28)	Congenital Malformation (11)	Suicide (44)	Heart Disease (244)	Unintentional Injuries (556)	Chronic Lower Respiratory Disease (497)	Chronic Lower Respiratory Disease (967)	Stroke (1298)	**Stroke (2636)**
4	SIDS (24)	Influenza & Pneumonia (5)	Cancer (24)	Suicide (175)	Chronic liver disease (299)	Stroke (253)	Stroke (824)	Alzheimer's Disease (1228)	**Chronic Lower Respiratory Disease (2565)**
5	Complications of placenta (21)	ill-defined conditions (5)	Heart Disease (18)	Homicide (73)	Chronic Lower Respiratory Disease (238)	Diabetes (207)	Alzheimer's Disease (492)	Influenza & Pneumonia (908)	**Unintentional Injuries (2029)**
6	Intrauterine Hypoxia (10)	Heart Disease (4)	ill-defined conditions (15)	ill-defined conditions (67)	Stroke (224)	Nephritis (187)	Nephritis (453)	Chronic Lower Respiratory Disease (851)	**Alzheimer's Disease (1829)**
7	Respiratory distress (10)	Perinatal conditions (4)	Congenital Malformation (11)	Chronic liver disease (63)	Diabetes (219)	Unintentional Injuries (141)	Influenza & Pneumonia (416)	Nephritis (604)	**Influenza & Pneumonia (1599)**
8	Circulatory System (8)	Suicide (3)	Injuries of Undetermined Intent (6)	HIV/AIDS (38)	Suicide (211)	Influenza & Pneumonia (134)	Diabetes (332)	Unintentional Injuries (389)	**Nephritis (1375)**
9	Neonatal hemorrhage (7)	Stroke (2)	Stroke (5)	Injuries of Undetermined Intent (31)	Septicemia (117)	Septicemia (133)	Septicemia (256)	ill-defined conditions (318)	**Diabetes (1084)**
10	Pulmonary hemorrhage (5)	Homicide (2)	Diabetes (3)	Diabetes (30)	ill-defined conditions (113)	Chronic liver disease (111)	Unintentional Injuries (252)	Pneumonitis (299)	**Septicemia (782)**
All Causes	**381**	**119**	**421**	**1,906**	**8,426**	**7,425**	**14,970**	**19,692**	**53,341**

[1] Ranking based on number of deaths. The number of deaths is shown in parentheses.

Injuries is 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).

Table 7. Leading Underlying Causes of Death, Numbers and Age-Specific Rates by Gender, Massachusetts: 2008

		Total		Female		Male	
Age	**Cause of death[1]**	**Number**	**Rate[2]**	**Number**	**Rate[2]**	**Number**	**Rate[2]**
1-14 years	**Total**	**119**	**10.9**	**49**	**9.2**	**70**	**12.6**
	Cancer	28	2.6	15	2.8	13	2.3
	Unintentional Injuries	24	2.2	6	1.1	18	3.2
	Congenital malformations	11	1.0	4	--[5]	7	1.3
	Influenza & Pneumonia	5	0.5	2	--[5]	3	--[5]
15-24 years	**Total**	**421**	**45.5**	**108**	**23.3**	**313**	**67.6**
	Unintentional Injuries	180	19.5	43	9.3	137	29.6
	Homicide	63	6.8	4	--[5]	59	12.7
	Suicide	44	4.8	14	3.0	30	6.5
	Cancer	24	2.6	7	1.5	17	3.7
25-44 years	**Total**	**1,906**	**106.9**	**632**	**70.6**	**1,274**	**143.6**
	Unintentional Injuries	482	27.0	100	11.2	382	43.1
	Cancer	289	16.2	166	18.5	123	13.9
	Heart Disease	244	13.7	76	8.5	168	18.9
	Suicide	175	9.8	36	4.0	139	15.7
45-64 years	**Total**	**8,426**	**481.1**	**3,256**	**361.6**	**5,170**	**607.5**
	Cancer	3,092	176.5	1,447	160.7	1,645	193.3
	Heart Disease	1,606	91.7	438	48.6	1,168	137.2
	Unintentional Injuries	556	31.7	172	19.1	384	45.1
	Chronic Liver disease	299	17.1	95	10.6	204	24.0
65+ years[4]	**Total**	**42,087**	**4,831.5**	**24,029**	**4,664.7**	**18,058**	**5,072.9**
	Heart Disease	10,962	1,258.4	6,155	1,194.9	4,807	1,350.4
	Cancer	9,560	1,097.5	4,818	935.3	4,742	1,332.1
	Stroke	2,375	272.6	1,559	302.6	816	229.2
	Chronic Lower Resp. Disease[3]	2,315	265.8	1,354	262.8	961	270.0

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. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title). 4. See Table 8 for leading causes of death for detailed age groups for persons ages 65+ years. 5. Calculations based on values 1-4 are excluded.

Table 8. Leading Underlying Causes of Death, Numbers and Age-Specific Rates (Ages 65 and older) by Gender, Massachusetts: 2008

		Total		Female		Male	
Age	**Cause of death[1]**	**Number**	**Rate[2]**	**Number**	**Rate[2]**	**Number**	**Rate[2]**
65-74 years	**Total**	**7,425**	**1,731.1**	**3,349**	**1,430.8**	**4,076**	**2,091.7**
	Cancer	2,933	683.8	1,360	581.0	1,573	807.2
	Heart Disease	1,485	346.2	567	242.2	918	471.1
	Chronic Lower Resp. Disease[3]	497	115.9	282	120.5	215	110.3
	Stroke	253	59.0	117	50.0	136	69.8
75-84 years	**Total**	**14,970**	**5,005.4**	**7,658**	**4,244.7**	**7,312**	**6,161.9**
	Cancer	4,119	1,377.2	2,022	1,120.8	2,097	1,767.2
	Heart Disease	3,531	1,180.6	1,696	940.1	1,835	1,546.4
	Chronic Lower Resp. Disease[3]	967	323.3	531	294.3	436	367.4
	Stroke	824	275.5	493	273.3	331	278.9
85+ years	**Total**	**19,692**	**13,761.3**	**13,022**	**12,937.6**	**6,670**	**15,714.5**
	Heart Disease	5,946	4,155.2	3,892	3,866.8	2,054	4,839.2
	Cancer	2,508	1,752.7	1,436	1,426.7	1,072	2,525.6
	Stroke	1,298	907.1	949	942.9	349	822.2
	Alzheimer's Disease	1,228	858.2	927	921.0	301	709.2

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-10 codes.
2. Number of deaths per 100,000 residents in each age group. 3. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title).

Table 9. Leading Causes of Death[1] and Age-Adjusted Death Rates by Race and Hispanic Ethnicity, Massachusetts: 2008

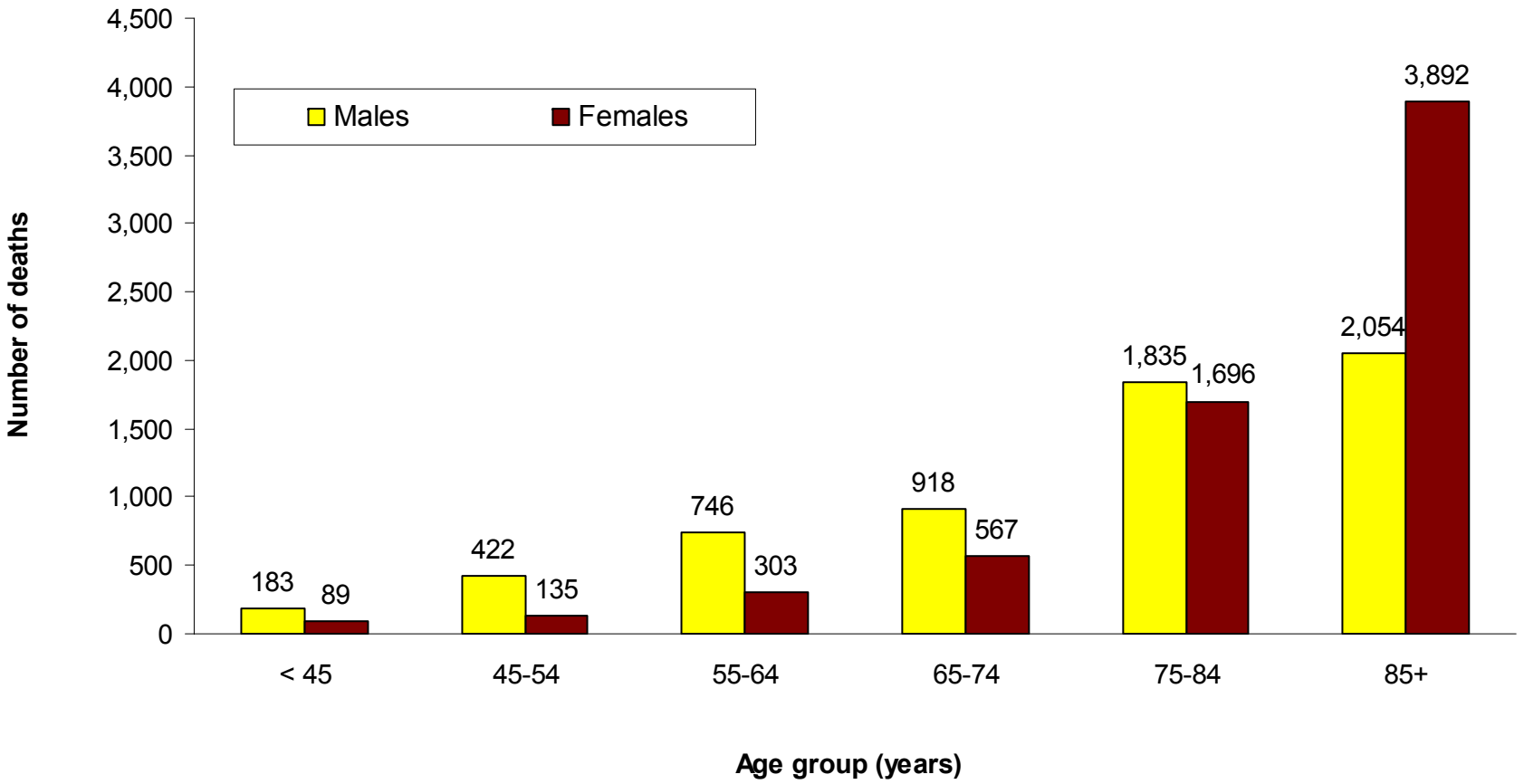
White non-Hispanic[2]			Black non-Hispanic[2]			Asian non-Hispanic[2]			Hispanic		
Cause[3]	**#**	**Rate[4]**	**Cause**	**#**	**Rate**	**Cause**	**#**	**Rate**	**Cause**	**#**	**Rate**
Total	**49,059**	**710.7**	**Total**	**2,222**	**805.8**	**Total**	**692**	**372.5**	**Total**	**1,275**	**458.2**
Heart Disease	12,048	167.9	Cancer	540	197.9	Cancer	220	109.0	Cancer	273	107.8
Cancer	11,940	180.7	Heart Disease	477	181.7	Heart Disease	112	66.3	Heart Disease	184	78.3
Chronic Lower Resp. Disease[5]	2,477	36.3	Stroke	112	45.5	Stroke	44	25.6	Unintentional Injuries[6]	104	21.4
Stroke	2,430	33.6	Unintentional Injuries	101	27.8	Unintentional Injuries	23	10.8	Diabetes	50	21.4
Unintentional Injuries	1,799	30.0	Nephritis	82	32.8	Nephritis	20	12.4	Perinatal conditions	50	5.4
Alzheimer's Disease	1,757	22.9	Diabetes	80	30.8	Influenza & Pneumonia	19	11.2	Stroke	49	21.1
Influenza & Pneumonia	1,515	20.5	Homicide	77	16.6	Diabetes	18	10.2	Nephritis	40	18.7
Nephritis	1,233	17.4	Chronic Lower Resp. Disease[5]	50	19.9	Alzheimer's Disease	17	11.5	Homicide	40	6.1
Diabetes	932	13.8	Perinatal conditions	47	10.4	Chronic Lower Resp. Disease[5]	15	8.5	ill-defined conditions-signs and symptoms	35	8.7
Septicemia	720	10.5	Influenza & Pneumonia	41	16.5	ill-defined conditions-signs and symptoms	13	6.3	Chronic liver disease	33	9.4

Total

Cause	#	Rate
Total	**53,341**	**703.5**
Cancer	12,996	177.8
Heart Disease	12,840	164.5
Stroke	2,636	33.7
Chronic Lower Respiratory Disease[5]	2,565	34.5
Unintentional Injuries[6]	2,029	28.6
Alzheimer's Disease	1,829	22.3
Influenza & Pneumonia	1,599	20.0
Nephritis	1,375	17.9
Diabetes	1,084	14.6
Septicemia	782	10.4

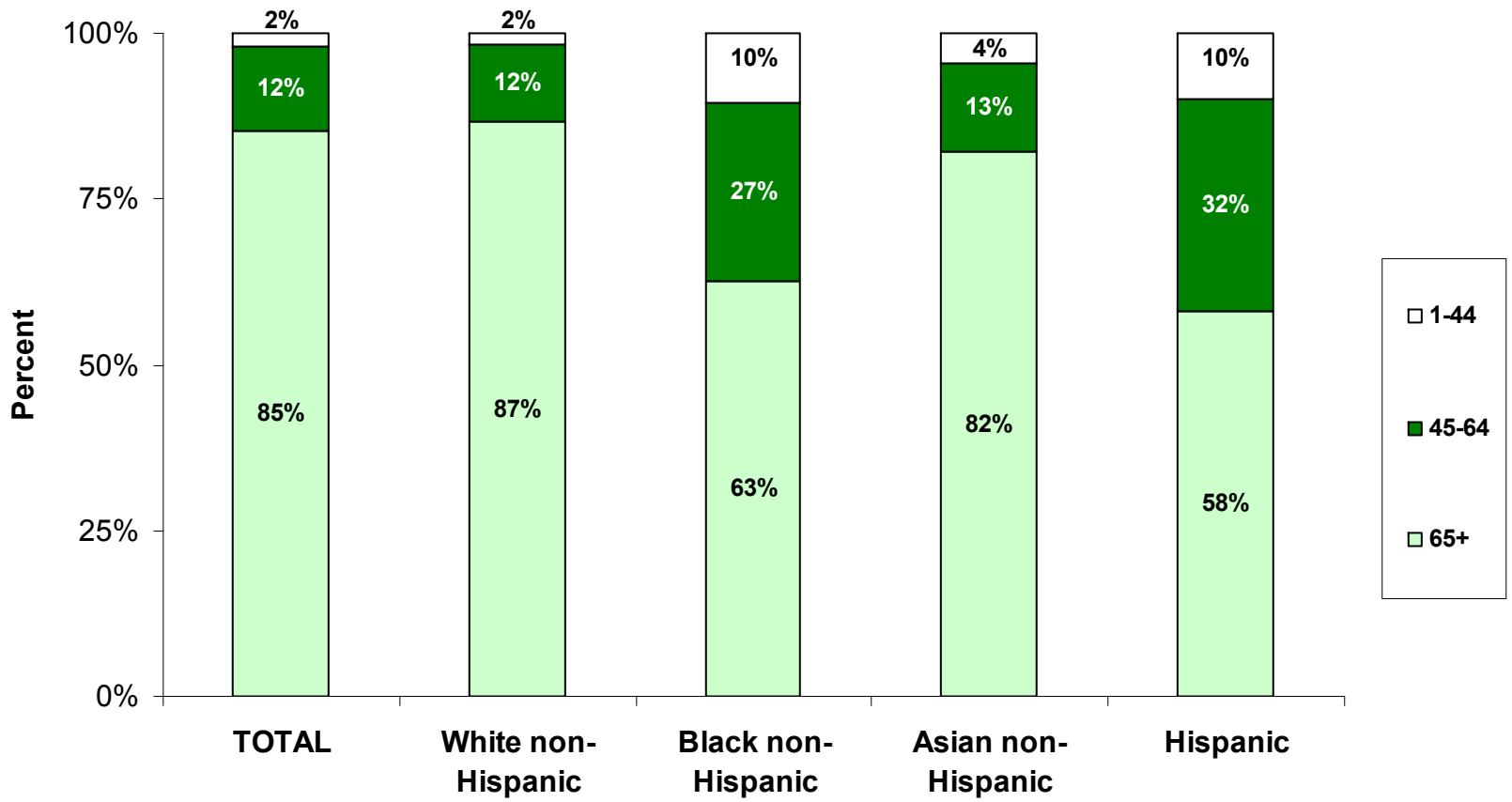
1. Ranking based on number of deaths. 2. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation. 3. Underlying Cause of Death based on ICD-10 (Please see Appendix for a list of ICD-10 codes used). 4. All rates are age-adjusted per 100,000 residents using the 2000 US standard population. 5. 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. Unintentional 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: 2008



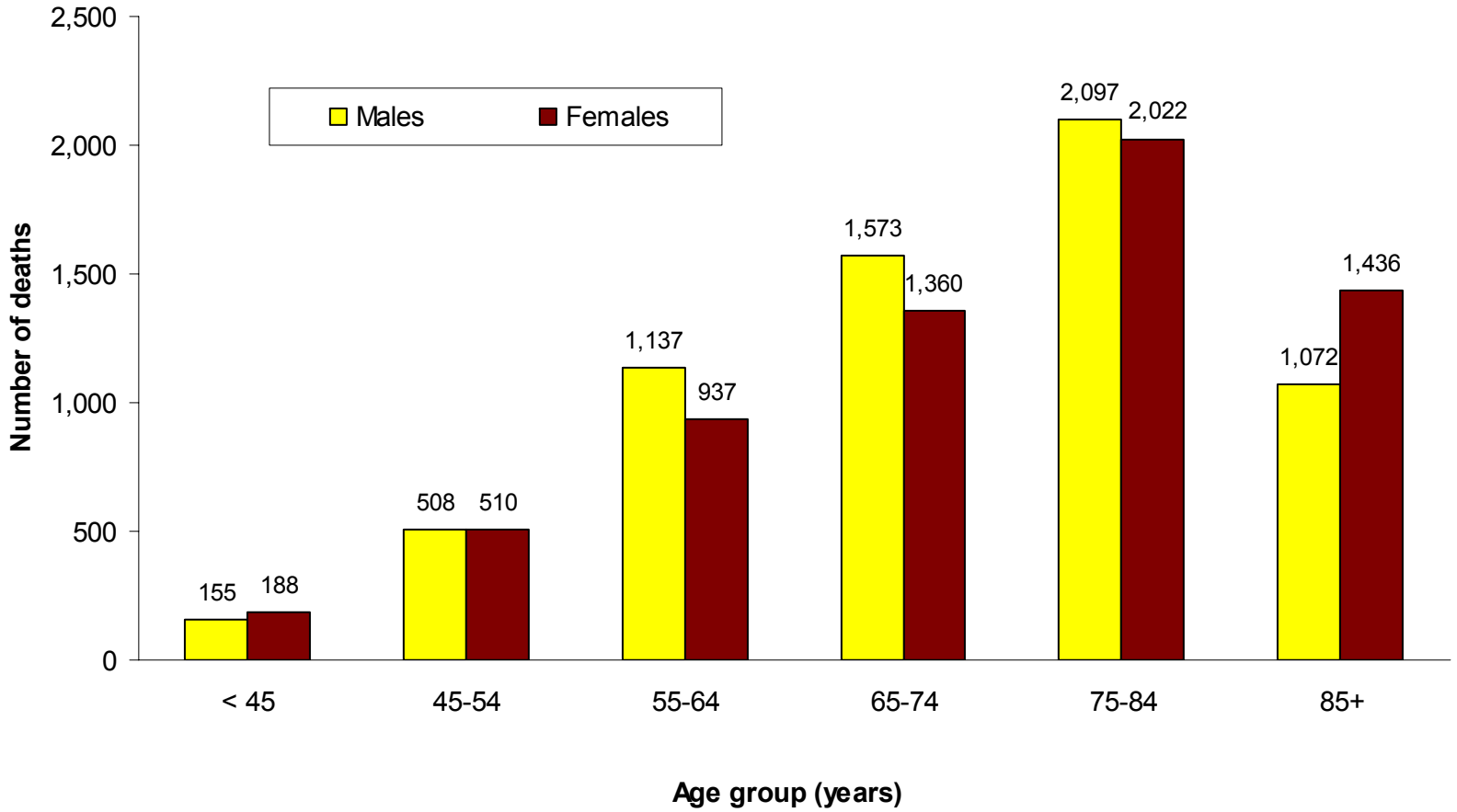
ICD-10: I00-I09, I11, I13, I20-I51

Figure 9. Age Distribution by Race and Ethnicity for Heart Disease Deaths, Massachusetts: 2008



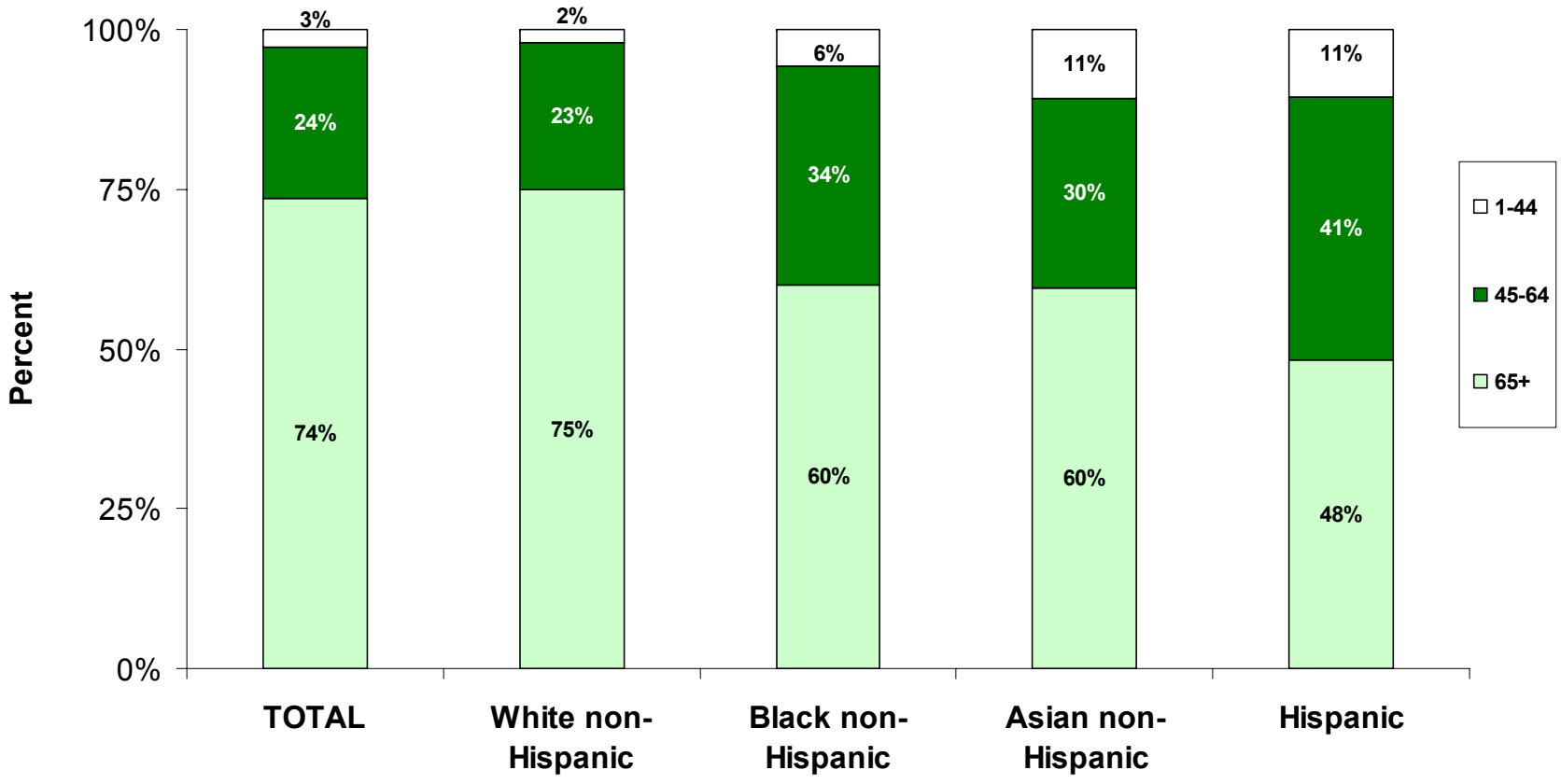
ICD-10: I00-I09, I11, I13, I20-I51

Figure 10. Number of Cancer Deaths by Age Group and Gender, Massachusetts: 2008



ICD-10: C00-C97

Figure 11. Age Distribution by Race and Ethnicity for Cancer Deaths, Massachusetts: 2008



ICD-10: C00-C97

Table 10. Heart Disease and Cancer Deaths by Race and Gender, Age-Adjusted Rates, Massachusetts: 1999-2008

Heart Disease[1]

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
1999	289.8	178.4	224.3	296.5	211.5	248.0
2000	282.4	174.4	219.3	235.1	203.6	221.9
2001	265.9	174.0	213.4	295.2	181.3	228.6
2002	254.7	163.5	202.3	242.2	177.6	205.9
2003	250.3	160.2	198.5	272.1	188.5	223.9
2004	233.1	150.3	185.7	268.1	148.3	198.8
2005	220.6	139.1	174.9	233.7	174.5	199.8
2006	216.5	138.8	172.2	222.3	127.6	165.3
2007	216.2	134.2	168.5	233.5	142.7	180.8
2008	217.1	133.1	167.9	226.7	151.7	181.7

Year	Asian non-Hispanic[2] Male	Asian non-Hispanic[2] Female	Asian non-Hispanic[2] Total	Hispanic Male	Hispanic Female	Hispanic Total
1999	119.6	73.7	94.7	143.4	83.5	108.2
2000	111.2	65.5	85.6	122.1	106.6	115.6
2001	113.5	62.6	85.1	148.7	110.0	126.9
2002	94.6	69.5	79.9	174.1	101.2	131.9
2003	115.2	65.0	87.6	124.8	96.2	109.7
2004	56.9	54.3	56.1	129.9	77.4	100.3
2005	77.5	48.2	61.3	118.5	83.7	99.2
2006	73.6	70.0	72.8	124.2	84.9	102.3
2007	83.3	52.9	67.4	124.9	61.8	88.3
2008	86.0	51.7	66.3	93.2	66.1	78.3

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 Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation.

Table 10 (continued). Heart Disease and Cancer Deaths by Race and Gender, Age-Adjusted Rates, Massachusetts: 1999-2008

Cancer[1]

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
1999	263.4	174.3	207.7	337.2	195.7	251.5
2000	258.7	179.0	209.0	348.1	167.4	237.8
2001	249.2	175.8	203.5	264.7	176.4	212.1
2002	245.7	175.3	202.2	293.5	179.5	224.3
2003	237.1	169.4	195.7	304.5	199.0	238.7
2004	230.4	168.4	192.5	277.6	155.7	200.1
2005	226.1	163.2	188.1	264.2	168.1	204.1
2006	234.9	161.5	190.0	265.6	180.9	212.4
2007	226.0	156.5	183.2	270.7	159.7	201.7
2008	221.4	154.8	180.6	255.0	163.7	197.9

Year	Asian non-Hispanic[2] Male	Asian non-Hispanic[2] Female	Asian non-Hispanic[2] Total	Hispanic Male	Hispanic Female	Hispanic Total
1999	162.8	116.9	136.7	141.8	92.5	113.8
2000	104.7	92.1	99.0	151.9	104.5	123.8
2001	98.3	105.6	103.1	142.9	97.4	116.4
2002	145.8	90.0	114.3	144.3	103.3	120.6
2003	134.6	87.4	109.3	110.0	76.6	90.0
2004	109.5	79.7	93.1	125.6	82.5	100.4
2005	138.9	79.5	106.1	118.2	97.3	105.7
2006	126.0	91.7	107.2	119.9	74.3	93.7
2007	124.4	76.4	98.4	125.0	90.0	104.7
2008	132.1	89.3	109.0	141.2	83.1	107.8

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 Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation.

Table 11. Number and Age-Adjusted Rates of Cancer Deaths by Selected Causes and Gender, Massachusetts: 2008

Cause of Death[1]	ICD-10 Code	Total		Female		Male	
		#	Rate[2,3]	#	Rate	#	Rate
Total Cancer Deaths	**C00-C97**	**12,996**	**177.8**	**6,453**	**151.6**	**6,543**	**218.5**
Bladder	C67	427	5.7	135	2.9	292	10.2
Brain and nervous system	C70-C72	292	4.1	138	3.5	154	4.9
Cervix	C53	48	1.3	48	1.3	NA	NA
Colorectal	C18-C21	1,157	15.6	621	13.9	536	18.0
Esophagus	C15	383	5.2	93	2.2	290	9.2
Female breast	C50[4]	891	21.2	891	21.2	NA	NA
Hodgkin disease	C81	23	0.3	10	0.3	13	0.4
Kidney and other urinary organs	C64, C65	257	3.5	91	2.1	166	5.4
Leukemia	C91-C95	495	6.8	234	5.5	261	8.8
Lung	C33, C34	3,553	49.3	1,720	41.4	1,833	60.9
Melanoma of the skin	C43	210	2.9	92	2.2	118	3.8
Multiple myeloma	C88, C90	247	3.4	101	2.3	146	5.0
Non-Hodgkin lymphoma	C82-C85	453	6.2	220	5.0	233	8.0
Ovary	C56	317	7.6	317	7.6	NA	NA
Pancreas	C25	847	11.7	454	10.5	393	13.1
Prostate	C61	622	22.2	NA	NA	622	22.2
Stomach	C16	293	4.0	123	2.7	170	5.7
Uterus	C54, C55	176	4.3	176	4.3	NA	NA
All other cancers	Residual	2,305	31.4	989	22.8	1,316	43.0

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. All rates are age-adjusted by the direct method using the 2000 US standard population. Rates are per 100,000 population. 3. The total resident population is used to calculate all "Total Rates" except for ICD-10 codes C50, C53-C56, which are based on the total female population, and ICD-10 C61, which is based on the total male population. 4. Includes only female breast cancer.

Table 12. Selected Causes of Cancer Deaths by Age, Massachusetts: 2008

Age	Cause of death[1]	ICD-10 Code	Number	Age-specific rate[2]
1-14 years	**Total**		**28**	**2.6**
	Brain and nervous system	C70-C72	8	0.7
	Leukemia	C91-C95	8	0.7
	Non-Hodgkin Lymphoma	C82-C85	3	--[3]
15-24 years	**Total**		**24**	**2.6**
	Leukemia	C91-C95	7	0.8
	Lung	C33, C34	2	--[3]
	Pancreas	C25	1	--[3]
	Brain and nervous system	C70-C72	1	--[3]
25-44 years	**Total**		**289**	**16.2**
	Female breast cancer[4]	C50	51	5.7
	Lung	C33, C34	29	1.6
	Colorectal	C18-C21	27	1.5
	Brain and nervous system	C70-C72	25	1.4
45- 64 years	**Total**		**3,092**	**176.5**
	Lung	C33, C34	862	49.2
	Female breast cancer[4]	C50	277	30.8
	Colorectal	C18-C21	231	13.2
	Pancreas	C25	188	10.7
65+ years	**Total**		**9,560**	**1,097.5**
	Lung	C33, C34	2,660	305.4
	Colorectal	C18-C21	899	103.2
	Pancreas	C25	647	74.3
	Prostate[5]	C61	569	159.8
65-74 years	**Total**		**2,933**	**683.8**
	Lung	C33, C34	986	229.9
	Colorectal	C18-C21	221	51.5
	Pancreas	C25	187	43.6
	Female breast cancer[4]	C50	174	74.3
75-84 years	**Total**		**4,119**	**1,377.2**
	Lung	C33, C34	1,192	398.6
	Colorectal	C18-C21	367	122.7
	Pancreas	C25	308	103.0
	Prostate[5]	C61	245	206.5
85+ years	**Total**		**2,508**	**1,752.7**
	Lung	C33, C34	482	336.8
	Colorectal	C18-C21	311	217.3
	Prostate[5]	C61	226	532.5
	Female breast cancer[4]	C50	184	182.8

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 fewer than five events 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: 2008

White non-Hispanic[1]			Black non-Hispanic[1]			Asian non-Hispanic[1]			Hispanic		
Cause[2]	**#**	**Rate[3]**	**Cause**	**#**	**Rate**	**Cause**	**#**	**Rate**	**Cause**	**#**	**Rate**
Lung	3,345	51.4	Lung	111	41.7	Lung	56	28.3	Lung	37	15.3
Colorectal	1,044	15.5	Colorectal	52	19.4	Colorectal	27	14.8	Colorectal	33	12.5
Female Breast[4]	814	21.6	Female Breast[4]	50	28.6	Non-Hodgkin Lymphoma	13	6.5	Pancreas	21	9.4
Pancreas	776	11.8	Pancreas	42	17.0	Stomach	11	5.9	Female Breast[4]	19	10.5
Prostate[5]	567	22.0	Prostate[5]	36	44.5	Female Breast[4]	8	7.1	Stomach	10	3.1
Total Cancer	**11,940**	**180.7**	**Total Cancer**	**540**	**197.9**	**Total Cancer**	**220**	**109.0**	**Total Cancer**	**273**	**107.8**

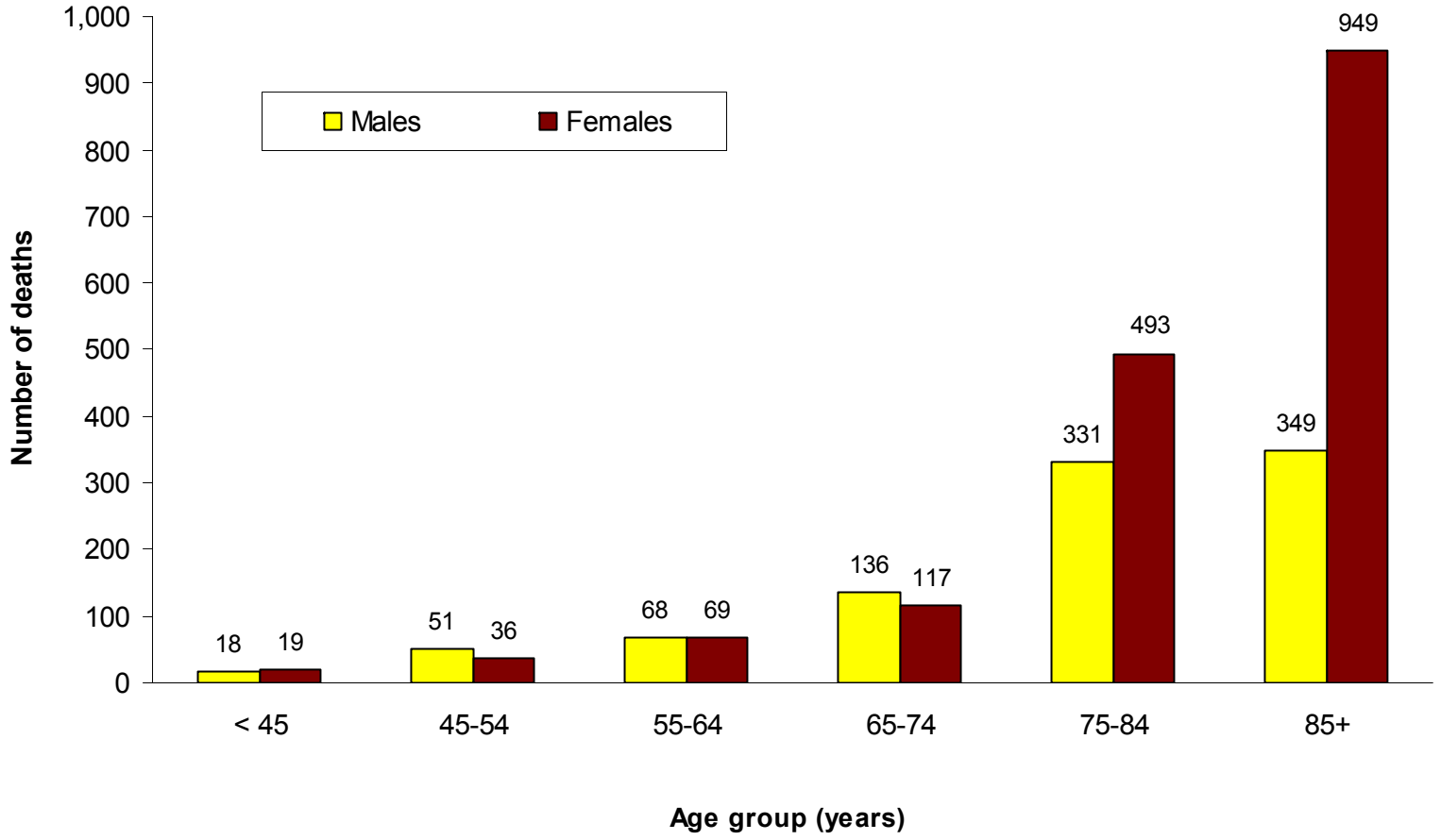
1. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation. 2. ICD-10 codes used. Please see the ICD-10 codes listing in the Appendix for detailed terminology. 3. All rates are age-adjusted by the direct method using the 2000 US standard population. Rates are per 100,000 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: 2008

