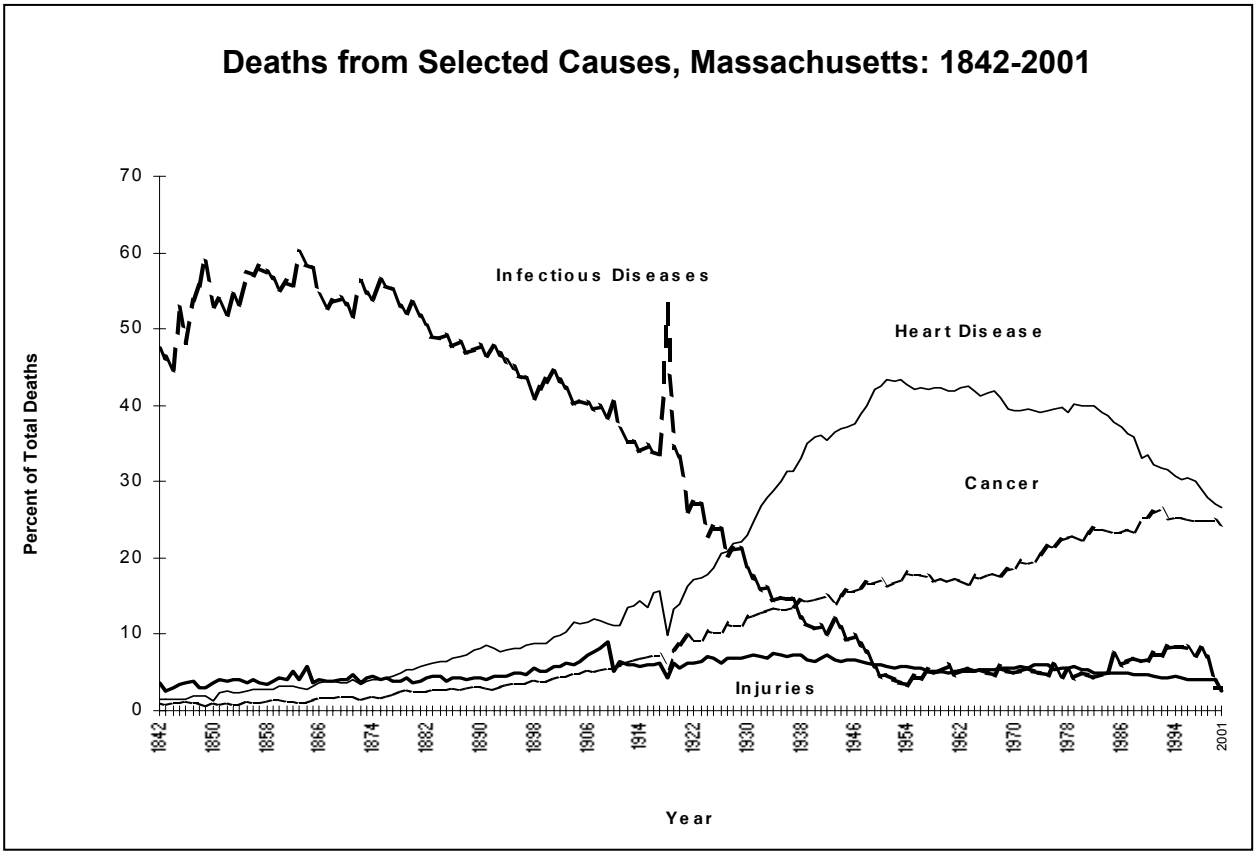
Massachusetts Deaths 2001



Bureau of Health Statistics, Research and Evaluation

Massachusetts Department of Public Health

May 2003

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TECHNICAL FOREWORD

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

CHANGES TO MORTALITY DATA, EFFECTIVE 1999

Beginning with data year 1999, two major changes in Federal classification and tabulation procedures have occurred that affect the tabulation and analyses of mortality data over time. First, a new revision for classifying causes of death has been implemented. The International Classification of Diseases, Tenth Revision (ICD-10) has 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 has been implemented.

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

What is ICD-10?

ICD-10 is an abbreviation for the International Classification of Diseases - Tenth revision. The International Classification of Diseases is a classification system developed by the World Health Organization (WHO). The United States uses the ICD in accordance with an international agreement. The purpose of an international classification system is to promote international comparability in collecting, classifying and tabulating mortality statistics.

Why has the ICD been revised?

The ICD is revised to reflect advances in medical science. The ICD was first implemented in 1900, and has undergone revisions approximately every ten years, except for the Ninth revision which was in effect between 1979-1998. Beginning with 1999, mortality data are coded according to the Tenth revision of the ICD.

How is ICD-10 different from ICD-9?

ICD-10 has approximately 8,000 categories, about twice as many as in ICD-9. ICD-10 uses an alpha-numeric coding scheme, whereas ICD-9 used a numeric coding scheme only.

Can I compare data classified in ICD-10 to data classified in ICD-9?

Differences in the coding between ICD-9 and ICD-10 make direct comparisons between the two classification systems difficult. Because there have been changes made in the codes that are assigned to causes of death, changes to the rules used to determine the underlying cause of death, and changes in the codes that comprise the leading cause of death categories, direct comparisons of causes of death between post 1999 and pre 1999 data cannot be made. Any comparison needs to take into account these changes in the classification system.

To help make comparisons, the National Center for Health Statistics (NCHS) has provided preliminary **comparability ratios** (CR) for leading causes of death, which will assist in the

interpretation of trends between 1998, when ICD-9 was used and 1999 or 2000, when ICD-10 was used. In addition to comparing 1998 and 1999 or 2000 data, the comparability ratios can be applied to data going back to 1994 so longer term trends can still be examined.

What is a comparability ratio?

A comparability ratio (CR) may be thought of as a multiplier to adjust for changes in how data are classified between the two revisions of the ICD. The purpose of a comparability ratio is to examine whether an increase or decrease in the number of death is "real" or simply due to the changes in the classification system for a specific cause of death. It is defined as the number of deaths coded in the new classification system divided by the number of deaths coded using the old classification system. (Please see the Glossary in the Appendix, page 102, for a more detailed explanation).

How do I use comparability ratios?

Comparability ratios are used to make comparisons between data classified under the new system with data classified under the old system. For example, in 1998, there were 2,897 underlying causes of death classified as influenza and pneumonia using ICD-9 (ICD-9 codes: 480-487). However, changes in the classification and coding of underlying causes of deaths using ICD-10 reduce the assignment of influenza and pneumonia as an underlying cause of death. The preliminary comparability ratio for influenza and pneumonia is 0.6982. Applying the preliminary comparability ratio to the 1998 number yields 2,023 deaths that would have been classified as influenza and pneumonia deaths in 1998, had the ICD-10 classification system and coding rules been in place. We can now compare that comparability modified number for 1998 (2,023 deaths) with the actual number of influenza and pneumonia deaths in 1999 (2,176 deaths). In 1999, there was a slight increase in influenza and pneumonia deaths from what we would have expected if the same classification system were used for 1998.

In all trend tables in this report, comparability modified data are presented, as well as comparability unmodified data. Comparability modified data have been adjusted using the CR. When examining whether a change occurred between 1999 (or later) and 1998, comparability modified data should be used.

The comparability ratios used in this report are considered preliminary. The preliminary comparability ratios are based on a national sample of mortality data and may change when the final comparability study is completed by NCHS.

The preliminary comparability ratios used in this report are found on pages 114-116. An example of how to apply the comparability ratios is found on page 102. A more detailed definition of comparability ratio is found in the Glossary on page 104-105.

New Standard Population for Age-adjusted Rates

What is age adjustment?

Age adjustment is a statistical procedure used to make meaningful comparisons of mortality over time and among populations. Age adjustment (also called age standardization) reduces the effect of having many older individuals in one group (where the risk of mortality is naturally higher) compared to another group which has younger persons. Age-adjusted

death rates should be used only for comparative purposes, and should not be interpreted as an actual or absolute risk of death.

What is a standard population?

A standard population is a set of arbitrary population weights representing the age distribution of a defined population. The standard population weights are used to adjust the age-specific rate for each of the comparison populations of interest (for example, the same population over time, or different geographies or race/ethnicity populations). The resulting weighted age-specific rates are then summed to produce the total age-adjusted rate for the populations of interest.

Why has the standard population changed?

Beginning with 1999, a new standard population is being used. The 2000 US projected population is the new standard population for age-adjustment of mortality rates. Previously, the 1940 US projected population was used by NHCS as the standard population for mortality statistics. However, other Federal agencies used different standard populations such as the 1970 or 1980 US standard population. The new standard has been adopted by Federal agencies to promote uniformity and comparability of data from many organizations. While there is no strong technical argument to be made for the use of the 2000 US population, there are some practical reasons for the adoption of the new standard. For example, the year 2000 standard population more closely resembles the current age distribution of the total population, and the year 2000 is a date that data users can relate to. (Please refer to the page 103 for a detailed definition of age-adjusted rates, and for an example of how to calculate an age-adjusted rate).

Why are age-adjusted rates so much higher than previously published?

Changing the standard population from 1940 to the year 2000 has affected the magnitude of age-adjusted death rates. This is because the age structures of the 1940 and 2000 US population are different. In the 2000 standard, older age groups are weighted more heavily than in the 1940 standard. It is important to remember that age-adjusted death rates are not an actual measure of risk of death, rather, age-adjusted death rates are a summary measure used to compare mortality trends over time or between different populations whose age structure differs.

Age-adjusted rates can only be compared to other age-adjusted rates that use the same standard population. Therefore, age-adjusted rates published in this report cannot be compared to previously published age-adjusted rates which use the 1940 US standard population.

What effect will the use of the new standard have on comparing populations?

Applying the 2000 standard population will show relative increases in older population groups and chronic diseases compared to younger population groups and causes of death that affect younger populations. For example, the 1998 age-adjusted heart disease death rate changed from 106.2 per 100,000 using the 1940 US standard population to 231.0 per 100,000 using the 2000 US standard population. In contrast, the 1998 age-adjusted homicide rate changed from 2.1 per 100,000 using the 1940 US standard population to 1.9 per 100,000 using the 2000 US standard population.

Similarly, the 1998 age-adjusted death rate for white, non-Hispanics (an older population) will change from 413.0 using the 1940 US standard population to 808.5 using the 2000 US standard population. The 1998 age-adjusted death rate for black, non-Hispanics (a younger population) will change from 653.3 using the 1940 US standard population to 1,076.6 using the 2000 US standard population. Using the 1940 US standard population, the age-adjusted death rate for black, non-Hispanics was 58% higher than the white, non-Hispanic age-adjusted death rate. However, using the 2000 US standard population, the age-adjusted death rate for black, non-Hispanics is 33% higher than the white, non-Hispanic death rate. This change does not represent a narrowing of the gap, but merely a statistical artifact of using a different standard population.

All age-adjusted rates published in this report have been recalculated using the 2000 US standard population. Again, it is important to note that ONLY RATES THAT ARE CALCULATED USING THE SAME STANDARD POPULATION CAN BE COMPARED. Therefore, age-adjusted rates published in this report cannot be compared to previously published age-adjusted rates, which used the 1940 US standard population.

CHANGES TO THE PRESENTATION OF RACE AND ETHNICITY DATA

In response to readers' feedback, the presentation of race and ethnicity data beginning with the 1999 publication 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 now 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 non-Hispanic; and Hispanic. In addition, Table A1 in the Appendix contains data according to the Federal definitions so data can be compared to 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 this year's publication, there has been a nomenclature change in the way data for Asians are presented: the Asian/Pacific Islander non-Hispanics category will be renamed Asian non-Hispanics, 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 the National Center for Health Statistics. Beginning with 1999 data, we have separated the concept of "Race" from "Ethnic group" for reporting birth 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 do not currently have accurately Cape Verdean population counts or estimates that we need to calculate rates either statewide or at the substate level. Thus, we can remove Cape Verdeans from the numerator (the count of deaths) but not from the denominator (population data) when we calculate rates. Beginning with our 2000 report, a more detailed table and figure summarizing age and cause specific patterns of deaths among Cape Verdeans were added.

NEW ADDITIONS TO THIS YEAR'S PUBLICATION

In this year's publication, two new sections, seven new tables, five amended tables, and seven new figures are provided to give more detailed information on death data to our readers:

CHANGES/ADDITIONS	REASON	LOCATION
	Additions	
Life expectancy at birth	Good alternative summary measure of force of mortality	Figure 2
Distribution of death as by place of occurrence	More detail requested by readers	Table 3
Cause-specific patterns of Medical Examiner certification	More detail requested by readers	Figure 5
Premature Mortality by race/ethnicity	Good single measure that reflects the health status of a population	Figure 6
Leading Causes of deaths by potential years of life lost	More detail requested by readers	Table 4
Cause-specific patterns of potential years of life lost	More detail requested by readers	Figure 7
Leading Causes of death by age group	More detail requested by readers	Table 5
Distribution of heart disease deaths by gender and age groups	More detail requested by readers	Figure 11
Distribution of cancer deaths by gender and age groups	More detail requested by readers	Figure 12
Distribution of poisoning deaths by manner	More detail requested by readers	Table 14e
Terrorist-related deaths	Terrorist attacks on September 11, 2001	Table 15 and Figure 13
HIV/AIDS deaths by race and gender	More detail requested by readers	Table 16d
Premature Mortality Rates for the largest 30 communities in Massachusetts	Good single measure that reflects the health status of a population	Table 22
	Changes	
Leading Causes of death by gender within age groups	More detail requested by readers	Table 6a and Table 6b
Injury deaths by Leading Causes by Gender, Age and Race/Ethnicity	More detail requested by readers	Table 14a
Intentional Injuries by gender, age, and race	More detail requested by readers	Table 14b
Added US figures to HP2010 Table	Comparison purposes	Table 21

EXECUTIVE SUMMARY

Executive Summary

Data on mortality are based on information on death certificates filed in state vital statistics offices. Physicians, medical examiners and coroners assign cause of death through a system that acknowledges 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. Unless otherwise noted, all data in this publication are resident data. Resident data include all events that occur to residents of the Commonwealth, wherever they occur.

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

Overview

In 2001, 56,733 Massachusetts residents died: 30,780 females and 25,953 males. The number of resident deaths in 2001 increased by 0.3% (142 deaths) from 2000, and constituted a 7% increase since 1990. This included the 87 deaths among Massachusetts residents that occurred due to the terrorist attacks on September 11, 2001.

The age-adjusted death rate in 2001 for Massachusetts was 818.2 deaths per 100,000 persons, a 7% decline since 1990 but an increase of 0.2% from the previous year (please note: these rates are age-adjusted to the 2000 US standard population). The 2001 Massachusetts age-adjusted death rate was 4% lower than the preliminary 2000 United States rate, and has been consistently lower than the US rate throughout the 1990's.

This report shows there is a continued reduction in death rates from the top leading causes of death. Age-adjusted death rates continued to fall for heart disease and cancer, the two leading causes of death in Massachusetts that account for more than half of all deaths in the state each year. In addition, the 2001 mortality rate for influenza and pneumonia significantly dropped from 29.3 deaths per 100,000 in 2000 to 24.6 deaths per 100,000. On the other hand, unintentional injuries, suicide and homicide death rates increased between 2000 and 2001. These increases were not statistically significant.