Cause of Death	ICD-10 Code	Total			Female			Male		
		#	%	Rate[1]	#	%	Rate[1]	#	%	Rate[1]
Total Stroke Deaths	**I60-I69**	**2,636**	**100%**	**33.7**	**1,683**	**100%**	**33.3**	**953**	**100%**	**33.5**
Subarachnoid hemorrhage	I60	86	3.3%	1.2	54	3.2%	1.3	32	3.4%	1.0
Intracerebral and other intracranial hemorrhage	I61-I62	542	20.6%	7.2	328	19.5%	7.1	214	22.5%	7.2
Cerebral infarction	I63	148	5.6%	1.9	89	5.3%	1.8	59	6.2%	2.0
Stroke, not specified	I64	1,363	51.7%	17.1	898	53.4%	17.0	465	48.8%	16.7
Other	I67, I69	497	18.9%	6.3	314	18.7%	6.1	183	19.2%	6.5

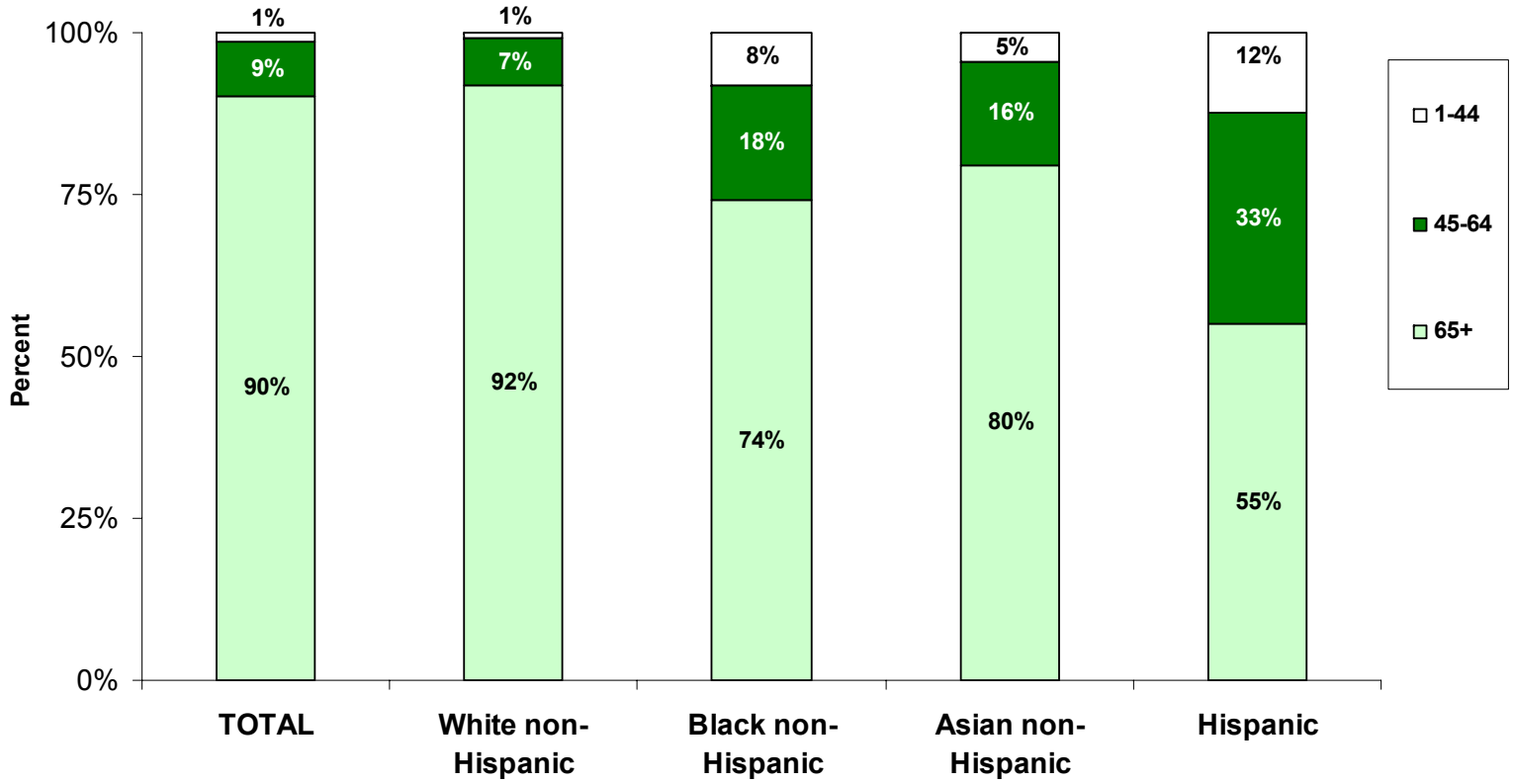
1. All rates are age-adjusted to the 2000 US Standard Population. Rates are per 100,000 population.

Figure 12. Number of Stroke Deaths by Age Group and Gender, Massachusetts: 2008



ICD-10: I60-I69

Figure 13. Age Distribution by Race and Ethnicity for Stroke Deaths, Massachusetts: 2008



ICD-10: I60-I69

Table 15. Stroke Deaths by Race and Gender, Age-Adjusted Rates[1], Massachusetts: 1999-2008

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
1999	52.1	48.5	50.2	71.5	47.5	57.5
2000	48.8	50.6	50.5	65.3	56.4	60.8
2001	51.5	46.0	48.5	50.8	61.5	59.3
2002	50.2	45.7	47.9	57.9	60.2	59.5
2003	44.7	43.9	44.7	45.9	54.9	52.7
2004	42.8	40.4	41.9	52.1	58.3	56.2
2005	37.7	37.3	37.9	50.6	44.9	47.5
2006	37.5	35.6	36.7	57.6	51.9	54.5
2007	35.4	34.0	34.8	34.4	36.4	35.6
2008	33.1	33.4	33.6	53.5	40.7	45.5

Year	Asian non-Hispanic[2] Male	Asian non-Hispanic[2] Female	Asian non-Hispanic[2] Total	Hispanic Male	Hispanic Female	Hispanic Total
1999	51.3	28.6	37.6	38.3	30.0	33.8
2000	50.9	49.4	50.4	40.6	47.1	45.0
2001	23.8	38.0	32.0	39.4	28.5	33.2
2002	21.2	28.7	25.6	49.6	30.2	38.3
2003	39.3	28.7	33.4	44.3	36.0	39.3
2004	35.2	32.7	34.1	39.7	32.6	35.5
2005	28.2	27.5	28.1	33.2	24.5	28.2
2006	34.5	41.9	39.2	26.5	29.6	28.8
2007	26.7	29.5	28.4	32.0	26.7	28.9
2008	23.4	27.1	25.6	23.9	18.4	21.1

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 Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation.

Figure 14. Diabetes Deaths, Massachusetts: 1999-2008

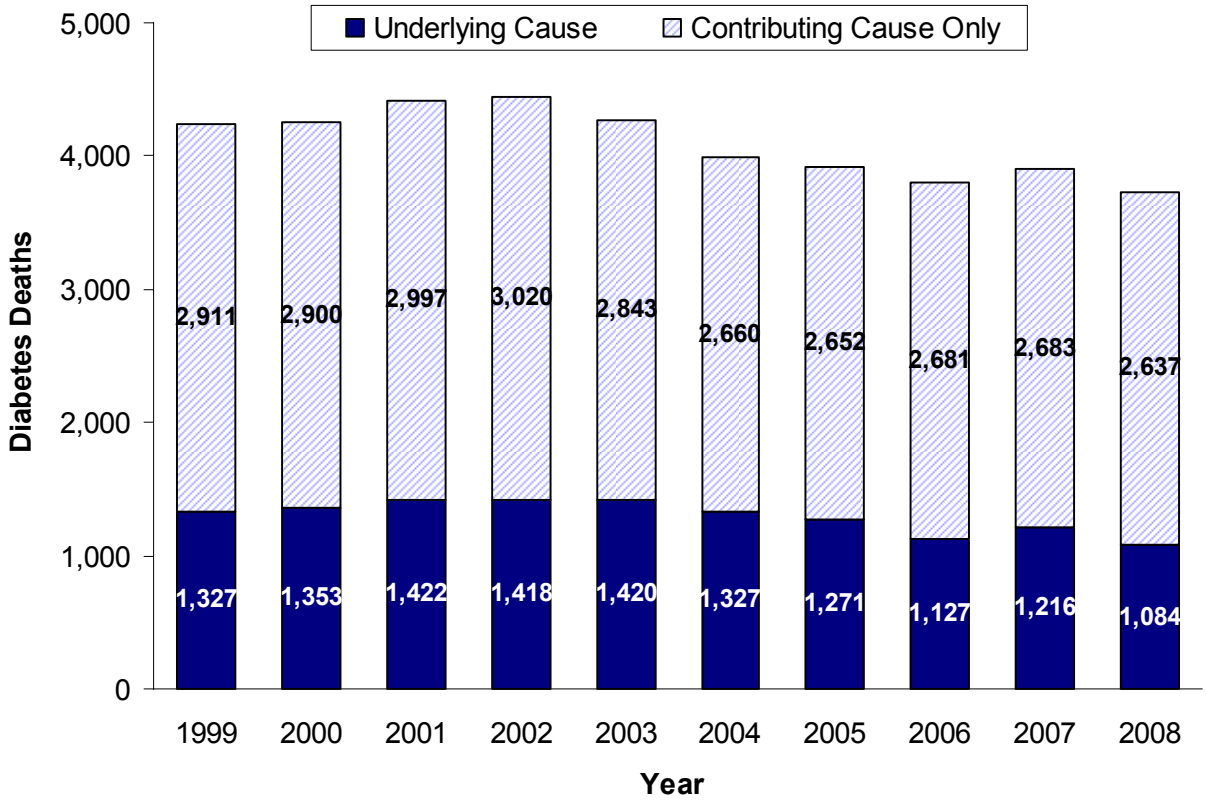


Table 16. Diabetes Deaths by Gender, Massachusetts: 2008

	Proportion of all deaths (%)			Number		
Cause of death	Males	Females	Total	Males	Females	Total
Underlying	2.2%	1.9%	2.0%	558	526	1,084
Contributing/Associated	5.2%	4.7%	4.9%	1,304	1,333	2,637
Total diabetes-related	7.4%	6.6%	7.0%	1,862	1,859	3,721
Total deaths (all causes)	***100%***	***100%***	***100%***	***25,095***	***28,246***	***53,341***

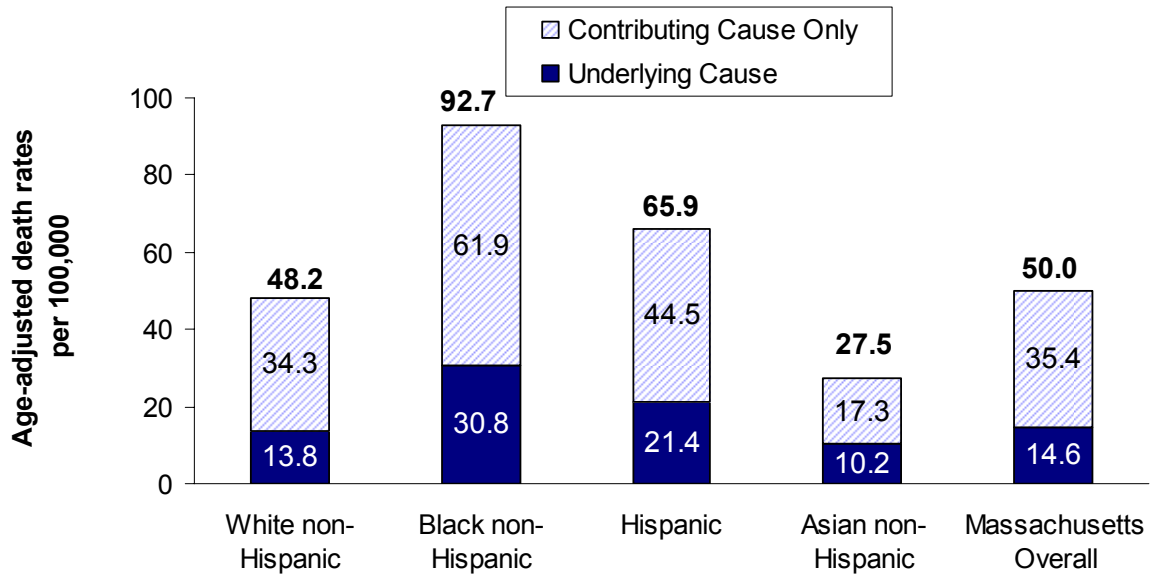
ICD-10: E10-E14

Table 17. Diabetes Deaths by Race and Hispanic Ethnicity, Massachusetts: 2008

Cause of death	Race/Hispanic Ethnicity				
	White non-Hispanic	Black non-Hispanic	Hispanic	Asian non-Hispanic	Total
	Number				
Underlying	932	80	50	18	1,084
Contributing/Associated	2,341	158	104	30	2,637
Total diabetes-related	3,273	238	154	48	3,721
Total deaths (all causes)	***49,059***	***2,222***	***1,275***	***692***	***53,341***
	Proportion of all deaths (%)				
Underlying	1.9	3.6	3.9	2.6	2.0
Contributing/Associated	4.8	7.1	8.2	4.3	4.9
Total diabetes-related	***6.7***	***10.7***	***12.1***	***6.9***	***7.0***

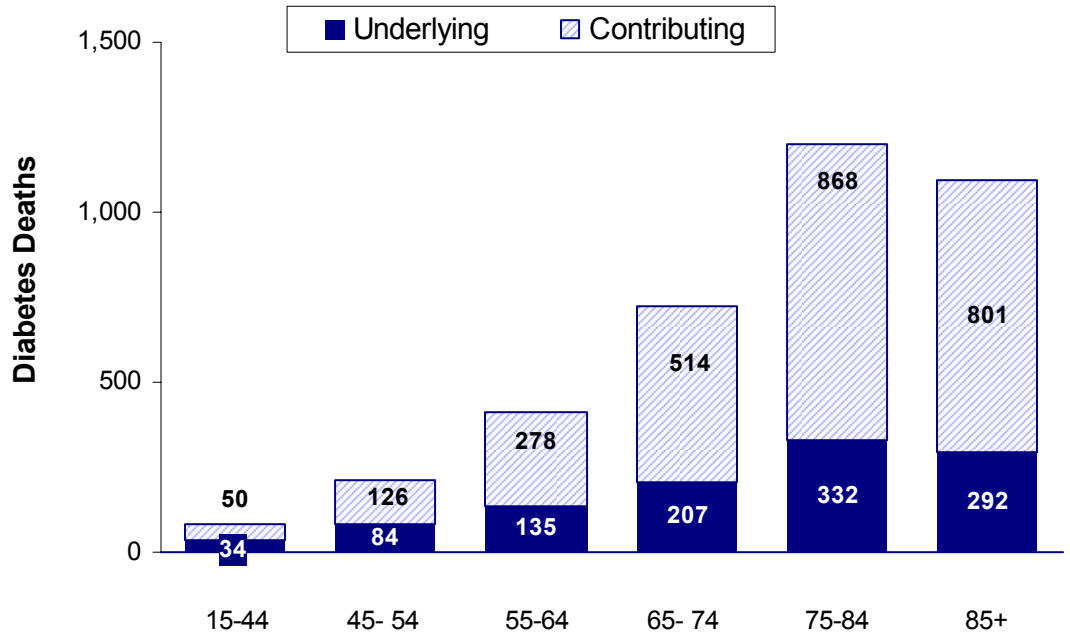
[1] **ICD-10: E10-E14**

Figure 15. Diabetes Death Rates by Race and Hispanic Ethnicity, Massachusetts: 2008



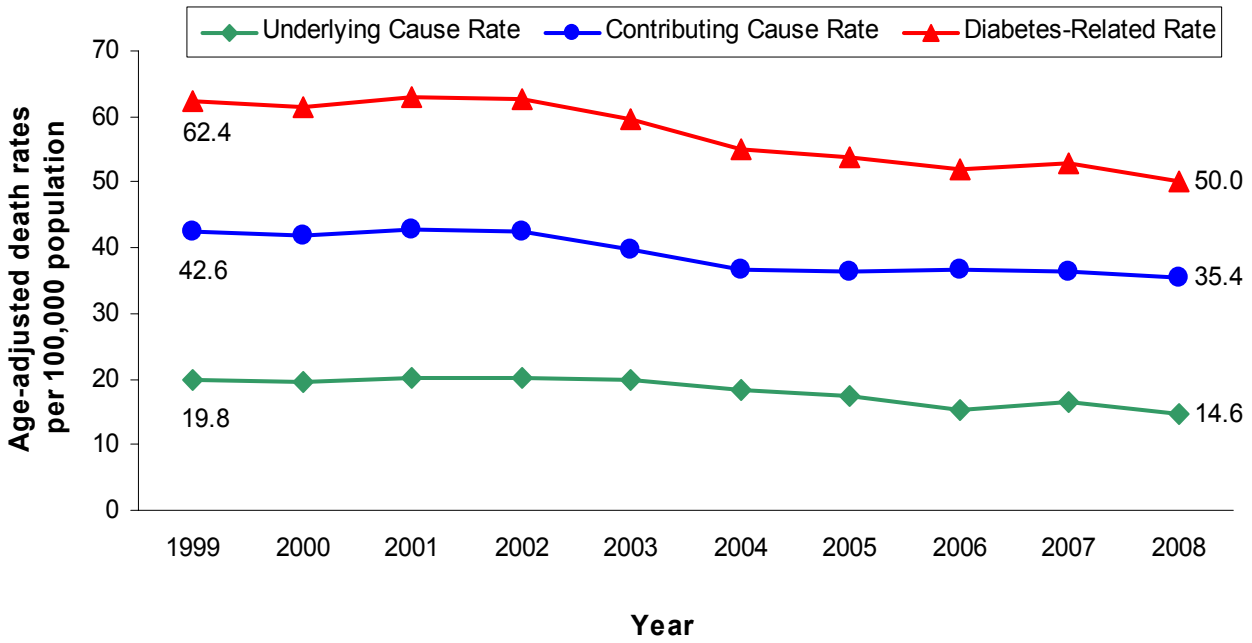
ICD-10: E10-E14. Rates are per 100,000 age-adjusted to the 2000 U.S. standard population.

Figure 16. Age Distribution of Diabetes Deaths, Massachusetts: 2008



ICD-10: E10-E14

Figure 17. Diabetes Death Rates, Massachusetts: 1999-2008



ICD-10: E10-E14. Rates are per 100,000 age-adjusted to the 2000 U.S. standard

Table 18. Injury Deaths by Leading Causes, Gender, Age: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2008

	All Injury Deaths[1]		Poisoning[2]		Falls		Motor Vehicle-related[3]		Hanging, strangulation, or suffocation		Firearm		Other[4]	
	Number	Rate[5]	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
All Persons	**2,820**	**40.3**	**867**	**12.9**	**496**	**6.5**	**373**	**5.4**	**346**	**5.0**	**220**	**3.3**	**518**	**7.2**
<1	5	6.4	0	0.0	1	--[6]	1	--[6]	2	--[6]	0	0.0	1	--[6]
1-14	32	2.9	1	--[6]	1	--[6]	6	0.6	10	0.9	0	0.0	14	1.3
15-24	294	31.8	61	6.6	7	0.8	96	10.4	29	3.1	60	6.5	41	4.4
25-44	766	43.0	385	21.6	20	1.1	82	4.6	103	5.8	79	4.4	97	5.4
45-64	840	48.0	379	21.6	67	3.8	97	5.5	117	6.7	51	2.9	129	7.4
65-74	188	43.8	25	5.8	66	15.4	24	5.6	24	5.6	13	3.0	36	8.4
75-84	284	95.0	5	1.7	131	43.8	41	13.7	23	7.7	12	4.0	72	24.1
85+	411	287.2	11	7.7	203	141.9	26	18.2	38	26.6	5	3.5	128	89.4
All Females	**922**	**22.7**	**263**	**7.5**	**227**	**4.6**	**108**	**2.9**	**92**	**2.4**	**16**	**0.5**	**216**	**4.9**
<1	1	--[6]	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	--[6]
1-14	10	1.9	0	0.0	0	0.0	2	--[6]	2	--[6]	0	0.0	6	1.1
15-24	63	13.6	15	3.2	0	0.0	28	6.1	9	1.9	5	1.1	6	1.3
25-44	161	18.0	93	10.4	2	--[6]	14	1.6	25	2.8	5	0.6	22	2.5
45-64	241	26.8	134	14.9	18	2.0	29	3.2	22	2.4	5	0.6	33	3.7
65-74	70	29.9	12	5.1	23	9.8	8	3.4	8	3.4	1	--[6]	18	7.7
75-84	125	69.3	2	--[6]	60	33.3	16	8.9	6	3.3	0	0.0	41	22.7
85+	251	249.4	7	7.0	124	123.2	11	10.9	20	19.9	0	0.0	89	88.4
All Males	**1,898**	**59.8**	**604**	**18.5**	**269**	**9.2**	**265**	**8.3**	**254**	**7.9**	**204**	**6.4**	**302**	**9.6**
<1	4	--[6]	0	0.0	1	--[6]	1	--[6]	2	--[6]	0	0.0	0	0.0
1-14	22	4.0	1	--[6]	1	--[6]	4	--[6]	8	1.4	0	0.0	8	1.4
15-24	231	49.9	46	9.9	7	1.5	68	14.7	20	4.3	55	11.9	35	7.6
25-44	605	68.2	292	32.9	18	2.0	68	7.7	78	8.8	74	8.3	75	8.5
45-64	599	70.4	245	28.8	49	5.8	68	8.0	95	11.2	46	5.4	96	11.3
65-74	118	60.6	13	6.7	43	22.1	16	8.2	16	8.2	12	6.2	18	9.2
75-84	159	134.0	3	--[6]	71	59.8	25	21.1	17	14.3	12	10.1	31	26.1
85+	160	377.0	4	--[6]	79	186.1	15	35.3	18	42.4	5	11.8	39	91.9

1. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Includes drug overdoses, which account for the largest percentage (74%). 3. Motor vehicle deaths to occupants, pedestrians, motorcyclists and bicyclists. 4. All remaining injury causes. 5. Number of deaths per 100,000 persons in each age group; rates for all rows except the age group rows are age-adjusted to the 2000 US standard population. 6. Calculations based on values 1-4 are excluded.

Table 19. Injury Deaths by Leading Causes, Gender and Race and Hispanic Ethnicity: Numbers and Age Adjusted Rates, Massachusetts: 2008

	All Injury Deaths[1]		Poisoning[2]		Falls		Motor Vehicle-related[3]		Hanging, strangulation, or suffocation		Firearm		Other[4]	
	Number	Rate[5]	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
White non-Hispanic	**2,401**	**40.8**	**760**	**14.2**	**467**	**6.7**	**311**	**5.5**	**311**	**5.4**	**126**	**2.2**	**426**	**6.8**
Females	834	23.7	238	8.3	214	4.6	93	3.0	84	2.6	12	0.4	193	4.8
Males	1,567	59.9	522	20.2	253	9.7	218	8.4	227	8.5	114	4.3	233	8.8
Black non-Hispanic	**207**	**52.2**	**48**	**12.1**	**14**	**5.1**	**26**	**6.4**	**16**	**4.6**	**59**	**12.5**	**44**	**11.6**
Females	45	23.1	13	6.5	6	4.0	7	3.0	5	2.6	3	--[6]	11	5.8
Males	162	84.4	35	17.9	8	6.4	19	10.5	11	7.2	56	23.5	33	19.0
Asian non-Hispanic	**41**	**17.9**	**3**	**--[6]**	**8**	**4.9**	**10**	**4.0**	**6**	**2.1**	**2**	**--[6]**	**12**	**5.4**
Females	17	14.2	2	--[6]	4	--[6]	5	4.0	1	--[6]	0	0.0	5	4.1
Males	24	21.1	1	--[6]	4	--[6]	5	3.8	5	4.0	2	--[6]	7	6.5
Hispanic	**165**	**32.2**	**55**	**10.7**	**7**	**2.3**	**26**	**4.2**	**13**	**3.3**	**31**	**5.1**	**33**	**6.7**
Females	23	10.2	9	3.3	3	--[6]	3	--[6]	2	--[6]	0	0.0	6	2.6
Males	142	56.1	46	18.5	4	--[6]	23	7.6	11	6.6	31	10.4	27	11.6

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 (74%). 3. Motor vehicle deaths to occupants, pedestrians, motorcyclists and bicyclists. 4. All remaining injury causes. 5. Number of deaths per 100,000 persons in each group; rates are age-adjusted to the 2000 US standard population. 6. Calculations based on values 1-4 are excluded.

Table 20. Unintentional Injury Deaths by Gender, Age: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2008

	All Unintentional[1]		Poisonings		Falls		Motor Vehicle-related	
	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]
All Persons	**2,029**	**28.6**	**728**	**10.9**	**479**	**6.2**	**373**	**5.4**
<1	5	6.4	0	0.0	1	--[3]	1	--[3]
1-14	24	2.2	1	--[3]	1	--[3]	6	0.6
15-24	180	19.5	53	5.7	5	0.5	96	10.4
25-44	482	27.0	346	19.4	12	0.7	82	4.6
45-64	556	31.7	298	17.0	65	3.7	97	5.5
65-74	141	32.9	16	3.7	64	14.9	24	5.6
75-84	252	84.3	4	--[3]	129	43.1	41	13.7
85+	389	271.8	10	7.0	202	141.2	26	18.2
All Females	**736**	**17.4**	**202**	**5.8**	**221**	**4.4**	**108**	**2.9**
<1	1	--[3]	0	0.0	0	0.0	0	0.0
1-14	6	1.1	0	0.0	0	0.0	2	--[3]
15-24	43	9.3	10	2.2	0	0.0	28	6.1
25-44	100	11.2	80	8.9	0	0.0	14	1.6
45-64	172	19.1	98	10.9	18	2.0	29	3.2
65-74	54	23.1	6	2.6	21	9.0	8	3.4
75-84	117	64.9	1	--[3]	59	32.7	16	8.9
85+	243	241.4	7	7.0	123	122.2	11	10.9
All Males	**1,293**	**41.2**	**526**	**16.2**	**258**	**8.8**	**265**	**8.3**
<1	4	--[3]	0	0.0	1	--[3]	1	--[3]
1-14	18	3.2	1	--[3]	1	--[3]	4	--[3]
15-24	137	29.6	43	9.3	5	1.1	68	14.7
25-44	382	43.1	266	30.0	12	1.4	68	7.7
45-64	384	45.1	200	23.5	47	5.5	68	8.0
65-74	87	44.6	10	5.1	43	22.1	16	8.2
75-84	135	113.8	3	--[3]	70	59.0	25	21.1
85+	146	344.0	3	--[3]	79	186.1	15	35.3

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 21. Unintentional Injury Deaths by Gender and Race and Hispanic Ethnicity: Numbers, and Age-Adjusted Rates, Massachusetts: 2008

	All Unintentional[1]		Poisonings		Falls		Motor Vehicle-related	
	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]
White non-Hispanic	**1,799**	**30.0**	**631**	**11.9**	**452**	**6.4**	**311**	**5.5**
Females	677	18.3	180	6.3	209	4.5	93	3.0
Males	1,122	43.2	451	17.7	243	9.2	218	8.4
Black non-Hispanic	**101**	**27.8**	**43**	**10.7**	**13**	**4.9**	**26**	**6.4**
Females	28	14.7	11	5.5	6	4.0	7	3.0
Males	73	43.1	32	16.3	7	6.0	19	10.5
Asian non-Hispanic	**23**	**10.8**	**2**	**--[3]**	**7**	**4.4**	**10**	**4.0**
Females	13	11.1	2	--[3]	3	--[3]	5	4.0
Males	10	9.8	0	0.0	4	--[3]	5	3.8
Hispanic	**104**	**21.4**	**51**	**9.7**	**7**	**2.3**	**26**	**4.2**
Females	17	8.2	8	3.0	3	--[3]	3	--[3]
Males	87	35.9	43	16.7	4	--[3]	23	7.6

1. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Number of deaths per 100,000 persons in each group; rates are age-adjusted to the 2000 US standard population. 3. Calculations based on values 1-4 are excluded.

Table 22. Intentional Injury Deaths by Gender, Age: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2008

	All Intentional[1]		Suicide		Homicide	
	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]
All Persons	**665**	**9.9**	**499**	**7.3**	**166**	**2.6**
<1	0	0.0	0	0.0	0	0.0
1-14	5	0.5	3	--[3]	2	--[3]
15-24	107	11.6	44	4.8	63	6.8
25-44	248	13.9	175	9.8	73	4.1
45-64	238	13.6	211	12.0	27	1.5
65-74	34	7.9	33	7.7	1	--[3]
75-84	22	7.4	22	7.4	0	0.0
85+	11	7.7	11	7.7	0	0.0
All Females	**138**	**4.0**	**112**	**3.2**	**26**	**0.8**
<1	0	0.0	0	0.0	0	0.0
1-14	4	--[3]	2	--[3]	2	--[3]
15-24	18	3.9	14	3.0	4	--[3]
25-44	47	5.2	36	4.0	11	1.2
45-64	55	6.1	46	5.1	9	1.0
65-74	9	3.8	9	3.8	0	0.0
75-84	3	--[3]	3	--[3]	0	0.0
85+	2	--[3]	2	--[3]	0	0.0
All Males	**527**	**16.2**	**387**	**11.9**	**140**	**4.3**
<1	0	0.0	0	0.0	0	0.0
1-14	1	--[3]	1	--[3]	0	0.0
15-24	89	19.2	30	6.5	59	12.7
25-44	201	22.7	139	15.7	62	7.0
45-64	183	21.5	165	19.4	18	2.1
65-74	25	12.8	24	12.3	1	--[3]
75-84	19	16	19	16.0	0	0.0
85+	9	21.2	9	21.2	0	0.0

1. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Number of deaths per 100,000 persons in each age group; rates for all rows except the age group rows are age-adjusted to the 2000 US standard population. 3. Calculations based on values 1-4 are excluded.

Table 23. Intentional Injury Deaths by Gender and Race and Hispanic Ethnicity: Numbers and Age-Adjusted Rates, Massachusetts: 2008

	All Intentional[1]		Suicide		Homicide	
	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]
White non-Hispanic	**499**	**9.0**	**455**	**8.2**	**44**	**0.8**
Females	117	4.1	103	3.6	14	0.5
Males	382	14.3	352	13.2	30	1.2
Black non-Hispanic	**93**	**20.4**	**16**	**3.8**	**77**	**16.6**
Females	12	5.6	4	--[3]	8	3.7
Males	81	35.4	12	5.8	69	29.6
Asian non-Hispanic	**13**	**4.5**	**11**	**3.9**	**2**	**--[3]**
Females	3	--[3]	3	--[3]	0	0.0
Males	10	7.2	8	6.0	2	--[3]
Hispanic	**57**	**10.1**	**17**	**4.0**	**40**	**6.1**
Females	5	1.7	2	--[3]	3	--[3]
Males	52	19.1	15	8.1	37	11.0

1. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Number of deaths per 100,000 persons in each group; rates are age-adjusted to the 2000 US standard population. 3. Calculations based on values 1-4 are excluded.

Table 24. Injury Deaths by Intent, Method and Gender: Number and Age-Adjusted Rates, Massachusetts: 2008

Type of Injury[1]	All Injury Deaths		Female		Male	
	Number	Rate[2]	Number	Rate	Number	Rate
Unintentional Injuries (Accidents)	**2,029**	**28.6**	**736**	**17.4**	**1,293**	**41.2**
Motor Vehicle-related	373	5.4	108	2.9	265	8.3
Injury to pedestrian	72	1	33	0.8	39	1.3
Injury to pedal cyclist	4	--[3]	1	--[3]	3	--[3]
Injury to motorcyclist	46	0.7	2	--[3]	44	1.3
Injury to occupant	35	0.5	8	0.2	27	0.9
Other and unspecified	216	3.2	64	1.8	152	4.8
Poisoning	728	11	202	6.0	526	16.0
Falls	479	6.2	221	4.4	258	8.8
Hanging/suffocation	116	1.5	41	0.9	75	2.4
Drowning/submersion	46	0.7	15	0.4	31	1.0
Exposure to smoke, fire and flames/ hot subs	39	0.5	22	0.6	17	0.5
Other and unspecified	223	2.9	125	2.4	98	3.3
Suicide	**499**	**7.3**	**112**	**3.2**	**387**	**11.9**
Hanging/strangulation/suffocation	223	3.3	47	1.4	176	5.4
Firearm discharge	115	1.7	7	0.2	108	3.4
Poisoning	101	1.5	42	1.1	59	1.8
Other and unspecified	60	0.9	16	0.5	44	1.3
Homicide	**166**	**2.6**	**26**	**0.8**	**140**	**4.3**
Firearm	97	1.5	9	0.3	88	2.7
Cut or pierce	48	0.7	7	0.2	41	1.3
Other and unspecified	21	0.3	10	0.3	11	0.3
Injury Deaths of Undetermined Intent	**85**	**1.3**	**32**	**0.9**	**53**	**1.6**
Poisoning	38	0.6	19	0.5	19	0.6
Other and unspecified	47	0.7	13	0.4	34	1.1
Legal Intervention	**7**	**0.1**	**0**	**0.0**	**7**	**0.2**
Firearm	6	0.1	0	0.0	6	0.2
Other and unspecified	1	--[3]	0	0.0	1	--[3]
Adverse Effects	**34**	**0.5**	**16**	**0.4**	**18**	**0.6**
Medical Care	28	0.4	14	0.3	14	0.5
Drugs	6	0.1	2	--[3]	4	--[3]
ALL INJURIES	**2,820**	**40.3**	**922**	**22.7**	**1,898**	**59.8**

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. 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.