For the fourth year in a row, the largest number of deaths occurred among people ages 85 years and older. In 2001, life expectancy at birth continued to be higher in Massachusetts when compared to the US (78.4 years compared to 77.2 years). In Massachusetts, life expectancy at birth was 75.9 years for men and 80.7 years for women.

There were 407 deaths to infants less than one year of age in 2001, which was 8% higher than in 2000 but 37% fewer than in 1990. The 2001 infant mortality rate (IMR) was 5.0 deaths per 1,000 live births, 9% higher than in 2000, which had the lowest rate ever recorded

for the state (4.6 deaths per 1,000 live births). However, the Massachusetts IMR was 28% lower than the 2001 United States rate (5.0 deaths compared to 6.9 deaths per 1,000 live births).

For the first time since 1994, there was an increase in HIV/AIDS deaths in 2001 (not statistically significant). Nevertheless, 2001 had still one of the lowest number of HIV/AIDS deaths since 1994 when these deaths peaked in the state.

The section on terrorist-related deaths is based on the 87 death certificates filed with the Office of Vital Records and Statistics through October 15, 2002 and represent more than 94% the total number of deaths to Massachusetts residents that occurred on September 11, 2001 in New York City.

Leading Causes of Death

Heart disease and cancer continued to be the leading causes of death among Massachusetts residents, accounting for 51% of all deaths. In 2001, 15,136 Massachusetts residents died of heart disease, which resulted in an age-adjusted death rate of 215.2 deaths per 100,000 persons. Cancer was the second leading cause of death, with 13,745 deaths, and an age-adjusted death rate of 202.8 per 100,000.

The ten leading causes of death accounted for 77% of all deaths in 2001. HIV/AIDS did not rank among the 10 leading causes of death for Massachusetts, although it remained among the leading causes of death for black non-Hispanics and Hispanics. Starting with this year's publication, all unintentional injuries will be presented together (motor vehicle-related, falls, drownings, and other unintentional injuries). This was done in order to capture the total burden of injury deaths among Massachusetts residents. In 2001, the top 10 leading causes of death remained the same, all in the same ranking as in 2000 after all injuries were grouped together.

Injuries were the leading cause of death for Massachusetts residents between the ages of 1 to 44 years. Heart disease was the leading cause of death for Massachusetts residents ages 75 years and older, while cancer was the leading cause of death for persons ages 25-74 years.

The age-adjusted death rates for many of the leading causes of death continued to be lower in Massachusetts than in the United States. Age-adjusted death rates for heart disease, stroke, unintentional injuries, diabetes, HIV/AIDS, suicide, homicide, chronic lower respiratory disease, motor vehicle-related deaths, and infant mortality were lower for Massachusetts when compared to preliminary figures for the United States. Age-adjusted death rates for cancer, Alzheimer's disease, nephritis, septicema, and influenza/pneumonia continued to be higher in Massachusetts as compared to the United States.

For all deaths among Massachusetts residents in 2001,779,267 potential years of life were lost. Potential years of life lost (PYLL) was calculated over the total age range of the Massachusetts population, from birth to death by specific age groups. Heart disease, cancer and stroke ranked high on both the number of deaths and PYLL. Unintentional injuries were the seventh leading cause of death in 2001, but it ranked third based on PYLL. This is because unintentional injuries tend to occur among younger persons, where the potential life lost is far greater than for older persons. Consequently, causes of death where more young people die rank higher on PYLL than on number of deaths.

Patterns by Race and Ethnicity

Age-adjusted mortality rates continued to vary markedly by race and Hispanic ethnicity in Massachusetts in 2001. Asian non-Hispanics had the lowest death rate in the state, 452.4 deaths per 100,000 persons; black non-Hispanics had the highest rate (1,049.6 per 100,000). In 2001, the death rate for white non-Hispanics decreased by 0.3% while rates for Hispanics, black non-Hispanics, and Asian non-Hispanics increased by 3%, 6% and 8%, respectively from the previous year.

Premature mortality rates (PMR) also varied by race and Hispanic ethnicity. Black non-Hispanics had the highest PMR, experiencing over one and a half the rate of premature deaths as white non-Hispanics (549.9 vs. 338.4 deaths per 100,000). Asian non-Hispanics had the lowest PMR in the state, 187.2 deaths per 100,000; while Hispanics and white non-Hispanics had similar PMRs (348.3 and 338.4 deaths per 100,000, respectively).

In addition, the leading causes of death varied by race and ethnicity in 2001 as in previous years. Cancer was the leading cause among Asian non-Hispanics; black non-Hispanics; and Hispanics in 2001. Heart disease was the leading cause for white non-Hispanics. HIV/AIDS was the fifth leading cause of death for black non-Hispanics and Hispanics. It was the 23rd leading cause of death for white non-Hispanics.

Continuing research and prevention efforts are needed to reach high-risk and underserved populations and to understand the reasons for differences in mortality among racial and ethnic groups in Massachusetts.

Cancer

The overall leading cause of cancer death was lung cancer, followed by colorectal cancer. Lung cancer was also the leading cause of cancer death for both men and women. Among women, the lung cancer mortality rate was 69% higher than the breast cancer mortality rate. The second leading cause of cancer death was breast cancer for females and prostate cancer for males.

Brain cancer was the leading cause of cancer death for all persons under the age of 15 years, while leukemia was the leading cause of cancer death for persons between the ages of 15-24 years. Lung cancer was the leading cause of cancer death for persons ages 45 years and older.

HIV/AIDS Disease

There were 249 Massachusetts residents who died from HIV/AIDS in 2001, an increase of 10% from 2000. This represents a change in the trend in HIV/AIDS deaths, which decreased between 1994 and 2000. In 2001, the proportion of male HIV/AIDS deaths (73%) increased 13% from 2000, indicating the first proportionate increase in male deaths in three years. The age-adjusted death rate from HIV/AIDS also increased by 9% from 2000, this increase was not statistically significant. In addition, the proportion of all HIV/AIDS deaths for persons ages 45 years and older has doubled since 1995 (44% vs. 22%).

Injuries

In 2001, 5% of all deaths to Massachusetts residents were the result of injuries (2,722 deaths). Poisonings, which include drug overdoses, were the leading cause of injury death. In 2001, the death rate from poisoning deaths increased by 22% from the year 2000, this was statistically significant. Sixty-nine percent of poisoning deaths were due to narcotics and other hallucinogens.

About 55% of all injury-related deaths were due to unintentional injuries, 22% were injuries of undetermined intent, and 21% were intentional injuries (suicide and homicide). Among unintentional injuries, the leading causes of death included motor vehicle-related deaths (38%), falls (16%), and hanging, strangulation or suffocation (9%). The vast majority of intentional injuries were suicides (73%). Almost 95% of injuries of undetermined intent involved poisonings, which include drug overdoses. Eighty-seven percent of these deaths involved narcotics and other hallucinogens.

Approximately 12% of all injury-related deaths occurred among persons ages 15-24 years. However, injuries accounted for over two-thirds of the deaths in this age group. Injury-related death rates were highest among persons ages 85 years and older (316.2 deaths per 100,000 population compared to 105.5 deaths per 100,000 among persons ages 75-84 who had the second highest injury-related death rate.)

There were 420 suicides in 2001, an increase of 5% from the previous year. The total number of homicides also increased between 2000 and 2001 (125 compared to 153).

In 2001, there were 568 motor vehicle-related deaths, an increase of 16% from 2000. Although the greatest number of motor vehicle-related deaths occurred to men ages 25-44 years (175 deaths), males ages 75-84 years had the highest rate for motor vehicle-related deaths (35.7 deaths/100,000) followed by males ages 15-24 (27.9 deaths/100,000).

The motor vehicle-related death rate, the suicide death rate, and the homicide death rate varied greatly by gender. All of these rates increased between 2000 and 2001, but these increases were not statistically significant. The male motor vehicle death rate was more than twice the female rate (13.3 vs. 4.9), and the male suicide rate was four times the suicide rate for females: 10.9 deaths per 100,000 males compared to 2.5 for females. The homicide rate for males was also more than four times the homicide rate for females, 4.0 vs. 0.9 deaths per 100,000 persons.

In 2001, a total of 193 persons died from firearm injuries in Massachusetts. This number was 10.3% higher than the 175 deaths in 2000. Firearm suicide and homicide accounted for 55.4% and 40.9%, respectively, of all firearm deaths in 2001. The rate for all firearm deaths in Massachusetts was about one quarter the rate for the United States (3.0 vs. 10.1 deaths per 100,000).

Terrorist-related deaths

The section on terrorist-related deaths is based on the 87 death certificates filed with the Massachusetts Registry of Vital Records and Statistics through October 15, 2002, and represent more than 94% of the total number of deaths to Massachusetts residents that occurred on September 11, 2001 in New York city. Most of these deaths were among young persons (25-44 years). These deaths are not included among injury deaths but are

presented as a separate category. Please note that as of May of this year, no additional death certificates had been received.

Causes of Infant Death

There were 407 infant deaths (deaths of infants less than one year of age) and 81,014 live births among Massachusetts residents for an infant mortality rate of 5.0 deaths per 1,000 live births in the year 2001. The 2001 infant mortality rate increased 8.7% from the 2000 rate of 4.6 deaths per 1,000 live births but has decreased 28.6% from the 1990 rate of 7.0 per 1,000 live births. Disparities continued to exist by race and ethnicity. Black non-Hispanics had the highest IMR (12.1 deaths per 1,000 live births), while white non-Hispanics had the lowest IMR (3.1 deaths per 1,000 live births).

However, the infant mortality rate continued to be lower for Massachusetts when compared to figures for the United States. In 2001, the infant mortality rate for Massachusetts was 28% lower than the figure for the United States (5.0 vs. 6.9, deaths per 1,000 live births). The Massachusetts IMR was lower than the US figure for Whites and Blacks.

The leading causes of infant death were conditions arising in the perinatal period (64% of all infant deaths) followed by congenital malformations (15% of all infant deaths). Deaths occurring in the neonatal period (less than 28 days after birth) accounted for 76% of all infant deaths. 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 (28-365 days).

Healthy People 2010

In 2001, Massachusetts either achieved or moved in the direction of many of the Healthy People 2010 mortality objectives. Out of 40 objectives presented, Massachusetts 2001 death data showed that the state has already met 15 of the 2010 targets goals. For ten objectives, including: lung cancer, female breast cancer, prostate cancer, malignant melanoma, stroke deaths, drownings, infant mortality rate, SIDS deaths, and child and adolescent mortality death rates (10-14, and 20-24 years old), the 2001 Massachusetts indicators were within 25% of the target goals.

However, Massachusetts still needs improvement in the following areas: overall cancer death rates, colorectal cancer, cirrhosis deaths, HIV/AIDS deaths, unintentional injuries, poisoning deaths, suffocation deaths, fall deaths, fire deaths, suicide deaths, drug-induced deaths, neonatal deaths, and asthma death rates for person ages 15-34 and 35-64 years. Although these rates were over 25% from the target goals, they were still lower than most of the rates for the United States overall.

Premature Mortality

In 2001, among the 30 largest communities in Massachusetts, the age-adjusted premature rates (number of deaths before age 75 per 100,000 population adjusted to the 2000 US Standard Population) were significantly higher in Lynn (467.9), Lowell (466.4), Springfield (459.3), Fall River (459.2), Worcester (453.6), New Bedford (450.3), Brockton (444.2), Taunton (439.6), and Boston (430.5) compared to the state overall (347.3). Age-adjusted death rates were significantly lower in Barnstable (274.7), Brookline (232.7) and Newton (218.0) compared to Massachusetts overall (347.3).

TRENDS

Trends[1]

In 2001, 56,733 Massachusetts residents died (Table 1). The number of resident deaths in 2001 increased by 0.3% (142 deaths) from 2000, and constituted a 7% increase since 1990. The age-adjusted death rate in 2001 was 818.2 deaths per 100,000 persons, a 7% decline since 1990, but an increase of 0.2% from the previous year. (Please note: rates are age-adjusted to the 2000 US standard population.) There were 407 deaths among infants less than one year of age in 2000, 8% more than in 2000 but 29% less than in 1990.

Age-adjusted death rates varied greatly by race/ethnicity in Massachusetts in 2001, and throughout the decade. Asian non-Hispanics continued to have the lowest age-adjusted death rate, followed by Hispanics and white non-Hispanics. In 2001, the age-adjusted death rate for Asian non-Hispanics was 452.4 deaths per 100,000 persons, less than half the black non-Hispanic rate of 1,049.6 deaths per 100,000. In 2001, death rates for all racial and ethnic groups increased except for white non-Hispanics who saw a decrease of 0.3% in their death rate from 2000. Death rates for Hispanics, black non-Hispanics and Asian non-Hispanics increased by 3%, 6% and 8%, respectively from the previous year.

The age-adjusted mortality rate for women continued to be substantially lower than for men: 697.8 compared to 988.5. However, men have experienced a larger decline in their age-adjusted rate since 1990 (13%) than women (2%).

The 2001 Massachusetts age-adjusted death rate was 4% lower than the preliminary 2001 United States rate, and has been consistently lower than the US rate throughout the 1990s (Table 2a). Massachusetts comparability modified age-adjusted death rates have been consistently lower than the US rates for stroke and unintentional injuries, and higher than the US rates for cancer and pneumonia/influenza.

Life expectancy at birth is based on the expected age at death for a newborn infant. One's future life expectancy of course falls as one ages, but one's expected age at death only rises -slowly at first and then more rapidly[2]. In 2001, life expectancy at birth continues to be higher in Massachusetts than in the United States (78.4 years compared to 77.2). In 2001, a woman born in Massachusetts could expect to live, on average, until the age of 80.7, and a man until the age of 75.9. This is because men tend to die from more external causes (such as unintentional injuries, homicide and suicide) and at younger ages than women.

Life expectancy varied by race as well (Figure 1). At birth, white non-Hispanic women could expect to live 80.8 years; black non-Hispanic women, 76.8 years; Hispanic women, 85.3 years; white non-Hispanic men, 76.2 years; black non-Hispanic men 70.2 years; and Hispanic men, 78.4 years. At age 65, men could expect to live an average of 17 more years, while women could expect to live almost 20 more years (Table 2b).

In 2001, life expectancy at birth decreased slightly by 0.1 year from the record high of 78.5 attained in 2000. Figure 2 shows a continuation of the trend toward longer life expectancy for Massachusetts residents in the last decade.

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[1] Beginning in 1999, mortality data are coded according to the International Classification of Diseases- Tenth revision (ICD-10). Due to changes in the classification of disease beginning in data year 1999, trends in the cause of death between data after 1999 and previous years must be interpreted with caution.

[2] Dalington, RB. Are we measuring "Life Expectancy" the Best Way? http://comp9.psych.cornell.edu/ Darlington/ lifespan.htm

The age composition of the Massachusetts population reflects changes in life expectancy and natural historic trends. From 1900 to 2000, the proportion of Massachusetts residents ages 45 and over increased from 21% to 36%; the increase was greatest in the oldest age group (those 85 years and over) (Figure 3). While persons 85 years and over accounted for 2% of the population in Massachusetts in 2000, for the fourth year in a row, they had the highest number of deaths in the state in the year 2001.

Massachusetts has a rich history of collecting and reporting vital statistics, as demonstrated by Figure 4, which presents historical mortality trend data for the Commonwealth 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 2001, in almost reversal of rank, 27% of the deaths in Massachusetts were due to heart disease, 24% to cancer, 3% to infectious diseases, and 3% were due to intentional and unintentional injuries.

Table 1. Trends in Mortality Characteristics Massachusetts: 1991 - 2001

Year		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Resident deaths[1]												
	Number	53,010	53,804	55,557	54,914	55,296	55,187	54,634	55,204	55,763	56,591	56,733
	Crude rate[2,3,4]	880.9	891.2	916.2	899.2	900.2	892.4	877.3	877.5	881.9	891.3	893.6
	Age-adjusted rate[5]	884.2	877.4	885.7	868.2	866.2	853.0	834.8	808.8	808.8	816.5	818.2
Race/ethnicity of decedent [6,7]												
White, non-Hispanic	Number	50,141	50,815	52,371	51,600	51,785	51,917	51,398	51,829	52,282	52,959	52,792
	Percent[8]	94.6	94.4	94.3	94.0	93.7	94.1	94.1	93.9	93.8	93.6	93.1
	Age-adjusted rate	882.7	875.5	882.8	864.2	860.1	852.2	835.1	808.5	808.7	816.2	813.5
Black, non-Hispanic	Number	1,887	1,957	1,969	2,079	2,136	2,025	2,033	1,969	2,018	2,109	2,226
	Percent	3.6	3.6	3.5	3.8	3.9	3.7	3.7	3.6	3.6	3.7	3.9
	Age-adjusted rate	1,104.6	1,139.2	1,115.3	1,176.7	1,193.0	1,141.1	1,142.1	1,076.6	995.2	992.4	1,049.6
Asian, non-Hispanic	Number	270	284	360	335	403	398	403	413	449	467	510
	Percent	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.9
	Age-adjusted rate	462.7	463.8	613.4	521.2	565.2	534.5	512.0	500.7	422.4	418.5	452.4
Hispanic	Number	677	712	813	865	936	803	749	924	975	1,014	1,059
	Percent	1.3	1.3	1.5	1.6	1.7	1.5	1.4	1.7	1.7	1.8	1.9
	Age-adjusted rate	435.5	440.5	488.5	482.7	504.7	430.0	391.0	463.8	507.8	596.0[9]	616.2
Gender of decedent [7]												
Female	Number	27,550	27,770	29,109	28,733	29,262	29,152	29,261	29,568	29,786	30,465	30,780
	Age-adjusted rate	720.9	711.1	724.5	712.6	717.6	702.7	699.0	678.0	676.9	691.6	697.8
Male	Number	25,460	26,034	26,448	26,181	26,034	26,035	25,373	25,635	25,977	26,126	25,953
	Age-adjusted rate	1,134.1	1,130.2	1,123.5	1,096.9	1,080.6	1,074.0	1,035.0	1,000.8	1,001.6	996.7	988.5
Age of decedent [7]												
<1 year	Number	576	569	523	499	419	403	425	414	418	377	407
1-14 years	Number	207	225	239	192	204	197	174	128	165	181	169
15-24 years	Number	538	470	464	473	452	434	422	413	407	403	444
25-44 years	Number	2,912	3,062	3,055	3,210	3,196	2,720	2,348	2,373	2,397	2,375	2,571
45-64 years	Number	7,877	7973	7,920	7,766	7,611	7,477	7,416	7,501	7,431	7,841	8,004
65-74 years	Number	11,415	11,515	11,509	11,394	10,858	10,711	10,286	10,216	9,782	9,746	9,323
75-84 years	Number	15,506	15,912	16,346	16,092	16,497	16,839	16,884	16,946	17,397	17,554	17,416
85+ years	Number	13,973	14,076	15,494	15,283	16,054	16,400	16,677	17,213	17,765	18,113	18,395

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 1991-1995 (released in September 1999), 1996-1997 (released in November 1999), and 1998 (released in September 2000). Residents deaths rates for 1999 have been recalculated using 1999 population estimates. 2000 rates are calculated using 2000 population estimates. 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 refer to 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 2a. Five Leading Causes of Death[1] Comparability Unmodified and Comparability Modified Age-Adjusted Rates Massachusetts and United States: 1991-2001

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]
1991	Rate	286.0	NA[6]	317.9	NA[6]	230.0	NA[6]	213.7	NA[6]	54.7	NA[6]	63.4	NA[6]
	% of Total	32.2		33.7		26.0		23.5		6.2		6.6	
1992	Rate	277.4	NA[6]	310.5	NA[6]	234.2	NA[6]	212.3	NA[6]	53.7	NA[6]	62.1	NA[6]
	% of Total	31.7		33.5		26.3		23.7		6.2		6.6	
1993	Rate	278.3	NA[6]	314.6	NA[6]	228.1	NA[6]	212.5	NA[6]	52.8	NA[6]	63.2	NA[6]
	% of Total	31.7		33.3		25.2		23.1		6.1		6.6	
1994	Rate	265.3	261.5	304.5	253.2	224.7	226.3	211.0	212.4	51.7	54.7	63.3	60.1
	% of Total	30.8		32.7		25.3		23.2		6.1		6.7	
1995	Rate	259.4	255.7	301.3	250.1	225.6	227.2	209.6	211.0	52.9	55.9	63.9	61.3
	% of Total	30.2		32.4		25.4		23.1		6.3		6.8	
1996	Rate	257.1	253.4	293.4	243.8	221.2	222.7	206.7	208.1	50.5	53.4	63.2	61.0
	% of Total	30.4		32.2		25.2		23.1		6.1		6.9	
1997	Rate	249.0	245.5	285.7	237.2	215.4	216.8	203.7	205.1	50.6	53.5	61.8	60.1
	% of Total	30.2		32.0		25.0		23.1		6.2		6.9	
1998	Rate	231.0	227.7	272.4	269.7	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[7]		265.9		206.6[7]		201.6		50.2[7]		61.4	
	% of Total	27.9		30.3		24.8		23.0		6.4		7.0	
2000	Rate	218.0[7]		258.2		206.9[7]		200.9		51.2[7]		60.9	
	% of Total	27.1		29.5		24.8		23.0		6.4		6.9	
2001	Rate	215.2[7]		247.7[8]		202.8[7]		195.8[8]		49.7[7]		57.9[8]	
	% of Total	26.7		28.9		24.2		22.9		6.2		6.8	

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 and 2000 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 1990-1998 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 1994 through 2000, please use the comparability modified rates for years 1994-1998. 8. US data for 2001 obtained from NCHS. Deaths: Preliminary Data for 2001. National Vital Statistics Report, Vol. 51, No. 5, March 14, 2003.

Table 2a (continued). Five Leading Causes of Death[1] Comparability Unmodified and Comparability Modified Age-Adjusted Rates, Massachusetts and United States: 1991-2001

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]		
1991	Rate	40.1	NA[6]	34.4	NA[6]	23.1	NA[6]	36.0	NA[6]	884.2	925.2
	% of Total	4.5		3.5		2.7		4.1			
1992	Rate	38.5	NA[6]	32.7	NA[6]	20.6	NA[6]	34.6	NA[6]	877.4	910.7
	% of Total	4.5		3.4		2.3		4.0			
1993	Rate	42.9	NA[6]	34.8	NA[6]	21.3	NA[6]	35.7	NA[6]	885.7	931.3
	% of Total	5.0		3.6		2.4		4.0			
1994	Rate	40.4	28.2	33.4	23.3	20.7	20.6	35.7	35.1	868.2	920.0
	% of Total	4.8		3.5		2.4		4.0			
1995	Rate	41.2	28.7	33.5	23.4	18.8	18.8	36.0	35.4	866.2	918.4
	% of Total	4.9		3.6		2.1		4.0			
1996	Rate	41.5	29.0	32.9	23.0	19.5	19.5	36.2	35.6	853.0	902.1
	% of Total	5.1		3.6		2.3		4.1			
1997	Rate	39.1	27.3	33.3	23.3	19.7	19.7	36.0	35.3	834.8	887.0
	% of Total	4.9		3.7		2.3		4.1			
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[7]		23.4		19.3[7]		35.9		808.8	881.9
	% of Total	3.9		2.7		2.3		4.1			
2000	Rate	29.3[7]		23.7		20.3[7]		35.6		816.5	872.0
	% of Total	3.7		2.8		2.4		3.9			
2001	Rate	24.6[7]		21.8[8]		22.3[7]		34.3[8]		818.2	855.0[8]
	% of Total	3.1		2.6		2.6		4.0			

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 and 2000 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 1990-1998 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 1994 through 2000, please use the comparability modified rate for years 1994-1998. 8. US data for 2001 obtained from NCHS. Deaths: Preliminary Data for 2001. National Vital Statistics Report, Vol. 51, No. 5, March 14, 2003.

Figure 1

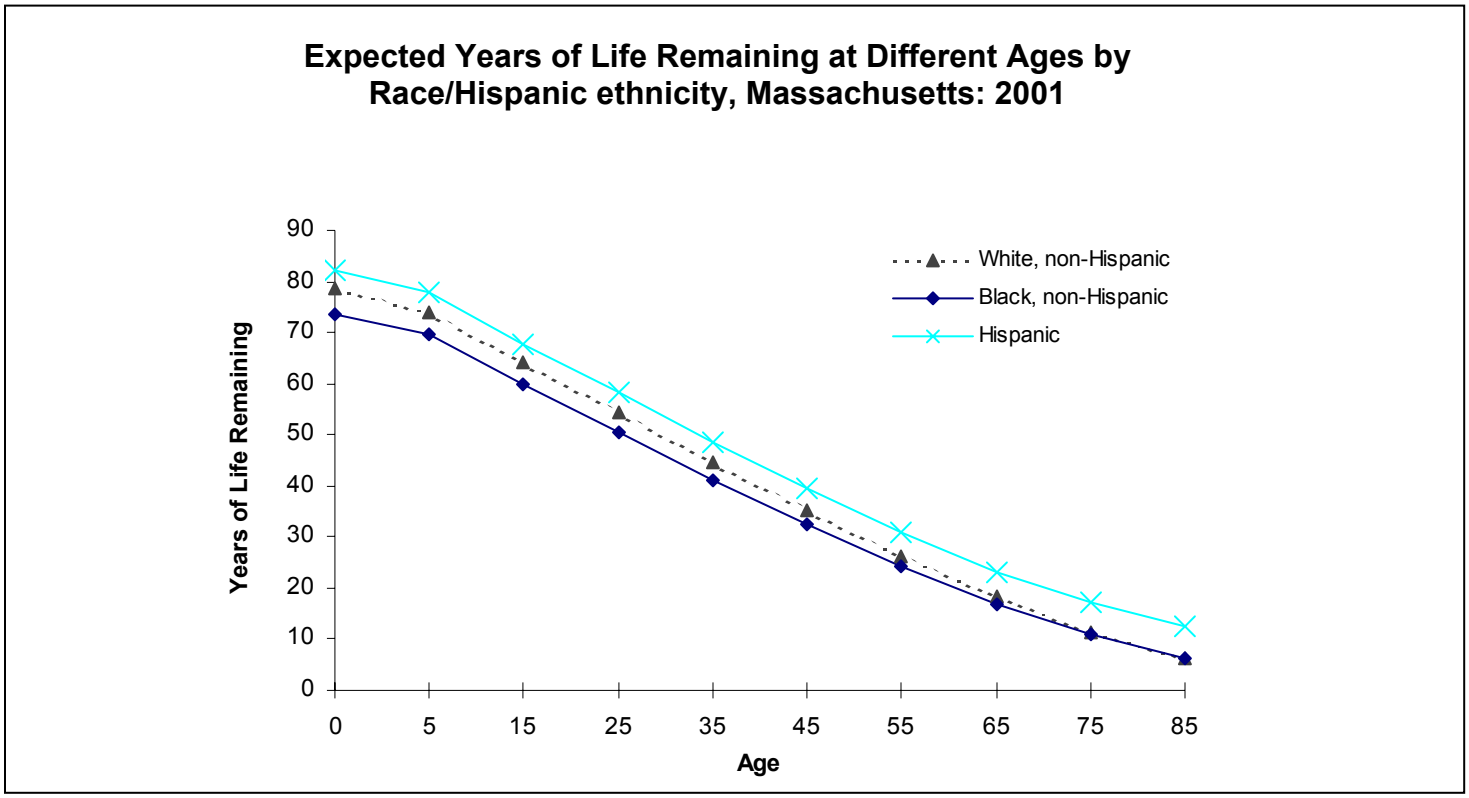


Table 2b. Years of Life Remaining[1], Massachusetts: 2001

At Age:	All	Females	White, non-Hispanic Females	Black, non-Hispanic Females	Hispanic Females	Males	White, non-Hispanic Males	Black, non-Hispanic Males	Hispanic Males
Birth	78.4	80.7	80.8	76.8	85.3	75.9	76.2	70.2	78.4
1 year old	77.8	80.1	80.1	76.7	84.7	75.3	75.5	70.3	78.1
5 years old	73.8	76.2	76.2	72.8	80.8	71.4	71.5	66.4	74.2
15 years old	63.9	66.2	66.2	63.0	71.0	61.5	61.6	56.6	64.3
25 years old	54.2	56.4	56.3	53.1	61.2	51.9	52.1	47.2	55.0
35 years old	44.6	46.6	46.6	43.5	51.5	42.5	42.5	38.5	45.6
45 years old	35.3	37.1	37.1	34.5	41.9	33.2	33.3	29.9	37.0
55 years old	26.4	28.0	27.9	25.8	32.8	24.6	24.5	22.2	28.8
65 years old	18.3	19.6	19.5	17.9	24.6	16.7	16.6	15.5	21.4
75 years old	11.5	12.3	12.3	11.3	17.4	10.3	10.2	10.3	16.9
85 years old	6.3	6.6	6.5	6.0	12.3	5.8	5.7	6.6	13.1

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.) DPH 2000 Preliminary Population Estimates (released January 2002) are used as the denominator.