Table 25. Type of Injury Deaths by Method and Intent Categories: Number and Age-Adjusted Rates, Massachusetts: 2008

Method	All Injury Deaths[1]		Intent									
			Unintentional		Intentional				Undetermined		Other[3]	
	Total		"Accidents"		Suicide		Homicide				Legal Intervention	
	Total Number	Rate[2]	Total Number	Rate	Total Number	Rate	Total Number	Rate	Total Number	Rate	Total Number	Rate
Poisoning	867	12.9	728	10.9	101	1.5	0	0.0	38	0.6	0	0.0
Falls	496	6.5	479	6.2	15	0.2	0	0.0	2	--[4]	0	0.0
Transport Injuries	402	5.9	398	5.8	4	--[4]	0	0.0	0	0.0	0	0.0
Motor vehicle-related	373	5.4	373	5.4	0	0.0	0	0.0	0	0.0	0	0.0
Injury to pedestrian	72	1	72	1.0	0	0.0	0	0.0	0	0.0	0	0.0
Injury to pedal cyclist	4	--[4]	4	--[4]	0	0.0	0	0.0	0	0.0	0	0.0
Injury to motorcyclist	46	0.7	46	0.7	0	0.0	0	0.0	0	0.0	0	0.0
Injury to occupant	35	0.5	35	0.5	0	0.0	0	0.0	0	0.0	0	0.0
Other and unspecified	216	3.2	216	3.2	0	0.0	0	0.0	0	0.0	0	0.0
Other transport	29	0.4	25	0.4	4	--[4]	0	0.0	0	0.0	0	0.0
Hanging, strangulation or suffocation	346	5.0	116	1.5	223	3.3	4	--[4]	3	--[4]	0	0.0
Firearm	220	3.3	0	0.0	115	1.7	97	1.5	2	--[4]	6	0.1
Drowning and submersion	66	1.0	46	0.7	7	0.1	0	0.0	13	0.2	0	0.0
Cut or pierce	62	0.9	0	0.0	14	0.2	48	0.7	0	0.0	0	0.0
Smoke, fire and flames	46	0.7	39	0.5	4	--[4]	2	--[4]	1	--[4]	0	0.0
Other and unspecified	281	3.7	223	2.9	16	0.2	15	0.2	26	0.4	1	--[4]
Adverse Effects	34	0.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ALL INJURIES	**2,820**	**40.3**	**2,029**	**28.6**	**499**	**7.3**	**166**	**2.6**	**85**	**1.3**	**7**	**0.1**

1. Data presented in this table are classified according to ICD-10. Please refer to Appendix for list of ICD-10 codes used in this table. 2. Number of deaths per 100,000; rates are adjusted to the 2000 US standard population. 3. Includes legal intervention and operations of war. 4. Calculations based on values 1-4 are excluded.

Table 26. Poisoning Deaths by Intent and Leading Agents, Massachusetts: 2007 and 2008

Poisoning Deaths – All Intents	2007 (N=965)		2008 (N= 867)	
	Deaths Associated by Agent/Class of Agent[2]			
Leading Agent / Class of Agents[1]	Number[2]	%[3]	Number[2]	%[3]
Opioids	637	66.0%	594	68.5%
Alcohols	178	18.4%	228	26.3%
Other and unspecified drugs, medicaments and biological substances	199	20.6%	204	23.5%
Cocaine	274	28.4%	190	21.9%
All other agents combined	126	13.1%	119	13.7%
Benzodiazepines	100	10.4%	93	10.7%
Antipsychotics & Neuroleptics	50	5.2%	22	2.5%
Carbon Monoxide	20	2.1%	22	2.5%
Antiepileptics	16	1.7%	17	2.0%
Antidepressants	147	15.2%	97	11.2%

Unintentional/Undetermined Intent Poisoning Deaths[4]	2007 (N=846)		2008 (N=766)	
	Deaths Associated by Agent/Class of Agent[2]			
Leading Agent / Class of Agents	Number[2]	%[3]	Number[2]	%[3]
Opioids	614	72.6%	561	73.2%
Alcohols	163	19.3%	216	28.2%
Cocaine	271	32.0%	186	24.3%
Other and unspecified drugs, medicaments and biological substances	137	16.2%	135	17.6%
All other agents combined	75	8.9%	85	11.1%
Benzodiazepines	84	9.9%	73	9.5%
Antipsychotics & Neuroleptics	36	4.3%	12	1.6%
Carbon Monoxide	4	NA	9	1.2%
Antiepileptics	11	1.3%	8	1.0%
Antidepressants	112	13.2%	69	9.0%

Table 26 (continued). Poisoning Deaths by Intent and Leading Agents, Massachusetts: 2007 and 2008

Suicide Poisoning Deaths	2007 (N=117)		2008 (N=101)	
	Deaths Associated by Agent/Class of Agent[2]			
Leading Agent / Class of Agents[1]	Number[2]	%[3]	Number[2]	%[3]
Other and unspecified drugs, medicaments and biological substances	62	53.0%	69	68.3%
Opioids	23	19.7%	33	32.7%
Antidepressants	35	29.9%	28	27.7%
Benzodiazepines	16	13.7%	20	19.8%
Carbon Monoxide	16	13.7%	13	12.9%
Alcohols	15	12.8%	12	11.9%
Antipsychotics & Neuroleptics	14	12.0%	10	9.9%
Antiepileptics	5	4.3%	9	8.9%
Cocaine	3	NA	4	4.0%
All other agents combined	49	41.9%	34	33.7%

[1] Leading Agents/Class of Agents is sorted in descending order by their count in 2008. See the Appendix for a list of specific ICD10 codes used.
[2] The sum of the number of deaths associated with agents or class of agents is greater than the number of deaths because some deaths involve multiple agents or classes of agents.
[3] The sum of the percentage of deaths associated with agents or class of agents is greater than the number of deaths because some deaths involve multiple agents or classes of agents.
[4] There was a policy change at the MA Office of the Chief Medical Examiner in 2005, which affected the classification of poisoning deaths. In order to allow consistent comparisons and interpretation of historical trends, unintentional poisoning deaths and poisoning deaths of undetermined intent have been combined into one category, which is comparable to the sum of the categories from previous years. Suicide-associated poisoning deaths were not affected by the policy change.
[5] Calculations based on values 1-4 are excluded.

Table 27. HIV/AIDS[1] Deaths by Place of Occurrence, Massachusetts: 1996-2008

Year		Total		Place of Occurrence: At Home		Hospital		Out of State		Hospice/Nursing Home/Other	
		Comparability Unmodified	Comparability Modified[2]	Comparability Unmodified	Comparability Modified[2]	Comparability Unmodified	Comparability Modified[2]	Comparability Unmodified	Comparability Modified[2]	Comparability Unmodified	Comparability Modified[2]
1996	#	609	648	154	164	336	357	9	10	110	117
	%	100.0		25.3	25.3	55.2	55.1	1.5	1.5	18.1	18.1
1997	#	242	277	59	68	158	181	4	5	21	24
	%	100.0		24.4	24.5	65.3	65.3	-[5]	1.8	8.6	8.7
1998	#	213	244	46	53	130	149	2	2	35	40
	%	100.0		21.6	21.7	61.0	61.1	-[5]	-[5]	16.4	16.4
1999	#		242[4]		55		142		2		43
	%		100.0		22.7		58.7		-[5]		17.8
2000	#		226[4]		48		145		0		33
	%		100.0		21.2		64.2		-[5]		14.6
2001	#		249[4]		47		164		4		34
	%		100.0		18.9		65.9		-[5]		13.7
2002	#		229[4]		33		156		4		36
	%		100.0		14.4		68.1		-[5]		15.7
2003	#		226[4]		55		134		5		32
	%		100.0		24.3		59.3		2.2		14.2
2004	#		211[4]		45		134		1		31
	%		100.0		21.3		63.5		-[5]		14.7
2005	#		180[4]		28		122		1		30
	%		100.0		15.6		67.8		-[5]		16.7
2006	#		179[4]		22		122		2		33
	%		100.0		12.3		68.2		-[5]		18.4
2007	#		143[4]		15		98		2		28
	%		100.0		10.5		68.5		-[5]		19.6
2008	#		143[4]		27		92		1		23
	%		100.0		18.9		64.3		-[5]		16.1

**PLEASE NOTE: this table has been updated June 2001 to reflect the revised comparability ratio of HIV Disease Deaths, issued by the National Center for Health Statistics. 1. AIDS: Acquired Immune Deficiency Syndrome, HIV: Human Immunodeficiency Virus. The deaths reported are cases for which AIDS or HIV-related disease was the underlying cause of death. Deaths for 1992-1998 were coded according to the ICD-9 classification schedule, which began with 1987 death data (codes 042-044). Deaths for 1999-2008 were coded according to the ICD-10 (codes B20-B24). 2. Comparability Modified (CM): this number has been adjusted using the preliminary comparability ratio (CR) from NCHS (revised June 2001). CM data for 1994-1996 use 1996 based CR; CM data for 1997-1998 use revised 1998 based CR. 3. NA: Comparability ratio is not applicable for years prior to 1994. 4. When comparing data after 1994, please use the comparability modified number for years 1994-1998. Please see Appendix for a detailed explanation. 5. Calculations based on values 1-4 are excluded.

Table 28. HIV/AIDS[1] Deaths by Age, Massachusetts: 1996-2008

Year		Age (in years) <15		15-24		25-34		35-44		45+	
		Comparability Unmodified	Comparability Modified[2]	Comparability Unmodified	Comparability Modified[2]	Comparability Unmodified	Comparability Modified[2]	Comparability Unmodified	Comparability Modified[2]	Comparability Unmodified	Comparability Modified[2]
1996	#	4	4	8	9	154	164	300	319	143	152
	%	0.7	0.6	1.3	1.4	25.3	25.3	49.3	49.2	23.5	23.5
1997	#	5	6	1	1	35	40	135	155	66	76
	%	2.1	2.2	-[5]	-[5]	14.5	14.4	55.8	56.0	27.3	27.4
1998	#	0	0	0	0	47	54	106	121	60	69
	%	0.0	0.0	0.0	0.0	22.1	22.1	49.8	50.0	28.2	28.3
1999	#	2[4]		9[4]		34[4]		112[4]		85[4]	
	%	-[5]		3.7		14.0		46.3		35.1	
2000	#	4[4]		0[4]		26[4]		104[4]		92[4]	
	%	-[5]		0.0[4]		11.5[4]		46.0[4]		40.7[4]	
2001	#	1[4]		2[4]		25[4]		111[4]		110[4]	
	%	-[5]		-[5]		10.0		44.6		44.2[4]	
2002	#	1[4]		1[4]		10[4]		91[4]		126[4]	
	%	-[5]		-[5]		4.4		39.7		55.0[4]	
2003	#	1[4]		3[4]		14[4]		94[4]		114[4]	
	%	-[5]		-[5]		6.2		41.6		50.4	
2004	#	0[4]		2[4]		9[4]		79[4]		121[4]	
	%	0.0		-[5]		4.3		37.4		57.4	
2005	#	0[4]		1[4]		6[4]		64[4]		109[4]	
	%	0.0		-[5]		3.3		35.6		60.6	
2006	#	0[4]		1[4]		6[4]		71[4]		101[4]	
	%	0.0		-[5]		3.4		39.7		56.4	
2007	#	0		0		5		34		104	
	%	0.0		0.0		3.5		32.7		72.7	
2008	#	0		1		6		32		104	
	%	0.0		-[5]		4.2		22.4		72.7	

**PLEASE NOTE: this table has been updated June 2001 to reflect the revised comparability ratio of HIV Disease Deaths, issued by the National Center for Health Statistics. 1.AIDS: Acquired Immune Deficiency Syndrome, HIV: Human Immunodeficiency Virus. The deaths reported are cases for which AIDS or HIV-related disease was the underlying cause of death. Deaths for 1992-1998 were coded according to the ICD-9 classification schedule, which began with 1987 death data (codes 042-044). Deaths for 1999-2008 were coded according to the ICD-10 (codes B20-B24). 2. Comparability Modified (CM): this number has been adjusted using the preliminary comparability ratio (CR) from NCHS (revised June 2001). CM data for 1994-1996 use 1996 based CR; CM data for 1997-1998 use revised 1998 based CR. 3. NA: Comparability ratio is not applicable for years prior to 1994. 4. When comparing data over time after 1994, please use the comparability modified number for years 1994-1998. Please see Appendix for a detailed explanation. 5. Calculations based on values 1-4 are excluded.

Table 29. HIV/AIDS[1] Deaths by Gender, Race and Hispanic Ethnicity, Massachusetts: 1996-2008

Year		Gender				Race and Ethnicity							
		Male		Female		White non-Hispanic[2]		Black non-Hispanic[2]		Other[3]		Hispanic[2]	
		Comparability Unmodified	Comparability Modified[4]	Comparability Unmodified	Comparability Modified[4]	Comparability Unmodified	Comparability Modified[4]	Comparability Unmodified	Comparability Modified[4]	Comparability Unmodified	Comparability Modified[4]	Comparability Unmodified	Comparability Modified[4]
1996	#	494	525	115	122	341	363	161	171	5	5	101	107
	%	81.1	81.0	18.9	18.8	56.0	56.0	26.4	26.4	0.8	0.8	16.6	16.5
1997	#	190	218	52	60	121	139	74	85	0	0	47	54
	%	78.5	78.7	21.5	21.7	50.0	50.2	30.6	30.7	-[5]	-[5]	19.4	19.5
1998	#	169	193	44	50	104	119	51	58	0	0	58	66
	%	79.3	79.1	20.7	20.5	48.8	48.8	23.9	23.8	-[5]	-[5]	27.2	27.0
1999	#	177[6]		65[6]		126[6]		51[6]		2[6]		63[6]	
	%	73.1		26.9		52.1		21.1		-[5]		26.0	
2000	#	161[6]		65[6]		104[6]		61[6]		2[6]		59[6]	
	%	71.2		28.8		46.0		27.0		-[5]		26.1	
2001	#	182[6]		67[6]		125[6]		73[6]		0[6]		51[6]	
	%	73.1		26.9		50.2		29.3		-[5]		20.5	
2002	#	163[6]		66[6]		108[6]		68[6]		1[6]		52[6]	
	%	71.2		28.8		47.1		29.7		-[5]		22.7	
2003	#	150[6]		76[6]		113[6]		58[6]		2[6]		53[6]	
	%	66.4		33.6		50.0		25.7		-[5]		23.5	
2004	#	151[6]		60[6]		97[6]		55[6]		4[6]		55[6]	
	%	71.6		28.4		46.0		26.1		-[5]		26.1	
2005	#	122[6]		58[6]		75[6]		56[6]		4[6]		45[6]	
	%	67.8		32.2		41.7		31.1		-[5]		25.0	
2006	#	122[6]		57[6]		91[6]		49[6]		2[6]		37[6]	
	%	68.2		31.8		50.8		27.4		-[5]		20.7	
2007	#	96[6]		47[6]		58[6]		48[6]		0[6]		37[6]	
	%	67.4		32.9		40.6		33.6		0.0		25.9	
2008	#	101[6]		42[6]		69[6]		37[6]		5[6]		31[6]	
	%	70.6		29.4		48.6		26.1		3.5		21.8	

**PLEASE NOTE: this table was updated in June 2001 to reflect the revised comparability ratio of HIV Disease Deaths, issued by the National Center for Health Statistics. 1. AIDS: Acquired Immune Deficiency Syndrome, HIV: Human Immunodeficiency Virus. The deaths reported are cases for which AIDS or HIV-related disease was the underlying cause of death. Deaths for 1992-1998 were coded according to the ICD-9 classification schedule, which began with 1987 death data (codes 042-044). Deaths for 1999-2008 were coded according to the ICD-10 (codes 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 Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation. 3. The "Other" category represents Asian non-Hispanics, American Indian non-Hispanics, and other non-Hispanics. 4. Comparability Modified: this number has been adjusted using the preliminary comparability ratio (CR) from NCHS (June 2001). CM data for 1994-1996 use 1996 based CR; CM data for 1997-1998 use revised 1998 based CR. 5. Calculations based on values 1-4 are excluded. 6. When comparing data over time after 1994, please use the comparability modified number for years 1994-1998. Please see Appendix for a detailed explanation.

Table 30. HIV/AIDS[1] Deaths by Gender, Race and Hispanic Ethnicity: Numbers, Percent and Age-adjusted Rates, Massachusetts: 2000-2008

TOTAL	White non-Hispanic[2]			Black non-Hispanic[2]			Hispanic		
Year	#	Percent	Rate[3]	#	Percent	Rate[3]	#	Percent	Rate[3]
2000	104	46%	1.9	61	27%	18.3	59	26%	17.4
2001	125	50%	2.2	73	29%	21.1	51	20%	13.5
2002	108	47%	1.9	68	30%	20.3	52	23%	13.5
2003	113	50%	2.0	58	26%	17.2	53	23%	14.9
2004	97	46%	1.7	55	26%	15.8	55	26%	13.9
2005	75	42%	1.3	56	31%	16.0	45	25%	11.5
2006	91	51%	1.6	49	27%	13.7	37	21%	8.4
2007	58	41%	1.0	48	34%	13.0	37	26%	8.9
2008	69	50%	1.2	37	27%	10.6	31	23%	8.3
MALE									
2000	77	48%	2.8	40	25%	26.0	42	26%	27.7
2001	92	51%	3.3	50	27%	31.4	40	22%	22.5
2002	86	53%	3.1	43	26%	27.9	34	21%	18.7
2003	74	49%	2.7	36	24%	23.4	39	26%	23.8
2004	74	49%	2.7	39	26%	24.0	34	23%	18.4
2005	52	43%	1.9	34	28%	20.9	33	27%	18.4
2006	67	55%	2.4	33	27%	20.0	21	17%	9.8
2007	48	50%	1.7	23	24%	13.4	25	26%	13.3
2008	55	56%	1.9	25	26%	16.0	18	18%	11.0
FEMALE									
2000	27	42%	1.0	21	32%	11.4	17	26%	8.6
2001	33	49%	1.2	23	34%	12.1	11	16%	5.4
2002	22	33%	0.8	25	38%	13.8	18	27%	8.7
2003	39	51%	1.4	22	29%	12.0	14	18%	7.1
2004	23	38%	0.8	16	27%	8.7	21	35%	10.0
2005	23	40%	0.8	22	38%	11.8	12	21%	5.4
2006	24	42%	0.9	16	28%	8.3	16	28%	7.1
2007	10	21%	0.3	25	53%	12.8	12	26%	5.2
2008	14	36%	0.5	12	31%	6.4	13	33%	6.4

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 Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation. 3. Number of deaths per 100,000 persons; rates are age-adjusted to the 2000 US standard population. Resident death rates for 2000-2005 are calculated using the Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2000-2005 (MMARS00-05), released October 2006. Population estimates are from the NCHS Modified Age, Race/Ethnicity, & Sex Estimates 2007, released September 5, 2008.

Table 31. Trends in Infant, Neonatal, and Post Neonatal Mortality, by Race and Hispanic Ethnicity, Massachusetts: 1998-2008

INFANT MORTALITY (less than one year of age)

	State Total[1]		White non-Hispanic		Black non-Hispanic		Hispanic		Asian non-Hispanic		Other[2]	
Year	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]
1998	414	5.1	287	4.6	59	10.6	58	6.7	10	2.7	0	0.0
1999	418	5.2	285	4.7	72	12.3	49	5.5	8	1.9	4	--[4]
2000	377	4.6	232	3.8	74	12.8	48	5.2	19	4.1	4	--[4]
2001	407	5.0	245	4.1	71	12.1	69	7.3	15	3.1	7	4.1
2002	397	4.9	239	4.1	69	11.6	67	7.0	16	3.0	6	3.8
2003	383	4.8	235	4.1	75	12.7	55	5.6	14	2.7	4	--[4]
2004	376	4.8	210	3.8	70	11.5	75	7.6	15	2.7	6	3.5
2005	391	5.1	230	4.3	57	9.4	77	7.7	18	3.4	8	4.3
2006	369	4.8	220	4.1	72	11.1	63	5.9	10	1.8	3	--[4]
2007	380	4.9	206	3.9	66	10.2	81	7.4	18	3.1	4	--[4]
2008	381	5.0	192	3.7	79	11.9	86	7.9	16	2.7	8	5.1

NEONATAL MORTALITY (birth to 27 days)

	State Total[1]		White non-Hispanic		Black non-Hispanic		Hispanic		Asian, non-Hispanic		Other[2]	
Year	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]
1998	315	3.9	218	3.5	47	8.5	43	5.0	7	1.9	0	0.0
1999	332	4.1	226	3.7	58	9.9	39	4.4	5	1.2	4	--[4]
2000	288	3.5	177	2.9	57	9.9	37	4.0	14	3.0	3	--[4]
2001	308	3.8	190	3.2	56	9.5	49	5.2	10	2.1	3	--[4]
2002	299	3.7	185	3.2	49	8.2	50	5.2	13	2.4	2	--[4]
2003	285	3.6	179	3.1	56	9.5	38	3.9	10	1.9	2	--[4]
2004	291	3.7	167	3.0	51	8.4	57	5.8	12	2.2	4	--[4]
2005	282	3.7	168	3.1	40	6.6	57	5.8	11	2.1	5	2.7
2006	279	3.6	173	3.3	53	8.2	42	3.9	7	1.3	3	--[4]
2007	263	3.4	141	2.7	48	7.4	53	4.9	15	2.6	4	--[4]
2008	290	3.8	152	2.9	57	8.6	65	6.0	10	1.7	6	3.8

POST NEONATAL MORTALITY (28-365 days)

	State Total[1]		White non-Hispanic		Black non-Hispanic		Hispanic		Asian non-Hispanic		Other[2]	
Year	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]
1998	99	1.2	69	1.1	12	2.2	15	1.7	3	--[4]	0	0.0
1999	86	1.1	59	1.0	14	2.4	10	1.1	3	--[4]	0	0.0
2000	89	1.1	55	0.9	17	2.9	11	1.2	5	1.1	1	--[4]
2001	99	1.2	55	0.9	15	2.6	20	2.1	5	1.0	4	--[4]
2002	98	1.2	54	0.9	20	3.4	17	1.8	3	--[4]	4	--[4]
2003	98	1.2	56	1.0	19	3.2	17	1.7	4	--[4]	2	--[4]
2004	85	1.1	43	0.8	19	3.1	18	1.8	3	--[4]	2	--[4]
2005	109	1.4	62	1.2	17	2.8	20	2.0	7	1.3	3	--[4]
2006	90	1.2	47	0.9	19	2.9	21	2.0	3	--[4]	0	0.0
2007	117	1.5	65	1.2	18	2.8	28	2.6	3	--[4]	0	0.0
2008	91	1.2	40	0.8	22	3.3	21	1.9	6	1.0	2	--[4]

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

Table 32. Infant, Neonatal, and Post Neonatal Deaths by Cause, Massachusetts: 2008

Cause of Death[1]	ICD-10 Code	Infant (<1 year) #	Infant (<1 year) %[2,3]	Neonatal (<28 days) #	Neonatal (<28 days) %[2,3]	Post Neonatal (28-365 days) #	Post Neonatal (28-365 days) %[2,3]
TOTAL		**381**	**100**	**290**	**100**	**91**	**100**
Infectious and parasitic diseases	**A00-B99**	**4**	**--[3]**	**4**	**--[3]**	**0**	**0**
Cancer	**C00-C97**	**2**	**--[3]**	**0**	**0**	**2**	**--[3]**
Diseases of the blood and blood forming organs (anemia)	**D50-D89**	**4**	**--[3]**	**1**	**--[3]**	**3**	**--[3]**
Diseases of nervous system and ear	**G00-G98, H60-H93**	**7**	**1.8**	**3**	**--[3]**	**4**	**--[3]**
Diseases of the respiratory system	**J00-J98**	**2**	**--[3]**	**1**	**--[3]**	**1**	**--[3]**
Diseases of digestive system	**K00-K92**	**4**	**--[3]**	**0**	**0**	**4**	**--[3]**
Congenital malformations	**Q00-Q99**	**58**	**15.2**	**41**	**14.1**	**17**	**18.7**
Congenital malformations of nervous system	Q00-Q07	**8**	**--[2]**	**8**	**--[2]**	**0**	**--[2]**
Anencephalus and similar malformations	Q00	**4**	**--[2]**	**4**	**--[2]**	**0**	**0**
Congenital malformations of eye, ear, face, and neck	Q10-Q18	**0**	**0**	**0**	**0**	**0**	**0**
Congenital malformations of heart	Q20-Q24	**11**	**--[2]**	**4**	**--[2]**	**7**	**--[2]**
Other congenital malformations of circulatory system	Q25-Q28	**2**	**--[2]**	**2**	**--[2]**	**0**	**0**
Congenital malformations of respiratory system	Q30-Q34	**4**	**--[2]**	**3**	**--[2]**	**1**	**--[2]**
Cleft palate and other digestive tract malformations	Q35-Q45	**0**	**0**	**0**	**0**	**0**	**0**
Congenital malformations of genitourinary system	Q50-Q64	**3**	**--[2]**	**3**	**--[2]**	**0**	**0**
Congenital malformations of musculoskeletal system	Q65-Q85	**10**	**--[2]**	**6**	**--[2]**	**4**	**--[2]**
Chromosomal abnormalities	Q90-Q99	**19**	**--[2]**	**14**	**--[2]**	**5**	**--[2]**
Certain conditions originating in the perinatal period	**P00-P96**	**237**	**62.2**	**225**	**77.6**	**12**	**13.2**
Newborn affected by maternal conditions which may be unrelated to present pregnancy	P00	**4**	**--[2]**	**2**	**--[2]**	**2**	**--[2]**
Newborn affected by maternal complications of pregnancy	P01	**28**	**--[2]**	**28**	**---[2]**	**0**	**0**
Newborn affected by complications of placenta, cord and membrane	P02	**21**	**--[2]**	**21**	**--[2]**	**0**	**0**
Newborn affected by other complications of labor and delivery	P03	**2**	**--[2]**	**2**	**--[2]**	**0**	**0**
Disorders relating to short gestation and low birthweight	P07	**95**	**--[2]**	**94**	**--[2]**	**1**	**0**
Birth trauma	P10-P15	**0**	**0**	**0**	**0**	**0**	**0**
Intrauterine hypoxia and birth asphyxia	P20-P21	**10**	**--[2]**	**7**	**--[2]**	**3**	**--[2]**
Respiratory distress of newborn	P22	**10**	**--[2]**	**9**	**--[2]**	**1**	**--[2]**
Other respiratory conditions of newborn	P23-P28	**19**	**--[2]**	**16**	**--[2]**	**3**	**--[2]**
Infections specific to the perinatal period	P35-P39	**9**	**--[2]**	**9**	**--[2]**	**0**	**0**
Neonatal hemorrhage	P50-P52, P54	**7**	**--[2]**	**7**	**--[2]**	**0**	**0**
Other and ill-defined conditions originating in the perinatal period	P90-P96	**6**	**--[2]**	**4**	**--[2]**	**2**	**--[2]**
Symptoms, signs, and ill-defined conditions	**R00-R99**	**43**	**11.3**	**8**	**2.8**	**35**	**38.5**
Sudden Infant Death Syndrome (SIDS)	R95	**24**	**--[2]**	**5**	**--[2]**	**19**	**--[2]**
Unintentional Injuries	**V01-X59**	**5**	**1.3**	**0**	**0**	**5**	**5.5**
Homicide	**X85-Y09**	**0**	**0**	**0**	**0**	**0**	**0**
All other causes	**Residual**	**15**	**3.9**	**7**	**2.4**	**8**	**8.8**

1. Please see the Technical Notes in the Appendix for an explanation of ICD-10 codes. 2. Percents not calculated for subcategories. 3. Calculations based on values 1-4 are excluded.

Table 33. Infant Deaths by Major Causes, Race and Hispanic Ethnicity, Massachusetts: 2008

Cause of Death[2]	ICD-10 Code	White non-Hispanic		Black non-Hispanic		Asian non-Hispanic		Hispanic	
		#	%	#	%	#	%	#	%
TOTAL		**192**	**100.0%**	**79**	**100.0%**	**16**	**100.0%**	**86**	**100.0%**
Certain conditions originating in the perinatal period	P00- P96	132	68.8%	46	58.2%	8	50.0%	50	58.1%
Congenital malformations	Q00-Q99	23	12.0%	13	16.5%	4	--[3]	15	17.4%
Symptoms, signs, and ill-defined conditions	R00-R99	21	10.9%	8	10.1%	2	--[3]	12	14.0%
SIDS	R95	11	5.7%	5	6.3%	1	--[3]	7	8.1%
Unintentional Injuries	V01-X59	1	--[3]	1	--[3]	0	0.0%	3	--[3]
Homicide	X85-Y09	0	0.0%	0	0.0%	0	0.0%	0	0.0%
All other causes	Residual	15	7.8%	11	13.9%	2	--[3]	6	7.0%

1. Race and ethnicity data in this table are presented as mutually exclusive categories and Cape Verdeans are not included with Blacks. Persons of Hispanic ethnicity are not included in a race category. Please see Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation. 2. Deaths are coded according to ICD-10. Please see Appendix for comparability ratios. 3. Calculations based on values 1-4 are excluded.

Table 34. Target Status for Selected Healthy People 2010 Mortality Objectives

Objective Number	HEALTHY PEOPLE 2010 OBJECTIVE	TARGET 2010[1]	MA 2007	MA 2008[2]	US 2007[3]	TARGET STATUS
	Age-adjusted rates (per 100,000 population)					
3-1	Overall Cancer death rate	159.9	179.2	177.8	178.4	O
3-2	Lung Cancer	44.9	51.0	49.3	50.6	O
3-3	Female Breast Cancer (per 100,000 females)	22.3	20.4	21.2	22.9	√
3-4	Uterine Cervix (per 100,000 females)	2.0	1.1	1.3	2.4	√
3-5	Colorectal Cancer	13.9	16.0	15.6	16.9	O
3-6	Oropharyngeal Cancer	2.7	2.5	2.5	2.5	√
3-7	Prostate Cancer (per 100,000 males)	28.8	24.1	22.2	23.5	√
3-8	Malignant Melanoma	2.5	3.5	3.4	2.7	●
12-1	Coronary Heart Disease	166.0	111.7	108.0	144.0[4]	√
12-7	Stroke	48.0	35.0	33.7	42.2	√
13-14	HIV/AIDS	0.7	2.0	2.0	3.7	●
26-2	Cirrhosis	3.0	5.2	5.4	9.1	●
26-3	Drug-induced deaths	1.0	14.9	13.1	12.6	●
	Injury Deaths					
15-3	Firearm- related	4.1	3.5	3.3	10.2	√
15-8	Poisonings	1.5	14.5	12.9	13.1	●
15-9	Hanging, strangulation or suffocation	3.0	6.3	6.3	4.9	●
15-13	Unintentional injuries (Accidents)	17.5	30.5	30.5	40.0	●
15-15	Motor vehicle crashes	9.0	6.6	6.6	14.4	√
15-25	Residential fire deaths	0.2	0.4	0.5	0.9[4]	●
15-27	Falls	3.0	6.3	6.5	7.3	●
15-29	Drowning	0.9	1.1	1.0	1.4	O
15-32	Homicide	3.0	2.9	2.9	6.1	√
18-1	Suicide	5.0	7.5	7.5	11.3	●
	Death Rates (per 1,000 live births)					
16-1c	Infant deaths	4.5	4.8	5.0	6.8	O
16-1d	Neonatal deaths	2.9	3.6	3.8	4.4	●
16-1e	Postneonatal deaths	1.2	1.2	1.2	2.3	√
16-1f	Birth defects	1.1	0.8	0.8	1.3	√
16-1g	Congenital heart defects	0.38	0.17	0.17	0.3	√
16-1h	Sudden infant death syndrome (SIDS)	0.25	0.40	0.40	0.6	●
16-4	Maternal deaths (per 100,000 live births)	3.3	9.0	10.4	12.7	●
	Child/Adolescent/Young Adults Death Rates (per 100,000 pop)					
16-2a	1-4 years old	25.0	14.6	16.7	28.6	√
16-2b	5-9 years old	14.3	9.4	7.8	13.7	√
16-3a	10-14 years old	16.8	11.8	9.5	16.9	√
16-3b	15-19 years old	43.2	43.7	33.4	62.0	√
16-3c	20-24 years old	57.3	67.8	57.4	98.7	O
24-1	Asthma deaths (per million)					
24-1a	Children under age 5 years	1.0	--[5]	0.0	10.5	√
24-1b	Children aged 5-14 years	1.0	--[5]	0.0	2.7	√
24-1c	Ages 15-34 years	3.0	--[5]	2.8	1.6	√
24-1d	Ages 35-64 years	9.0	11.1	6.3	12.7	√
24-1e	Ages 65+ years	60.0	34.9	28.7	43.2	√

✓ = YES, met target O = NO, but within 25% of target ● = NO, > 25% from target

1. Data 2010 the Healthy People 2010 Database. CDC Wonder website. 2. Death data for 2008 are calculated using 2008 Modified Age, Race/Ethnicity, and Sex (MARS) estimates, from the National Center for Health Statistics (NCHS) and the Census Bureau Population Estimates Program. 3. U.S. data for 2007 obtained from NCHS. Deaths: Final Data for 2007. National Vital Statistics Report, Vol. 58, No. 19, May 2010. 4. Final Data for 2006at http://wonder.cdc.gov 5. Calculations based on values 1-4 are excluded.

Table 35. Rank of Premature Mortality Rates for the Largest 30 Communities[1], Massachusetts: 2008 (Sorted by PMR)

City/Town	Number of Premature Deaths	PMR[2] (per 100,000)
Fall River	371	434.4*
New Bedford	378	431.9*
Springfield	567	427.5*
Brockton	363	409.3*
Lowell	337	399.1*
Worcester	605	396.0*
Taunton	202	393.8*
Haverhill	211	389.2*
Pittsfield	180	383.6*
Lynn	300	378.3*
Chicopee	217	374.7*
Boston	1,713	371.8*
Revere	163	355.7*
Weymouth	205	353.9*
Attleboro	139	351.7*
Leominster	133	337.1
Lawrence	190	333.2
Malden	174	321.4
Quincy	293	314.4
Methuen	132	310.2
Medford	173	308.4
Plymouth	151	303.0
Barnstable	148	286.7
Peabody	165	280.3
Waltham	146	262.0
Somerville	150	258.8
Framingham	149	234.7*
Cambridge	169	219.9*
Newton	142	167.4*
Brookline	68	142.3*
STATE TOTAL	**18,678**	**282.7**

[1] Selected from among the 30 Massachusetts communities with the largest populations, based on 2000 Census.

[2] Rates are age-adjusted to the 2000 US Standard Population for person ages 0-74 years.

* significantly differently from State PMR.