Figure 2

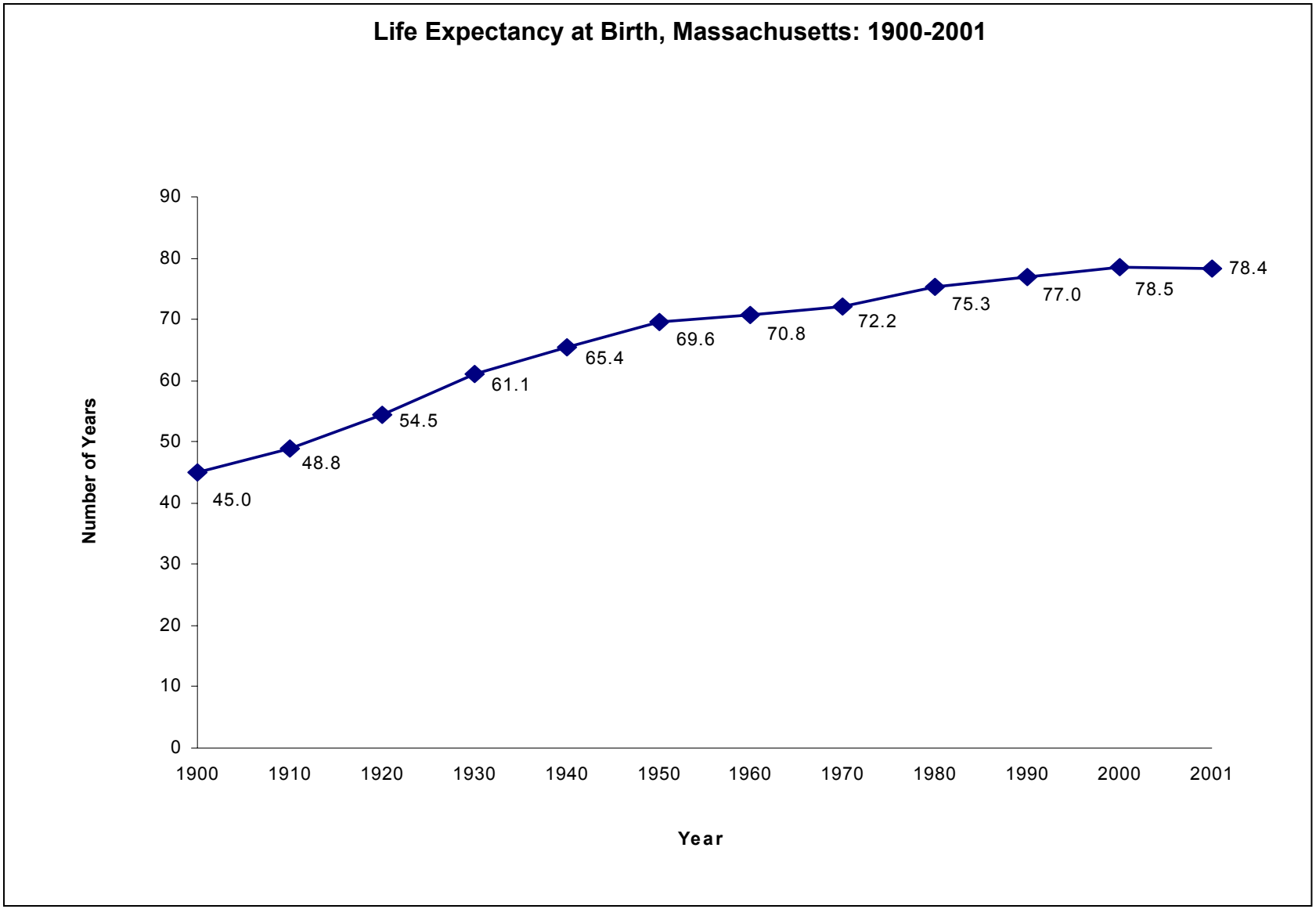
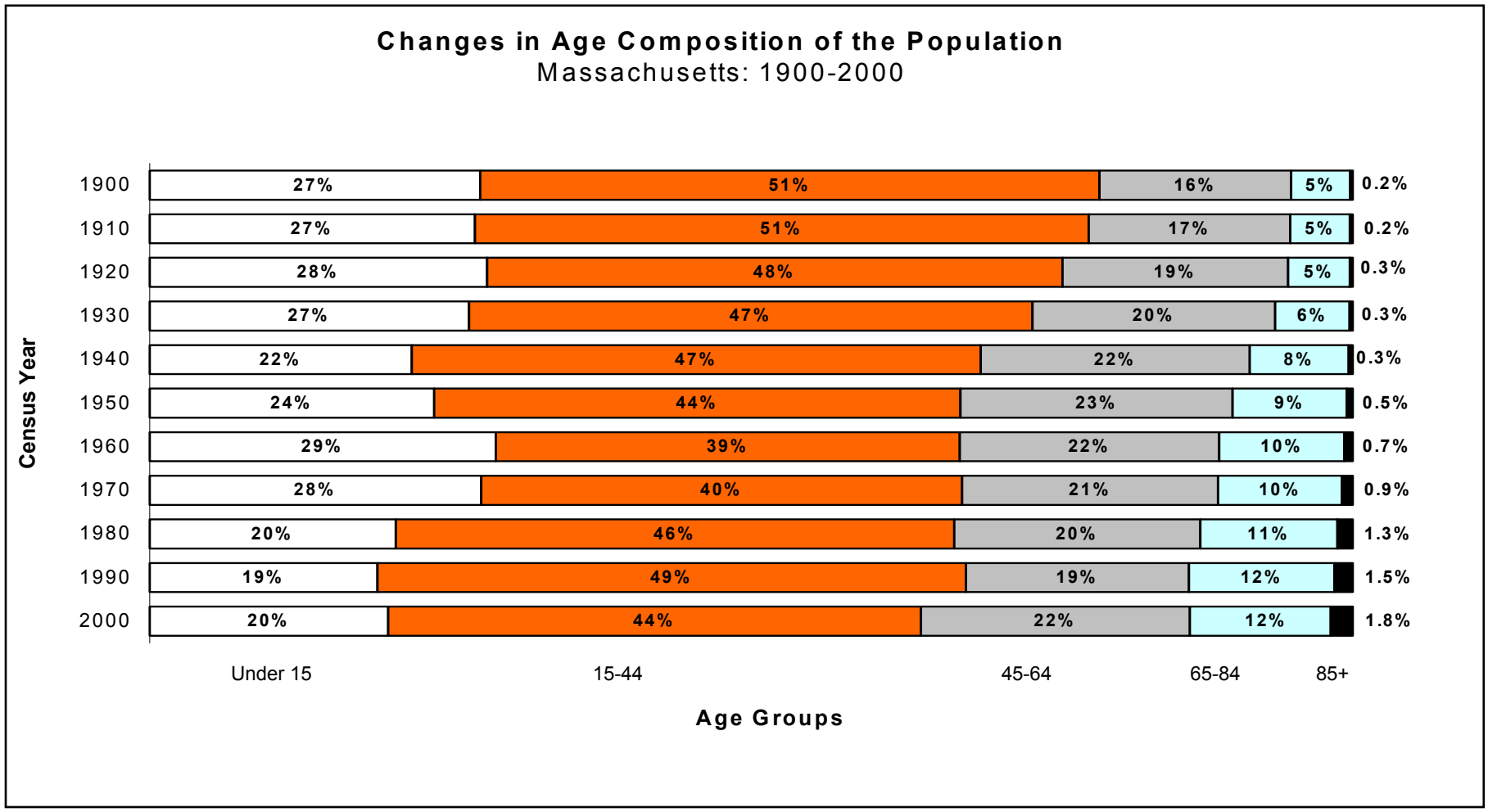

Life Expectancy at Birth, Massachusetts: 1900-2001
Number of Years
Year
0
10
20
30
40
50
60
70
80
90
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2001
45.0
48.8
54.5
61.1
65.4
69.6
70.8
72.2
75.3
77.0
78.5
78.4

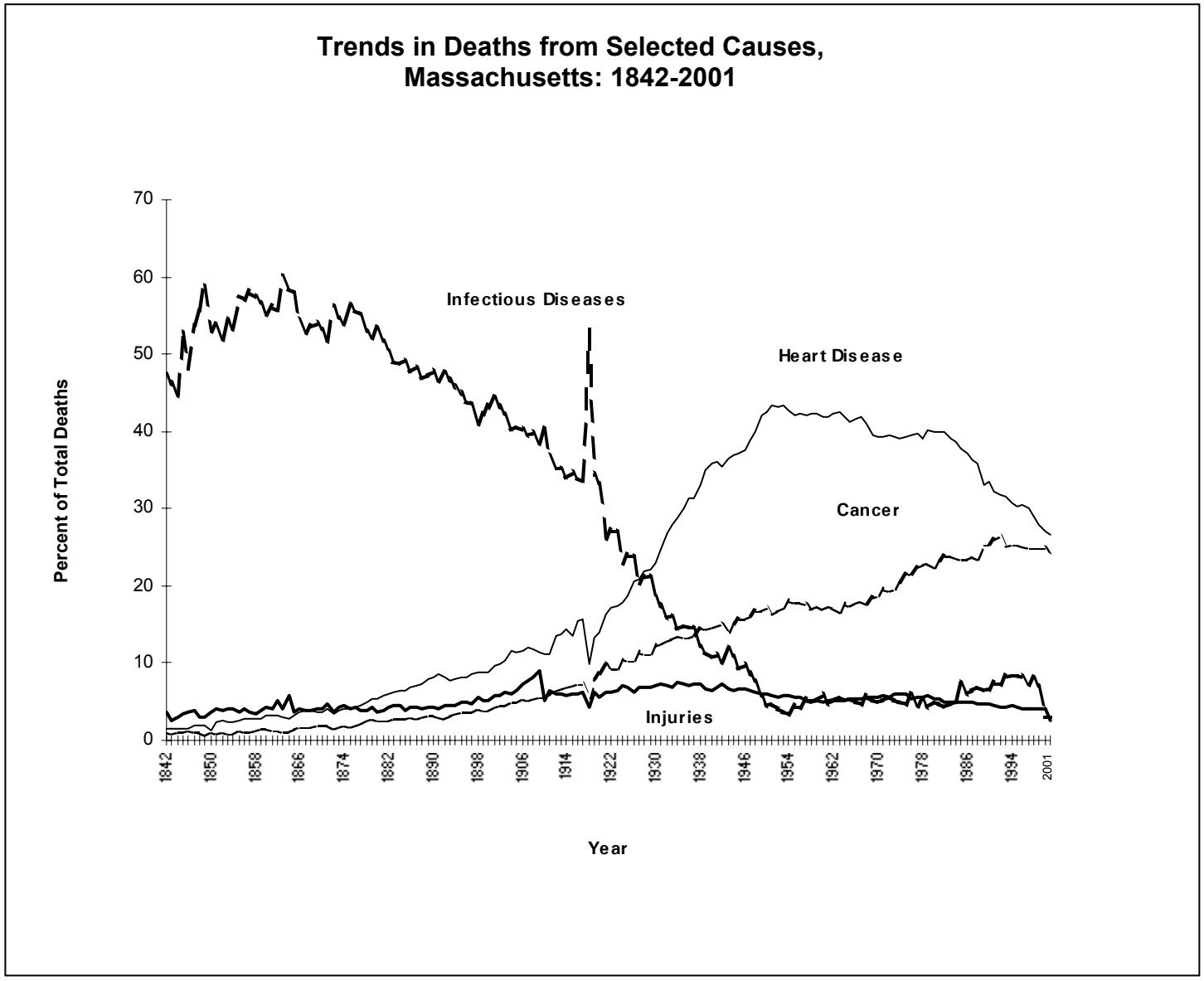
Figure 3



Source: US Census Bureau 1900-2000.

Note: Percentages based on counts with known age.

Figure 4


Trends in Deaths from Selected Causes,
Massachusetts: 1842-2001
Percent of Total Deaths
70
60
50
40
30
20
10
0
Infectious Diseases
Heart Disease
Cancer
Injuries
1842
1850
1858
1866
1874
1882
1890
1898
1906
1914
1922
1930
1938
1946
1954
1962
1970
1978
1986
1994
2001
Year

PLACE OF OCCURRENCE, MEDICAL EXAMINER CERTIFIED DEATHS AND MEASURES OF MORTALITY

Place of Occurrence, Medical Examiner Certified Deaths and Measures of Mortality

Place of Occurrence

Of the 56,733 deaths in 2001, 25,393 (45%) occurred in hospitals –38% were inpatients at hospitals and 7% died in emergency departments, 17,265 (30%) died in nursing homes, 11,952 (21%) died at home, and 923 (2%) were pronounced dead on arrival at emergency departments. These percentages have been consistent in the last 3 years (Table 3).

Medical Examiner Certified Deaths

The total number of deaths certified by medical examiners increased from 3,805 in 2000 to 4,251 in 2001. Of these deaths certified by medical examiners, 49% were reported as a result of natural causes (non-injury related). Most homicide and suicide deaths were certified by medical examiners in 2001 compared to only 8% of heart disease deaths and less than 1% of cancer deaths (Figure 5).

Measures of Mortality

Premature Mortality

A good summary measure of the impact of death on different groups in the population is premature mortality. Premature mortality rate (PMR) measures the rate of premature death, that is, deaths that occur before the age of 75 years. It is given as a rate per 100,000 and is age-adjusted to the 2000 US standard population. PMR is considered an excellent, single measure that reflects the health status of a population[3,4].

The rationale is that the vast majority of deaths to persons ages 75 and older are due to chronic conditions associated with aging. By examining deaths to younger persons, it may reflect premature deaths, that is deaths that may be more amenable to preventive health practices and medical treatment.

PMR varied markedly by race and Hispanic ethnicity in Massachusetts in 2001. Black non-Hispanics had the highest PMR, experiencing over one and a half the rate of premature deaths as white non-Hispanics (549.9 vs. 338.4 deaths per 100,000). Asian non-Hispanics had the lowest PMR in the state, 187.2 deaths per 100,000; while Hispanics and white non-Hispanics had similar PMRs (348.3 and 338.4 deaths per 100,000, respectively) (Figure 6).

Potential years of life lost

Potential years of life lost (PYLL), a measure of the overall impact of mortality in the population, is calculated by multiplying the total number of deaths for each age group by the difference between the life expectancy and the midpoint of the age group, then adding the figures for each specific cause for all age groups[5]. It gives more weight to causes of death

[3] Carstairs V, Morris R. *Deprivation and Health in Scotland*. Aberdeen, Scotland: Aberdeen University Press, 1991.
[4] http://www.umanitoba.ca/centres/mchp/reports/reports_02/rfn.htm.
[5] CDC. Premature Mortality in the United States: Public Health Issues in the Use of Years of Potential Life Lost. MMWR 1986; 35:1s-11s.

occurring at younger ages than to those occurring at later ages. See Glossary for further explanation.

For all deaths among Massachusetts residents in 2001,779,267 potential years of life were lost (Table 4). Heart disease, cancer and stroke ranked high on both the number of deaths and PYLL. Yet, other causes had different rankings. For instance, unintentional injuries were the 7th leading cause of death in 2001, but it ranked third based on PYLL. This is because unintentional injuries tend to occur among younger persons, where the potential life lost if far greater than for older persons. Consequently, causes of death from which more young people die rank higher on PYLL than on number of deaths.

There were gender differences between the PYLL measure of mortality and the number of deaths. For instance, when examining heart disease deaths, we can see that there were 1,188 more deaths for females than for males; however, males had over 21,000 more years of life lost than do females (Figure 7 and Figure 11). This means that on average males died from heart disease at a younger age than do females.

Figure 7 illustrates that cancer was the leading cause of PYLL for men and women, with lung cancer responsible for 55,226 PYLL. Heart disease was the second leading cause for both genders. Males experienced substantially more PYLL due to injuries than females did; whereas females had almost 4,000 more years of life lost due to Alzheimer's Disease than do males.