Table 36. Premature Mortality Rates by Community Within EOHHS Region, Massachusetts: 2008

City/Town	Premature Deaths (#)	PMR* (per 100,000 population)
STATE	18,678	282.7
	WESTERN REGION	
ADAMS	36	383.9
AGAWAM	85	291.7
ALFORD		0
AMHERST	40	233.3
ASHFIELD	5	254.7
ATHOL	40	349.0
BECKET	8	328.0
BELCHERTOWN	31	273.8
BERNARDSTON	9	342.3
BLANDFORD	2	--[1]
BUCKLAND	5	271.6
CHARLEMONT	8	602.9
CHESHIRE	10	270.7
CHESTER	1	--[1]
CHESTERFIELD	1	--[1]
CHICOPEE	217	374.7
CLARKSBURG	6	299.3
COLRAIN	3	--[1]
CONWAY	1	--[1]
CUMMINGTON	2	--[1]
DALTON	21	277.3
DEERFIELD	6	126.6
EAST LONGMEADOW	34	209.1
EASTHAMPTON	60	377.6
EGREMONT	6	339.6
ERVING	5	268.7
FLORIDA	2	--[1]
GILL	2	--[1]
GOSHEN	1	--[1]
GRANBY	20	312.6
GRANVILLE	1	--[1]
GREAT BARRINGTON	40	518.9
GREENFIELD	70	405.9
HADLEY	17	307.4
HAMPDEN	12	205.1
HANCOCK	1	--[1]
HATFIELD	6	175.0
HAWLEY	1	--[1]
HEATH	3	--[1]
HINSDALE	8	426.8
HOLYOKE	154	429.0
HUNTINGTON	8	418.8
LANESBOROUGH	7	219.1
LEE	25	382.3
LENOX	17	270.7
LEVERETT	6	268.3

Table 36. Premature Mortality Rates by Community Within EOHHS Region, Massachusetts: 2008

City/Town	Premature Deaths (#)	PMR* (per 100,000 population)
LEYDEN	1	--[1]
LONGMEADOW	28	167.0
LUDLOW	53	226.3
MIDDLEFIELD	2	--[1]
MONROE	.	0
MONSON	27	324.0
MONTAGUE	38	437.2
MONTEREY	2	--[1]
MONTGOMERY	3	--[1]
MOUNT WASHINGTON	1	--[1]
NEW ASHFORD	1	--[1]
NEW MARLBOROUGH	5	284.3
NEW SALEM	2	--[1]
NORTH ADAMS	72	512.7
NORTHAMPTON	112	417.7
NORTHFIELD	11	333.9
ORANGE	38	495.0
OTIS	7	371.2
PALMER	57	453.2
PELHAM	2	--[1]
PERU	3	--[1]
PETERSHAM	4	--[1]
PHILLIPSTON	3	--[1]
PITTSFIELD	180	383.6
PLAINFIELD	.	0
RICHMOND	3	--[1]
ROWE	1	--[1]
ROYALSTON	1	--[1]
RUSSELL	5	339.7
SANDISFIELD	4	--[1]
SAVOY	.	0
SHEFFIELD	7	159.3
SHELBURNE	6	241.4
SHUTESBURY	3	--[1]
SOUTH HADLEY	53	324.6
SOUTHAMPTON	20	365.3
SOUTHWICK	34	383.2
SPRINGFIELD	567	427.5
STOCKBRIDGE	6	170.8
SUNDERLAND	7	282.6
TOLLAND	0	0
TYRINGHAM	0	0
WARE	36	361.0
WARWICK	1	--[1]
WASHINGTON	0	0
WENDELL	0	0
WEST SPRINGFIELD	110	377.6
WEST STOCKBRIDGE	1	--[1]
WESTFIELD	122	321.1
WESTHAMPTON	1	--[1]
WHATELY	7	439.6
WILBRAHAM	44	296.8

Table 36. Premature Mortality Rates by Community Within EOHHS Region, Massachusetts: 2008

City/Town	Premature Deaths (#)	PMR* (per 100,000 population)
WILLIAMSBURG	1	--[1]
WILLIAMSTOWN	25	347.4
WINDSOR	3	--[1]
WORTHINGTON	5	375.3
	CENTRAL REGION	
ASHBURNHAM	16	297.5
ASHBY	11	410.2
AUBURN	54	303.5
AYER	21	314.9
BARRE	25	510.1
BELLINGHAM	41	272.7
BERLIN	10	404.9
BLACKSTONE	29	420.5
BOLTON	11	326.6
BOYLSTON	9	198.4
BRIMFIELD	10	255.4
BROOKFIELD	12	402.1
CHARLTON	35	408.6
CLINTON	50	380.3
DOUGLAS	16	285.7
DUDLEY	27	275.8
EAST BROOKFIELD	5	225.9
FITCHBURG	155	433.9
FRANKLIN	57	237.8
GARDNER	73	357.5
GRAFTON	28	189.0
GROTON	20	263.9
HARDWICK	10	399.6
HARVARD	23	389.6
HOLDEN	43	246.4
HOLLAND	5	236.8
HOPEDALE	21	351.5
HUBBARDSTON	15	520.9
LANCASTER	16	303.3
LEICESTER	35	345.1
LEOMINSTER	133	337.1
LUNENBURG	23	230.8
MEDWAY	25	241.3
MENDON	16	309.4
MILFORD	67	262.0
MILLBURY	54	383.6
MILLVILLE	5	230.2
NEW BRAINTREE	1	--[1]
NORTH BROOKFIELD	12	268.7
NORTHBRIDGE	43	342.3
OAKHAM	6	371.4
OXFORD	53	422.5
PAXTON	9	191.1
PEPPERELL	21	220.9

Table 36. Premature Mortality Rates by Community Within EOHHS Region, Massachusetts: 2008

City/Town	Premature Deaths (#)	PMR* (per 100,000 population)
PRINCETON	6	163.5
RUTLAND	19	309.0
SHIRLEY	20	304.7
SHREWSBURY	65	207.9
SOUTHBRIDGE	46	294.6
SPENCER	38	333.8
STERLING	17	295.9
STURBRIDGE	23	256.8
SUTTON	24	279.2
TEMPLETON	27	370.6
TOWNSEND	29	419.7
UPTON	13	238.1
UXBRIDGE	44	424.7
WALES	8	576.2
WARREN	19	390.8
WEBSTER	81	501.0
WEST BOYLSTON	22	316.6
WEST BROOKFIELD	14	370.3
WESTMINSTER	18	238.5
WINCHENDON	36	429.4
WORCESTER	605	396.0
NORTHEAST REGION		
AMESBURY	51	342.9
ANDOVER	59	180.2
BEVERLY	107	272.2
BILLERICA	116	318.8
BOXFORD	8	112.0
CHELMSFORD	94	267.7
DANVERS	89	297.9
DRACUT	83	297.7
DUNSTABLE	9	344.0
ESSEX	12	330.7
EVERETT	93	255.4
GEORGETOWN	12	195.9
GLOUCESTER	111	316.7
GROVELAND	13	217.7
HAMILTON	10	129.9
HAVERHILL	211	389.2
IPSWICH	28	192.7
LAWRENCE	190	333.2
LOWELL	337	399.1
LYNN	300	378.3
LYNNFIELD	17	121.2
MALDEN	174	321.4
MANCHESTER	14	187.0
MARBLEHEAD	42	183.0
MEDFORD	173	308.4
MELROSE	70	253.7
MERRIMAC	19	316.7
METHUEN	132	310.2

Table 36. Premature Mortality Rates by Community Within EOHHS Region, Massachusetts: 2008

City/Town	Premature Deaths (#)	PMR* (per 100,000 population)
MIDDLETON	21	252.5
NAHANT	8	183.2
NEWBURY	11	149.5
NEWBURYPORT	39	208.5
NORTH ANDOVER	49	204.0
NORTH READING	40	283.5
PEABODY	165	280.3
READING	52	222.8
ROCKPORT	18	189.9
ROWLEY	8	183.8
SALEM	117	292.0
SALISBURY	40	450.1
SAUGUS	95	291.3
STONEHAM	73	287.1
SWAMPSCOTT	34	243.5
TEWKSBURY	87	289.8
TOPSFIELD	6	84.7
TYNGSBOROUGH	38	449.6
WAKEFIELD	88	358.7
WENHAM	8	179.9
WEST NEWBURY	8	215.3
WESTFORD	39	230.6
METROWEST REGION		
ACTON	39	224.7
ARLINGTON	107	232.9
ASHLAND	27	177.7
BEDFORD	34	232.6
BELMONT	36	143.2
BOXBOROUGH	9	189.7
BRAINTREE	103	271.6
BURLINGTON	67	244.6
CAMBRIDGE	169	219.9
CANTON	51	226.2
CARLISLE	4	--[1]
COHASSET	19	238.4
CONCORD	26	134.1
DEDHAM	72	280.0
DOVER	9	147.8
FOXBOROUGH	54	319.0
FRAMINGHAM	149	234.7
HINGHAM	50	219.0
HOLLISTON	29	227.8
HOPKINTON	25	237.5
HUDSON	53	270.5
HULL	33	245.1
LEXINGTON	54	152.6
LINCOLN	7	91.9
LITTLETON	6	68.2
MARLBOROUGH	93	267.7
MAYNARD	26	261.6

Table 36. Premature Mortality Rates by Community Within EOHHS Region, Massachusetts: 2008

City/Town	Premature Deaths (#)	PMR* (per 100,000 population)
MEDFIELD	23	209.8
MILLIS	18	234.2
MILTON	70	272.1
NATICK	74	222.5
NEEDHAM	48	168.5
NEWTON	142	167.4
NORFOLK	20	288.4
NORTHBOROUGH	33	254.5
NORWELL	35	347.9
NORWOOD	89	300.0
PLAINVILLE	25	304.9
QUINCY	293	314.4
RANDOLPH	84	267.6
SCITUATE	50	242.7
SHARON	35	197.6
SHERBORN	8	187.8
SOMERVILLE	150	258.8
SOUTHBOROUGH	15	193.2
STOW	9	195.2
SUDBURY	27	172.8
WALPOLE	48	203.0
WALTHAM	146	262.0
WATERTOWN	73	224.0
WAYLAND	26	179.0
WELLESLEY	38	140.4
WESTBOROUGH	45	322.0
WESTON	9	95.7
WESTWOOD	27	204.5
WEYMOUTH	205	353.9
WILMINGTON	58	296.0
WINCHESTER	31	131.7
WOBURN	134	340.5
WRENTHAM	34	353.8
SOUTHEAST REGION		
ABINGTON	54	342.2
ACUSHNET	30	258.1
ATTLEBORO	139	351.7
AVON	12	253.4
BARNSTABLE	148	286.7
BERKLEY	9	176.5
BOURNE	68	328.6
BREWSTER	26	206.5
BRIDGEWATER	59	279.7
BROCKTON	363	409.3
CARVER	37	316.0
CHATHAM	25	253.8
CHILMARK	5	386.4
DARTMOUTH	82	270.9
DENNIS	56	280.2
DIGHTON	21	348.3

Table 36. Premature Mortality Rates by Community Within EOHHS Region, Massachusetts: 2008

City/Town	Premature Deaths (#)	PMR* (per 100,000 population)
DUXBURY	22	158.5
EAST BRIDGEWATER	35	276.2
EASTHAM	24	289.7
EASTON	51	254.4
EDGARTOWN	9	209.6
FAIRHAVEN	68	387.0
FALL RIVER	371	434.4
FALMOUTH	119	275.3
FREETOWN	15	189.1
AQUINNAH	1	--[1]
GOSNOLD	0	0
HALIFAX	24	300.8
HANOVER	39	296.2
HANSON	27	296.4
HARWICH	50	300.4
HOLBROOK	41	324.8
KINGSTON	41	352.1
LAKEVILLE	25	253.8
MANSFIELD	47	323.1
MARION	15	244.3
MARSHFIELD	84	343.8
MASHPEE	44	250.3
MATTAPOISETT	17	206.5
MIDDLEBOROUGH	89	478.0
NANTUCKET	29	325.0
NEW BEDFORD	378	431.9
NORTH ATTLEBORO	91	377.4
NORTON	42	323.3
OAK BLUFFS	15	387.7
ORLEANS	16	164.6
PEMBROKE	53	318.3
PLYMOUTH	151	303.0
PLYMPTON	12	577.7
PROVINCETOWN	9	208.7
RAYNHAM	25	187.7
REHOBOTH	28	272.8
ROCHESTER	13	269.3
ROCKLAND	74	407.9
SANDWICH	52	255.4
SEEKONK	32	211.6
SOMERSET	50	225.6
STOUGHTON	81	289.6
SWANSEA	51	292.9
TAUNTON	202	393.8
TISBURY	17	423.9
TRURO	4	--[1]
WAREHAM	108	452.2
WELLFLEET	9	240.3
WEST BRIDGEWATER	19	242.6
WEST TISBURY	6	209.0
WESTPORT	55	318.5
WHITMAN	50	385.9

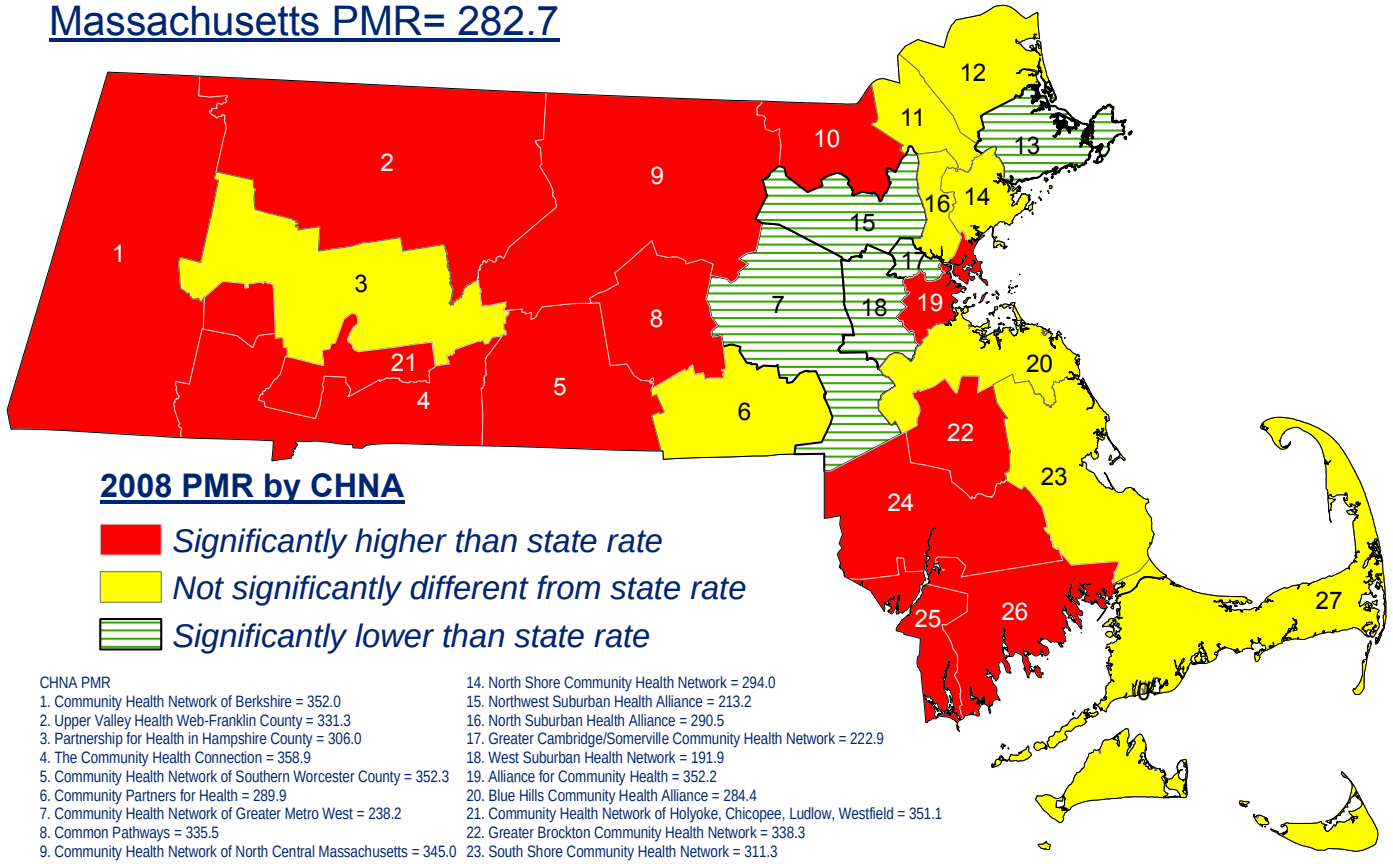
Table 36. Premature Mortality Rates by Community Within EOHHS Region, Massachusetts: 2008

City/Town	Premature Deaths (#)	PMR* (per 100,000 population)
YARMOUTH	116	388.1
	BOSTON REGION	
BOSTON	1,713	371.8
BROOKLINE	68	142.3
CHELSEA	111	423.7
REVERE	163	355.7
WINTHROP	59	340.4

* Premature Mortality Rates (PMR) for cities and towns were calculated using MDPH population estimates for 2005, which are the most up-to-date information available on the number of persons by age, race, and sex at the sub-state level. PMR are age-adjusted to the 2000 US Standard Population for persons ages 0-74 years.

[1] Age-adjusted rates based on values 1-4 are excluded.

Map 1. Premature Mortality Rates (PMR) by Community Health Network Area (CHNA), Massachusetts: 2008

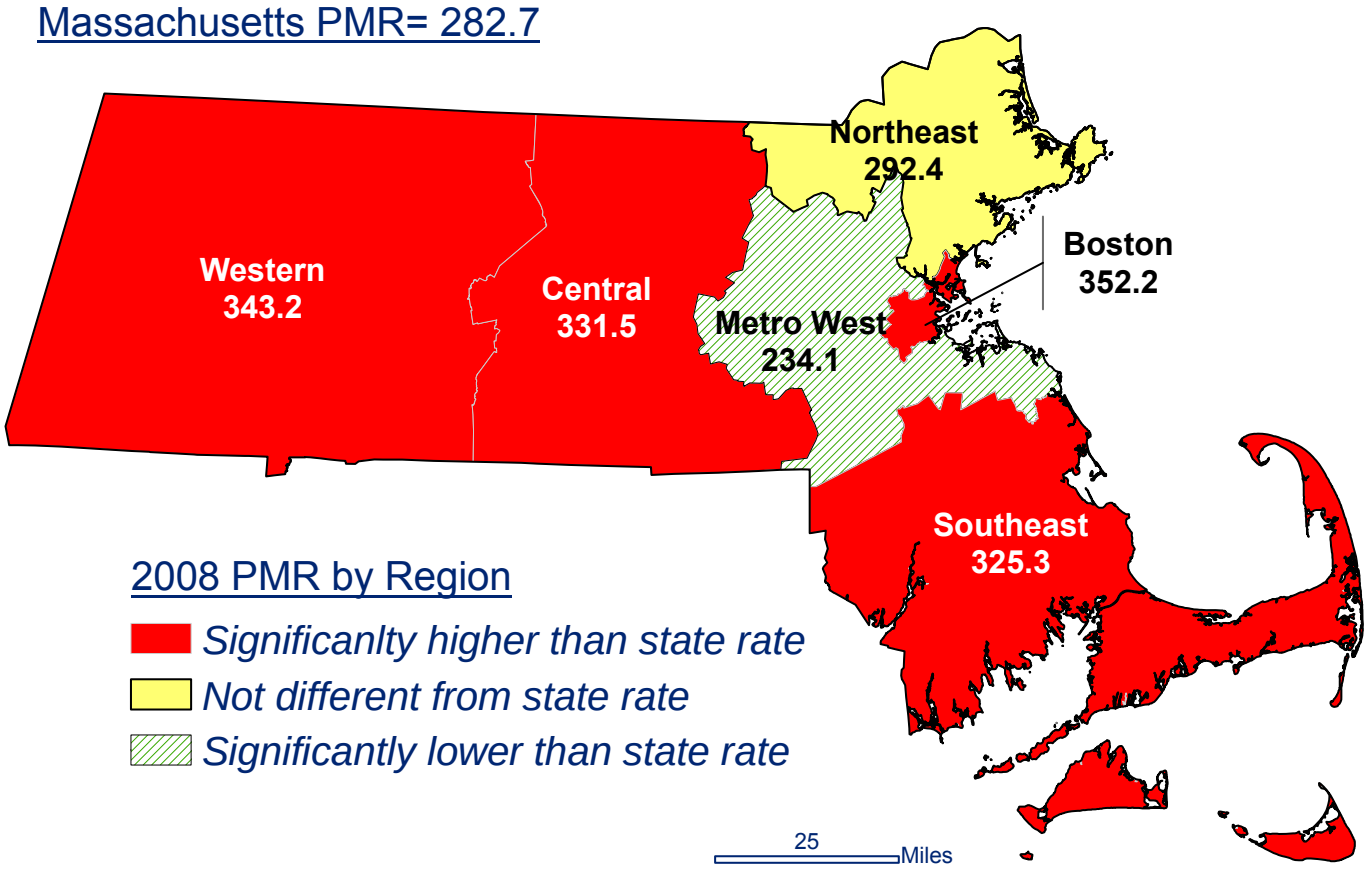


CHNA PMR

1. Community Health Network of Berkshire = 352.0
2. Upper Valley Health Web-Franklin County = 331.3
3. Partnership for Health in Hampshire County = 306.0
4. The Community Health Connection = 358.9
5. Community Health Network of Southern Worcester County = 352.3
6. Community Partners for Health = 289.9
7. Community Health Network of Greater Metro West = 238.2
8. Common Pathways = 335.5
9. Community Health Network of North Central Massachusetts = 345.0
10. Greater Lowell Community Health Network = 329.9
11. Greater Lawrence Community Health Network = 274.2
12. Greater Haverhill Community Health Network = 300.8
13. Community Health Network North = 245.4
14. North Shore Community Health Network = 294.0
15. Northwest Suburban Health Alliance = 213.2
16. North Suburban Health Alliance = 290.5
17. Greater Cambridge/Somerville Community Health Network = 222.9
18. West Suburban Health Network = 191.9
19. Alliance for Community Health = 352.2
20. Blue Hills Community Health Alliance = 284.4
21. Community Health Network of Holyoke, Chicopee, Ludlow, Westfield = 351.1
22. Greater Brockton Community Health Network = 338.3
23. South Shore Community Health Network = 311.3
24. Greater Attleboro-Taunton Health & Education Response = 335.8
25. Partners for Healthier Community = 371.0
26. Greater New Bedford Community Health Network = 362.5
27. Cape Cod and Islands Health Network = 283.5

Rates are per 100,000 persons under 75 years of age, age-adjusted to the 2000 US standard population and are calculated using MDPH population estimates for 2005, which are the most up-to-date estimates available at the sub-state level by age groups.

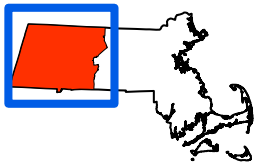
Map 2. Premature Mortality Rates (PMR) by Region, Massachusetts: 2008

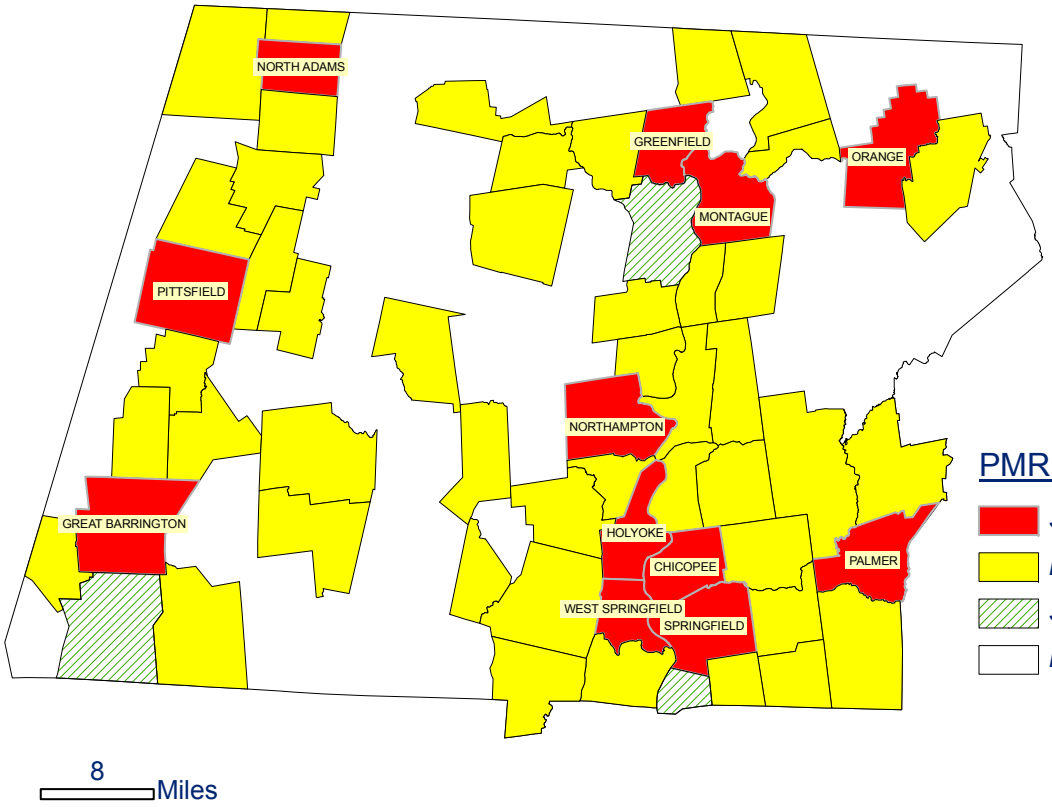


Rates are per 100,000 persons under 75 years of age, age-adjusted to the 2000 US standard population and are calculated using MDPH population estimates for 2005, which are the most up-to-date estimates available at the sub-state level by age groups.

Map 3. Premature Mortality Rates (PMR), Western Region by City/Town: 2008

Massachusetts PMR= 282.7
Western Region PMR= 343.2





PMR by City/Town

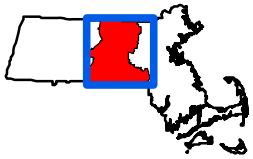
- *Significantly higher than state rate*
- *Not different from state rate*
- *Significantly lower than state rate*
- *Less than 5 premature deaths.*

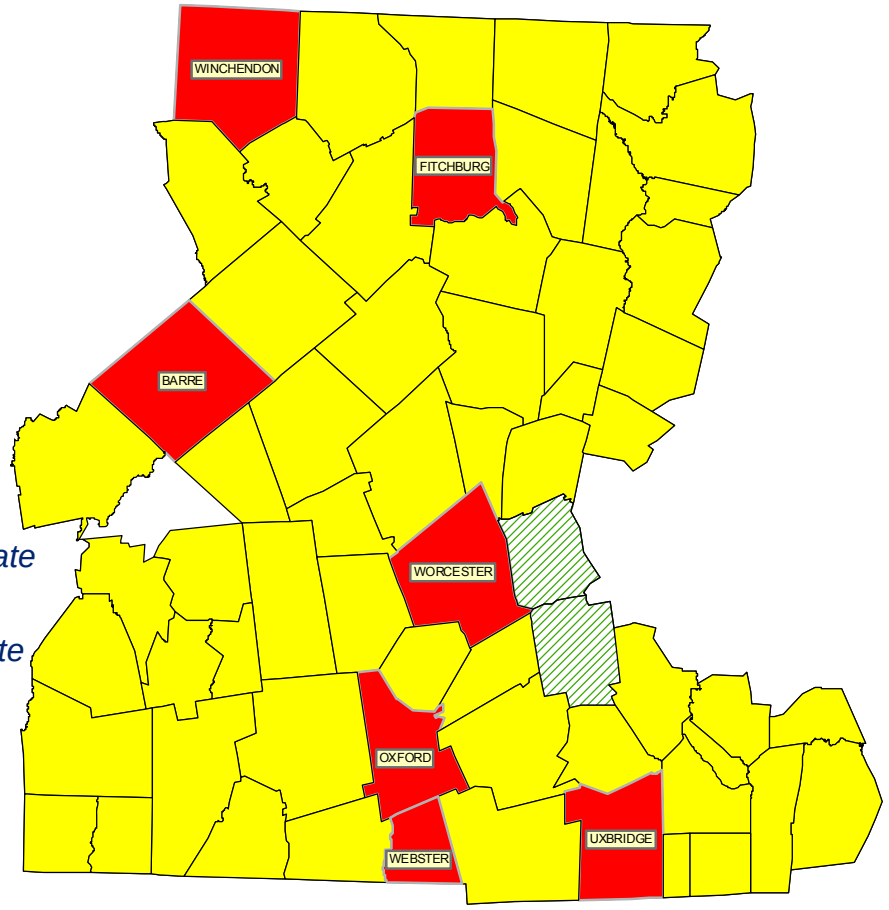
Rates are per 100,000 persons under 75 years of age, age-adjusted to the 2000 US standard population and are calculated using MDPH population estimates for 2005, which are the most up-to-date estimates available at the sub-state level by age groups.

Map 4. Premature Mortality Rates (PMR), Central Region by City/Town: 2008

Massachusetts PMR= 282.7

Central Region PMR= 331.5





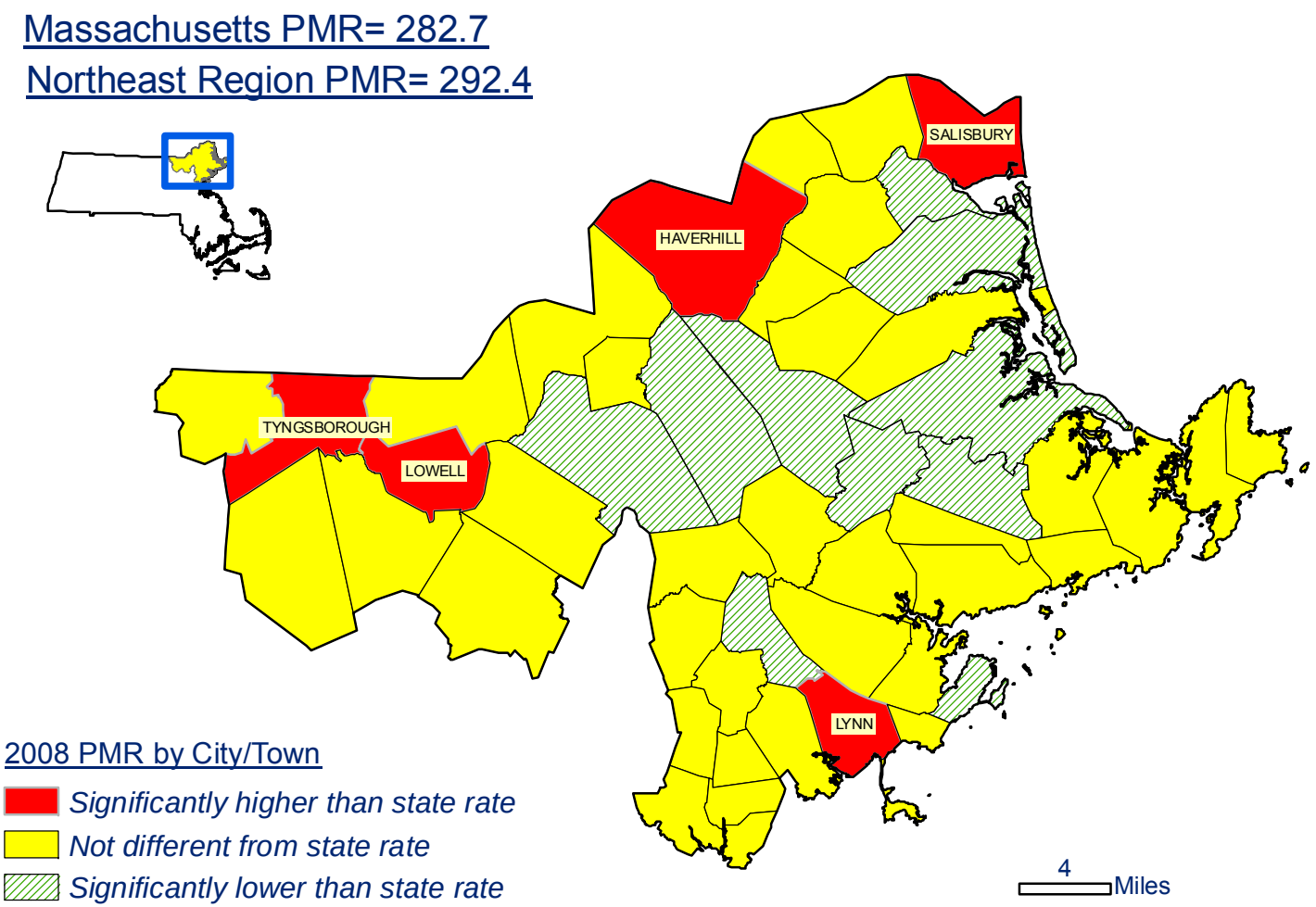
2008 PMR by City/Town

- *Significantly higher than state rate*
- *Not different from state rate*
- *Significantly lower than state rate*
- Less than 5 premature deaths.

5 Miles

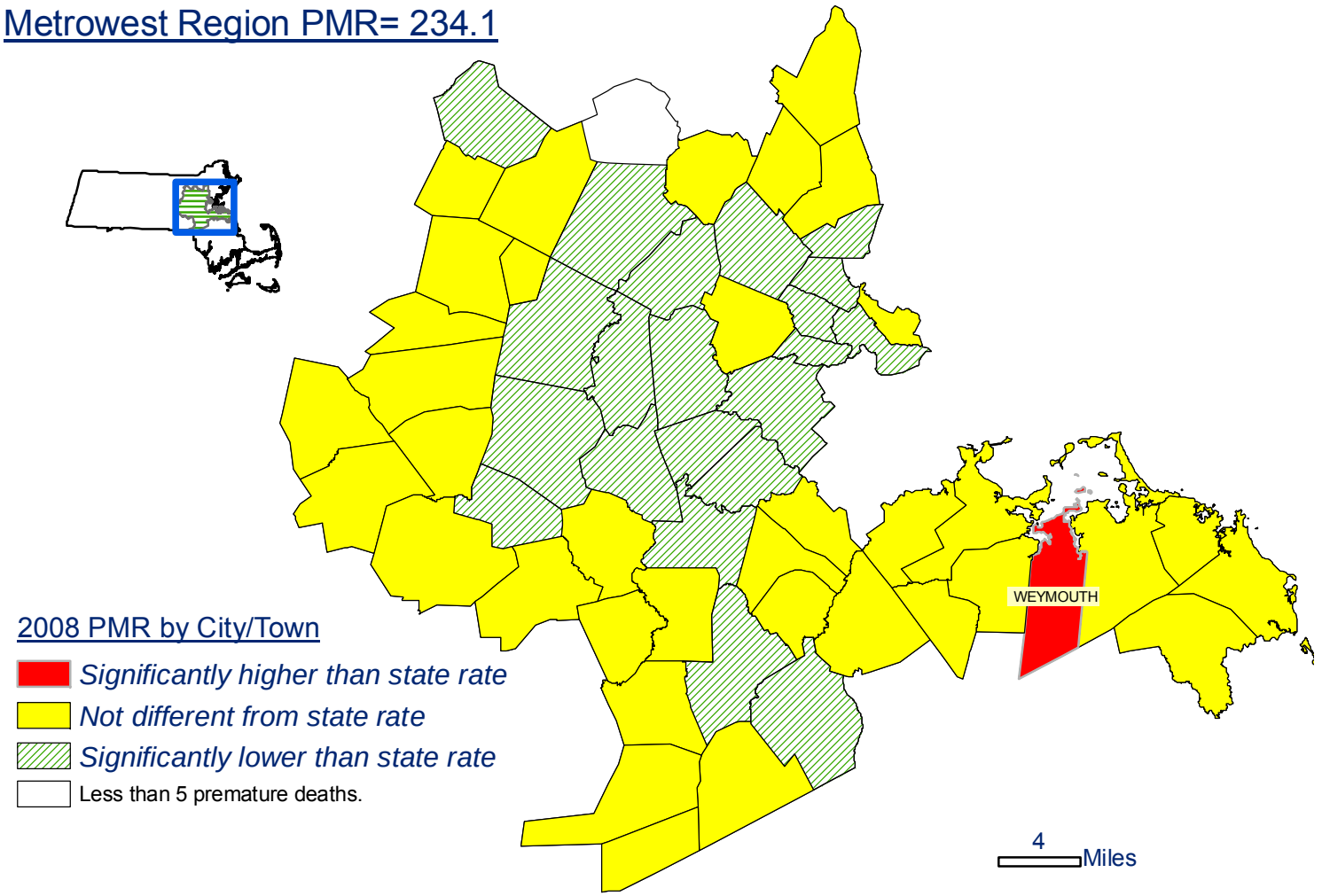
Rates are per 100,000 persons under 75 years of age, age-adjusted to the 2000 US standard population and are calculated using MDPH population estimates for 2005, which are the most up-to-date estimates available at the sub-state level by age groups.

Map 5. Premature Mortality Rates (PMR), Northeast Region by City/Town: 2008



Rates are per 100,000 persons under 75 years of age, age-adjusted to the 2000 US standard population and are calculated using MDPH population estimates for 2005, which are the most up-to-date estimates available at the sub-state level by age groups.

Map 6. Premature Mortality Rates (PMR), Metrowest Region by City/Town: 2008

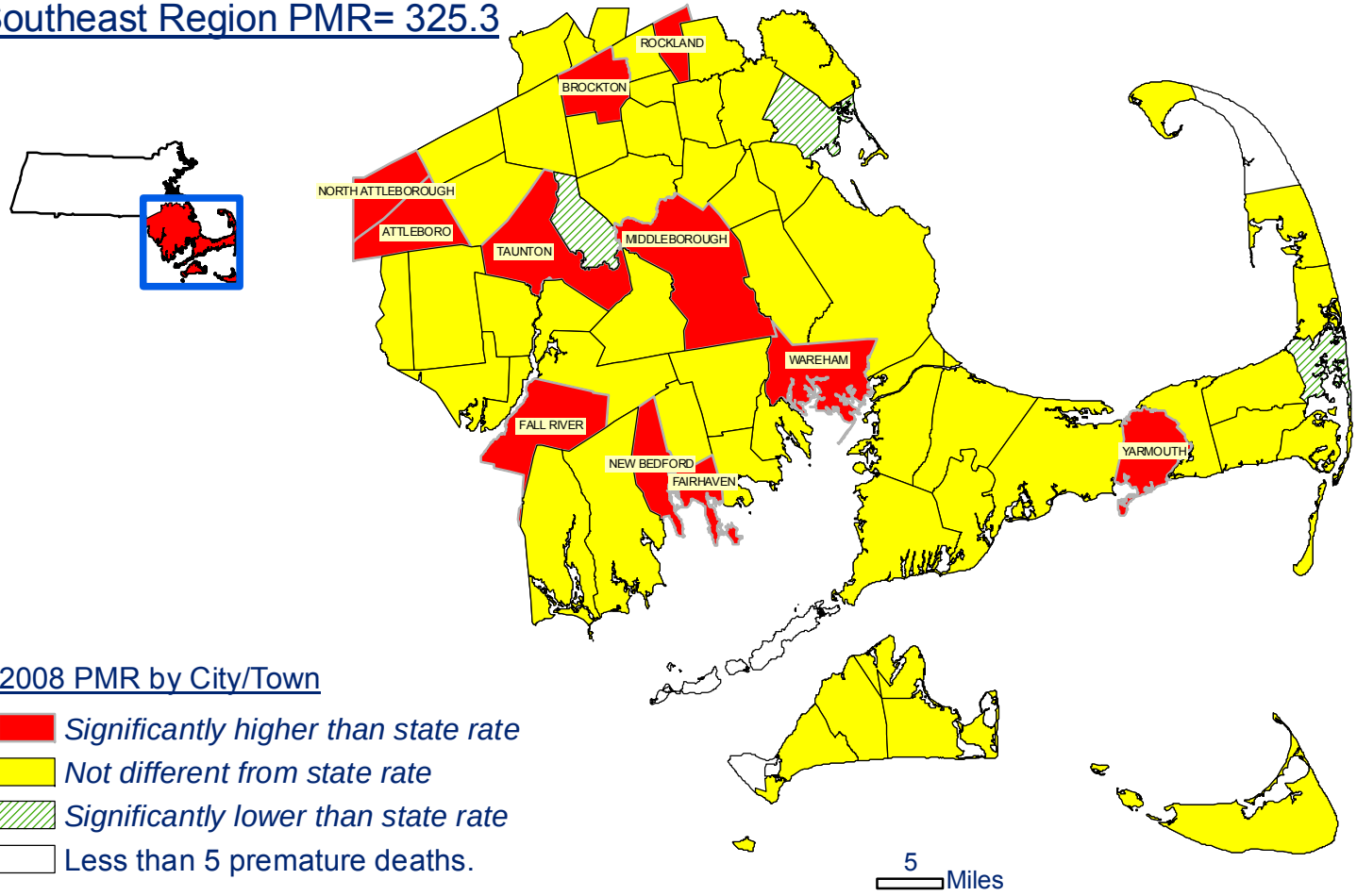


Rates are per 100,000 persons under 75 years of age, age-adjusted to the 2000 US standard population and are calculated using MDPH population estimates for 2005, which are the most up-to-date estimates available at the sub-state level by age groups.

Map 7. Premature Mortality Rates (PMR), Southeast Region by City/Town: 2008

Massachusetts PMR= 282.7

Southeast Region PMR= 325.3

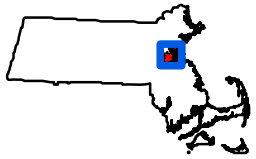


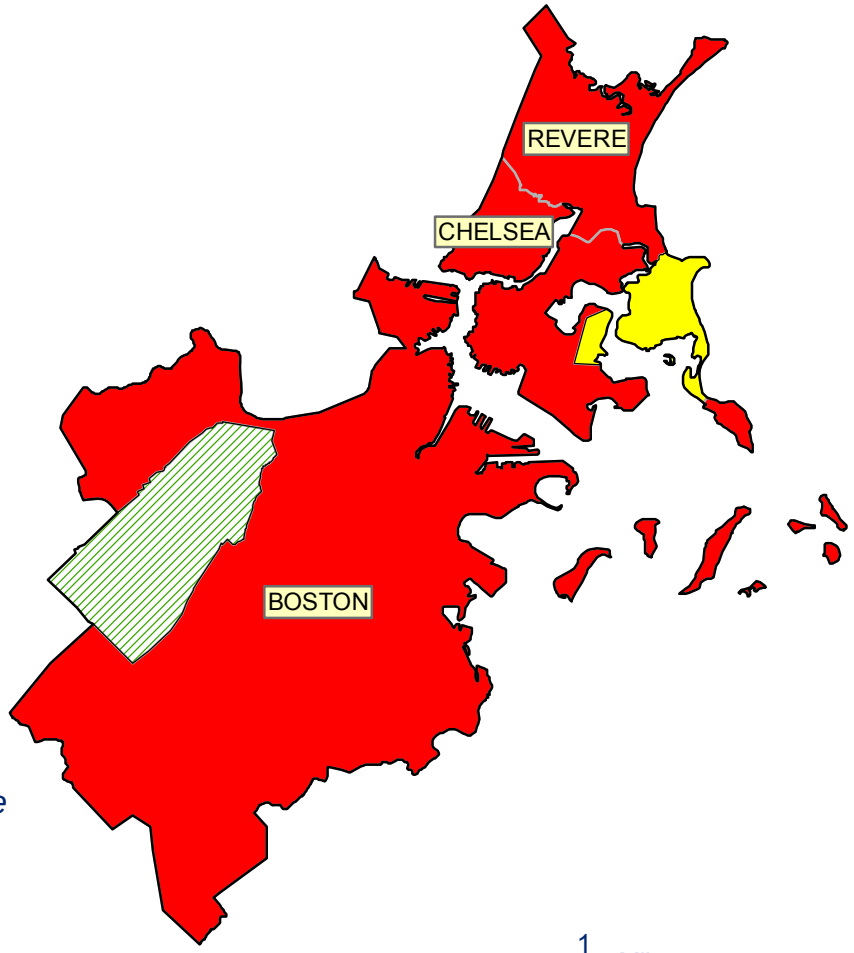
Rates are per 100,000 persons under 75 years of age, age-adjusted to the 2000 US standard population and are calculated using MDPHpopulation estimates for 2005, which are the most up-to-date estimates available at the sub-state level by age groups.

Map 8. Premature Mortality Rates (PMR), Boston Region by City/Town: 2008

Massachusetts PMR= 282.7

Boston Region PMR= 352.2





2008 PMR by City/Town

- *Significantly higher than state rate*
- *Not different from state rate*
- *Significantly lower than state rate*

Rates are per 100,000 persons under 75 years of age, age-adjusted to the 2000 US standard population and are calculated using MDPH population estimates for 2005, which are the most up-to-date estimates available at the sub-state level by age groups.

Figure 18. Premature Mortality Rates adjusted by poverty level, Massachusetts: 2008

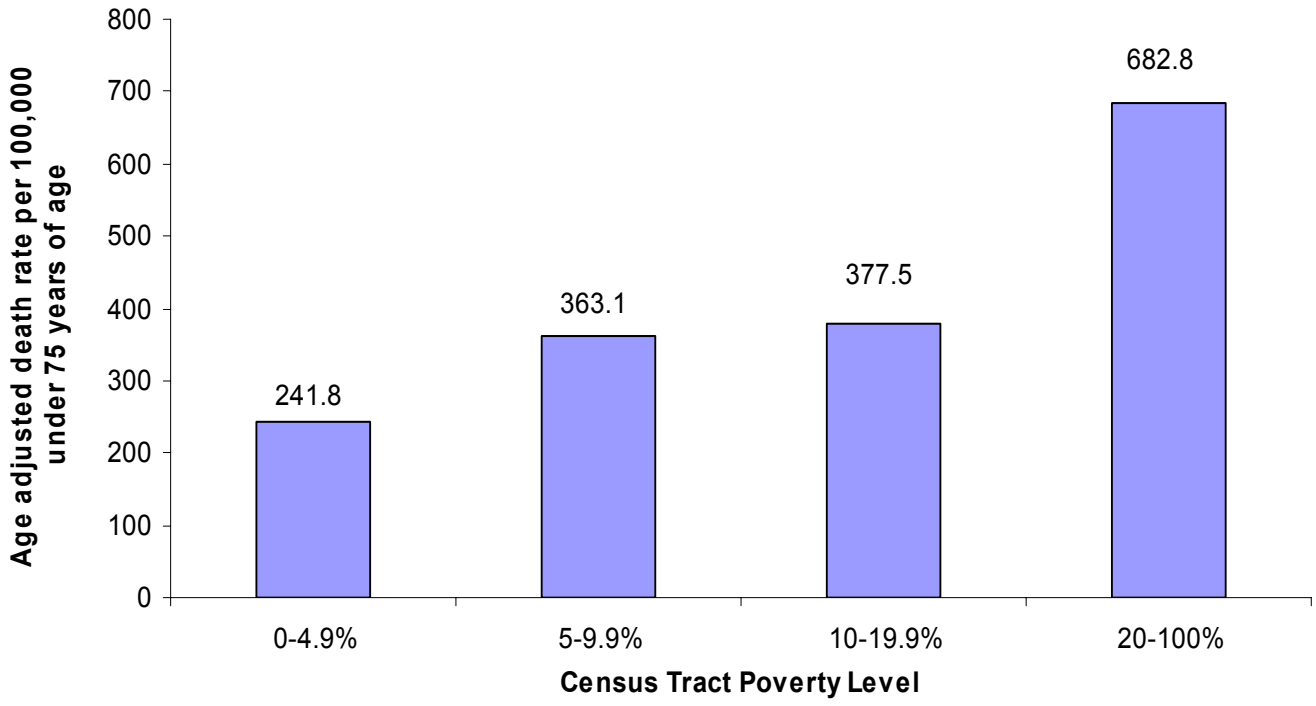


Figure 19. Infant Mortality rates adjusted by poverty level, Massachusetts: 2008

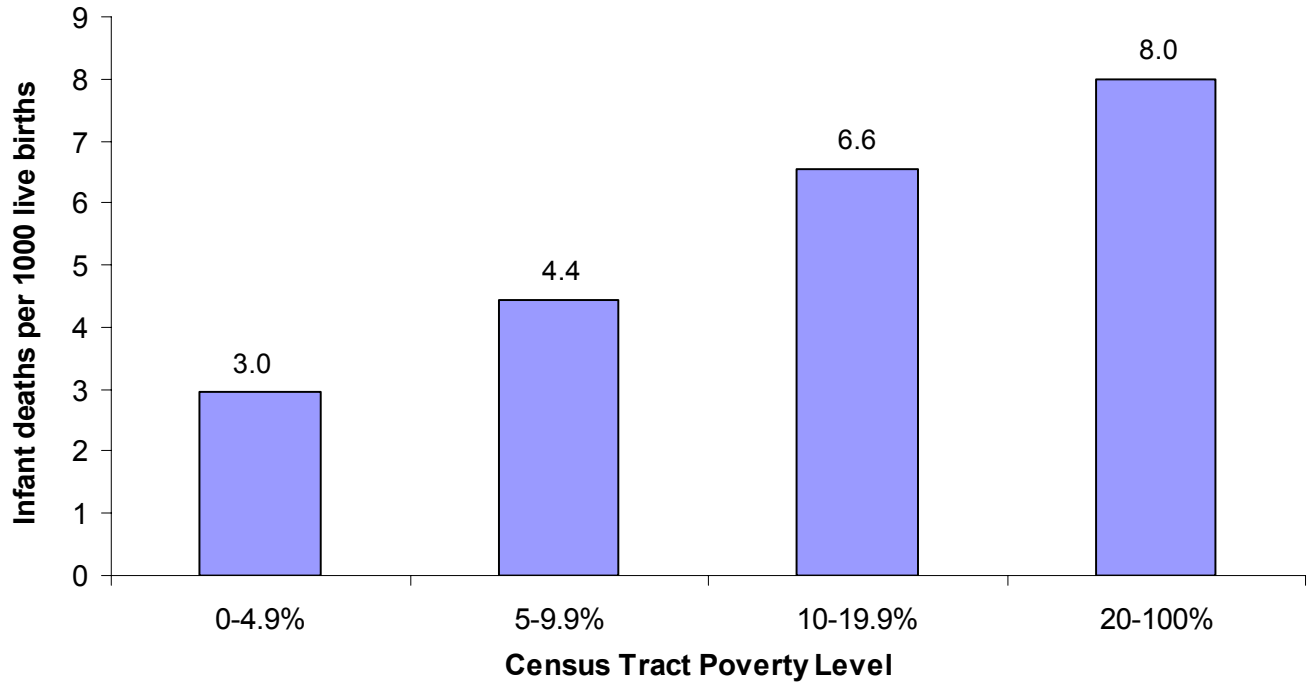


Figure 20. Percent Deaths Amenable to Health Care, Massachusetts: 2008

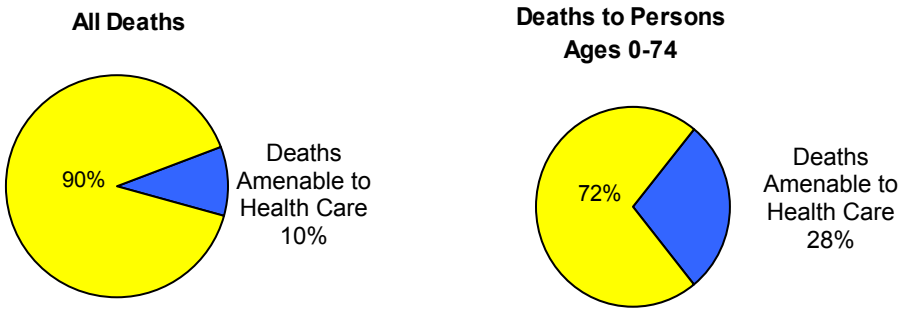
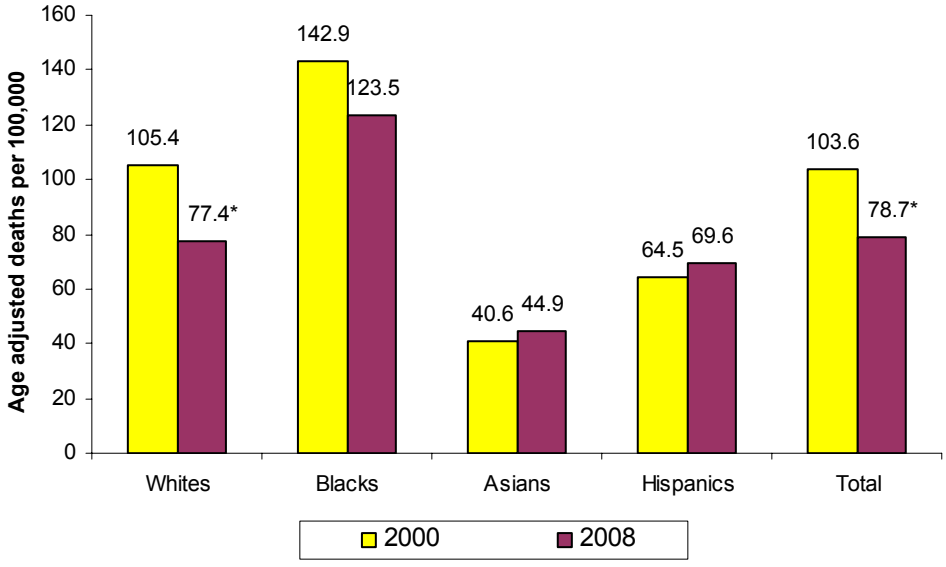


Figure 21. Amenable Mortality by race and Hispanic ethnicity, Massachusetts: 2000 and 2008



APPENDIX

Additional Tables & Figures

Technical Notes

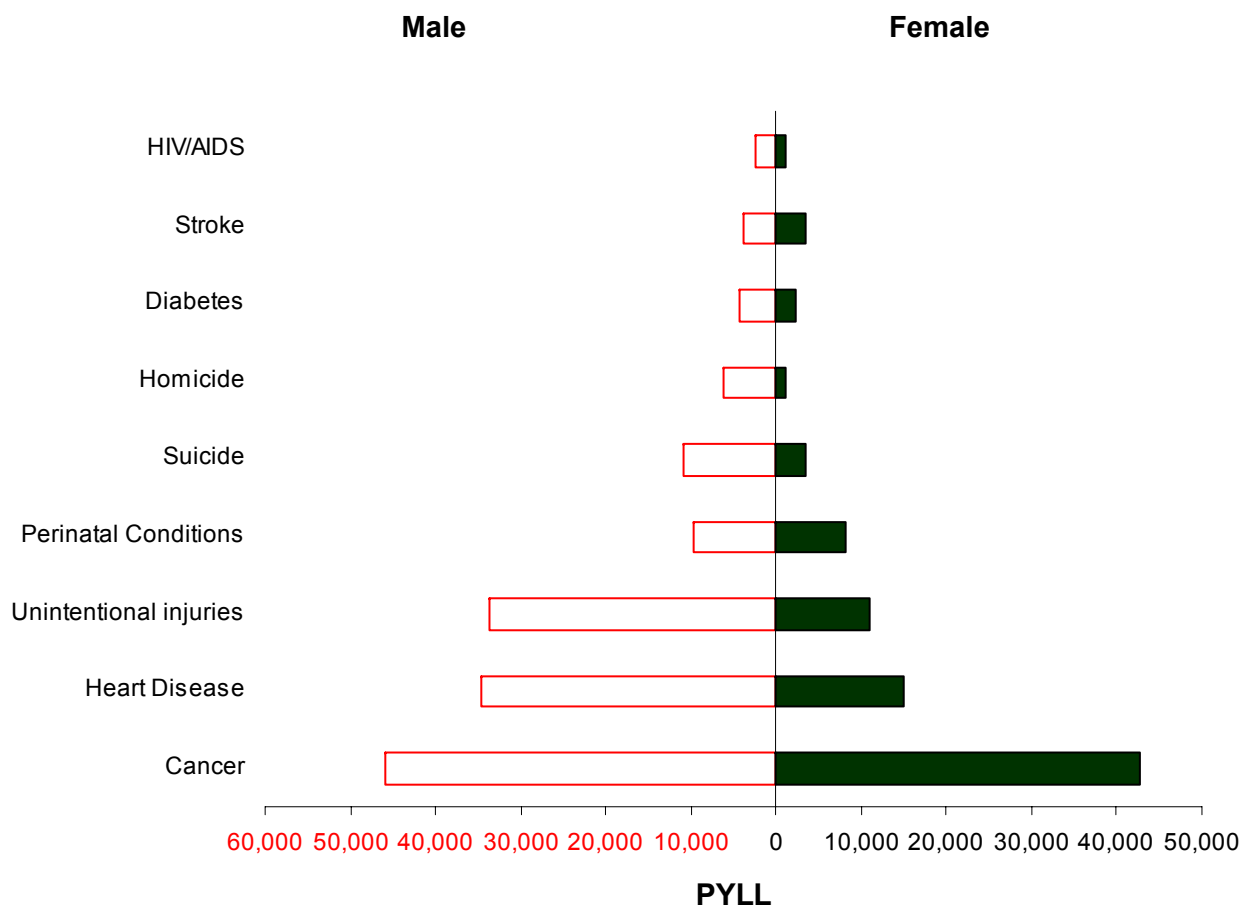
Glossary

Table 37. Rank by Potential Years of Life Lost (PYLL), Massachusetts: 2008

Cause	Total PYLL	Rank on PYLL	Average PYLL	# of Deaths before 75 years	Rank on Number of Deaths
All Causes	*337,505*		*18.1*	*18,678*	
Cancer	88,477	1	13.9	6,368	1
Heart Disease	49,555	2	14.7	3,363	2
Unintentional injuries	44,533	3	32.1	1,388	5
Perinatal Conditions	17,947	4	74.5	241	20
Suicide	14,662	5	31.0	473	14
Stroke	7,379	7	14.4	514	3
Homicide	7,270	6	43.8	166	23
Diabetes	6,720	8	14.6	460	9
HIV/AIDS	3,424	9	25.0	137	25
Alzheimer's Disease	950	10	8.7	109	6

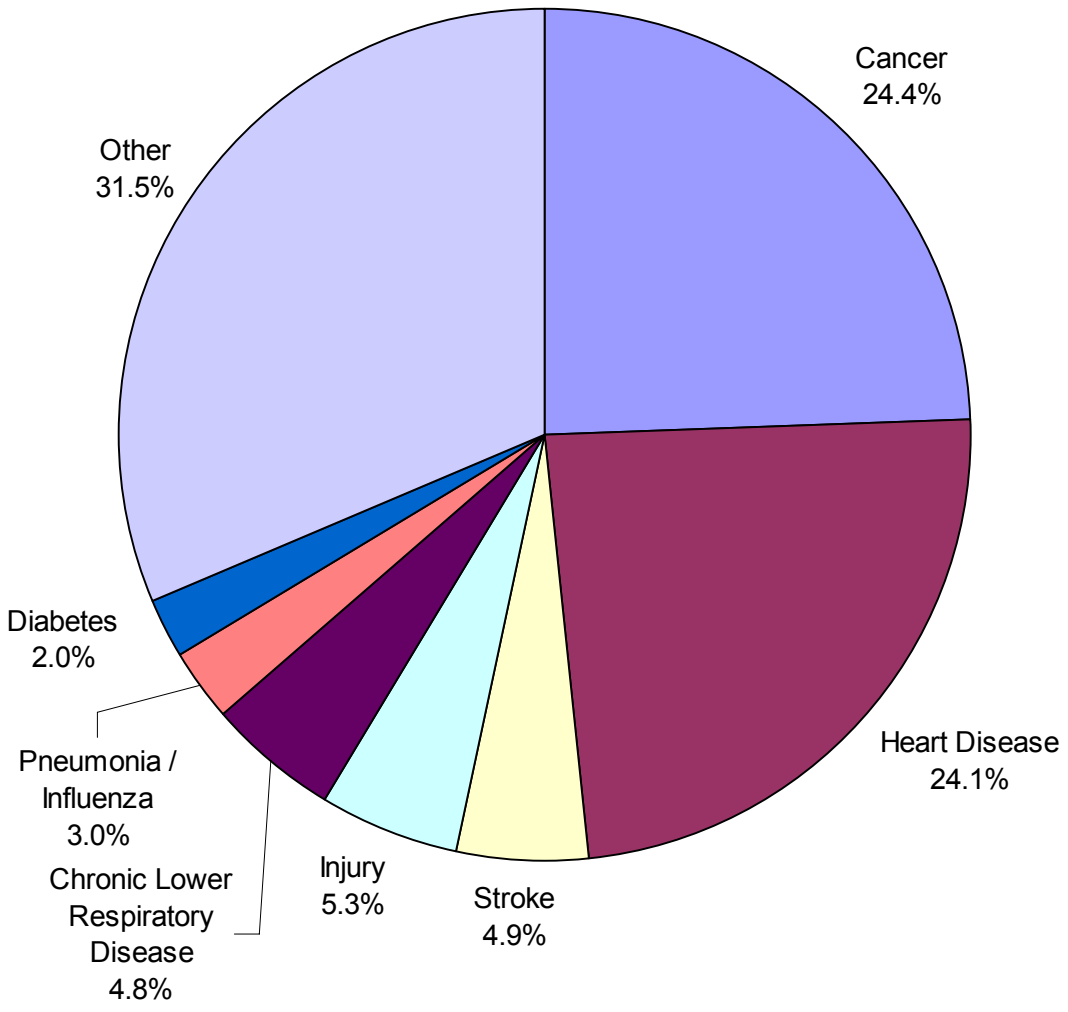
Note: Total potential years of life lost is calculated by multiplying the number of deaths for each group by the years of life lost (the difference between life expectancy and the midpoint of the age group, then adding the figures for all age groups).

Figure 22. Potential Years of Life Lost (PYLL) for Selected Causes by Gender, Massachusetts: 2008



Note: Total potential years of life lost is calculated by multiplying the number of deaths for each group by the years of life lost (the difference between life expectancy and the midpoint of the age group, then adding the figures for all age groups).

Figure 23. Percent Distribution of Leading Underlying Causes of Death[1], Massachusetts: 2008



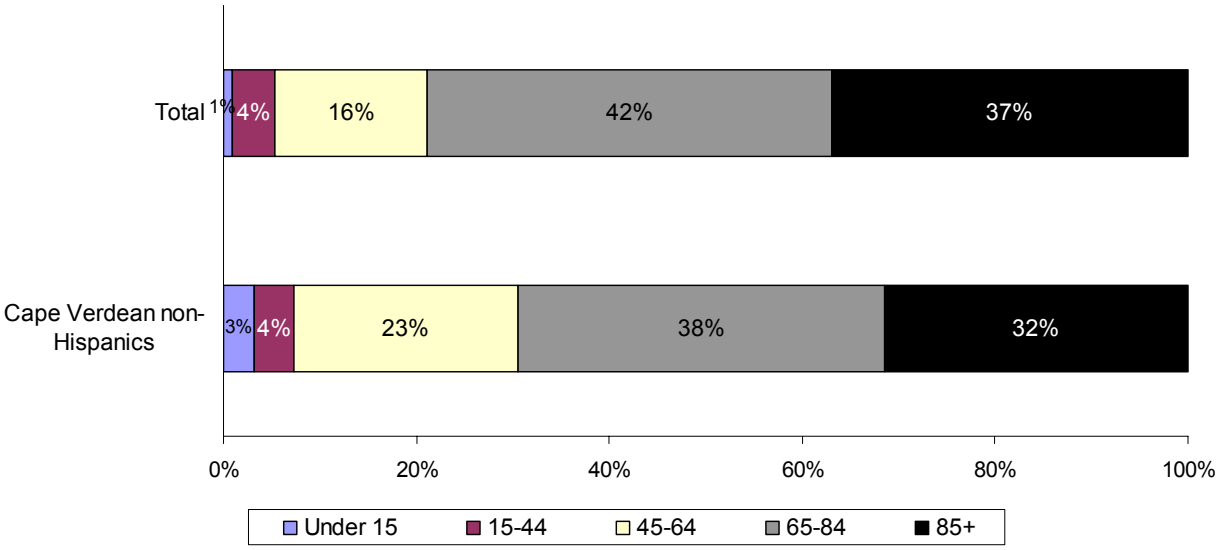
[1]Total Number of Deaths = 53,341
Causes of Death are classified according to ICD-10

Table 38. Leading Causes of Death[1] for Cape Verdean non-Hispanics[2], Massachusetts: 2008

	Number	Percent
Heart Disease	54	24.7
Cancer	50	22.8
Stroke	13	5.9
Unintentional	12	5.5
Nephritis	10	4.6
Chronic Lower Resp	8	3.7
Influenza And Pneumonia	8	3.7
Diabetes	6	2.7
Certain Infect	4	1.8
Aortic Aneurysm	54	24.7
All Deaths	**219**	**100.0%**

1. Deaths are coded according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Historically, MA DPH has followed federal definitions of race and ethnicity and has reported death rates for White, Black, Asian races including persons of Hispanic origin; and Hispanic ethnicity. Furthermore, Cape Verdeans have been included with Blacks, to be consistent with the National Center for Health Statistics. Starting with Deaths 1999, in all tables where data were classified by race and ethnicity, we presented mutually exclusive categories of White; Black; Asian; and Hispanic. Here, we separate Cape Verdeans from the Black non-Hispanic group. 3 Calculations bases on 1-4 events are excluded.

Figure 24. Age Distribution of Deaths for Cape Verdean non-Hispanics* and State Total, Massachusetts: 2008



* Historically, MA DPH has followed federal definitions of race and ethnicity and has reported death rates for White, Black, Asian races including persons of Hispanic origin; and Hispanic ethnicity. Furthermore, Cape Verdeans have been included with Blacks, to be consistent with the National Center for Health Statistics. Starting with Deaths 1999, in all tables where data were classified by race and ethnicity, we presented mutually exclusive categories of White; Black; Asian; and Hispanic. Here, we separate Cape Verdeans from the Black non-Hispanic group.

Table 39. Number and Age-Specific Rates for Selected Causes of Death by Race and Hispanic Ethnicity, Massachusetts: 2008

	Total		White non-Hispanic[1]		Black non-Hispanic[1]		Asian non-Hispanic[1]		Hispanic	
Selected Causes[2]	**#**	**Rate[3]**	**#**	**Rate**	**#**	**Rate**	**#**	**Rate**	**#**	**Rate**
Age: 1-14, TOTAL	**119**	**10.9**	**69**	**8.7**	**18**	**20.3**	**5**	**8.0**	**27**	**18.7**
Cancer	28	2.6	17	2.2	6	6.8	3	--[5]	2	1.4
Unintentional Injuries[4]	24	2.2	11	1.4	1	--[5]	2	--[5]	10	6.9
Congenital malformations	11	1.0	6	0.8	1	--[5]	0	0.0	4	--[5]
Influenza and pneumonia	5	0.5	3	--[5]	1	--[5]	0	0.0	1	--[5]
Age: 15-24, TOTAL	**421**	**45.5**	**279**	**39.9**	**71**	**97.5**	**13**	**26.0**	**55**	**54.8**
Unintentional Injuries[4]	180	19.5	136	19.4	18	24.7	5	10.0	20	19.9
Homicide	63	6.8	9	1.3	36	49.4	1	--[5]	15	14.9
Suicide	44	4.8	39	5.6	4	--[5]	0	0.0	1	--[5]
Cancer	24	2.6	15	2.1	3	--[5]	1	--[5]	5	5.0
Age: 25-44, TOTAL	**1,906**	**106.9**	**1,462**	**108.8**	**209**	**172.5**	**47**	**37.0**	**186**	**99.8**
Unintentional Injuries[4]	482	27.0	412	30.7	28	23.1	2	1.6	39	20.9
Cancer	289	16.2	226	16.8	21	17.3	20	15.7	22	11.8
Heart Disease	244	13.7	184	13.7	43	35.5	3	--[5]	13	7.0
Suicide	175	9.8	153	11.4	8	6.6	4	--[5]	10	5.4
Age: 45-64, TOTAL	**8,426**	**481.1**	**7,299**	**484.4**	**596**	**691.1**	**135**	**206.9**	**373**	**418.6**
Cancer	3,092	176.5	2,724	180.8	185	214.5	65	99.6	112	125.7
Heart Disease	1,606	91.7	1,400	92.9	128	148.4	15	23.0	59	66.2
Unintentional Injuries[4]	556	31.7	496	32.9	36	41.7	3	--[5]	21	23.6
Chronic liver disease	299	17.1	267	17.7	14	16.2	3	--[5]	15	16.8
Age: 65+, TOTAL	**42,087**	**4,831.5**	**39,757**	**5,001.7**	**1,244**	**4,224.3**	**476**	**2,222.4**	**548**	**2,295.1**
Heart Disease	10,962	1,258.4	10,451	1,314.8	299	1,015.3	92	429.5	107	448.1
Cancer	9,560	1,097.5	8,956	1,126.7	324	1,100.2	131	611.6	132	552.8
Stroke	2,375	272.6	2,229	280.4	83	281.8	35	163.4	27	113.1
Chronic Lower Respiratory Disease[6]	2,315	265.8	2,250	283.1	34	115.5	12	56.0	17	71.2

1. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation. 2. Deaths are coded according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 3. Number of deaths per 100,000 persons in each age group. 4. Unintentional injuries include injuries such as motor vehicle-related and other transportation related deaths, falls, fires, and drownings that were not intended to occur. 5. Calculations based on values 1-4 are excluded. 6. 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 39 (continued). Number and Age-Specific Rates for Selected Causes of Death by Race and Hispanic Ethnicity, Massachusetts: 2008

	Total		White non-Hispanic[1]		Black non-Hispanic[1]		Asian non-Hispanic[1]		Hispanic	
Selected Causes[2]	**#**	**Rate[3]**	**#**	**Rate**	**#**	**Rate**	**#**	**Rate**	**#**	**Rate**
Age: 65-74, TOTAL	**7,425**	**1,731.1**	**6,676**	**1,739.5**	**375**	**2,203.9**	**159**	**1,242.2**	**197**	**1,356.7**
Cancer	2,933	683.8	2,656	692.0	153	899.2	60	468.8	58	399.4
Heart Disease	1,485	346.2	1,337	348.4	77	452.5	27	210.9	41	282.4
Chronic Lower Respiratory Disease[4]	497	115.9	481	125.3	7	41.1	5	39.1	4	--[5]
Stroke	253	59.0	220	57.3	15	88.2	10	78.1	7	48.2
Age: 75-84, TOTAL	**14,970**	**5,005.4**	**14,126**	5,109.8	**450**	4,953.8	**172**	**2,670.0**	**200**	**3,009.3**
Cancer	4,119	1,377.2	3,889	1,406.8	115	1,266.0	55	853.8	52	782.4
Heart Disease	3,531	1,180.6	3,355	1,213.6	106	1,166.9	28	434.6	38	571.8
Chronic Lower Respiratory Disease[4]	967	323.3	936	338.6	18	198.2	5	77.6	8	120.4
Stroke	824	275.5	771	278.9	25	275.2	16	248.4	12	180.6
Age: 85+, TOTAL	**19,692**	**13,761.3**	**18,955**	**14,079.9**	**419**	**12,507.5**	**145**	**6,663.6**	**151**	**5,569.9**
Heart Disease	5,946	4,155.2	5,759	4,277.8	116	3,462.7	37	1,700.4	28	1,032.8
Cancer	2,508	1,752.7	2,411	1,790.9	56	1,671.6	16	735.3	22	811.5
Stroke	1,298	907.1	1,238	919.6	43	1,283.6	9	413.6	8	295.1
Alzheimer's Disease	1,228	858.2	1,186	881.0	21	626.9	10	459.6	10	368.9

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 Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation. 2. Deaths are coded according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 3. Number of deaths per 100,000 persons in each age group. 4. 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). 5. Calculations based on values 1-4 are excluded.