Table 3. Distribution of deaths by place of occurrence, Massachusetts: 1999-2001

Type of Place where death occurred	1999		2000		2001	
	Number	Percent	Number	Percent	Number	Percent
Hospital (inpatient/outpatient)	25,178	45%	25,246	45%	25,393	45%
Dead on Arrival	1,015	2%	1,001	2%	923	2%
Nursing Home	16,845	30%	17,355	31%	17,265	30%
At Home	11,515	21%	11,744	21%	11,952	21%
Other	980	2%	892	2%	1,085	2%
Unknown	239	0.4%	353	1%	115	0.2%

Figure 5

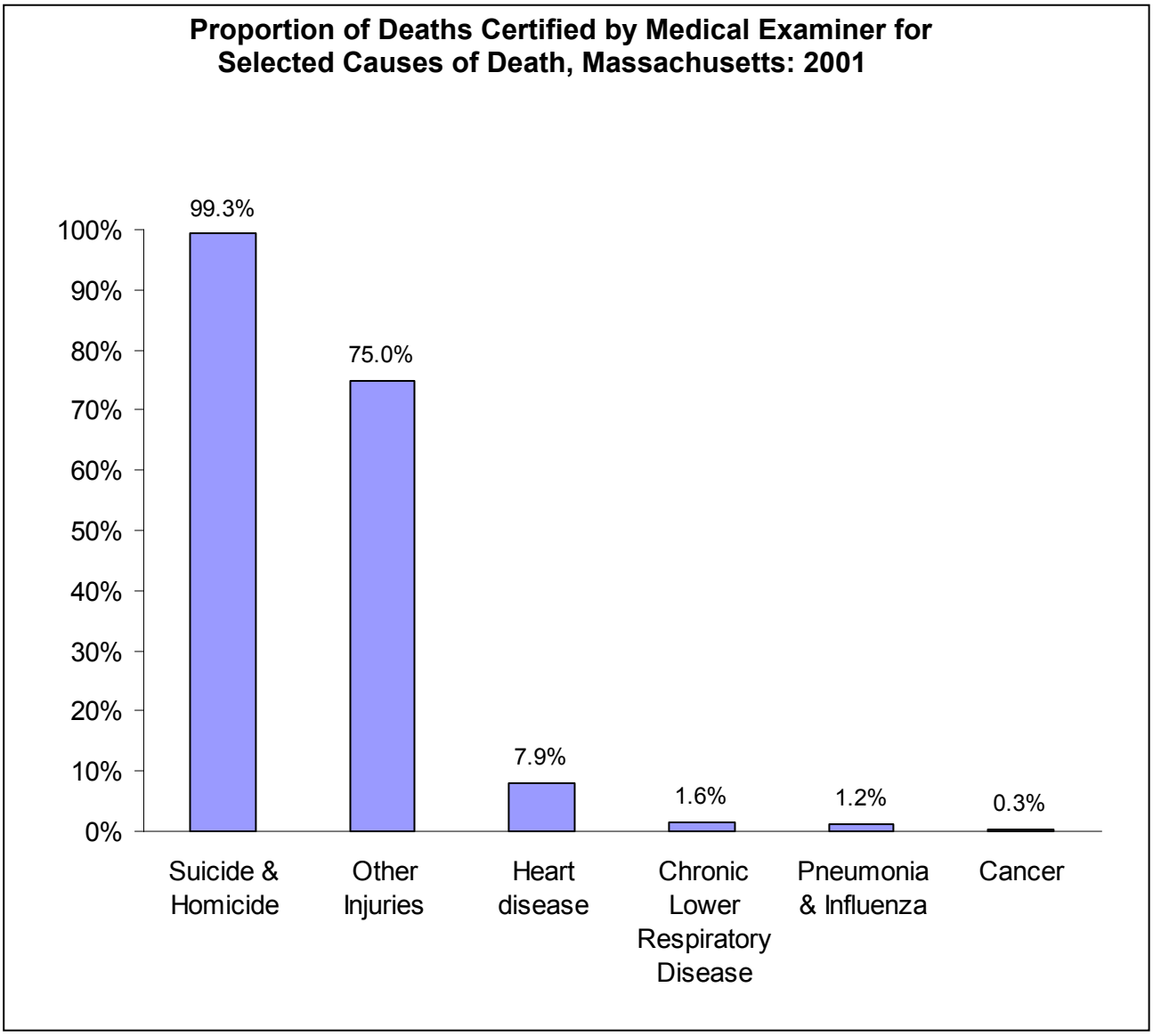
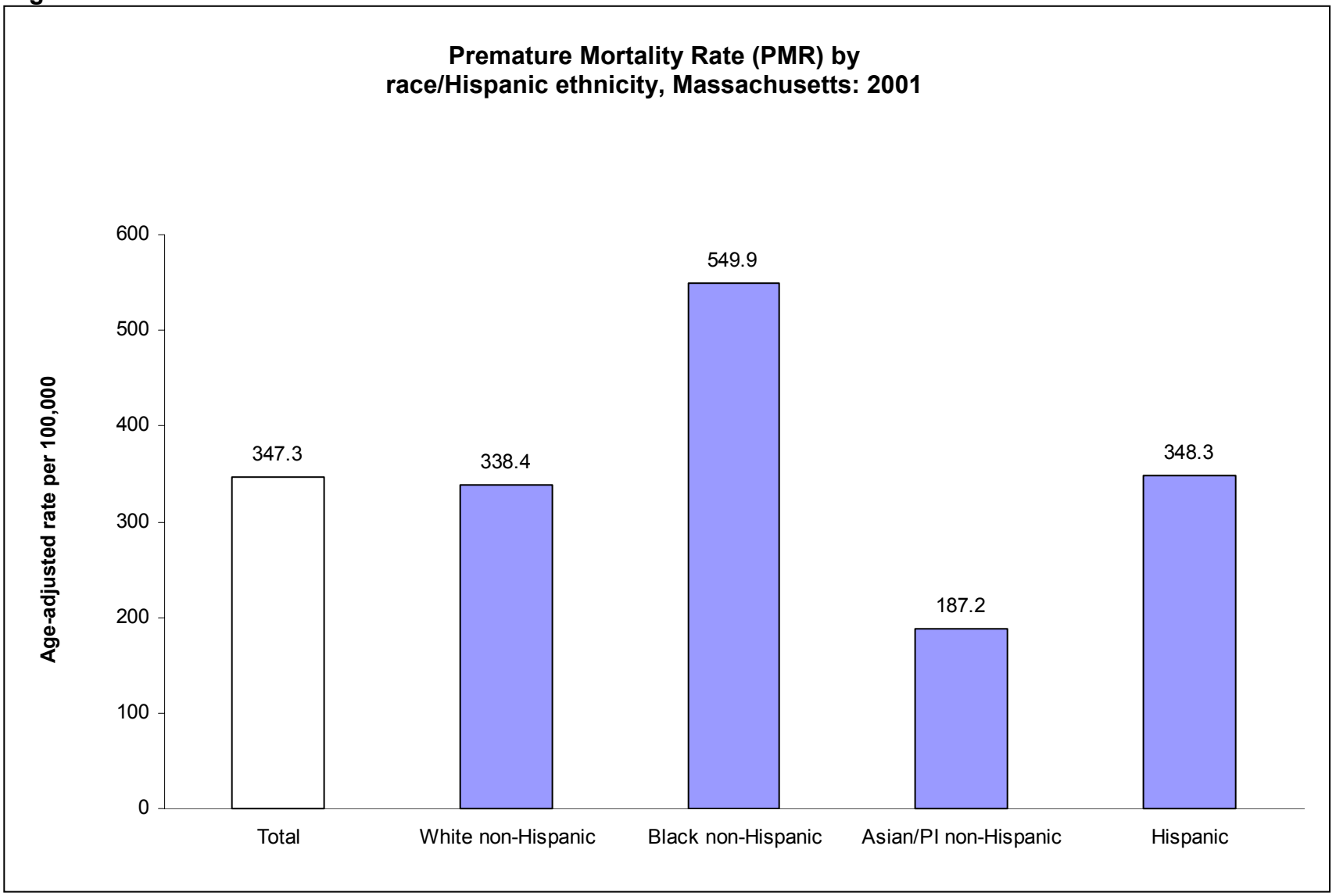

Proportion of Deaths Certified by Medical Examiner for Selected Causes of Death, Massachusetts: 2001
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
99.3%
75.0%
7.9%
1.6%
1.2%
0.3%
Suicide & Homicide
Other Injuries
Heart disease
Chronic Lower Respiratory Disease
Pneumonia & Influenza
Cancer

Figure 6

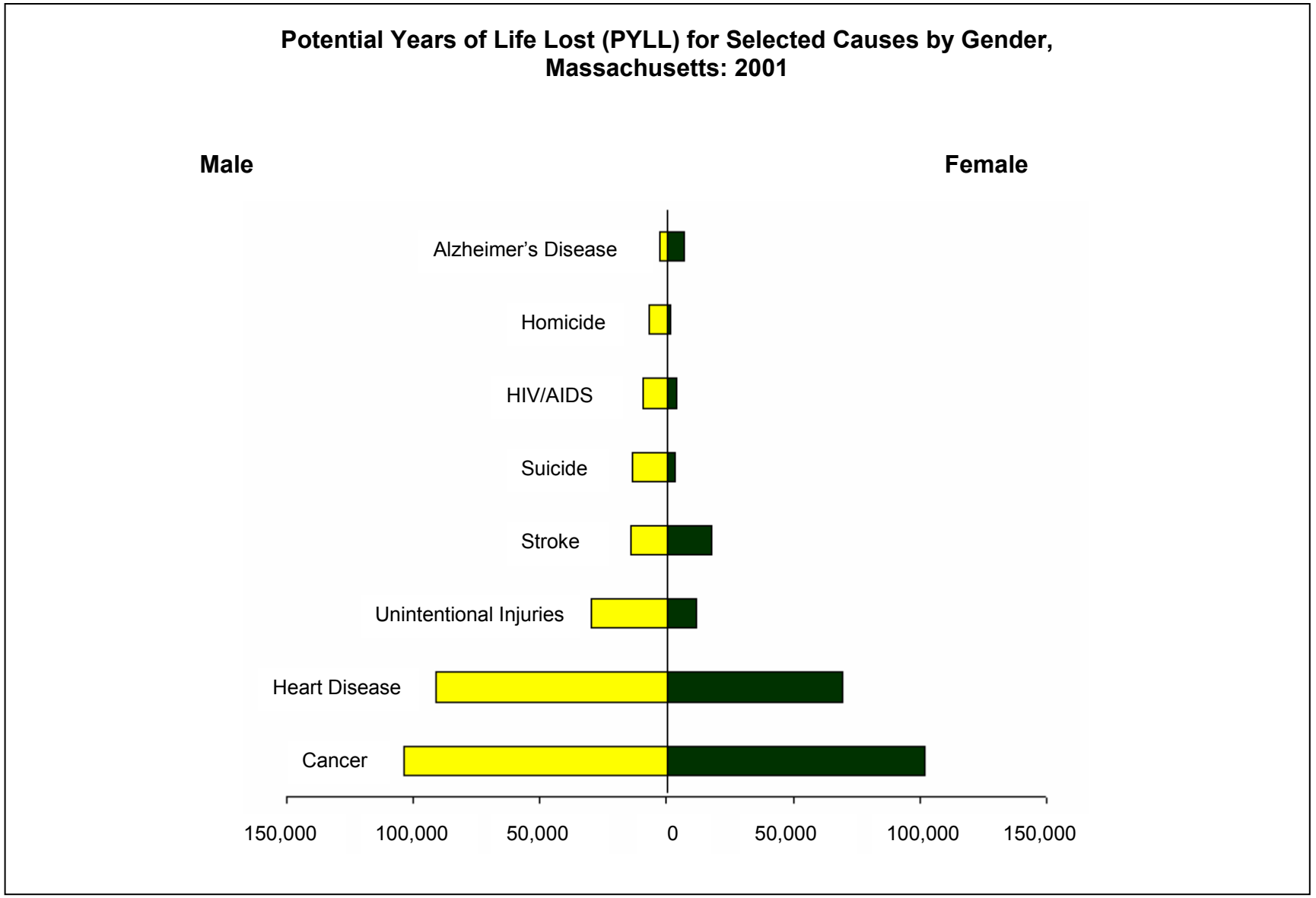


Note: Rates are per 100,000 population and are age-adjusted to the 2000 U.S. Population for persons ages 0-74 years.

Table 4. Rank by Potential Years of Life Lost (PYLL), Massachusetts: 2001

Cause	PYLL	Rank on PYLL	Average PYLL	# of Deaths	Rank on # of Deaths
All Causes	*779,267*		*13.74*	*56,733*	
Cancer	205,626	1	14.96	13,745	2
Heart Disease	160,258	2	10.59	15,136	1
Unintentional injuries	41,479	3	27.73	1,496	7
Stroke	31,813	4	9.00	3,534	3
Perinatal Conditions	22,051	5	84.48	261	22
Diabetes	18,391	6	12.93	1,422	8
Suicide	17,110	7	40.74	420	16
HIV/AIDS	12,649	8	50.80	249	23
Alzheimer's Disease	9,796	9	6.39	1,532	6
Homicide	8,379	10	54.76	153	25

Figure 7


Potential Years of Life Lost (PYLL) for Selected Causes by Gender, Massachusetts: 2001
Male
Female
Alzheimer's Disease
Homicide
HIV/AIDS
Suicide
Stroke
Unintentional Injuries
Heart Disease
Cancer
150,000
100,000
50,000
0
50,000
100,000
150,000

LEADING CAUSES

Leading Causes

Ranking causes of death provides a condense overview of the major forces of mortality. Causes are ranked according to the number of deaths.

Heart disease and cancer continued to be the leading causes of death among Massachusetts residents, accounting for 51% of all deaths (Figure 8). In 2001, 15,136 Massachusetts residents died of heart disease, which resulted in an age-adjusted death rate of 215.2 per 100,000 persons. Cancer was the second leading cause of death, with 13,745 deaths, and an age-adjusted death rate of 202.8 (Table 2). (Please note: rates are age-adjusted to the 2000 US standard population).

On an average day in 2001, 157 Massachusetts residents died (Figure 9). Approximately 41 of these deaths were due to heart disease, 38 to cancer, 17 to respiratory diseases, 10 to stroke, 7 to injuries, 4 to diabetes, 4 to Alzheimer's Disease, 1 was an infant death, 1 was an HIV/AIDS death, and 34 were due to other causes.

Leading causes of death varied substantially by age. All injuries combined (unintentional, intentional and injuries of undetermined intent) were the leading cause of death for persons between the ages of 1 to 44 years. In the older age groups, mortality due to chronic diseases was most prevalent (Table 5).

The lowest number of deaths (169) in the five-age groups was seen among 1-14 year olds (Table 6a). In this group, the leading causes of death were unintentional injuries (41), cancer (28), congenital malformations (9), and signs and symptoms (8).

For persons ages 15-24 years, there was a total of 444 deaths. Injuries accounted for over two-thirds of these deaths. Unintentional injuries which included motor vehicle-related deaths, falls, fires, and drownings accounted for the highest percentage of deaths in this age group (37%), followed by injuries of undetermined intent (13%), homicide (12%), and suicide (12%).

In 2001, cancer remained the number one cause of death for Massachusetts residents ages 25-74 years (35%). Heart disease, chronic lower respiratory disease, and stroke were other leading causes.

Heart disease was the leading cause of death for Massachusetts residents ages 75 years and older (30%) (Table 6b). Chronic diseases disproportionately affect older populations. For instance, the heart disease death rate among persons 65-74 years was over 4 times higher than the rate for persons 45-64 years (532.0 vs. 116.8 deaths per 100,000).

Death rates for children and young adults (ages 1-24 years) were much lower than those for older persons. However, 62% of the deaths in this age group were due to injuries, both unintentional and intentional, and therefore largely preventable. The proportion of deaths due to injury increased with age from 32% for children 1-14 years old to 73% for young persons ages, 15-24 years. But, these deaths only accounted for 7% and 2% of deaths to persons ages 45-64 years and persons age 65 years and older, respectively.

Tables 6a and 6b also contrast leading causes of death for males and females. Unintentional injuries ranked first and cancer ranked second for both males and females ages 1-14 years. Unintentional injuries also ranked first for young males and females

(ages 15-24 years). The next four leading causes were also the same, although not in the same order. The rank for homicide was second for males and fifth for females. Cancer ranked third among young females and fifth among young males.