Table 40. Number of Deaths for Leading Causes of Death[1] by Hispanic Ethnicity, Massachusetts: 2008

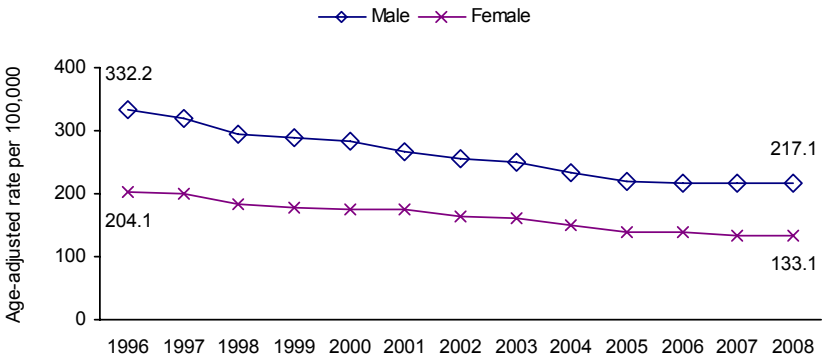
Ethnicity	Cancer	Heart Disease	Unintentional Injuries	Diabetes	Perinatal	Stroke	Homicide	Nephritis	Ill defined conditions	HIV/AIDS	**ALL DEATHS**
Puerto Rican	177	112	65	37	27	32	23	27	20	27	**831**
Dominican	30	34	16	5	7	7	7	6	5	2	**164**
Central American	28	15	10	4	8	5	5	3	2	2	**109**
South American	21	13	3	1	5	3	2	1	4	0	**85**
Cuban	8	6	1	3	0	1	1	1	2	0	**41**
Mexican	4	2	6	0	2	1	2	2	2	0	**32**
Other/Unknown	3	2	2	0	0	0	0	0	0	0	**9**
All Hispanics	**273**	**184**	**104**	**50**	**50**	**49**	**40**	**40**	**35**	**31**	**1,275**

[1] Ranking based on number of deaths. Underlying Cause of Death based on ICD-10 (Please see Appendix for a list of ICD-10 codes used).

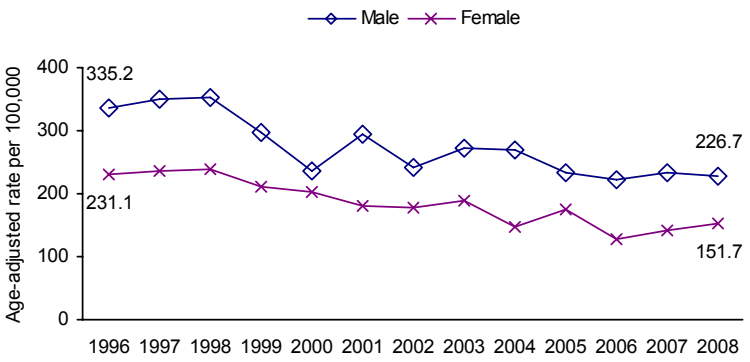
Figure 25. Heart Disease Death Rates[1] by Race/Ethnicity and Gender, Massachusetts: 1996-2008

(For 1996-1998 the comparability modified rates were used)

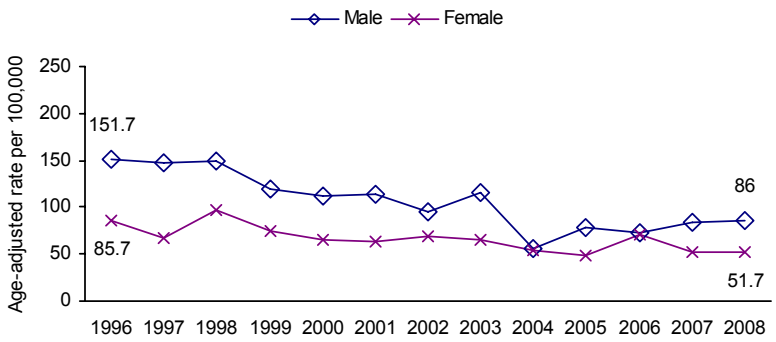
White non-Hispanics



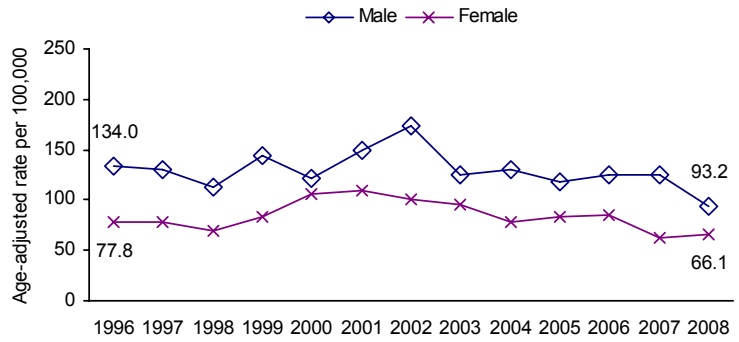
Black non-Hispanics



Asian non-Hispanics



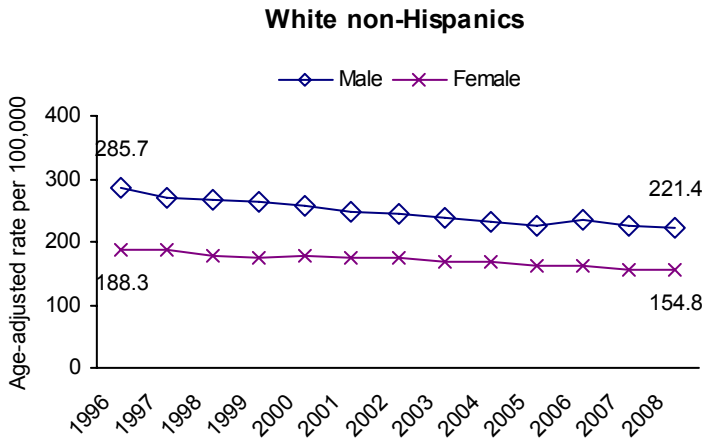
Hispanics

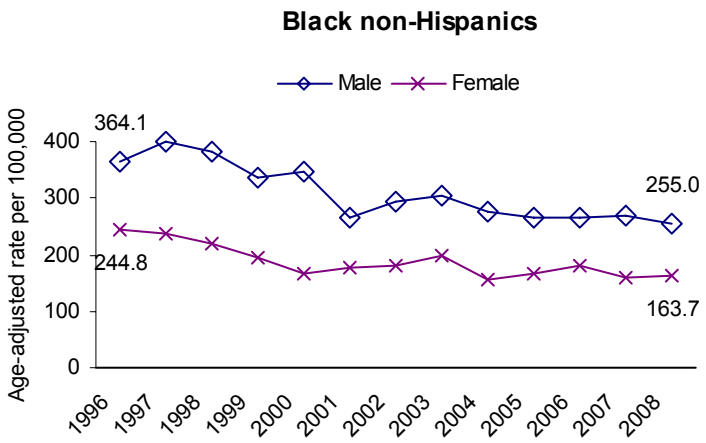


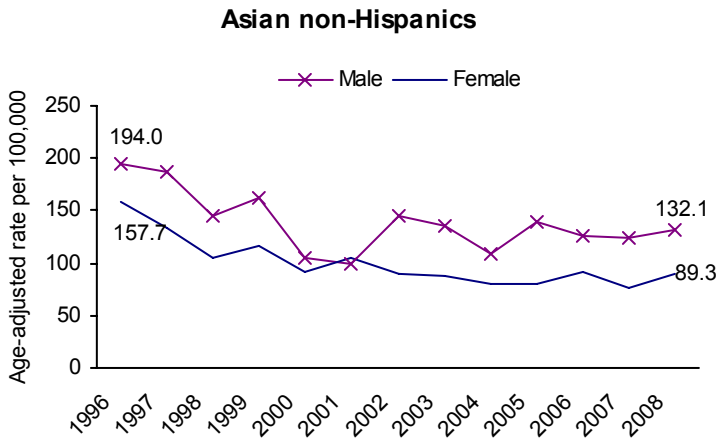
1 Rates are per 100,000 population, age-adjusted to the 2000 U.S. Standard Population.

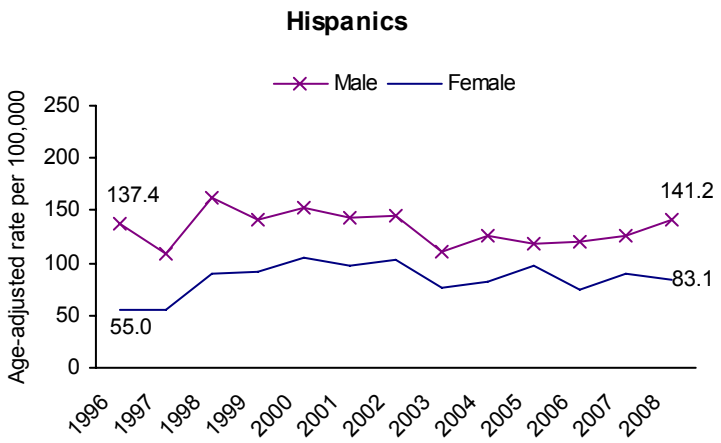
Figure 26. Cancer Death Rates[1] by Race/Ethnicity and Gender, Massachusetts: 1996-2008

(For 1996-1998 the comparability modified rates were used)









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

Table 41. Underlying Cause of Death where Diabetes[1] is a Contributing Cause, Massachusetts: 2008

Underlying Cause of Death	Number	Proportion (%)
Cardiovascular Diseases	1,158	43.9
Heart Disease	963	36.5
Stroke	133	5.0
Cancer	461	17.5
Diseases of the respiratory system	235	8.9
Chronic lower respiratory disease[2]	19	0.7
Influenza and pneumonia	2	--[3]
Diseases of the digestive system	103	3.9
Diseases of the genito-urinary system	103	3.9
Nephritis	1	--[3]
Diseases of the nervous system and sense organs	141	5.3
Alzheimer's Disease	1	--[3]
Parkinson's Disease	58	2.2
Infectious and parasitic diseases	91	3.5
HIV/AIDS	50	1.9
Injury and poisoning	71	2.7
Endocrine, nutritional and metabolic diseases and immunity disorders	42	1.6
Diseases of the musculoskeletal systems and connective tissue	14	0.5
Other	218	8.3
Total deaths where diabetes is ONLY a contributing cause	**2,637**	**100%**

[1] ICD-10: E10-E14. [2] The title of this cause 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] Calculations based on values 1-4 are excluded.

Table 42. Associated Causes of Death where Diabetes[1] is the Underlying Cause of Death, Massachusetts: 2008

Associated Causes of Death	Number	Proportion (%)
Cardiovascular Disease alone	548	50.6%
Cardiovascular Disease and Diseases of the Genitourinary System	157	14.5%
No Associated Causes	91	8.4%
Cardiovascular Disease and Diseases of the Respiratory System	68	6.3%
Other Associated Cause Combinations less than 10	65	6.0%
Diseases of the Genitourinary System alone	57	5.3%
Cardiovascular Disease and Diseases of the Nervous System	28	2.6%
Cardiovascular Disease, Diseases of the Respiratory System and Diseases of the Genitourinary System	28	2.6%
Diseases of the Respiratory System	26	2.4%
Cancer & Cardiovascular Disease	16	1.5%
Total deaths where diabetes is the underlying cause of death	**1,084**	**100.0%**

[1] **ICD-10: E10-E14**

Figure 27. Distribution of Injury Deaths by Intent, Massachusetts: 2008

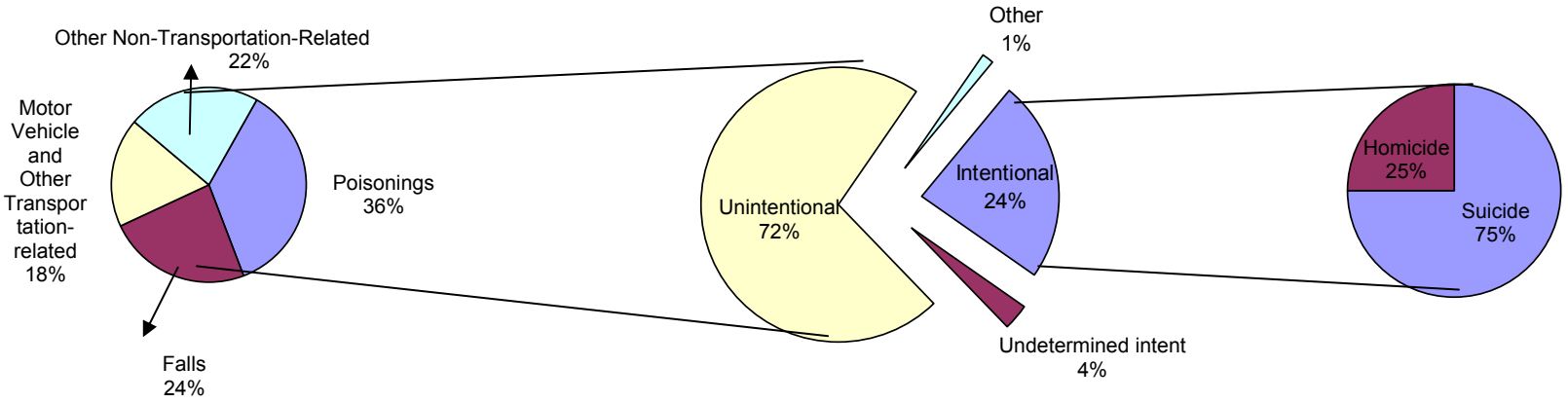


Table 43. HIV/AIDS[1] Deaths by Race, Hispanic Ethnicity, and Gender of Persons Ages 25-44, Massachusetts: 1998- 2008

Year	White non-Hispanic[2]				Black non-Hispanic[2]				Hispanic			
TOTAL	#	Rate[3]	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate
	Comparability Unmodified		Comparability Modified[4]		Comparability Unmodified		Comparability Modified[4]		Comparability Unmodified		Comparability Modified[4]	
1998	68	3.9	78	4.5	38	40.7	44	46.6	47	39.8	54	45.6
1999	74[6]	4.4			32[6]	31.2			40[6]	30.5		
2000	60	3.7			28	23.8			40	27.6		
2001	70	4.4			35	29.3			31	20.3		
2002	42	2.7			24	20.1			35	22.1		
2003	63	4.1			19	15.8			25	15.1		
2004	38	2.6			17	14.0			31	18.0		
2005	29	2.0			22	18.2			19	10.7		
2006	35	2.5			17	14.2			23	12.9		
2007	16	1.2			11	9.1			12	6.6		
2008	19	1.4			9	7.4			8	4.3		
MALE												
1998	57	6.6	65	7.6	27	58.2	31	66.6	34	57.7	39	66.1
1999	54[6]	6.5			20[6]	39.9			30[6]	46.2		
2000	39	4.9			17	30.1			27	37.9		
2001	46	5.8			19	33.3			23	30.6		
2002	29	3.8			15	26.3			21	26.8		
2003	42	5.6			10	17.3			19	23.1		
2004	30	4.1			11	18.9			19	22.1		
2005	21	2.9			12	20.4			11	12.3		
2006	22	3.2			12	20.5			12	13.3		
2007	16	2.4			5	8.5			9	9.7		
2008	13	2.0			3	--[5]			6	6.2		
FEMALE												
1998	11	1.3	13	1.5	11	23.4	13	26.8	13	22.0	15	25.2
1999	20[6]	2.3			12[6]	22.9			10[6]	15.1		
2000	21	2.5			11	17.9			13	17.6		
2001	24	2.9			16	25.7			8	10.3		
2002	13	1.6			9	14.4			14	17.4		
2003	21	2.7			9	14.4			6	7.2		
2004	8	1.1			6	9.6			12	13.9		
2005	8	1.1			10	16.0			8	9.0		
2006	13	1.8			5	8.2			11	12.5		
2007	0	0.0			6	9.8			3	--[5]		
2008	6	0.9			6	9.8			2	--[5]		

1. AIDS and HIV disease deaths for years 1994-1998 coded using ICD-9: 042-044; 1999–2007 deaths coded using ICD-10: B20-B24. Please see Appendix for comparability ratios. 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 Table A1 in the Appendix for death data by race according to Federal definitions, which include persons of Hispanic ethnicity in a race category. Please see the Technical Notes in the Appendix for a more detailed explanation. 3. Number of deaths per 100,000 residents in the specified population group. 4. Comparability Modified (CM) number and rate based on preliminary comparability ratios (CR) from NCHS (June 2001). CM data for 1994-1996 use 1996 based CR; CM data for 1997-1998 use revised 1998 based CR. Please see Appendix for detailed explanation. 5. Calculations based on values 1-4 are excluded. 6. When comparing data over time after 1994, please use comparability modified data for years 1994-1998. MA population denominators are from the NCHS Modified Age, Race/Ethnicity, & Sex Estimates 2008, released May 20, 2008. Population estimates are from the NCHS Modified Age, Race/Ethnicity, & Sex Estimates 2008, released September 5, 2008.

Table 44. Premature Mortality Rates by Community Health Network Area (CHNA), Massachusetts: 2008

CHNA (Name and Number)	Number of Deaths	PMR* (per 100,000 population)
Massachusetts	**18,678**	**282.7**
Community Health Network of Berkshire (1)	507	352.0
Upper Valley Health Web (Franklin County) (2)	287	331.3
Partnership for Health in Hampshire County (Northampton) (3)	410	306.0
The Community Health Connection (Springfield) (4)	1,009	358.9
Community Health Network of Southern Worcester County (5)	388	352.3
Community Partners for Health (Milford) (6)	401	289.9
Community Health Network of Greater Metro West (Framingham) (7)	861	238.2
Common Pathways (Worcester) (8)	924	335.5
Community Health Network of North Central Massachusetts (9)	812	345.0
Greater Lowell Community Health Network (10)	803	329.9
Greater Lawrence Community Health Network (11)	451	274.2
Greater Haverhill Community Health Network (12)	420	300.8
Community Health Network North (Beverly/Gloucester) (13)	314	245.4
North Shore Community Health Network (14)	867	294.0
Northwest Suburban Health Alliance (15)	469	213.2
North Suburban Health Alliance (Medford/Malden/Melrose) (16)	763	290.5
Greater Cambridge/Somerville Community Health Network (17)	535	222.9
West Suburban Health Network (Newton/Waltham) (18)	491	191.9
Alliance for Community Health (Boston/Chelsea/Revere/Winthrop) (19)	2,114	352.2
Blue Hills Community Health Alliance (Greater Quincy) (20)	1,117	284.4
Community Health Network of Chicopee, Holyoke, Ludlow, Westfield (21)	555	351.1
Greater Brockton Community Health Network (22)	765	338.3
South Shore Community Health Network (23)	564	311.3
Greater Attleboro-Taunton Health & Education Response (24)	750	335.8
Partners for Healthier Communities (Fall River) (25)	527	371.0
Greater New Bedford Community Health Network (26)	726	362.5
Cape Cod and Islands Health Network (27)	848	283.5

*Rates are age-adjusted to the 2000 US Standard Population for persons ages 0-74 years. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population and calculated using MDPH population estimates for 2005, which are the most up-to-date information available on the number of persons by age, race, and sex at the sub-state level.

Table 45. Premature Mortality Rates by County, Massachusetts: 2008

County	Number of Deaths	PMR* (per 100,000 population)
Massachusetts	**18,678**	**282.7**
Barnstable	766	280.5
Berkshire	507	352.0
Bristol	1,787	344.8
Dukes	53	319.7
Essex	2,052	281.7
Franklin	239	335.8
Hampden	1,579	354.7
Hampshire	418	307.2
Middlesex	3,535	250.0
Nantucket	29	325.0
Norfolk	1,690	255.7
Plymouth	1,579	326.5
Suffolk	2,046	372.2
Worcester	2,398	336.1

*Rates are age-adjusted to the 2000 US Standard Population for persons ages 0-74 years. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population and calculated using MDPH population estimates for 2005, which are the most up-to-date information available on the number of persons by age, race, and sex at the sub-state level.

Table 46. Selected Causes of Death by Community, Massachusetts: 2008

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[5]
Massachusetts	**53,340**	**703.5**	**12,840**	**12,995**	**3,553**	**891**	**2,636**	**2,565**	**1,084**	**1,599**	**373**	**166**	**499**	**491**
Abington	124	691.7	34	41	14	1	3	5	1	4	0	1	2	1
Acton	108	742.7	20	36	10	3	5	6	2	4	2	0	0	0
Acushnet	78	632	22	18	3	1	5	4	1	1	2	0	0	1
Adams	116	824.1	31	22	5	0	8	4	5	3	1	0	1	0
Agawam	315	711.3	53	61	10	3	18	17	6	17	4	0	2	1
Alford	3	--[4]	1	0	0	0	1	0	0	0	0	0	0	0
Amesbury	137	765.0	38	31	11	0	2	9	9	6	0	0	2	0
Amherst	130	589.7	29	32	4	3	7	7	2	2	1	0	1	0
Andover	231	603.1	66	55	10	4	10	13	1	11	1	0	1	1
Aquinnah	3	--[4]	1	0	0	0	1	1	0	0	0	0	0	0
Arlington	354	579.4	73	86	20	6	14	16	8	13	2	0	1	1
Ashburnham	39	939.9	9	10	3	0	3	5	1	2	1	0	1	0
Ashby	19	812.9	4	5	1	0	3	0	0	0	0	0	1	1
Ashfield	15	722.1	4	6	1	2	0	0	0	0	0	0	1	0
Ashland	84	797.3	23	21	3	5	4	4	3	2	1	0	0	0
Athol	122	717.9	31	29	10	0	4	10	3	7	1	0	0	1
Attleboro	372	777.2	91	78	32	3	17	17	12	24	2	0	7	3
Auburn	176	725.5	44	40	15	4	7	4	6	5	1	1	3	1
Avon	32	595.5	9	5	1	0	3	1	0	0	0	0	0	0
Ayer	66	876.1	17	18	5	1	3	3	3	0	1	0	1	0
Barnstable	452	605.9	108	104	33	7	23	19	4	6	4	3	13	5
Barre	43	769.7	11	12	2	0	2	1	0	3	1	0	0	1
Becket	11	502.6	2	4	1	0	2	0	0	0	1	0	0	0
Bedford	122	580.8	25	31	8	2	4	10	2	3	0	0	0	0
Belchertown	70	632.1	20	19	5	2	4	3	3	1	1	0	1	0
Bellingham	105	882.5	35	29	12	2	2	6	4	3	0	0	1	2
Belmont	163	442.1	43	39	8	6	9	5	2	3	0	0	4	0
Berkley	31	962.8	5	4	1	0	3	1	1	1	1	0	0	0
Berlin	23	936.9	8	7	0	1	1	3	0	0	0	0	0	1
Bernardston	24	802.1	5	5	2	0	1	0	0	0	0	0	0	0
Beverly	361	644.4	87	78	19	9	25	23	8	11	0	0	6	1
Billerica	268	938.6	58	83	29	3	12	9	4	6	2	0	3	3
Blackstone	64	863.6	15	24	11	1	3	5	2	3	0	0	0	0
Blandford	8	1094	3	0	0	0	1	1	0	0	0	0	0	0
Bolton	21	1,047.8	6	5	1	1	2	0	0	1	0	0	0	0

Table 46. Selected Causes of Death by Community, Massachusetts: 2008

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[5]
Boston	3,878	737.1	801	927	226	66	174	154	93	96	24	69	33	56
Bourne	226	819.9	56	70	18	10	10	14	2	4	2	0	1	2
Boxborough	17	716.1	3	3	0	1	1	1	0	0	0	0	1	0
Boxford	40	718.1	9	8	2	0	2	1	2	1	0	0	0	1
Boylston	25	661.7	11	3	1	0	0	1	0	1	0	0	0	0
Braintree	356	692.8	82	81	32	6	19	13	7	11	2	0	3	2
Brewster	150	591.4	45	35	9	2	10	7	4	4	0	0	1	0
Bridgewater	154	828.2	37	41	15	3	6	7	1	6	2	1	1	0
Brimfield	24	645.6	7	6	2	0	0	1	0	3	1	0	0	0
Brockton	764	802.3	169	186	47	15	27	32	22	29	9	6	6	9
Brookfield	19	619.6	2	6	3	0	1	3	1	0	0	0	0	0
Brookline	304	449.1	71	73	15	6	14	4	4	12	1	0	5	1
Buckland	13	564.8	1	3	2	0	2	0	0	0	0	0	1	0
Burlington	209	994.0	35	70	17	5	11	7	2	7	0	0	1	0
Cambridge	477	560.2	93	131	26	12	19	21	14	18	5	2	7	1
Canton	211	600.9	50	43	14	3	11	11	2	8	4	0	1	2
Carlisle	19	703.3	3	10	1	0	0	0	0	1	0	0	0	0
Carver	117	878.2	27	32	7	1	3	8	1	6	1	0	1	0
Charlemont	14	1,071.4	3	7	0	0	0	1	1	0	0	0	0	0
Charlton	98	1,030.6	21	28	7	3	6	5	2	1	1	0	1	3
Chatham	106	555.1	27	31	6	2	5	4	1	6	0	0	2	0
Chelmsford	285	756.2	80	69	20	7	8	16	4	7	0	0	5	2
Chelsea	253	797.4	45	65	20	5	8	18	7	5	1	2	1	2
Cheshire	31	775.3	9	10	1	2	1	0	2	2	0	0	0	0
Chester	8	682.3	2	0	0	0	1	1	0	1	0	0	0	0
Chesterfield	4	--[4]	1	1	1	0	0	0	0	0	0	0	0	0
Chicopee	597	800.3	148	127	34	9	36	34	14	16	2	3	1	4
Chilmark	12	759.6	3	3	0	1	1	0	1	0	0	0	0	0
Clarksburg	20	1,077.4	6	4	1	1	2	1	0	0	0	0	1	0
Clinton	128	754.0	36	28	4	1	10	7	1	4	3	0	2	0
Cohasset	64	695.2	15	20	7	0	4	2	1	1	1	0	1	0
Colrain	13	704.9	5	1	0	0	2	0	0	1	0	0	0	0
Concord	158	604.2	38	33	5	3	10	4	2	3	2	0	1	1
Conway	5	352.7	0	2	0	0	0	2	0	0	0	0	0	0
Cummington	4	--[4]	1	3	1	1	0	0	0	0	0	0	0	0
Dalton	67	686.3	15	15	9	0	7	5	0	1	0	0	0	0

Table 46. Selected Causes of Death by Community, Massachusetts: 2008

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[5]
Danvers	331	837.2	76	90	21	7	22	14	7	6	0	0	0	1
Dartmouth	283	689.2	83	67	17	1	13	10	6	7	0	0	4	3
Dedham	237	724.3	60	65	20	3	9	7	4	5	0	0	2	3
Deerfield	34	597.9	12	3	2	0	1	3	1	0	0	0	0	0
Dennis	217	667.7	53	42	14	2	13	22	4	1	2	0	3	2
Dighton	55	773.8	20	10	3	1	5	3	1	1	1	0	2	1
Douglas	38	669.2	12	13	7	0	1	3	0	0	0	0	0	0
Dover	29	610.6	9	10	1	2	1	2	0	0	0	0	0	0
Dracut	210	847.7	56	50	14	4	5	12	5	3	1	0	3	2
Dudley	92	819.7	26	28	11	4	4	1	0	4	0	0	0	0
Dunstable	18	987.9	4	6	1	1	2	1	1	0	0	0	0	0
Duxbury	123	689.1	32	23	6	1	4	7	6	7	0	0	2	0
East Bridgewater	93	737.9	36	21	6	1	4	2	2	2	0	0	2	1
East Brookfield	14	573.4	6	3	1	0	1	0	0	0	0	0	0	0
East Longmeadow	183	702.2	30	37	6	5	9	6	1	8	2	1	0	0
Eastham	72	702.8	18	21	5	2	3	5	1	2	0	0	0	0
Easthampton	160	792.3	56	37	11	4	7	5	4	6	2	0	1	0
Easton	139	761.5	31	37	9	1	5	6	2	4	0	0	2	1
Edgartown	21	554.1	3	4	1	0	3	1	0	1	0	0	1	0
Egremont	8	426.5	2	2	0	0	0	0	0	0	0	0	1	0
Erving	15	775.3	8	1	0	0	1	1	0	0	1	0	0	0
Essex	28	765.0	5	9	2	1	3	2	0	2	0	0	0	0
Everett	292	646.4	61	85	25	5	8	14	6	11	2	3	1	4
Fairhaven	207	752.8	54	43	16	3	14	8	2	7	3	1	1	4
Fall River	1,014	811.5	250	222	75	5	52	61	20	43	8	3	8	18
Falmouth	395	647.2	88	107	30	9	31	23	6	12	3	0	2	3
Fitchburg	416	881.2	91	96	27	6	37	22	19	11	3	2	4	7
Florida	4	--[4]	1	1	1	0	0	2	0	0	0	0	0	0
Foxborough	118	730.0	25	40	9	5	6	5	3	1	3	0	3	3
Framingham	495	628.2	130	111	32	5	21	19	8	13	1	1	5	4
Franklin	139	622.1	38	40	8	2	3	7	3	7	3	0	0	1
Freetown	37	544.7	10	8	4	1	1	1	2	1	1	0	1	0
Gardner	206	733.2	60	43	9	2	13	9	4	6	0	0	4	3
Georgetown	32	510.2	9	11	3	0	0	4	2	0	0	0	0	0
Gill	7	437.5	3	2	1	0	0	0	0	1	0	0	0	0
Gloucester	298	740.5	60	87	33	6	21	16	6	4	3	0	5	4

Table 46. Selected Causes of Death by Community, Massachusetts: 2008

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[5]
Goshen	3	--[4]	0	2	0	0	0	0	0	0	0	0	0	0
Gosnold	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grafton	104	717.6	25	26	8	1	2	10	0	5	3	0	0	0
Granby	40	645.7	10	13	2	0	1	1	0	2	0	0	0	0
Granville	4	--[4]	0	2	0	1	0	1	0	1	0	0	0	0
Great Barrington	104	875.4	21	19	5	2	6	9	6	3	0	1	1	0
Greenfield	222	771.9	55	58	22	4	10	13	5	6	0	0	1	1
Groton	52	773.3	11	11	3	0	4	1	2	3	0	0	0	2
Groveland	39	747.2	14	13	3	3	0	3	0	0	0	0	0	0
Hadley	75	758.4	26	9	0	0	3	5	0	3	0	0	0	0
Halifax	63	764.9	17	13	3	1	4	3	2	1	1	0	0	1
Hamilton	39	573.2	10	8	0	0	1	2	0	1	0	0	1	0
Hampden	44	663.3	12	8	3	1	1	0	1	3	0	0	0	0
Hancock	2	--[4]	0	1	0	0	0	0	0	0	0	0	0	0
Hanover	98	788.7	27	29	8	0	3	5	1	3	1	0	1	2
Hanson	55	800.2	13	18	8	2	0	5	0	2	0	0	0	0
Hardwick	23	787.6	6	6	2	0	2	0	1	0	0	0	0	0
Harvard	40	873.5	8	14	0	0	1	0	1	1	0	0	0	0
Harwich	186	606.6	48	54	10	5	15	11	4	3	0	1	2	1
Hatfield	26	573.6	7	6	2	1	1	2	1	1	0	0	1	0
Haverhill	565	812.2	164	121	39	6	15	31	18	13	5	2	6	8
Hawley	2	--[4]	0	2	0	0	0	0	0	0	0	0	0	0
Heath	3	--[4]	0	2	0	0	0	0	0	0	0	0	0	0
Hingham	214	792.6	46	50	16	2	10	14	2	4	3	0	1	0
Hinsdale	13	966.6	2	4	1	0	1	2	0	0	0	0	0	0
Holbrook	89	701.4	22	23	10	1	6	3	3	3	0	0	1	1
Holden	139	674.0	34	39	8	3	4	7	2	9	2	0	0	0
Holland	12	716.2	6	3	0	0	0	1	0	0	0	0	0	0
Holliston	79	833.7	21	23	6	1	5	7	0	3	1	0	0	0
Holyoke	455	849.4	107	94	25	4	30	21	9	16	1	2	5	7
Hopedale	63	741.0	16	15	1	1	5	4	0	0	2	0	2	1
Hopkinton	68	723.4	19	19	4	1	5	5	0	0	0	0	1	0
Hubbardston	29	1,131.2	7	7	2	1	2	2	0	2	0	0	1	0
Hudson	129	713.8	20	42	13	1	7	7	3	5	1	0	1	0
Hull	67	599.2	14	19	6	1	2	4	2	2	0	0	0	0
Huntington	18	914.2	3	5	2	0	0	2	0	2	0	0	1	0

Table 46. Selected Causes of Death by Community, Massachusetts: 2008

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[5]
Ipswich	118	637.2	32	40	10	6	7	4	2	3	1	0	1	0
Kingston	123	782.4	20	36	5	3	6	2	2	6	1	0	1	0
Lakeville	77	662.8	18	19	6	1	5	3	1	5	3	0	2	0
Lancaster	44	802.9	10	10	4	0	3	2	0	0	0	0	0	0
Lanesborough	14	445.7	4	2	1	0	2	1	0	0	0	0	0	0
Lawrence	432	663.7	95	99	24	3	21	19	13	12	3	3	3	6
Lee	72	923.5	15	18	5	3	3	2	0	7	3	0	1	0
Leicester	110	966.8	17	34	15	3	4	7	3	3	2	0	0	0
Lenox	114	855.0	33	23	3	2	5	5	2	2	0	0	0	0
Leominster	393	832.4	94	95	29	9	41	15	10	13	4	1	3	1
Leverett	10	534.0	0	4	0	1	2	1	0	0	0	0	0	0
Lexington	250	482.1	61	52	12	2	11	9	4	7	0	0	1	0
Leyden	4	--[4]	0	0	0	0	0	1	1	0	0	0	0	0
Lincoln	27	410.2	6	8	3	1	0	3	0	1	0	0	0	0
Littleton	35	354.9	7	8	4	1	1	3	0	4	0	0	0	0
Longmeadow	137	509.8	35	34	5	3	8	10	4	1	1	0	5	0
Lowell	781	822.6	206	161	44	8	27	38	17	13	8	6	8	6
Ludlow	162	635.6	40	41	8	5	9	4	4	2	0	0	2	2
Lunenburg	70	738.0	15	16	5	0	5	5	0	2	2	0	1	0
Lynn	681	741.4	164	170	45	11	35	41	12	17	7	7	2	8
Lynnfield	77	481.7	15	18	5	0	4	1	0	5	1	0	0	0
Malden	429	662.7	97	126	34	9	20	16	11	8	4	1	3	9
Manchester	36	466.6	9	11	0	1	2	2	0	1	0	0	0	0
Mansfield	127	932.3	37	28	13	2	6	3	1	7	1	1	4	1
Marblehead	172	618.5	49	42	11	4	15	9	2	5	0	0	2	0
Marion	55	662.2	19	13	3	0	5	2	0	2	0	0	0	0
Marlborough	300	733.4	64	73	19	4	14	15	7	7	3	0	2	3
Marshfield	201	1,003.2	53	58	24	3	8	13	3	5	5	0	3	1
Mashpee	123	629.9	27	41	8	1	5	7	2	6	0	0	0	1
Mattapoisett	49	550.9	12	16	2	2	2	1	1	0	0	0	1	0
Maynard	76	660.6	13	19	11	1	6	4	3	2	0	0	1	0
Medfield	47	463.3	11	17	5	5	2	5	0	0	0	1	1	1
Medford	539	682.4	122	128	35	10	24	22	7	14	2	0	4	8
Medway	80	773.3	23	29	14	1	1	5	0	1	1	0	1	1
Melrose	244	611.5	69	64	23	7	16	10	6	9	2	0	3	1
Mendon	30	647.6	4	13	6	1	2	0	0	1	1	0	0	0

Table 46. Selected Causes of Death by Community, Massachusetts: 2008

CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[5]
Merrimac	47	805.4	9	13	6	0	3	3	3	0	0	0	1	0
Methuen	397	686.1	113	96	29	5	17	13	7	16	4	2	4	2
Middleborough	190	932.4	45	41	19	2	10	10	4	2	7	1	2	2
Middlefield	4	--[4]	1	1	0	0	0	0	0	0	0	0	0	0
Middleton	60	828.2	10	14	3	2	4	7	1	2	1	0	0	0
Milford	215	661.6	78	46	9	1	8	11	3	6	0	0	2	2
Millbury	143	804.0	26	35	12	1	9	13	4	3	0	0	1	1
Millis	45	769.6	14	12	5	1	2	2	0	1	1	0	0	0
Millville	13	714.8	4	3	2	0	1	0	0	0	0	0	1	0
Milton	246	662.2	69	44	10	3	15	17	5	8	2	1	0	2
Monroe	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monson	73	887	19	19	5	1	4	1	1	6	1	0	1	1
Montague	89	829.3	19	20	9	1	5	5	1	7	0	1	1	0
Monterey	5	634.3	3	0	0	0	0	0	0	0	0	0	0	0
Montgomery	6	1,122.4	2	3	1	0	1	0	0	0	0	0	0	0
Mount Washington	2	--[4]	1	0	0	0	0	1	0	0	0	0	0	0
Nahant	42	609.7	9	8	0	2	4	1	0	1	0	0	0	0
Nantucket	76	899.9	20	19	5	2	2	3	1	3	0	0	1	0
Natick	268	667	84	62	19	6	17	18	3	6	0	0	0	1
Needham	263	522.2	69	68	13	9	8	13	1	17	0	0	3	1
New Ashford	1	--[4]	0	1	0	0	0	0	0	0	0	0	0	0
New Bedford	1,005	817.7	276	207	51	10	44	40	22	37	9	3	8	20
New Braintree	6	1,180.8	4	1	0	0	1	0	0	0	0	0	0	0
New Marlborough	10	550.8	3	3	0	0	1	0	0	0	0	1	0	0
New Salem	7	977.2	1	2	0	0	1	0	0	0	0	0	0	0
Newbury	31	480.4	6	4	2	0	2	6	0	1	0	0	0	1
Newburyport	172	724.4	39	30	8	1	9	12	9	4	0	0	1	0
Newton	573	476.2	152	144	26	18	30	18	12	14	1	0	7	1
Norfolk	43	884.2	12	17	3	0	1	2	1	1	0	1	1	0
North Adams	183	911.0	44	41	14	1	10	11	6	10	2	2	3	2
North Andover	242	626.5	51	47	8	2	15	19	4	8	0	1	2	1
North Attleboro	207	838.9	40	61	18	4	9	10	2	9	1	0	5	4
North Brookfield	30	619.2	9	4	0	1	2	2	0	1	2	0	1	0
North Reading	98	810.4	22	24	4	4	5	6	1	0	1	0	2	0
Northampton	306	801.2	64	58	10	7	19	19	4	9	3	0	5	4
Northborough	104	945.8	17	31	7	2	9	3	1	3	1	0	0	0

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CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[5]
Northbridge	156	818.1	38	33	9	2	11	5	0	6	2	0	1	2
Northfield	24	656.6	5	6	3	0	0	2	1	2	1	0	0	0
Norton	116	849.8	31	24	6	1	6	8	2	4	1	0	0	2
Norwell	99	824.5	24	22	2	2	6	5	1	6	0	0	0	1
Norwood	309	729.9	74	73	20	4	17	13	11	3	2	0	2	0
Oak Bluffs	41	920.2	9	13	4	0	1	2	1	3	0	0	1	0
Oakham	11	791.6	3	2	1	0	1	0	0	0	0	0	0	0
Orange	78	896.9	21	19	5	1	6	6	4	3	2	0	1	1
Orleans	85	442.6	23	26	6	0	5	3	1	2	0	0	0	0
Otis	14	886.1	5	3	0	0	1	1	1	1	0	0	0	0
Oxford	112	902.6	24	38	11	2	6	9	2	3	0	0	1	0
Palmer	142	862.9	40	27	6	1	4	6	4	7	3	0	0	1
Paxton	32	644.0	7	1	1	0	2	2	2	0	0	0	1	0
Peabody	625	855.7	167	141	38	11	45	31	10	16	3	1	5	8
Pelham	5	355.2	1	2	0	0	1	0	0	0	0	0	0	1
Pembroke	113	866.6	24	40	12	4	7	9	2	3	1	0	1	1
Pepperell	50	644.4	11	12	5	0	3	5	0	0	0	0	1	1
Peru	6	909.9	1	2	0	2	0	0	0	0	0	0	1	0
Petersham	17	963.2	6	2	1	0	1	1	0	0	0	0	0	0
Phillipston	5	386.1	0	4	1	1	0	0	1	0	0	0	0	0
Pittsfield	531	788.1	128	116	35	7	21	41	11	8	2	0	5	1
Plainfield	3	--[4]	0	1	0	0	0	1	0	0	0	0	0	0
Plainville	58	723.8	19	13	3	2	2	2	1	1	0	0	0	1
Plymouth	471	786.5	128	116	28	3	20	31	4	21	10	0	5	4
Plympton	20	1114.7	4	7	4	1	2	1	0	1	2	0	0	0
Princeton	8	240.1	2	1	0	1	1	0	0	0	2	0	0	0
Provincetown	44	773.2	15	8	3	0	2	2	0	0	0	0	0	0
Quincy	849	696.3	227	201	64	17	33	41	16	30	5	0	12	14
Randolph	226	638.7	46	73	21	1	4	3	12	9	0	0	0	2
Raynham	94	622.9	29	22	6	1	5	7	2	2	1	0	1	2
Reading	198	702.9	42	59	12	8	8	13	8	4	0	0	2	2
Rehoboth	66	705.5	17	17	5	1	3	0	0	2	0	0	0	0
Revere	451	761.1	110	110	32	8	25	17	5	15	2	2	4	10
Richmond	8	398.1	0	3	0	2	0	1	0	0	0	0	0	0
Rochester	31	770.3	11	9	2	0	0	1	1	1	0	0	0	0

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CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[5]
Rockland	177	924.7	38	43	18	1	8	6	6	7	0	0	2	2
Rockport	75	524.1	18	25	8	2	6	6	1	1	0	0	0	0
Rowe	2	--[4]	1	0	0	0	0	0	0	0	0	0	0	0
Rowley	36	698.9	7	10	1	1	4	2	2	0	0	0	0	0
Royalston	7	466.8	1	4	1	0	0	0	0	0	0	0	0	0
Russell	9	667.2	3	5	2	0	1	0	0	0	0	0	0	0
Rutland	38	662.7	13	10	1	0	0	1	2	0	1	0	0	0
Salem	350	709.5	82	101	19	7	22	16	2	14	2	0	4	3
Salisbury	77	931.4	23	26	6	1	1	5	1	2	0	0	0	0
Sandisfield	9	829.8	1	3	2	0	2	0	0	0	0	0	0	0
Sandwich	152	608.5	37	42	9	4	4	7	1	4	0	0	2	2
Saugus	255	663.5	58	63	18	5	12	11	9	5	0	0	1	4
Savoy	3	--[4]	0	1	0	0	0	0	0	0	0	0	0	0
Scituate	151	680.6	37	32	7	2	10	8	2	8	1	0	0	2
Seekonk	98	661.5	29	18	4	1	4	7	3	1	0	0	2	1
Sharon	94	553.9	24	30	7	5	1	4	2	1	0	0	2	0
Sheffield	19	452.5	6	4	1	2	2	0	0	0	0	0	0	0
Shelburne	22	587.8	5	5	1	1	0	1	0	0	0	0	0	0
Sherborn	24	616.1	6	11	3	1	0	1	1	0	0	0	0	0
Shirley	41	712.2	6	15	6	1	2	2	0	1	1	0	0	0
Shrewsbury	244	651.5	55	54	15	7	14	15	6	11	1	0	1	2
Shutesbury	6	480.8	1	2	1	0	0	0	0	1	1	0	0	0
Somerset	242	744.9	80	55	14	4	9	9	7	13	0	0	3	2
Somerville	403	583.9	98	107	27	9	16	23	8	8	2	1	5	4
South Hadley	182	747.7	61	41	12	5	9	8	3	7	0	0	1	3
Southampton	51	897.4	11	17	4	0	2	1	0	2	0	0	0	1
Southborough	41	648.5	11	10	3	0	1	2	2	2	0	0	1	0
Southbridge	161	705.3	42	34	8	2	2	5	5	3	1	1	0	1
Southwick	84	873.4	24	20	4	2	4	6	1	2	1	0	0	2
Spencer	95	811.9	20	21	8	1	4	4	1	3	3	0	0	0
Springfield	1,251	799.1	286	289	77	18	62	53	28	33	9	9	14	19
Sterling	70	1,336.3	15	11	3	2	6	6	3	3	0	0	0	0
Stockbridge	28	661.1	8	6	1	1	0	2	0	0	0	0	0	0
Stoneham	257	725.1	75	58	16	1	15	12	0	5	2	0	0	1
Stoughton	246	740.5	62	58	19	4	9	12	3	7	2	0	0	4
Stow	19	450.9	9	3	0	2	0	1	0	0	1	0	0	0

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CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[5]
Sturbridge	69	723.8	15	20	6	1	2	5	0	4	0	0	0	0
Sudbury	85	571.8	21	22	6	1	3	3	1	3	1	1	2	0
Sunderland	22	801.8	8	5	0	0	2	0	0	2	1	0	0	0
Sutton	43	615.9	9	12	4	0	0	1	2	0	1	0	0	1
Swampscott	145	584.8	37	29	7	1	7	7	1	1	0	0	1	3
Swansea	138	658.3	40	37	16	1	4	6	5	5	1	0	0	0
Taunton	526	855	141	132	41	7	25	17	10	17	3	3	5	1
Templeton	83	1,027.3	29	10	2	1	7	8	2	6	0	1	0	2
Tewksbury	221	801.7	52	60	16	2	8	9	8	6	0	0	4	2
Tisbury	41	741	7	14	5	0	3	2	1	0	1	0	0	1
Tolland	2	--[4]	1	0	0	0	0	0	0	0	0	0	0	0
Topsfield	55	688.4	14	15	2	0	5	0	0	1	0	0	0	0
Townsend	53	891	3	18	5	1	2	5	1	0	2	0	0	1
Truro	17	556.3	6	3	1	0	1	0	0	1	0	0	0	0
Tyngsborough	77	1,120.2	15	21	3	4	2	4	3	0	0	0	4	1
Tyringham	1	--[4]	0	0	0	0	0	0	0	0	0	0	0	0
Upton	33	603.2	5	13	3	1	2	0	2	0	0	1	0	0
Uxbridge	107	1,011.7	31	32	10	3	2	1	3	4	3	0	0	1
Wakefield	245	754.6	53	54	18	3	15	6	6	7	1	0	1	5
Wales	18	1,632.7	4	4	2	0	1	1	0	0	1	0	1	0
Walpole	172	578.9	26	49	18	2	10	9	7	3	0	0	0	2
Waltham	394	591.9	92	103	29	5	21	19	9	8	3	0	3	4
Ware	106	786.9	30	26	5	3	7	5	3	3	1	0	1	0
Wareham	244	901.6	64	66	19	7	9	13	4	5	6	1	2	4
Warren	39	735.3	8	15	3	2	0	2	1	2	1	0	1	0
Warwick	3	--[4]	1	0	0	0	0	0	0	0	0	0	0	0
Washington	2	--[4]	0	0	0	0	0	0	0	0	0	0	0	0
Watertown	261	551.4	64	74	19	6	16	15	5	5	2	0	0	2
Wayland	92	600.6	16	32	6	3	5	5	4	5	1	0	2	0
Webster	229	966.4	57	50	12	4	14	15	5	6	2	0	3	0
Wellesley	168	489.1	44	36	6	6	8	7	0	4	0	0	5	1
Wellfleet	25	530.3	3	11	2	1	0	2	1	0	1	0	1	1
Wendell	1	--[4]	0	0	0	0	0	0	0	0	0	0	0	0
Wenham	25	482.5	3	8	1	0	1	0	0	0	1	0	1	0
West Boylston	88	930.8	23	21	4	3	5	6	1	2	0	0	1	1
West Bridgewater	67	617.7	16	16	5	1	3	4	2	1	0	0	2	0

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CITY/TOWN	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[5]
West Brookfield	57	733.9	20	9	3	0	4	2	0	1	0	0	0	0
West Newbury	19	542.3	3	6	1	0	1	1	2	1	0	0	1	0
West Springfield	303	839.2	76	65	25	3	11	13	7	5	1	1	4	4
West Stockbridge	5	228.2	2	0	0	0	1	0	0	1	0	0	0	0
West Tisbury	13	522.5	3	6	1	1	0	0	1	0	0	0	0	0
Westborough	174	822.5	39	34	13	2	9	9	2	12	1	0	1	0
Westfield	343	715.2	83	91	20	4	15	13	2	7	2	1	3	1
Westford	107	740.2	27	24	8	1	4	3	2	0	0	0	0	0
Westhampton	6	552.6	0	3	1	0	0	1	0	1	0	0	0	0
Westminster	43	626.1	11	12	4	1	1	2	1	4	0	0	2	0
Weston	74	388.8	13	18	6	1	5	4	2	5	1	0	0	1
Westport	138	774.8	34	35	7	6	2	5	5	6	2	0	0	1
Westwood	145	568.7	39	34	8	2	9	9	4	5	1	0	1	1
Weymouth	527	783.3	108	145	52	9	25	35	12	18	4	0	3	5
Whately	13	708.4	4	4	2	0	1	0	1	0	0	0	0	0
Whitman	113	923.6	31	23	4	5	8	6	2	4	4	0	2	1
Wilbraham	155	753.0	34	32	2	2	4	6	4	8	1	0	3	0
Williamsburg	10	336.4	1	4	2	0	1	0	0	0	0	0	0	0
Williamstown	99	685.8	21	16	5	0	11	3	1	5	1	0	1	0
Wilmington	168	834.7	33	36	10	1	12	9	3	3	1	2	2	5
Winchendon	83	946.1	27	18	2	2	1	5	0	2	0	0	2	4
Winchester	159	440.0	43	32	5	3	20	4	0	4	1	0	0	1
Windsor	5	659.3	2	2	0	0	0	0	0	0	0	0	0	0
Winthrop	166	721.1	37	35	12	4	8	6	2	8	0	0	3	2
Woburn	374	847.2	72	100	41	5	24	15	6	12	3	1	8	6
Worcester	1,715	823.3	360	385	114	21	79	78	41	57	9	2	15	24
Worthington	11	797.4	3	3	2	0	1	0	0	1	0	0	1	0
Wrentham	104	805.3	23	20	4	2	6	2	1	3	0	0	0	2
Yarmouth	372	674.4	80	104	26	6	15	14	7	12	0	0	6	0

1. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population and calculated using MDPH population estimates for 2005, which are the most up-to-date information available on the number of persons by age, race, and sex at the sub-state level. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Includes only female breast cancer. 3. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title). 4. Rates based on 1 to 4 deaths are not calculated. 5. Deaths due to narcotics and hallucinogens including cannabis, cocaine, codeine, heroin, lysergic acid diethylamide (LSD), mescaline, methadone, morphine, and opium (alkaloids).

Table 47. Selected Causes of Death by Community Health Network Area (CHNA), Massachusetts: 2008

CHNA Name	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[4]
Massachusetts	**53,340**	**703.5**	**12,840**	**12,995**	**3,553**	**891**	**2,636**	**2,565**	**1,084**	**1,599**	**373**	**166**	**499**	**491**
Community Health Network of Berkshire	1,510	755.9	367	326	91	25	87	91	34	43	10	4	15	3
Upper Valley Health Web (Franklin County)	799	713.4	200	198	64	11	39	47	19	30	7	1	5	3
Partnership for Health in Hampshire County (Northampton)	1,196	703.7	322	278	62	26	63	58	20	38	8	0	12	9
The Community Health Connection (Springfield)	2,716	767.8	618	602	146	40	128	120	57	91	23	11	29	28
Community Health Network of Southern Worcester County	1,069	792.2	267	269	77	20	47	56	17	31	12	1	8	4
Community Partners for Health (Milford)	1,086	735.9	308	302	96	15	41	48	19	31	13	1	8	11
Community Health Network of Greater Metro West (Framingham)	2,625	675.5	623	681	192	52	135	130	51	73	16	4	21	17
Common Pathways (Worcester)	2,776	776.5	602	638	193	43	126	143	65	96	18	3	22	29
Community Health Network of North Central Massachusetts	2,098	804.5	517	493	126	31	157	109	51	64	21	4	23	24
Greater Lowell Community Health Network	1,967	816.6	498	474	135	30	68	92	44	35	11	6	27	16
Greater Lawrence Community Health Network	1,362	658.3	335	311	74	16	67	71	26	49	9	6	10	10
Greater Haverhill Community Health Network	1,195	745.0	321	273	82	12	39	77	48	28	5	2	11	10
Community Health Network North (Beverly/Gloucester)	1,035	641.0	238	281	75	25	71	55	17	24	5	0	14	5
North Shore Community Health Network	2,678	728.9	657	662	164	48	166	131	43	70	13	8	15	27
Northwest Suburban Health Alliance	1,646	643.1	346	419	116	27	99	71	21	49	9	3	14	13
North Suburban Health Alliance (Medford/Malden/Melrose)	2,302	680.6	541	598	167	47	111	99	45	58	14	4	16	30
Greater Cambridge/Somerville Community Health Network	1,658	553.6	371	437	100	39	74	80	37	47	11	3	17	8
West Suburban Health Network (Newton/Waltham)	1,883	533.6	478	478	109	46	91	79	32	58	6	0	21	12
Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	5,052	715.4	1,064	1,210	305	89	229	199	111	136	28	73	46	71
Blue Hills Community Health Alliance (Greater Quincy)	3,413	695.4	816	833	258	55	157	170	75	109	24	1	25	30
Community Health Network of Chicopee, Holyoke, Ludlow, Westfield	1,583	766.6	383	358	89	22	91	75	29	44	5	6	12	14
Greater Brockton Community Health Network	1,821	760.9	447	451	130	32	74	78	38	60	17	8	18	18
South Shore Community Health Network	1,561	819.3	383	415	123	20	65	90	27	62	22	0	16	11
Greater Attleboro-Taunton Health & Education Response	1,959	797.1	503	454	154	24	98	86	39	75	21	5	30	17
Partners for Healthier Communities	1,532	773.8	404	349	112	16	67	81	37	67	11	3	11	21
Greater New Bedford Community Health Network	1,989	758.5	551	447	117	25	93	80	39	61	21	5	17	32
Cape Cod and Islands Health Network	2,829	633.0	680	758	196	55	153	149	43	70	13	4	36	18

1. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population and calculated using MDPH population estimates for 2005, which are the most up-to-date information available on the number of persons by age, race, and sex at the sub-state level. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Includes only female breast cancer. 3. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title). 4. Deaths due to narcotics and hallucinogens including cannabis, cocaine, codeine, heroin, lysergic acid diethylamide (LSD), mescaline, methadone, morphine, and opium (alkaloids).

Table 48. Selected Causes of Death by County, Massachusetts: 2008

County	Total Deaths	Age-Adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	CLRD[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide	Narcotics[4]
Massachusetts	**53,340**	**703.5**	**12,840**	**12,995**	**3,553**	**891**	**2,636**	**2,565**	**1,084**	**1,599**	**373**	**166**	**499**	**491**
Barnstable	2,622	626.0	634	699	180	51	142	140	38	63	12	4	33	17
Berkshire	1,510	755.9	367	326	91	25	87	91	34	43	10	4	15	3
Bristol	4,973	764.7	1320	1123	341	54	232	223	106	192	37	11	53	65
Dukes	131	698.0	26	40	11	2	9	6	4	4	1	0	2	1
Essex	6,270	699.1	1551	1527	395	101	343	334	134	171	32	16	50	52
Franklin	648	718.0	162	159	51	10	34	36	15	23	6	1	5	2
Hampden	4,335	766.8	1015	968	237	62	220	196	86	136	30	17	41	42
Hampshire	1,214	706.0	325	283	64	26	63	60	20	40	8	0	13	9
Middlesex	10,614	646.4	2491	2710	726	201	512	488	209	266	64	18	101	86
Nantucket	76	899.9	20	19	5	2	2	3	1	3	0	0	1	0
Norfolk	5,306	648.6	1306	1348	401	103	231	242	107	163	32	3	48	52
Plymouth	4,053	788.0	996	1030	296	65	175	207	75	143	57	10	39	32
Suffolk	4,748	742.1	993	1137	290	83	215	195	107	124	27	73	41	70
Worcester	6,840	781.5	1634	1626	465	106	371	344	148	228	57	9	57	60

1. Rates are per 100,000 population age-adjusted to the 2000 US Standard Population and calculated using MDPH population estimates for 2005, which are the most up-to-date information available on the number of persons by age, race, and sex at the sub-state level. Data presented in this table are classified according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. Includes only female breast cancer. 3. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title). 4. Deaths due to narcotics and hallucinogens including cannabis, cocaine, codeine, heroin, lysergic acid diethylamide (LSD), mescaline, methadone, morphine, and opium (alkaloids).

Table A1. Age-Adjusted Death Rates[1] for Selected Causes of Death by Race and Gender, Massachusetts: 2008

		White[2]			Black[2]		
Cause	**ICD-10 Code**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
All Deaths		**861.5**	**601.6**	**710.6**	**921.7**	**617.4**	**743.5**
Heart Disease	I00-I09, I11, I13, I20-I51	214.9	133.2	167.4	211.1	130.7	164.5
Cancer	C00-C97	224.3	155.0	181.7	244.0	146.1	183.2
Stroke	I60-I69	35.6	34.2	35.0	31.1	33.1	32.3
Chronic Lower Respiratory Disease[3]	J40-J47	36.0	30.9	32.6	17.5	16.2	16.1
Influenza and Pneumonia	J10-J18	24.3	17.0	19.7	18.2	9.5	12.7
Diabetes	E10-E14	20.6	12.8	16.0	39.7	30.0	33.7
Alzheimer's Disease	G30	17.6	23.4	21.5	16.9	12.4	13.8
Nephritis	N00-N07, N17-N19, N25-N27	23.6	13.5	17.2	54.5	32.9	40.9
Septicemia	A40-A41	14.3	10.2	11.7	14.4	14.1	14.2
HIV/AIDS	B20-B24	2.4	0.7	1.5	12.3	11.1	11.6
Perinatal Conditions	P00-P96	3.4	3.3	3.3	11.4	5.4	8.5
All Injuries	V01-Y98	63.2	27.0	44.2	71.9	24.5	47.7
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	10.1	4.0	7.0	8.6	2.4	5.2
Suicide	X60-X84, Y87.0	13.0	3.3	7.9	7.9	0.4	4.1
Homicide	X85-Y09, Y87.1	2.3	1.3	1.8	26.2	4.9	15.5

1. Age-adjusted death rates are calculated using the NCHS population estimates for 2006 by age, sex, race, and Hispanic origin. Age-adjusted to the 2000 US standard population, per 100,000. 2. Race categories presented in this table are consistent with Federal definitions of race and ethnicity. Persons of Hispanic ethnicity are included in any race category. Please use data in this table to compare to national data by race. 3. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title).

TECHNICAL NOTES

Since our 1999 publication, the *Advance Data: Deaths* series has been renamed *Massachusetts Deaths*.

NOTE
Please note that death statistics are presented as both *numbers* (or percentages, proportions) and *rates. Numbers* are, of course, the basic, raw counts of deaths, while *rates* are population-based statistics, for example, *the number of deaths per 100,000*.

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

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

CHANGES TO THE PRESENTATION OF RACE AND ETHNICITY DATA
In response to readers' feedback, the presentation of race and ethnicity data has been changed. Previously, race and ethnicity data were presented according to Federal definitions of race and ethnicity; that is, persons of Hispanic ethnicity can be of any race group. Beginning with the 1999 report, race and ethnicity data are presented as mutually exclusive categories, that is, persons of Hispanic ethnicity are not included in a race group. All race and ethnicity data presented in trend tables have been updated to reflect this change. Thus, race and ethnicity data tables include the categories White non-Hispanic; Black non-Hispanic; Asian; and Hispanic. In addition, Table A1 in the Appendix contains data according to the Federal definitions so data can be compared with the nation and other states. Race data presented in Table A1 are for Whites (including persons of Hispanic ethnicity) and Blacks (including persons of Hispanic ethnicity). Furthermore, starting with the 2001 publication, there has been a nomenclature change in the way data for Asians are presented: the Asian/Pacific Islander non-Hispanics category was renamed Asians, which includes Pacific Islanders.

CAPE VERDEANS
The US Federal Census and the National Center for Health Statistics (NCHS) places persons who are Cape Verdean in the race category "Black". Historically, we have followed this federal definition in order to be consistent with NCHS. Beginning with 1999 data, we have separated the concept of "Race" from "Ethnic Group" for reporting death statistics. This enables us to place Cape Verdeans where they self-identify: Cape Verdeans are classified as "Cape Verdeans" in ethnicity tables. With respect to race, 70% of Cape Verdeans classified their race as "Other" while only 24% classified themselves as Black and 6% as White in 1999. We have no Cape Verdean population counts or estimates with which to calculate rates at the state or lower geographic levels. Although we can identify Cape Verdeans in the count of deaths (numerator), because we have no count or estimate of the number of Cape Verdeans in the Massachusetts population (denominator), we are unable to calculate death rates. Beginning

with the 2000 report, we have included a detailed table and figure summarizing age and cause of deaths among Cape Verdeans.

POPULATION ESTIMATES

Source for 2007 Population Estimates (used for state-wide rates)

National Center for Health Statistics. Postcensal estimates of the resident population of the United States for July 1, 2000-July 1, 2007, by year, county, age, bridged race, Hispanic origin, and sex (Vintage 2007). Prepared under a collaborative arrangement with the US Census Bureau; released August 7, 2008. Available from: http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm as of September 5, 2008.

Source for 2005 Population Estimates (used for city/town rates)

Massachusetts Department of Public Health, Bureau of Health Information, Statistics, Research, and Evaluation, Division of Research and Epidemiology. Massachusetts Department of Public Health Modified Age, Race/Ethnicity, and Sex (MMARS00-05) which is based upon 2005 estimates produced by the National Center for Health Statistics in collaboration with the Census Bureau's Population Estimation Program. October 2006. Available on the Internet from: http://masschip.state.ma.us.

For additional information about population and MDPH estimation methods, refer to the Technical Notes in the report, *Massachusetts Births 2005,* which can be downloaded from the following website: http://www.mass.gov/dph/pubstats.htm

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-10th 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 A7. 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 then 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). For more information about the comparability of ICD-9 and ICD-10, see:

http://www.cdc.gov/nchs/nvss/mortality/comparability_icd.htm

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 that 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:

Technical Appendix, Vital Statistics of The United States, 2003 Natality. US Department of Health And Human Services, Centers For Disease Control And Prevention, National Center For Health Statistics, Hyattsville, Maryland: September 2005.

This document is available from the following website:

http://www.cdc.gov/nchs/products/vsus.htm#natab2001

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.

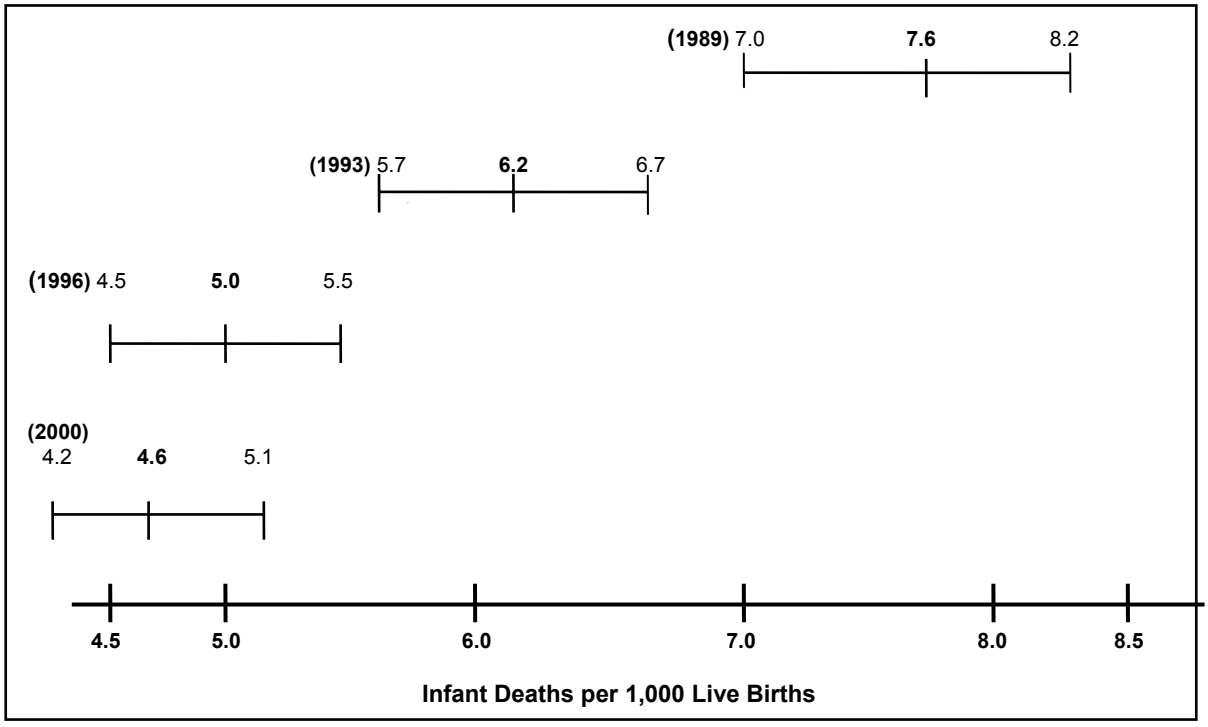
When two statistics are determined to differ significantly, they are referred to in the text with language expressing differences, such as, “higher” and “lower”, or “increased” and “decreased”. Otherwise, differences that are not significant are reported as having “no change” or “no statistical difference.”

CONFIDENCE INTERVALS AND INFANT MORTALITY RATES

The confidence interval (CI) provides a measure of stability of the infant mortality rates (IMR) 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 IMR. For example, a narrow CI reflects high stability, and a wide CI reflects low stability. If the CIs around two IMRs 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 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 (Cape Cod) and Hampshire County, the age-adjusted formula would account for the fact that 24% of the Barnstable County residents were 65 years of age or older, whereas only 11% of the Hampshire County residents were in this age group.

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. The Community Health Network Area (CHNA) 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 A10, 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 then 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 A7 and A8).

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 signed by a licensed physician that includes cause of death, decedent's name, gender, birth date, place of residence, and place of occurrence. (A copy of the Massachusetts death certificate used in 2008 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. ICD-9 codes used in this publication are listed on Tables A2-Table 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)
The tenth revision of the International Classification of Diseases was used to code mortality data beginning in 1999. For a list of ICD-10 codes used in the publication, please see Tables A2-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.

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 and Canada 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.

Potential Years of Life Lost (PYLL)
Total potential years of life lost (PYLL) is calculated by multiplying the number of deaths for each group by the years of life lost (the difference between life expectancy and the midpoint of the age group, then adding the figures for all age groups).

A measure of the impact of death from various diseases on society, highlighting the total loss to society, especially the loss contributed by early deaths. For the purpose of calculating PYLL, since *Massachusetts Deaths 2002*, we have adjusted the maximum age to be 75 years so that we do not include deaths beyond average life expectancy. Data after 2002 are not comparable with previous publications because we used a different maximum age cutoff.

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.

Race and Hispanic Ethnicity
For death records, race and Hispanic ethnicity are specified by the death record informant (for example, spouse or next of kin). Prior to 1989, death certificates included a question on race, but a separate question on Hispanic origin was added to the death record beginning on January 1, 1989.

Beginning with the 1999 report, race and ethnicity categories are presented as mutually exclusive categories, except for Table A1 which provides race and ethnicity data consistent with federal guidelines so that national comparisons can be made. All trend data from 1989-2003 presented in this report have been re-tabulated to reflect this modification. Data presented by race in this report are not directly comparable to previously published data by race.

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.

Total Rate of Change
The total rate of change is calculated as follows:

$$\frac{P_n - P_o}{P_o}$$

where P_n is the rate during the later time period and P_o is the rate during the earlier time period.