The four leading causes of death among persons ages 25-44 were also the same for males and females, but not in the same order. Cancer ranked first among females and fourth among males. Cancer ranked first while heart disease ranked second for both males and females ages 45-64 years. Among persons ages 65 and older, the top 3 causes were the same for both females and males (heart disease, cancer and stroke).

The ten leading causes of death accounted for 77% of all deaths in 2001 (Table 7). HIV/AIDS disease did not rank among the 10 leading causes of death for Massachusetts, although it remained among the leading causes of death for black non-Hispanics and Hispanics. Starting with this year's publication, all unintentional injuries will be presented together (motor vehicle-related, falls, drownings, and other unintentional injuries) in this table. This was done in order to capture the total burden of injury deaths among Massachusetts residents. In 2001, the top 10 leading causes of death remained the same as in 2000, all in the same ranking.

The leading causes of death varied markedly by race and Hispanic ethnicity in Massachusetts in 2001 as in previous years (Table 7). The overall age-adjusted death rate for black non-Hispanics exceeded that of white non-Hispanics by 25%. Age-adjusted death rates for black non-Hispanics were higher for most leading causes of death.

Cancer was the number one cause of death among Asian non-Hispanics and black non-Hispanics in 2001, followed by heart disease and stroke. Cancer was also the leading cause of death for Hispanics, followed by heart disease and unintentional injuries. Heart disease was the leading cause of death for white non-Hispanics followed by cancer and stroke. The leading causes of death for Hispanics also included HIV/AIDS, perinatal conditions, and homicide, all of which occured more frequently among younger people.

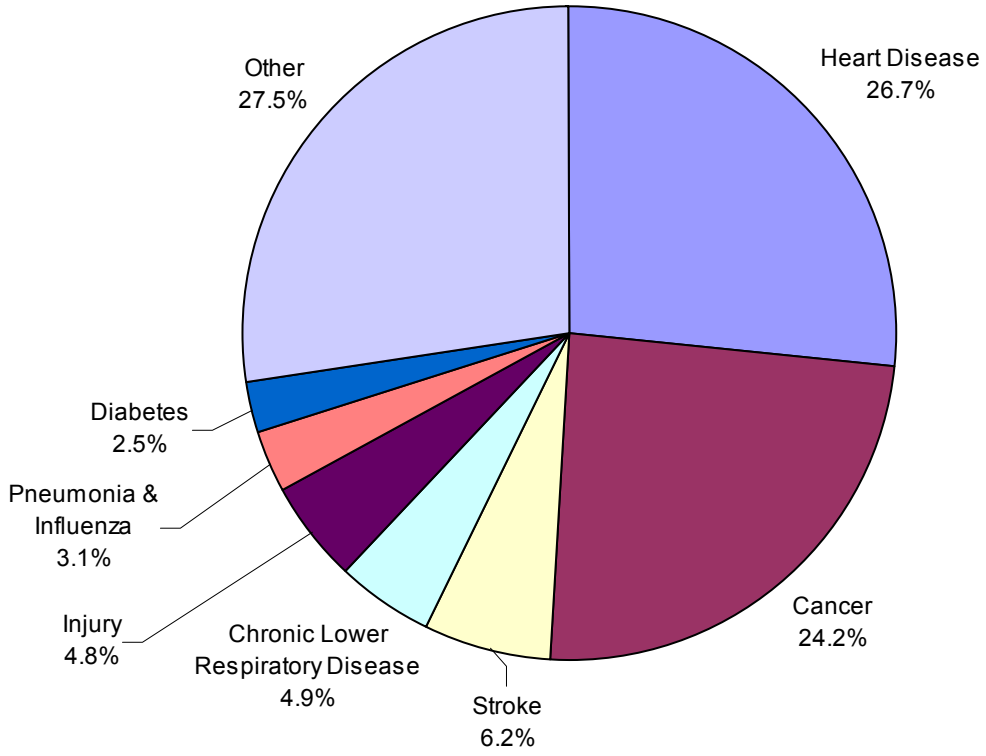
In 2001, heart disease and cancer were the leading causes of death among Cape Verdean non-Hispanics in Massachusetts, followed by stroke, chronic lower respiratory disease and unintentional injuries (Table 8) (see Technical Foreword for reasons for looking at this specific ethnicity group).

The differences in the 10 leading causes of death by race and ethnicity result from a combination of factors. Younger age distributions within the Massachusetts black non-Hispanic and Hispanic populations yield higher proportions of deaths from causes typically affecting the young. Also, among the younger age groups, black non-Hispanics and Hispanics have higher age-specific death rates for such causes as unintentional injuries and homicide as compared to white non-Hispanics. Among persons over the age of 44 years, Hispanics and Asian non-Hispanics have lower age-specific rates of death from heart disease and cancer as compared to white non-Hispanics and black non-Hispanics (Tables 9a, Table 9b, and Figure 10).

Among Hispanic subgroups, the majority of deaths occurred among Puerto Ricans (68%), the largest Hispanic group in Massachusetts. The leading causes of death varied by group among Hispanics. Cancer was the leading cause of death for Puerto Ricans, Dominicans and South Americans while heart disease was the leading cause of death for Cubans. HIV/AIDS disease was the third leading cause of death among Puerto Ricans (Table 9c).

Figure 8

Percent Distribution of Leading Causes of Death[1]
Massachusetts: 2001



[1] Total Number of Deaths = 56,733
Causes of Death are classified according to ICD-10

Figure 9

Daily Death Statistics
Massachusetts: 2001

Every day in 2001, residents of Massachusetts experienced an average of the following:

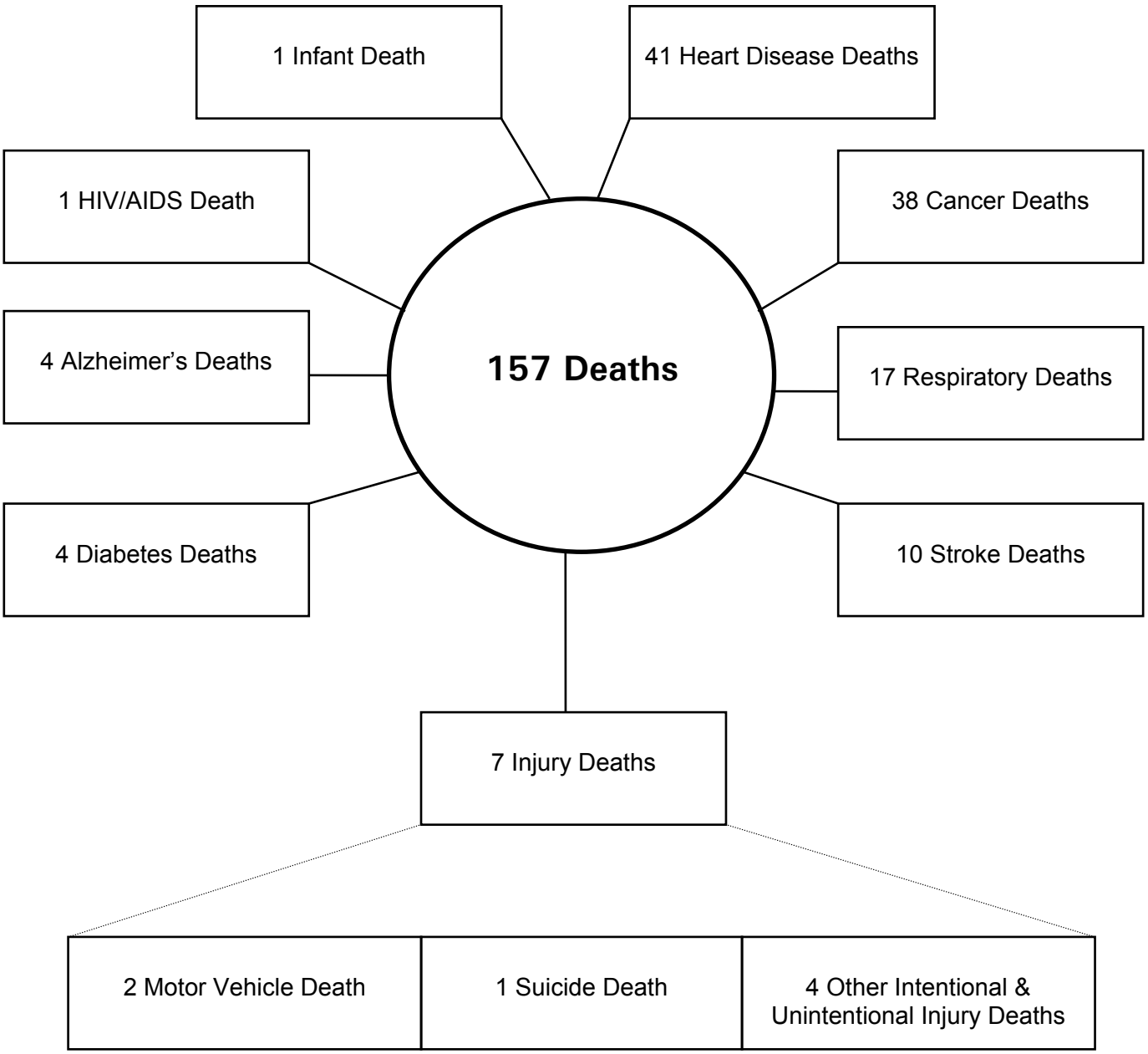


Table 5. Top Ten Leading Causes of Death* by Age, Massachusetts 2001

	Age Groups (number of deaths)								
Rank	**<1 year**	**1-14 years**	**15-24 years**	**25-44 years**	**45-64 years**	**65-74 years**	**75-84 years**	**85+ years**	**All**
1	Short gestation (92)	Unintentional injuries (41)	Unintentional injuries (164)	Cancer (450)	Cancer (3,113)	Cancer (3,399)	Heart Disease (4,789)	Heart Disease (6,069)	Heart Disease (15,136)
2	Congenital malformations (62)	Cancer (28)	Injuries of undetermined intent (57)	Injuries of undetermined intent (371)	Heart Disease (1,658)	Heart Disease (2,276)	Cancer (4,426)	Cancer (2,302)	Cancer (13,745)
3	SIDS (24)	Congenital malformations (9)	Homicide (53)	Heart Disease (317)	Chronic Lower Respiratory Disease (268)	Chronic Lower Respiratory Disease (602)	Stroke (1,200)	Stroke (1,602)	Stroke (3,534)
4	Maternal Pregnancy Comp. (23)	Signs and symptoms (8)	Suicide (52)	Unintentional injuries (286)	Chronic Liver Disease (250)	Stroke (441)	Chronic Lower Respiratory Disease (1,082)	Influenza & Pneumonia (954)	Chronic Lower Respiratory Disease (2,806)
5	Respiratory Distress (19)	Heart Disease (7)	Cancer (26)	Suicide (171)	Stroke (239)	Diabetes (289)	Influenza & Pneumonia (538)	Alzheimer's Disease (931)	Influenza & Pneumonia (1,769)
6	Complications of placenta, cord/membranes (18)	Pneumonitis (6)	Heart Disease (10)	HIV/AIDS (136)	Unintentional injuries (233)	Nephritis (206)	Alzheimer's Disease (486)	Chronic Lower Respiratory Disease (822)	Alzheimer's Disease (1,532)
7	Bacterial sepsis (13)	Homicide (6)	Signs and symptoms (9)	Chronic Liver Disease (76)	Diabetes (231)	Septicemia (169)	Diabetes (484)	Nephritis (448)	Unintentional injuries (1,496)
8	Circulatory system (10)	Chronic Lower Respiratory Disease (4)	Septicemia (4)	Signs and symptoms (63)	Injuries of undetermined intent (155)	Influenza & Pneumonia (155)	Nephritis (428)	Diabetes (368)	Diabetes (1,422)
9	Neonatal hemorrhage (9)	Suicide (4)	Congenital malformations (4)	Homicide (63)	Septicemia (147)	Unintentional injuries (136)	Septicemia (332)	Unintentional injuries (341)	Nephritis (1,206)
10	Intrauterine Hypoxia (8)	Stroke (3)	Other infections (3)	Diabetes (50)	Suicide (133)	Chronic Liver Disease (114)	Unintentional injuries (290)	Pneumonitis (329)	Septicemia (954)
All Causes	**407**	**169**	**444**	**2,571**	**8,004**	**9,323**	**17,416**	**18,395**	**56,733**

* Ranking based on number of deaths. Number of deaths in parenthesis.

Injuries are broken down by intent (unintentional, homicide, suicide and injuries of undetermined intent (deaths where investigation has not determined whether injuries were accidental or purposely inflicted).

Table 6a. Leading Causes of Death, Numbers and Age-Specific Rates by Gender, Massachusetts: 2001

		Total		Female		Male	
Age	**Cause of death[1]**	**Number**	**Rate[2]**	**Number**	**Rate[2]**	**Number**	**Rate[2]**
1 – 14 years	**TOTAL**	**169**	**14.3**	**77**	**13.4**	**92**	**15.2**
	Unintentional Injuries	41	3.5	18	3.1	23	3.8
	Cancer	28	2.4	11	1.9	17	2.8
	Congenital Malformations	9	0.8	4	--[5]	5	0.8
	Signs and Symptoms	8	0.7	5	0.9	3	--[5]
15 - 24 years	**TOTAL**	**444**	**54.1**	**111**	**27.0**	**333**	**81.4**
	Unintentional Injuries	164	20.0	27	6.6	137	33.5
	Injuries of Undetermined Intent	57	7.0	16	3.9	41	10.0
	Homicide	53	6.5	7	1.7	46	11.2
	Suicide	52	6.3	9	2.2	43	10.5
25 – 44 years	**TOTAL**	**2,571**	**129.2**	**938**	**92.7**	**1,633**	**167.0**
	Cancer	450	22.6	250	24.7	200	20.4
	Injuries of Undetermined Intent	371	18.6	108	10.7	263	26.9
	Heart Disease	317	15.9	99	9.8	218	22.3
	Unintentional Injuries	286	14.4	69	6.8	217	22.2
45 – 64 years	**TOTAL**	**8,004**	**563.8**	**3,225**	**438.7**	**4,779**	**698.1**
	Cancer	3,113	219.3	1,508	205.1	1,605	234.5
	Heart Disease	1,658	116.8	475	64.6	1,183	172.8
	Chronic Lower Respiratory Disease[3]	268	18.9	148	20.1	120	17.5
	Chronic Liver Disease	250	17.6	69	9.4	181	26.4
65 + years[4]	**TOTAL**	**45,134**	**5,247.2**	**26,246**	**5,060.7**	**18,888**	**5,530.3**
	Heart Disease	13,134	1,526.9	7,577	1,461.0	5,557	1,627.0
	Cancer	10,127	1,177.3	5,184	999.6	4,943	1,447.3
	Stroke	3,243	377.0	2,069	398.9	1,174	343.7
	Chronic Lower Respiratory Disease[3]	2,506	291.3	1,447	279.0	1,059	310.1

1. Cause of Death classified using ICD-10. See Appendix for 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 3b for leading causes of death for detailed age groups for persons ages 65+ years. 5. Calculations based on fewer than 5 events are excluded.