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 A2. 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[-4]29
Stroke (Cerebrovascular disease)	I60-I69	430[-4]38
Influenza and pneumonia	J10-J18	480[-4]87
Chronic lower respiratory diseases[1]	J40-J47	490[-4]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 A3. ICD-10 and ICD-9 Codes Used in this Publication

(Sorted by Cause of Death)

Cause of Death	ICD-10 Code	ICD-9 Code
Alzheimer's Disease	G30	331.0
Cancer (Malignant Neoplasms)	C00-C97	140-208
of bladder	C67	188
of cervix uteri	C53	180
of colon, rectum, rectum and anus	C18-C21	153-154, 159.9
of corpus uteri and uterus, part unspecified	C54-C55	179,182
of esophagus	C15	150
of female breast	C50	174
Hodgkin Disease	C81	201
of kidney and renal pelvis	C64-C65	189.0-189.1
Leukemia	C91-C95	202.4, 204-208
of meninges, brain & other parts of central nervous system	C70-C72	191-192
Multiple myeloma and immunoproliferative neoplasms	C88, C90	203
Non-Hodgkin lymphoma	C82-C85	200, 202 (except 202.4)
of ovary	C56	183.0
of prostate	C61	185
of stomach	C16	151
of pancreas	C25	157
of trachea, bronchus and lung	C33-C34	162
Certain conditions originating in the perinatal period (Perinatal Conditions)	P00-P96	760-779
Chronic liver disease and cirrhosis	K70, K73-K74	571
Chronic lower respiratory diseases[1]	J40-J47	490–496
Congenital malformations, deformations, and chromosomal abnormalities	Q00-Q99	740-759
Diabetes Mellitus	E10-E14	250
External causes of injuries and poisonings (intentional, unintentional and of undetermined intent)	V01-Y98	E800-E999
Homicide	X85-Y09, Y87.1	E960-E969
Injuries of undetermined intent	Y10-Y34,Y87.2,Y89.9	E980-E989
Suicide	X60-X84, Y87.0	E950-E959
Accidents (Unintentional Injuries)	V01-X59	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 E850-E869, E880-
Unintentional non-transport injuries	W00-X59, Y86	E928, E929.2-E929.9
Heart Disease	I00-I09, I11, I13, I20-I51	390-398, 402, 404–429
Infectious and parasitic diseases	A00-B99	001-139
Human Immunodeficiency Virus (HIV) disease (AIDS)	B20-B24	042-044
Septicemia	A40-A41	038
Influenza and pneumonia	J10-J18	480–487
Nephritis	N00-N07, N17-N19, N25-N27	580-589
Stroke (Cerebrovascular disease)	I60-I69	430–438
Ill defined conditions	R00-R99	780-797, 798.1-798.9, 799
Sudden infant death syndrome (SIDS)	R95	798.0

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 A4. 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 A5. ICD-10 Poisoning Agent Codes Used in Table 26

Opioids

T40.0 Opium
T40.1 Heroin
T40.2 Other opioids
T40.3 Methadone
T40.4 Other synthetic narcotics
T40.6 Other and unspecified narcotics

Cocaine

T40.5 Cocaine

Benzodiazepines

T42.4 Benzodiazepines

Poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs

T42.0 Hydantoin derivatives
T42.1 Iminostilbenes
T42.2 Succinimides and oxazolidinedione
T42.3 Barbiturates
T42.5 Mixed antiepileptics, not elsewhere classified
T42.6 Other antiepileptic and sedative-hypnotic drugs
T42.7 Antiepileptic and sedative-hypnotic drugs, unspecified

Tricyclic and tetracyclic antidepressants, & Monoamine-oxidase-inhibitor antidepressants, & Other and unspecified antidepressants

T43.0 Tricyclic and tetracyclic antidepressants
T43.1 Monoamine-oxidase-inhibitor antidepressants
T43.2 Other and unspecified antidepressants

Phenothiazine antipsychotics & neuroleptics, Butyrophenone & thioxanthene neuroleptics, Other & unspecified antipsychotics & neuroleptics

T43.3 Phenothiazine antipsychotics and neuroleptics
T43.4 Butyrophenone and thioxanthene neuroleptics
T43.5 Other and unspecified antipsychotics and neuroleptics
T43.8 Other psychotropic drugs, not elsewhere classified

Toxic effect of alcohol

T51.0 Ethanol
T51.1 Methanol
T51.2 2-Propanol
T51.3 Fusel oil
T51.8 Other alcohols
T51.9 Alcohol, unspecified

Other and unspecified drugs, medicaments and biological substances

T50.9 Other and unspecified drugs, medicaments and biological substances

All other agents combined

T36-T50 Poisoning by drugs, medicaments and biological substances - excluding the specific agent classes and agents listed above

Table A6. ICD-10 Codes for Selected Healthy People 2010 Mortality Objectives Used in this Publication
(Sorted by Objective Number)

Objective Number	Cause of Death*	ICD-10 Identifying Codes
3-1	Cancer (all sites)	C00-C97
3-2	Lung cancer	C33-C34
3-3	Female breast cancer	C50
3-4	Uterine Cervix cancer	C53
3-5	Colorectal cancer	C18-C21
3-6	Oropharyngeal cancer	C00-C14
3-7	Prostate cancer	C61
3-8	Malignant melanoma	C43
12-1	Coronary heart disease	I11, I20-I25
12-7	Stroke	I60-I69
13-14	HIV infection	B20-B24
15-3	Firearm-related deaths	W32-W34, X72-X74, Y22-Y24, Y35.0, X93-X95
15-8	Poisoning	X40-X49, X60-X69, X85-X90, Y10-Y19, Y35.2
15-9	Hanging, strangulation or suffocation	W75-W84, X70, X91, Y20
15-13	Unintentional injuries (Accidents)	V01-X59, Y85-Y86
15-15	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
15-25	Residential fire deaths	X00, X02
15-27	Falls	W00-W19, X80, Y01, Y30
15-29	Drownings	W65-W74, X71, X92, Y21
15-32	Homicides	X85-Y09, Y87.1
16-1f	Birth defects	Q00-Q99
16-1g	Congenital heart and vascular defects	Q20-Q24
16-1h	Sudden infant death syndrome (SIDS)	R95
18-1	Suicide	X60-X84, Y87.0
24-1	Asthma	J45-J46
26-1	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
26-2	Cirrhosis	K74
26-3	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

These Healthy People 2010 objectives use underlying cause of death data.

Table A7. 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^{-4}29	0.9858
Stroke (Cerebrovascular disease)	I60-I69	430^{-4}34, 436^{-4}38	1.0588
Influenza and pneumonia	J10-J18	480^{-4}87	0.6982
Chronic lower respiratory diseases	J40-J47	490^{-4}94,496	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

Please refer to the 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 A8. 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[-4]87	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
Please refer to the Appendix for an example of how to apply comparability ratios.

Table A9. Population Estimates for Massachusetts Community Health Network Areas (CHNA) and Counties, 2005[1]

CHNA	POPULATION
1. Community Health Network of Berkshire County	131,965
2. Upper Valley Health Web (Franklin County)	88,506
3. Partnership for Health in Hampshire County (Northampton)	151,801
4. The Community Health Connection (Springfield)	299,490
5. Community Health Network of Southern Worcester County	119,141
6. Community Partners for Health (Milford)	160,521
7. Community Health Network of Greater Metro West (Framingham)	379,658
8 .Community Wellness Coalition (Worcester)	303,669
9. Fitchburg/Gardner Community Health Network	261,369
10. Greater Lowell Community Health Network	272,893
11. Greater Lawrence Community Health Network	195,176
12. Greater Haverhill Community Health Network	148,557
13. Community Health Network North (Beverly/Gloucester)	119,378
14. North Shore Community Health Network	287,352
15. Greater Woburn/Concord/Littleton Community Health Network	209,597
16. North Suburban Health Alliance (Medford/Malden/Melrose)	257,235
17. Greater Cambridge/Somerville Community Health Network	273,883
18. West Suburban Health Network (Newton/Waltham)	253,138
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	711,603
20. Blue Hills Community Health Alliance (Greater Quincy)	372,309
21. Four (For) Communities (Holyoke, Chicopee, Ludlow, Westfield)	161,454
22. Greater Brockton Community Health Network	242,404
23. South Shore Community Partners in Prevention (Plymouth)	188,787
24. Greater Attleboro-Taunton Health & Education Response	252,919
25. Partners for a Healthier Community (Fall River)	141,977
26. Greater New Bedford Health & Human Services Coalition	199,955
27. Cape and Islands Community Health Network	252,204

COUNTY	POPULATION
Barnstable	226,505
Berkshire	131,965
Bristol	547,711
Dukes	15,605
Essex	750,463
Franklin	72,415
Hampden	466,739
Hampshire	153,981
Middlesex	1,464,179
Nantucket	10,095
Norfolk	656,472
Plymouth	497,687
Suffolk	655,181
Worcester	787,943
STATE	**6,436,940**

1. Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2005 (MMARS05), released October 2006.

Table A10. Population Estimates for Massachusetts Communities, 2005

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Abington	Plymouth	22	16,305	Concord	Middlesex	15	16,858
Acton	Middlesex	15	20,539	Conway	Franklin	2	1,902
Acushnet	Bristol	26	10,535	Cummington	Hampshire	3	986
Adams	Berkshire	1	8,456	Dalton	Berkshire	1	6,697
Agawam	Hampden	4	28,547	Danvers	Essex	14	25,999
Alford	Berkshire	1	400	Dartmouth	Bristol	26	31,371
Amesbury	Essex	12	16,617	Dedham	Norfolk	18	23,681
Amherst	Hampshire	3	34,721	Deerfield	Franklin	2	4,786
Andover	Essex	11	32,838	Dennis	Barnstable	27	15,914
Aquinnah (Gay Head)	Dukes	27	362	Dighton	Bristol	24	6,648
Arlington	Middlesex	17	41,273	Douglas	Worcester	6	7,861
Ashburnham	Worcester	9	5,970	Dover	Norfolk	18	5,634
Ashby	Middlesex	9	2,926	Dracut	Middlesex	10	28,805
Ashfield	Franklin	2	1,824	Dudley	Worcester	5	10,787
Ashland	Middlesex	7	15,431	Dunstable	Middlesex	10	3,142
Athol	Worcester	2	11,690	Duxbury	Plymouth	23	14,655
Attleboro	Bristol	24	43,364	East Bridgewater	Plymouth	22	13,832
Auburn	Worcester	8	16,393	East Brookfield	Worcester	5	2,111
Avon	Norfolk	22	4,345	East Longmeadow	Hampden	4	14,845
Ayer	Middlesex	9	7,212	Eastham	Barnstable	27	5,550
Barnstable	Barnstable	27	47,902	Easthampton	Hampshire	3	15,994
Barre	Worcester	9	5,375	Easton	Bristol	22	22,995
Becket	Berkshire	1	1,783	Edgartown	Dukes	27	3,934
Bedford	Middlesex	15	12,486	Egremont	Berkshire	1	1,355
Belchertown	Hampshire	3	13,897	Erving	Franklin	2	1,542
Bellingham	Norfolk	6	15,735	Essex	Essex	13	3,342
Belmont	Middlesex	17	23,453	Everett	Middlesex	16	37,100
Berkley	Bristol	24	6,352	Fairhaven	Bristol	26	16,223
Berlin	Worcester	9	2,683	Fall River	Bristol	25	92,117
Bernardston	Franklin	2	2,237	Falmouth	Barnstable	27	33,620
Beverly	Essex	13	39,833	Fitchburg	Worcester	9	40,514
Billerica	Middlesex	10	39,812	Florida	Berkshire	1	666
Blackstone	Worcester	6	9,051	Foxborough	Norfolk	7	16,288
Blandford	Hampden	4	1,266	Framingham	Middlesex	7	65,651
Bolton	Worcester	9	4,428	Franklin	Norfolk	6	30,748
Boston	Suffolk	19	558,435	Freetown	Bristol	26	8,963
Bourne	Barnstable	27	19,355	Gardner	Worcester	9	20,955
Boxborough	Middlesex	15	5,032	Georgetown	Essex	12	8,023
Boxford	Essex	12	8,162	Gill	Franklin	2	1,392
Boylston	Worcester	8	4,253	Gloucester	Essex	13	30,671
Braintree	Norfolk	20	33,658	Goshen	Hampshire	3	956
Brewster	Barnstable	27	10,242	Gosnold	Dukes	27	86
Bridgewater	Plymouth	22	25,769	Grafton	Worcester	8	16,783
Brimfield	Hampden	5	3,627	Granby	Hampshire	3	6,332
Brockton	Plymouth	22	100,366	Granville	Hampden	4	1,644
Brookfield	Worcester	5	3,096	Great Barrington	Berkshire	1	7,440
Brookline	Norfolk	19	56,422	Greenfield	Franklin	2	17,888
Buckland	Franklin	2	1,995	Groton	Middlesex	9	10,396
Burlington	Middlesex	15	23,265	Groveland	Essex	12	6,591
Cambridge	Middlesex	17	101,529	Hadley	Hampshire	3	4,820
Canton	Norfolk	20	21,481	Halifax	Plymouth	23	7,805
Carlisle	Middlesex	15	4,823	Hamilton	Essex	13	8,334
Carver	Plymouth	23	11,552	Hampden	Hampden	4	5,312
Charlemont	Franklin	2	1,387	Hancock	Berkshire	1	1,018
Charlton	Worcester	5	12,447	Hanover	Plymouth	23	14,077
Chatham	Barnstable	27	6,833	Hanson	Plymouth	23	9,915
Chelmsford	Middlesex	10	33,728	Hardwick	Worcester	9	2,655
Chelsea	Suffolk	19	34,128	Harvard	Worcester	9	6,116
Cheshire	Berkshire	1	3,356	Harwich	Barnstable	27	12,673
Chester	Hampden	21	1,320	Hatfield	Hampshire	3	3,280
Chesterfield	Hampshire	3	1,271	Haverhill	Essex	12	60,032
Chicopee	Hampden	21	54,599	Hawley	Franklin	2	345
Chilmark	Dukes	27	944	Heath	Franklin	2	805
Clarksburg	Berkshire	1	1,663	Hingham	Plymouth	20	21,470
Clinton	Worcester	9	13,997	Hinsdale	Berkshire	1	1,811
Cohasset	Norfolk	20	7,219	Holbrook	Norfolk	22	10,765
Colrain	Franklin	2	1,858	Holden	Worcester	8	16,571

Table A10. Population Estimates for Massachusetts Communities, 2005, continued

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Holland	Hampden	5	2,529	New Marlborough	Berkshire	1	1,522
Holliston	Middlesex	7	13,830	New Salem	Franklin	2	986
Holyoke	Hampden	21	41,089	Newbury	Essex	12	6,990
Hopedale	Worcester	6	6,234	Newburyport	Essex	12	17,395
Hopkinton	Middlesex	7	14,048	Newton	Middlesex	18	83,346
Hubbardston	Worcester	9	4,340	Norfolk	Norfolk	7	10,506
Hudson	Middlesex	7	18,847	North Adams	Berkshire	1	14,031
Hull	Plymouth	20	11,279	North Andover	Essex	11	27,137
Huntington	Hampshire	21	2,180	North Attleboro	Bristol	24	28,078
Ipswich	Essex	13	13,285	North Brookfield	Worcester	5	4,812
Kingston	Plymouth	23	12,435	North Reading	Middlesex	16	13,930
Lakeville	Plymouth	24	10,618	Northampton	Hampshire	3	28,803
Lancaster	Worcester	9	7,069	Northborough	Worcester	7	14,652
Lanesborough	Berkshire	1	2,951	Northbridge	Worcester	6	14,184
Lawrence	Essex	11	81,591	Northfield	Franklin	2	3,226
Lee	Berkshire	1	5,882	Norton	Bristol	24	19,106
Leicester	Worcester	8	10,953	Norwell	Plymouth	20	10,382
Lenox	Berkshire	1	5,149	Norwood	Norfolk	20	28,472
Leominster	Worcester	9	42,120	Oak Bluffs	Dukes	27	3,794
Leverett	Franklin	2	1,769	Oakham	Worcester	9	1,892
Lexington	Middlesex	15	30,452	Orange	Franklin	2	7,659
Leyden	Franklin	2	815	Orleans	Barnstable	27	6,459
Lincoln	Middlesex	15	7,935	Otis	Berkshire	1	1,391
Littleton	Middlesex	15	8,561	Oxford	Worcester	5	13,710
Longmeadow	Hampden	4	15,556	Palmer	Hampden	4	12,895
Lowell	Middlesex	10	105,749	Paxton	Worcester	8	4,556
Ludlow	Hampden	21	21,835	Peabody	Essex	14	50,954
Lunenburg	Worcester	9	10,008	Pelham	Hampshire	3	1,415
Lynn	Essex	14	92,186	Pembroke	Plymouth	23	18,069
Lynnfield	Essex	14	11,540	Pepperell	Middlesex	9	11,386
Malden	Middlesex	16	56,730	Peru	Berkshire	1	836
Manchester	Essex	13	5,332	Petersham	Worcester	2	1,282
Mansfield	Bristol	24	22,933	Phillipston	Worcester	2	1,753
Marblehead	Essex	14	20,285	Pittsfield	Berkshire	1	43,949
Marion	Plymouth	26	5,316	Plainfield	Hampshire	3	600
Marlborough	Middlesex	7	37,163	Plainville	Norfolk	7	7,994
Marshfield	Plymouth	23	24,879	Plymouth	Plymouth	23	54,781
Mashpee	Barnstable	27	14,159	Plympton	Plymouth	23	2,777
Mattapoisett	Plymouth	26	6,477	Princeton	Worcester	9	3,520
Maynard	Middlesex	7	10,221	Provincetown	Barnstable	27	3,444
Medfield	Norfolk	7	12,328	Quincy	Norfolk	20	90,458
Medford	Middlesex	16	53,801	Randolph	Norfolk	20	32,552
Medway	Norfolk	6	12,780	Raynham	Bristol	24	13,428
Melrose	Middlesex	16	26,366	Reading	Middlesex	16	23,161
Mendon	Worcester	6	5,743	Rehoboth	Bristol	24	11,229
Merrimac	Essex	12	6,350	Revere	Suffolk	19	45,551
Methuen	Essex	11	44,532	Richmond	Berkshire	1	1,618
Middleborough	Plymouth	24	21,153	Rochester	Plymouth	26	5,295
Middlefield	Hampshire	3	549	Rockland	Plymouth	23	17,842
Middleton	Essex	11	9,077	Rockport	Essex	13	7,761
Milford	Worcester	6	27,523	Rowe	Franklin	2	350
Millbury	Worcester	8	13,443	Rowley	Essex	12	5,832
Millis	Norfolk	7	7,949	Royalston	Worcester	2	1,366
Millville	Worcester	6	2,938	Russell	Hampden	4	1,723
Milton	Norfolk	20	26,243	Rutland	Worcester	9	7,406
Monroe	Franklin	2	100	Salem	Essex	14	41,647
Monson	Hampden	4	8,744	Salisbury	Essex	12	8,264
Montague	Franklin	2	8,416	Sandisfield	Berkshire	1	830
Monterey	Berkshire	1	959	Sandwich	Barnstable	27	20,707
Montgomery	Hampden	4	743	Saugus	Essex	14	26,867
Mt. Washington	Berkshire	1	135	Savoy	Berkshire	1	724
Nahant	Essex	14	3,591	Scituate	Plymouth	20	18,119
Nantucket	Nantucket	27	10,095	Seekonk	Bristol	24	13,660
Natick	Middlesex	7	31,895	Sharon	Norfolk	20	17,269
Needham	Norfolk	18	28,445	Sheffield	Berkshire	1	3,360
New Ashford	Berkshire	1	247	Shelburne	Franklin	2	2,054
New Bedford	Bristol	26	94,502	Sherborn	Middlesex	7	4,220
New Braintree	Worcester	9	1,090	Shirley	Middlesex	9	7,361

Table A10. Population Estimates for Massachusetts Communities, 2005, continued

TOWN NAME	COUNTY	CHNA	POPULATION
Shrewsbury	Worcester	8	33,171
Shutesbury	Franklin	2	1,843
Somerset	Bristol	25	18,564
Somerville	Middlesex	17	75,372
South Hadley	Hampshire	3	17,071
Southampton	Hampshire	3	5,828
Southborough	Worcester	7	9,511
Southbridge	Worcester	5	17,503
Southwick	Hampden	4	9,512
Spencer	Worcester	5	12,087
Springfield	Hampden	4	156,358
Sterling	Worcester	9	7,761
Stockbridge	Berkshire	1	2,256
Stoneham	Middlesex	16	21,594
Stoughton	Norfolk	22	26,782
Stow	Middlesex	7	6,159
Sturbridge	Worcester	5	8,825
Sudbury	Middlesex	7	17,035
Sunderland	Franklin	2	3,853
Sutton	Worcester	6	8,974
Swampscott	Essex	14	14,283
Swansea	Bristol	25	16,243
Taunton	Bristol	24	56,348
Templeton	Worcester	9	7,474
Tewksbury	Middlesex	10	28,990
Tisbury	Dukes	27	3,819
Tolland	Hampden	4	446
Topsfield	Essex	13	6,178
Townsend	Middlesex	9	9,273
Truro	Barnstable	27	2,162
Tyngsborough	Middlesex	10	11,297
Tyringham	Berkshire	1	352
Upton	Worcester	6	6,374
Uxbridge	Worcester	6	12,377
Wakefield	Middlesex	16	24,553
Wales	Hampden	5	1,818
Walpole	Norfolk	7	23,067
Waltham	Middlesex	18	59,564
Ware	Hampshire	3	9,988
Wareham	Plymouth	26	21,274
Warren	Worcester	5	5,040
Warwick	Franklin	2	763
Washington	Berkshire	1	546
Watertown	Middlesex	17	32,255
Wayland	Middlesex	7	13,015
Webster	Worcester	5	16,853
Wellesley	Norfolk	18	26,975
Wellfleet	Barnstable	27	2,821
Wendell	Franklin	2	1,035
Wenham	Essex	13	4,643
West Boylston	Worcester	8	7,708
West Bridgewater	Plymouth	22	6,819
West Brookfield	Worcester	5	3,896
West Newbury	Essex	12	4,301
West Springfield	Hampden	4	27,938
West Stockbridge	Berkshire	1	1,450
West Tisbury	Dukes	27	2,666
Westborough	Worcester	7	18,781
Westfield	Hampden	21	40,432
Westford	Middlesex	10	21,369
Westhampton	Hampshire	3	1,566
Westminster	Worcester	9	7,358
Weston	Middlesex	18	11,591
Westport	Bristol	25	15,053
Westwood	Norfolk	18	13,902
Weymouth	Norfolk	20	53,708
Whately	Franklin	2	1,584
Whitman	Plymouth	22	14,424
Wilbraham	Hampden	4	13,960
Williamsburg	Hampshire	3	2,433
Williamstown	Berkshire	1	8,276
Wilmington	Middlesex	15	21,431
Winchendon	Worcester	9	10,085
Winchester	Middlesex	15	21,139
Windsor	Berkshire	1	858
Winthrop	Suffolk	19	17,067
Woburn	Middlesex	15	37,074
Worcester	Worcester	8	179,839
Worthington	Hampshire	3	1,291
Wrentham	Norfolk	7	11,066
Yarmouth	Barnstable	27	24,663

1. Massachusetts (Department of Public Health) Modified Age, Race/Ethnicity, & Sex Estimates 2005 (MMARS05), released October 2006.

Table A11. 2008 Massachusetts Population Estimates[1] By Age Group, Gender, Race and Hispanic Ethnicity[2] (mutually exclusive)

AGE	GENDER	TOTAL	WHITE Non-Hispanic	BLACK Non-Hispanic	ASIAN Non-Hispanic	HISPANIC
UNDER 1	MALE	40,194	27,734	3,182	2,677	6,492
	FEMALE	38,342	26,419	3,072	2,532	6,211
	TOTAL	78,536	54,153	6,254	5,209	12,703
1 TO 4	MALE	155,539	107,866	13,819	10,003	23,423
	FEMALE	149,493	103,351	13,327	9,817	22,580
	TOTAL	305,032	211,217	27,146	19,820	46,003
5 TO 14	MALE	400,412	296,573	31,314	21,190	50,319
	FEMALE	383,550	282,651	30,198	21,640	48,057
	TOTAL	783,962	579,224	61,512	42,830	98,376
15 TO 24	MALE	462,817	349,469	36,685	23,985	51,339
	FEMALE	462,565	349,930	36,154	26,036	49,061
	TOTAL	925,382	699,399	72,839	50,021	100,400
25 TO 34	MALE	418,465	299,679	31,281	32,603	53,732
	FEMALE	413,324	301,130	30,379	33,241	47,508
	TOTAL	831,789	600,809	61,660	65,844	101,240
35 TO 44	MALE	468,685	365,269	28,793	31,181	42,351
	FEMALE	481,975	377,170	30,713	30,143	42,837
	TOTAL	950,660	742,439	59,506	61,324	85,188
45 TO 54	MALE	491,422	416,419	25,922	20,143	27,676
	FEMALE	511,588	431,585	27,368	20,836	30,528
	TOTAL	1,003,010	848,004	53,290	40,979	58,204
55 TO 64	MALE	359,671	318,214	14,935	11,739	14,014
	FEMALE	388,827	340,563	18,012	12,536	16,892
	TOTAL	748,498	658,777	32,947	24,275	30,906
65 TO 74	MALE	194,862	175,048	7,105	6,115	6,190
	FEMALE	234,063	208,746	9,910	6,685	8,330
	TOTAL	428,925	383,794	17,015	12,800	14,520
75 TO 84	MALE	118,664	109,748	3,259	2,801	2,647
	FEMALE	180,412	166,700	5,825	3,641	3,999
	TOTAL	299,076	276,448	9,084	6,442	6,646
85 +	MALE	42,445	39,577	1,015	847	932
	FEMALE	100,652	95,048	2335	1,329	1,779
	TOTAL	143,097	134,625	3,350	2,176	2,711
ALL AGES	MALE	3,153,176	2,505,596	197,310	163,284	279,115
	FEMALE	3,344,791	2,683,293	207,293	168,436	277,782
	TOTAL	6,497,967	5,188,889	404,603	331,720	556,897

1. National Center for Health Statistics. Estimates of the July 1, 2000-July 1, 2006, United States resident population from the Vintage 2006 postcensal series by year, county, age, sex, race, and Hispanic origin, prepared under a collaborative arrangement with the US Census Bureau. Available on the Internet from http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm August 16, 2006. 2. Persons of Hispanic ethnicity are NOT included in the race categories. These estimates are used to calculate population based rates published in this report, except for Table A1.

Table A12. 2008 Massachusetts Population Estimates[1] By Age Group, Gender, Race and Hispanic Ethnicity[2]

AGE	GENDER	TOTAL	WHITE	BLACK	ASIAN	HISPANIC ETHNICITY
UNDER 1	MALE	40,194	32,815	4,387	2,770	6,492
	FEMALE	38,342	31,295	4,212	2,620	6,211
	TOTAL	78,536	64,110	8,599	5,390	12,703
1 TO 4	MALE	155,539	125,807	18,697	10,340	23,423
	FEMALE	149,493	120,584	18,096	10,138	22,580
	TOTAL	305,032	246,391	36,793	20,478	46,003
5 TO 14	MALE	400,412	337,388	39,519	21,859	50,319
	FEMALE	383,550	321,774	37,835	22,303	48,057
	TOTAL	783,962	659,162	77,354	44,162	98,376
15 TO 24	MALE	462,817	392,504	43,482	24,674	51,339
	FEMALE	462,565	391,075	42,690	26,680	49,061
	TOTAL	925,382	783,579	86,172	51,354	100,400
25 TO 34	MALE	418,465	346,307	36,827	33,306	53,732
	FEMALE	413,324	341,321	36,369	33,853	47,508
	TOTAL	831,789	687,628	73,196	67,159	101,240
35 TO 44	MALE	468,685	401,612	33,772	31,627	42,351
	FEMALE	481,975	413,162	36,396	30,701	42,837
	TOTAL	950,660	814,774	70,168	62,328	85,188
45 TO 54	MALE	491,422	439,633	29,644	20,472	27,676
	FEMALE	511,588	457,029	31,606	21,231	30,528
	TOTAL	1,003,010	896,662	61,250	41,703	58,204
55 TO 64	MALE	359,671	329,883	16,913	11,904	14,014
	FEMALE	388,827	354,756	20,250	12,744	16,892
	TOTAL	748,498	684,639	37,163	24,648	30,906
65 TO 74	MALE	194,862	180,227	7,954	6,195	6,190
	FEMALE	234,063	215,722	11,045	6,803	8,330
	TOTAL	428,925	395,949	18,999	12,998	14,520
75 TO 84	MALE	118,664	111,970	3,616	2,840	2,647
	FEMALE	180,412	170,026	6,375	3,690	3,999
	TOTAL	299,076	281,996	9,991	6,530	6,646
85 +	MALE	42,445	40,386	1,104	871	932
	FEMALE	100,652	96,580	2539	1,357	1,779
	TOTAL	143,097	136,966	3,643	2,228	2,711
ALL AGES	MALE	3,153,176	2,738,532	235,915	166,858	279,115
	FEMALE	3,344,791	2,913,324	247,413	172,120	277,782
	TOTAL	6,497,967	5,651,856	483,328	338,978	556,897

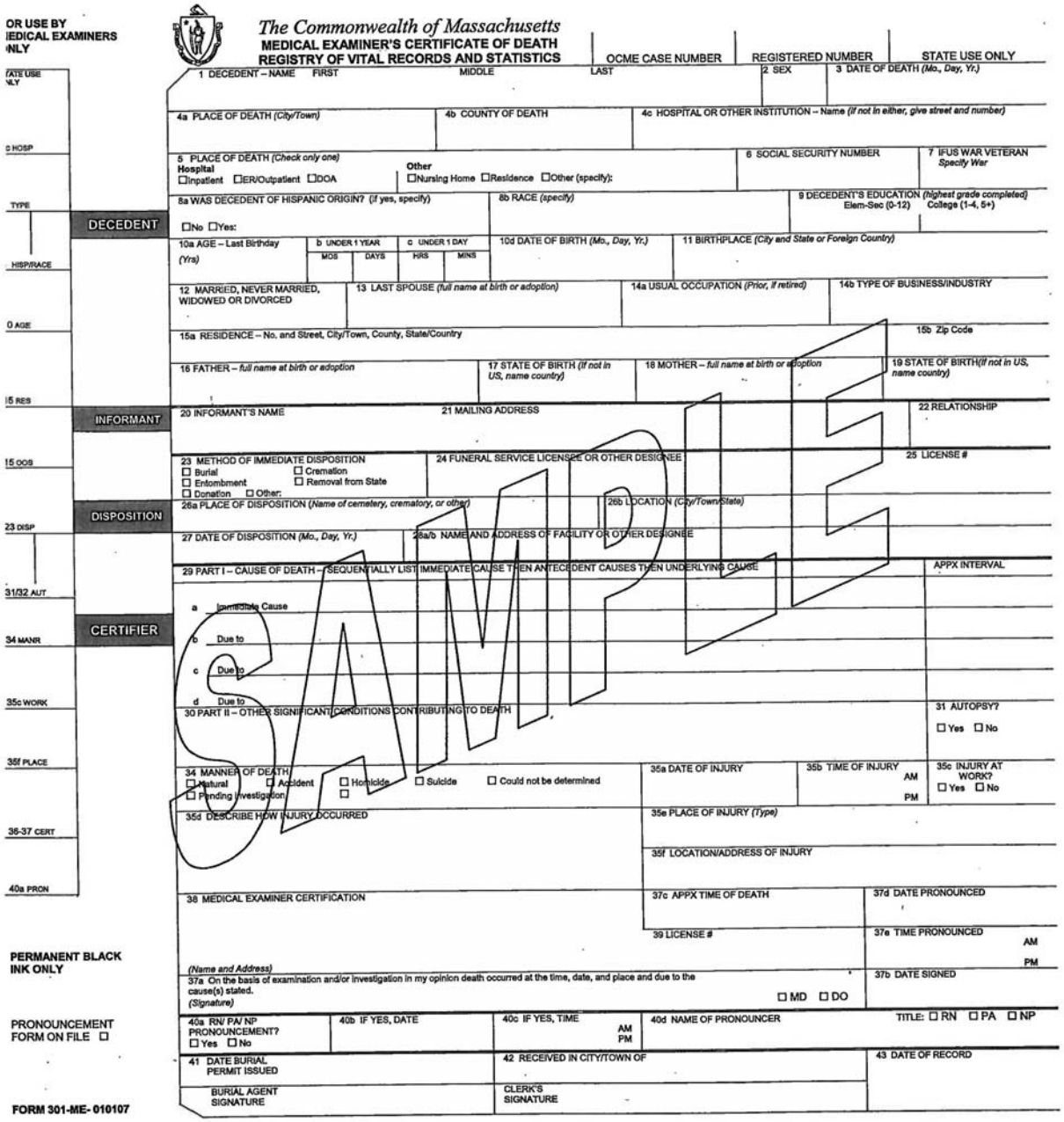
1. National Center for Health Statistics. Estimates of the July 1, 2000-July 1, 2006, United States resident population from the Vintage 2006 postcensal series by year, county, age, sex, race, and Hispanic origin, prepared under a collaborative arrangement with the US Census Bureau. Available on the Internet from http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm August 16, 2006. 2. Persons of Hispanic ethnicity are included in the race categories. These estimates are used to calculate population based rates published in Table A1.

Table A13. Causes of Death Considered Amenable to Health Care

Cause of Death Considered Amenable to Health Care	Age	ICD-10 Codes
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://content.healthaffairs.org/cgi/data/27/1/58/DC1/1. Accessed 7/15/2010

Massachusetts Death Certificate: 2008



The Commonwealth of Massachusetts
MEDICAL EXAMINER'S CERTIFICATE OF DEATH
REGISTRY OF VITAL RECORDS AND STATISTICS

OCME CASE NUMBER | REGISTERED NUMBER | STATE USE ONLY

1 DECEDENT – NAME FIRST MIDDLE LAST | 2 SEX | 3 DATE OF DEATH (Mo., Day, Yr.)

4a PLACE OF DEATH (City/Town) | 4b COUNTY OF DEATH | 4c HOSPITAL OR OTHER INSTITUTION – Name (if not in either, give street and number)

5 PLACE OF DEATH (Check only one)
Hospital ☐Inpatient ☐ER/Outpatient ☐DOA
Other ☐Nursing Home ☐Residence ☐Other (specify):

6 SOCIAL SECURITY NUMBER | 7 IFUS WAR VETERAN Specify War

DECEDENT

8a WAS DECEDENT OF HISPANIC ORIGIN? (if yes, specify) ☐No ☐Yes:
8b RACE (specify)
9 DECEDENT'S EDUCATION (highest grade completed) Elem-Sec (0-12) College (1-4, 5+)

10a AGE – Last Birthday (Yrs)
b UNDER 1 YEAR MOS DAYS
c UNDER 1 DAY HRS MINS
10d DATE OF BIRTH (Mo., Day, Yr.)
11 BIRTHPLACE (City and State or Foreign Country)

12 MARRIED, NEVER MARRIED, WIDOWED OR DIVORCED
13 LAST SPOUSE (full name at birth or adoption)
14a USUAL OCCUPATION (Prior, if retired)
14b TYPE OF BUSINESS/INDUSTRY

15a RESIDENCE – No. and Street, City/Town, County, State/Country
15b Zip Code

16 FATHER – full name at birth or adoption
17 STATE OF BIRTH (If not in US, name country)
18 MOTHER – full name at birth or adoption
19 STATE OF BIRTH (If not in US, name country)

INFORMANT

20 INFORMANT'S NAME
21 MAILING ADDRESS
22 RELATIONSHIP

23 METHOD OF IMMEDIATE DISPOSITION
☐ Burial ☐ Cremation
☐ Entombment ☐ Removal from State
☐ Donation ☐ Other:
24 FUNERAL SERVICE LICENSEE OR OTHER DESIGNEE
25 LICENSE #

DISPOSITION

26a PLACE OF DISPOSITION (Name of cemetery, crematory, or other)
26b LOCATION (City/Town/State)
27 DATE OF DISPOSITION (Mo., Day, Yr.)
28a/b NAME AND ADDRESS OF FACILITY OR OTHER DESIGNEE

CERTIFIER

29 PART I – CAUSE OF DEATH – SEQUENTIALLY LIST IMMEDIATE CAUSE THEN ANTECEDENT CAUSES THEN UNDERLYING CAUSE
APPX INTERVAL
a Immediate Cause
b Due to
c Due to
d Due to
30 PART II – OTHER SIGNIFICANT CONDITIONS CONTRIBUTING TO DEATH
31 AUTOPSY? ☐ Yes ☐ No

34 MANNER OF DEATH
☐ Natural ☐ Accident ☐ Homicide ☐ Suicide ☐ Could not be determined
☐ Pending Investigation
35a DATE OF INJURY
35b TIME OF INJURY AM PM
35c INJURY AT WORK? ☐ Yes ☐ No
35d DESCRIBE HOW INJURY OCCURRED
35e PLACE OF INJURY (Type)
35f LOCATION/ADDRESS OF INJURY

38 MEDICAL EXAMINER CERTIFICATION
37c APPX TIME OF DEATH
37d DATE PRONOUNCED
39 LICENSE #
37e TIME PRONOUNCED AM PM
(Name and Address)
37a On the basis of examination and/or investigation in my opinion death occurred at the time, date, and place and due to the cause(s) stated.
(Signature) ☐ MD ☐ DO
37b DATE SIGNED

40a RN/ PA/ NP PRONOUNCEMENT? ☐ Yes ☐ No
40b IF YES, DATE
40c IF YES, TIME AM PM
40d NAME OF PRONOUNCER
TITLE: ☐ RN ☐ PA ☐ NP

41 DATE BURIAL PERMIT ISSUED
42 RECEIVED IN CITY/TOWN OF
43 DATE OF RECORD
BURIAL AGENT SIGNATURE
CLERK'S SIGNATURE

FOR USE BY MEDICAL EXAMINERS ONLY
STATE USE ONLY
0 HOSP
TYPE
HISP/RACE
0 AGE
15 RES
15 OOS
23 DISP
31/32 AUT
34 MANR
35c WORK
35f PLACE
36-37 CERT
40a PRON

PERMANENT BLACK INK ONLY

PRONOUNCEMENT FORM ON FILE ☐

FORM 301-ME- 010107

SAMPLE

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: 2008 Evaluation Form

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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.

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