Table 6b. Leading Causes of Death, Numbers and Age-Specific Rates by Gender, Massachusetts: 2001

		Total		Female		Male	
Age	**Cause of death[1]**	**Number**	**Rate[2]**	**Number**	**Rate[2]**	**Number**	**Rate[2]**
65-74 years	**TOTAL**	**9,323**	**2,179.1**	**4,151**	**1,747.6**	**5,172**	**2,717.8**
	Cancer	3,399	794.5	1,569	660.5	1,830	961.6
	Heart Disease	2,276	532.0	853	359.1	1,423	747.8
	Chronic Lower Respiratory Disease[3]	602	140.7	330	138.9	272	142.9
	Stroke	441	103.1	195	82.1	246	129.3
75-84 years	**TOTAL**	**17,416**	**5,517.7**	**9,072**	**4,644.0**	**8,344**	**6,936.4**
	Heart Disease	4,789	1,517.2	2,375	1,215.8	2,414	2,006.8
	Cancer	4,426	1,402.2	2,240	1,146.7	2,186	1,817.2
	Stroke	1,200	380.2	686	351.2	514	427.3
	Chronic Lower Respiratory Disease[3]	1,082	342.8	575	294.3	507	421.5
85+ years	**TOTAL**	**18,395**	**15,763.7**	**13,023**	**15,188.2**	**5,372**	**17,358.1**
	Heart Disease	6,069	5,200.9	4,349	5,072.1	1,720	5,557.7
	Cancer	2,302	1,972.7	1,375	1,603.6	927	2,995.3
	Stroke	1,602	1,372.8	1,188	1,385.5	414	1,337.7
	Influenza and Pneumonia	954	817.5	646	753.4	308	995.2

1. Cause of Death classified according to ICD-10. See Appendix for 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).

Table 7. Leading Causes of Death[1] and Age-Adjusted Death Rates by Race and Hispanic Ethnicity, Massachusetts: 2001

White, non-Hispanic[2]

Cause[3]	#	Rate[4]
Total	**52,792**	**813.5**
Heart disease	14,355	216.4
Cancer	12,910	204.9
Stroke	3,324	49.2
Chronic Lower Resp. Disease[5]	2,702	41.2
Influenza and Pneumonia	1,696	24.9
Alzheimer's Disease	1,475	21.2
Unintentional injuries[6]	1,327	12.1
Diabetes	1,260	19.5
Nephritis	1,101	16.5
Septicemia	865	13.3

Black, non-Hispanic[2]

Cause	#	Rate
Total	**2,226**	**1,049.6**
Cancer	493	233.0
Heart Disease	493	251.6
Stroke	125	65.4
Diabetes	96	48.7
HIV/AIDS	73	23.4
Unintentional injuries[6]	73	28.2
Nephritis	72	37.7
Homicide	57	15.3
Chronic Lower Resp. Disease[5]	54	27.9
Perinatal Conditions	49	12.8

Asian, non-Hispanic[2]

Cause	#	Rate
Total	**510**	**452.4**
Cancer	145	116.4
Heart Disease	94	97.3
Stroke	36	36.6
Unintentional injuries[6]	25	14.4
Diabetes	24	25.1
Influenza and Pneumonia	15	18.9
Septicemia	13	11.7
Chronic Lower Resp. Disease[5]	11	14.1
Nephritis	11	12.6
Homicide	10	3.6

Hispanic

Cause	#	Rate
Total	**1,059**	**616.2**
Cancer	187	128.5
Heart Disease	175	141.2
Unintentional injuries[6]	64	20.2
Injuries of Undetermined Intent	52	13.2
HIV/AIDS	51	14.7
Stroke	48	37.3
Diabetes	41	28.4
Perinatal Conditions	39	6.0
Chronic Lower Resp. Disease[5]	38	33.3
Homicide	34	6.5

Total

Cause	#	Rate
Total	**56,733**	**818.2**
Heart disease	15,136	215.2
Cancer	13,745	202.8
Stroke	3,534	49.7
Chronic Lower Respiratory Disease[5]	2,806	40.3
Influenza and Pneumonia	1,769	24.6
Alzheimer's Disease	1,532	21.1
Unintentional injuries[6]	1,496	22.3
Diabetes	1,422	20.6
Nephritis	1,206	17.2
Septicemia	954	13.8

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 refer to the Technical Notes in the Appendix for a more detailed explanation. 3. Underlying Cause of Death based on ICD-10 (Please refer to Appendix for 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.

Table 8. Leading Causes of Death[1] for Cape Verdean, non-Hispanics*, Massachusetts: 2001

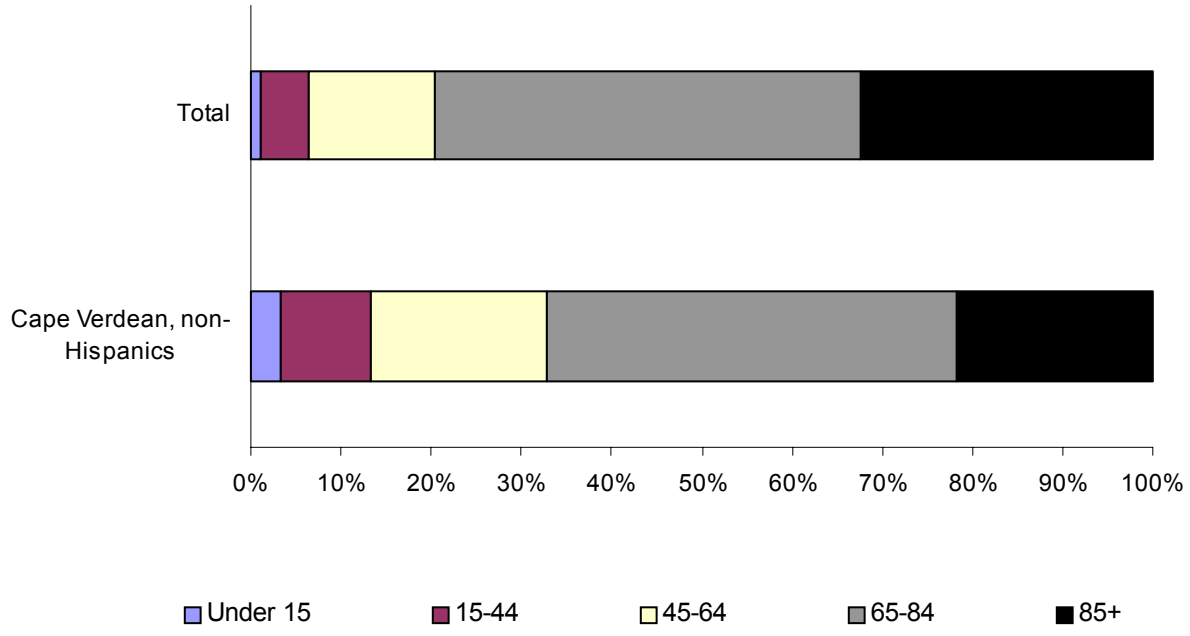
	Number	Percent
Heart Disease	47	26.1
Cancer	33	18.3
Stroke	11	6.1
Chronic Lower Respiratory Disease[2]	10	5.6
Unintentional Injuries	10	5.6
HIV/AIDS	8	4.4
Diabetes	8	4.4
Septicemia	5	2.8
Alzheimer's Disease	5	2.8
Nephritis	5	2.8
Other	85	4.7
All Deaths	**180**	**100%**

1. Deaths are coded according to ICD-10. Please see Appendix for a list of ICD-10 codes used in this table. 2. The title of this cause of death has changed between ICD-10 and ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title).

* Historically, we have followed federal definitions of race and ethnicity and have 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, non-Hispanic; black, non-Hispanic; Asian, non-Hispanic; and Hispanic. Here, we separate Cape Verdeans from the Black, non-Hispanic group.

Figure 10

Age Distribution of Deaths for Cape Verdean, non-Hispanics and State Total, Massachusetts: 2001



* Historically, we have followed federal definitions of race and ethnicity and have 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 non-Hispanic; black non-Hispanic; Asian non-Hispanic; and Hispanic. Here, we separate Cape Verdeans from the Black, non-Hispanic group.

Table 9a. Number and Age-Specific Rates for Selected Causes of Death by Race and Hispanic Ethnicity, Massachusetts: 2001

	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	**169**	**14.3**	**108**	**11.7**	**19**	**23.1**	**8**	**16.6**	**29**	**23.0**
Unintentional Injuries[4]	41	3.5	26	2.8	3	--[5]	3	--[5]	8	6.4
Cancer	28	2.4	23	2.5	3	--[5]	0	0.0	2	--[5]
Congenital malformations	9	0.8	6	0.7	1	--[5]	0	0.0	1	--[5]
Signs and symptoms	8	0.7	4	--[5]	1	--[5]	1	--[5]	0	0.0
Age: 15-24, TOTAL	**444**	**54.1**	**316**	**49.8**	**42**	**77.0**	**18**	**39.2**	**58**	**69.5**
Unintentional Injuries[4]	164	20.0	128	20.2	8	14.7	8	17.4	17	20.4
Injuries of Undetermined Intent[6]	57	7.0	53	8.4	0	0.0	1	--[5]	3	--[5]
Homicide	53	6.5	12	1.9	20	36.6	3	--[5]	18	21.6
Suicide	52	6.3	43	6.8	2	--[5]	1	--[5]	5	6.0
Age: 25-44, TOTAL	**2,571**	**129.2**	**1,971**	**120.4**	**293**	**264.8**	**51**	**53.5**	**208**	**145.3**
Cancer	450	22.6	379	23.2	32	28.9	16	16.8	22	15.4
Injuries of Undetermined Intent[6]	371	18.6	304	18.6	25	22.6	3	--[5]	39	27.2
Heart Disease	317	15.9	252	15.4	44	39.8	4	--[5]	15	10.5
Unintentional Injuries[4]	286	14.4	237	14.5	22	19.9	5	5.2	21	14.7
Age: 45-64, TOTAL	**8,004**	**563.8**	**7,004**	**554.1**	**549**	**911.4**	**120**	**303.1**	**284**	**530.7**
Cancer	3,113	219.3	2,801	221.6	180	298.8	59	149.0	69	128.9
Heart Disease	1,658	116.8	1,484	117.4	112	185.9	16	40.4	42	78.5
Chronic Lower Respiratory Disease[7]	268	18.9	252	19.9	9	14.9	0	0.0	7	13.1
Chronic Liver Disease	250	17.6	219	17.3	12	19.9	4	--[5]	12	22.4
Age: 65+, TOTAL[8]	**45,134**	**5,247.2**	**43,146**	**5,333.3**	**1,245**	**5,320.5**	**298**	**2,274.5**	**410**	**2,970.4**
Heart Disease	13,134	1,526.9	12,599	1,557.4	334	1,427.4	73	557.2	115	833.2
Cancer	10,127	1,177.3	9,685	1,197.2	276	1,179.5	70	534.3	91	659.3
Stroke	3,243	377.0	3,102	383.4	88	376.1	26	198.4	26	188.4
Chronic Lower Respiratory Disease[7]	2,506	291.3	2,427	300.0	40	170.9	11	84.0	27	195.6

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 refer to 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 fewer than five events are excluded. 6. Injuries of undetermined intent include deaths from falls, fires, drownings, and drug overdoses, where the investigation has not determined whether the injuries were accidental or purposely inflicted. 7. 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). 8. Please see Table 9b for causes of death for detailed age groups for persons ages 65+ years.

Table 9b. Number and Age-Specific Rates for Selected Causes of Death, Persons age 65+ by Race and Hispanic Ethnicity, Massachusetts: 2001

	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	**9,323**	**2,179.1**	**8,636**	**2,178.3**	**402**	**2,943.8**	**95**	**1,129.7**	**175**	**1,985.3**
Cancer	3,399	794.5	3,200	807.1	124	908.0	32	380.5	40	453.8
Heart Disease	2,276	532.0	2,099	529.4	100	732.3	24	285.4	49	555.9
Chronic Lower Respiratory Disease[4]	602	140.7	574	144.8	16	117.2	3	35.7	8	90.8
Stroke	441	103.1	403	101.7	23	168.4	7	83.2	7	79.4
Age: 75-84, TOTAL	**17,416**	**5,517.7**	**16,683**	**5,552.8**	**467**	**6,294.6**	**115**	**3,110.6**	**140**	**3,687.1**
Heart Disease	4,789	1,517.2	4,585	1,526.1	136	1,833.1	25	676.2	37	974.5
Cancer	4,426	1,402.2	4,266	1,419.9	97	1,307.5	24	649.2	38	1,000.8
Stroke	1,200	380.2	1,142	380.1	37	498.7	12	324.6	9	237.0
Chronic Lower Respiratory Disease[4]	1,082	342.8	1,056	351.5	11	148.3	2	54.1	13	342.4
Age: 85+, TOTAL	**18,395**	**15,763.7**	**17,827**	**15,903.2**	**376**	**16,172.0**	**88**	**8,835.3**	**95**	**7,976.5**
Heart Disease	6,069	5,200.9	5,915	5,276.7	98	4,215.1	24	2,409.6	29	2,434.9
Cancer	2,302	1,972.7	2,219	1,979.5	55	2,365.6	14	1,405.6	13	1,091.5
Stroke	1,602	1,372.8	1,557	1,389.0	28	1,204.3	7	702.8	10	839.6
Influenza and Pneumonia	954	817.5	928	827.9	16	688.2	7	702.8	2	167.9

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 refer to 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 fewer than five events are excluded.

Table 9c. Number of Deaths for Leading Causes of Death[1] by Hispanic Ethnicity, Massachusetts: 2001

Ethnicity	Cancer	Heart Disease	HIV /AIDS	Diabetes	Stroke	Unintentional Injuries	Chronic Lower Respiratory Disease[2]	Perinatal Conditions	Injuries of Undetermined Intent	Homicide	ALL DEATHS
Puerto Rican	119	118	45	30	27	35	30	28	37	28	725
Dominican	26	20	1	6	7	8	1	5	6	3	116
Central American	11	9	2	1	4	14	1	5	0	3	69
Cuban	11	14	1	2	6	2	0	0	1	0	52
South American	13	9	0	0	3	4	4	1	2	0	58
Mexican	5	1	2	2	1	0	0	0	1	0	19
Other/Unknown	2	4	0	0	0	1	2	0	5	0	20
All Hispanics	**187**	**175**	**51**	**41**	**48**	**64**	**38**	**39**	**52**	**34**	**1,059**

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

HEART DISEASE AND CANCER

Heart Disease and Cancer

Heart disease and cancer continued to be the first and second leading causes of death among Massachusetts residents in 2001: 15,136 heart disease deaths and 13,745 cancer deaths, yielding age-adjusted rates of 215.2 and 202.8 deaths per 100,000 persons respectively (Table 2). Heart disease and cancer accounted for 51% of all deaths in Massachusetts in 2001. Cancer was the leading cause of death for persons ages 25-74 years, while heart disease was the leading cause of death for Massachusetts residents ages 75 years and older (Table 5).

The introduction of a new revision of the ICD can create major discontinuities in trend data. The extent of this discontinuity is measured using a "comparability ratio", which measures the level of agreement between both classification systems. The National Center for Health Statistics (NCHS) has calculated preliminary comparability ratios using a large sample of national mortality data. When comparing data after 1999 to previous years, the comparability modified data should be used.

Age Patterns

Heart disease deaths occur predominantly among the older population, and this held true in 2001 with 87% of all heart disease deaths among people 65 years and older (Figure 11). This varied by race-ethnicity: 88% of heart disease deaths occurred in this age group among white non-Hispanics, 68% of heart disease deaths among black non-Hispanics, 77% of heart disease deaths among Asian non-Hispanics and 66% of deaths among Hispanics (data not shown).

Cancer is also largely a disease of older adults. In 2001, approximately 3 out of 4 cancer deaths in Massachusetts occurred in persons 65 years and older (Figure 12). This age group, accounted for 75% of all cancer deaths among white non-Hispanics, 56% of cancer deaths among black non-Hispanics, 48% of cancer deaths among Asian non-Hispanics, and 49% of cancer deaths among Hispanics (data not shown).

The fewest number of cancer deaths was seen among persons under the age of 25 (505 deaths, Table 12). Brain cancer was the leading cause of cancer death for all persons under the age of 15. Leukemia was the leading cause of cancer death for persons between the ages of 15-24. Lung and colorectal cancer accounted for 38% of all cancer deaths among persons ages 65 and older. Lung cancer was the leading cause of cancer death for all persons ages 25 and older, while breast cancer was the leading cause of cancer death (80 deaths) followed by lung cancer (73 deaths) among persons ages 45-64 years.

Race/Ethnicity and Gender Patterns

While more women, in terms of absolute numbers die from heart disease each year, men have a higher risk of dying from heart disease than women, as measured by the rate of heart disease. In 2001, the age-adjusted heart disease death rate for male was 271.7 deaths per 100,000 compared to 174.6 deaths per 100,000 for females. One reason that the number of heart disease deaths was higher for women is that there are 3 times as many women as men in the older age group (Figure 11). A similar pattern was seen among cancer deaths (Figure 12).

In Massachusetts, the age-adjusted comparability modified death rates for heart disease have declined since 1995 for both white non-Hispanics, and black non-Hispanics (16%, Table 10). Black non-Hispanic females experienced an overall decline in age-adjusted rates

of 18% between 1995 and 2001, but these rates have fluctuated during this period. After experiencing increases in heart disease death rates between 1995 and 1998 and decreases between 1998 and 2000, the heart disease death rate among black non-Hispanic males in 2001 increased again by 31% from 2000. Age-adjusted comparability modified heart disease death rates have fluctuated for Asian non-Hispanics and Hispanics for both genders. In 2001, white non-Hispanics were the only group to experience an overall decrease in heart disease death rates (2%), while black non-Hispanics, Asian non-Hispanics, and Hispanics experienced increases of 7%, 9% and 20%, respectively from 2000.

In 2001, there were 13,745 cancer deaths – 6,778 men and 6,967 women (Table 11). The overall leading cause of cancer death was lung cancer (27%), followed by colorectal cancer (11%). For women, lung cancer (25%), breast cancer (15%), and colon cancer (11%) were the most common causes of death from cancer –accounting for 51% of all cancer deaths. For men, lung cancer (28%), prostate cancer (11%), and colon cancer (10%) accounted for 50% of all cancer deaths. Among women, the lung cancer mortality rate was 69% higher than the breast cancer mortality rate. The overall cancer death rate was 1.4 times higher for men when compared to women. Men also had higher death rates than women for site-specific cancers of the bladder (10.2 vs. 2.8), esophagus (9.2 vs. 1.8), lung (69.8 vs. 45.5), stomach (7.2 vs. 3.6), colorectal (26.3 vs. 17.6) and leukemia (9.8 vs. 5.6) among others.

Lung cancer and colorectal cancer were the leading causes of cancer death for all race and ethnicity groups (Table 13). However, the other leading causes of cancer death varied by race and ethnicity. Female breast cancer was the third leading cause of cancer deaths for white non-Hispanics, black non-Hispanics and Hispanics; and the fifth leading cause of cancer death for Asian non-Hispanics. For Asian non-Hispanics and Hispanics, there were less than 20 deaths for any other specific cancer cause.

Age-adjusted comparability modified cancer death rates have decreased for white non-Hispanic males since 1995, with a decline of 12% in 2001. After undergoing declines each year since 1995 with the exception of 2000, white non-Hispanic females experienced a decrease in cancer rates in the last two years (2%). Black non-Hispanic males experienced a decrease of 21% while black non-Hispanic females experienced an increase of 9% between 2000 and 2001. In 2001, black non-Hispanics continued to have higher cancer death rates than white non-Hispanics of both genders. In 2001 there were 292 cancer deaths per 100,000 black non-Hispanic males compared to 254 per 100,000 white non-Hispanic males. Black non-Hispanic females also had a higher cancer death rate than white non-Hispanic females (194 vs. 176 deaths per 100,000) (Table 10).

Asian non-Hispanic males and females had decreases in age-adjusted comparability modified cancer death rates from 1995 to 2001. Age-adjusted comparability modified cancer death rates have fluctuated for Hispanics for both genders.

In 2001, 56% of all cancer-related deaths in Massachusetts were associated with five sites: lung, colorectal, female breast, pancreas and prostate. Cancer-related deaths do not affect racial/ethnic groups similarly. Data for 2001 indicated that death rates for many cancer types were higher for black non-Hispanics than for other races and Hispanic ethnicity in the state. The age-adjusted prostate cancer death rate for black non-Hispanics was 1.8 times the rate for white non-Hispanics (Table 13). Since 1994, rates have not decreased equally for all populations and have increased in certain instances. For instance, lung cancer death rates decreased steadily between 1994-1999, increased between 1999 and 2000 and decreased again between 2000 and 2001 for white non-Hispanics. Rates for black non-Hispanics and

Hispanics have fluctuated for the major cancer types (data not shown). In 2001, Hispanics had a rate of 27 lung cancer deaths per 100,000 compared to 8 deaths per 100,000 in 1994.

Trends in cancer death rates might reflect changes in cancer risk behaviors, new screening modalities, and the development and use of new and more effective treatments. Continuing research and prevention efforts are needed to reach high-risk and underserved populations and to understand the reasons for differences in mortality among racial and ethnic groups in Massachusetts.

Figure 11

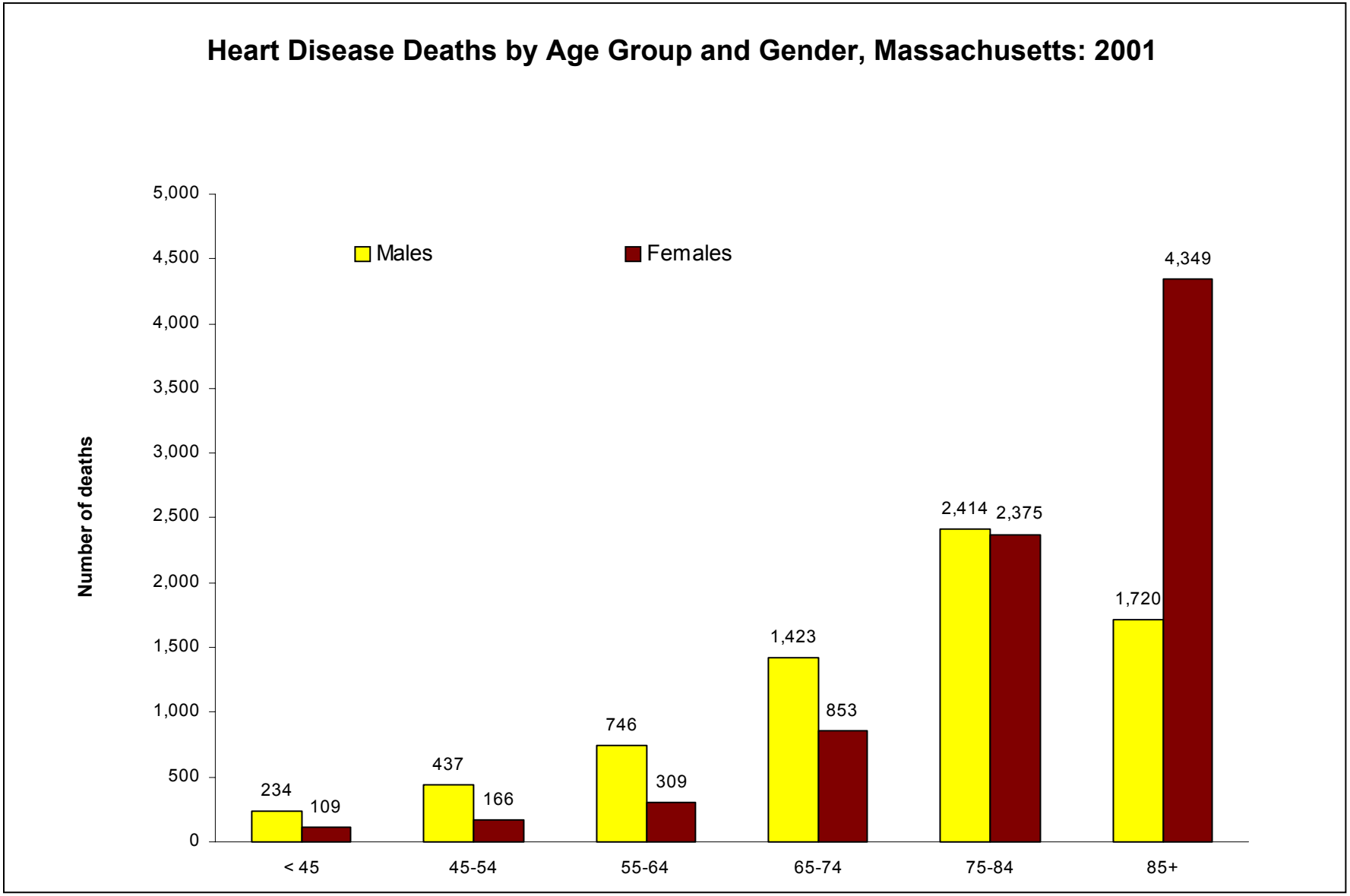

Heart Disease Deaths by Age Group and Gender, Massachusetts: 2001
Males
Females
Number of deaths
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
234
109
437
166
746
309
1,423
853
2,414
2,375
1,720
4,349
< 45
45-54
55-64
65-74
75-84
85+
Age group (years)

Figure 12

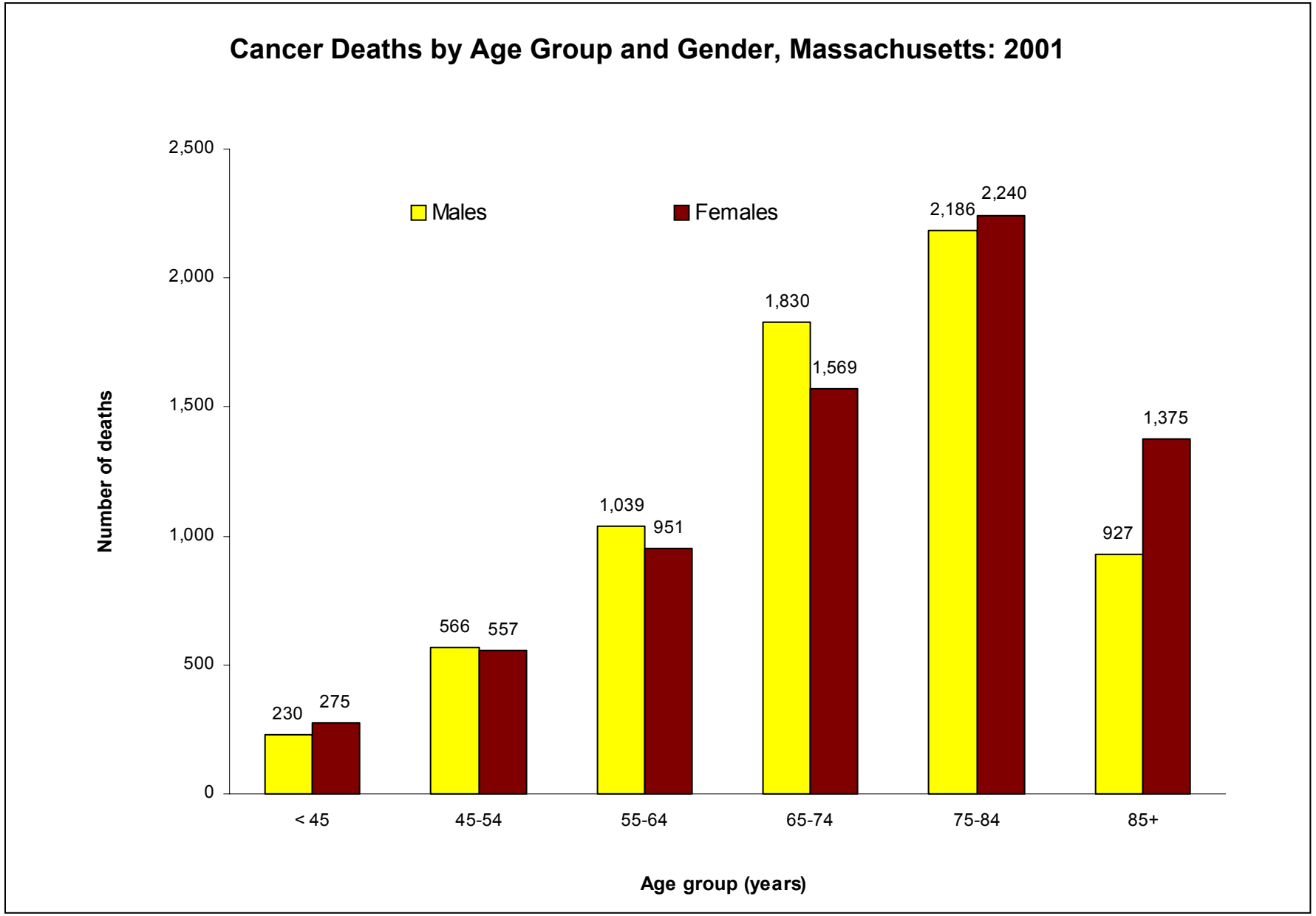

Cancer Deaths by Age Group and Gender, Massachusetts: 2001
Males
Females
Number of deaths
2,500
2,000
1,500
1,000
500
0
230
275
566
557
1,039
951
1,830
1,569
2,186
2,240
927
1,375
< 45
45-54
55-64
65-74
75-84
85+
Age group (years)

Table 10. Heart Disease and Cancer Deaths by Race and Gender, Comparability Unmodified and Comparability Modified Age-Adjusted Rates,[1] Massachusetts: 1995-2001

Heart Disease

White, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified[3]	Comparability Modified[4]	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1995	338.0	333.2	208.9	205.9	262.6	258.9
1996	337.0	332.2	207.0	204.1	260.5	256.8
1997	323.5	318.9	202.3	199.4	252.1	248.5
1998	300.0	295.7	186.6	184.0	233.2	229.9
1999[6]	289.8[7]		178.4[7]		224.3[7]	
2000[6]	284.1[7]		174.8[7]		220.0[7]	
2001[6]	273.7[7]		175.3[7]		216.4[7]	

Black, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1995	333.4	328.7	246.1	242.6	282.5	278.5
1996	340.0	335.2	234.4	231.1	281.2	277.2
1997	356.3	351.2	238.5	235.1	291.3	287.2
1998	357.2	352.1	242.8	239.4	286.9	282.8
1999[6]	296.5[7]		211.5[7]		248.0[7]	
2000[6]	249.8[7]		215.6[7]		235.4[7]	
2001[6]	326.8[7]		198.9[7]		251.6[7]	

Asian, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified[3]	Comparability Modified[4]	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1995	120.8	119.1	97.9	96.5	105.8	104.3
1996	153.9	151.7	86.9	85.7	115.2	113.6
1997	150.4	148.3	67.7	66.7	105.1	103.6
1998	150.6	148.5	98.5	97.1	121.0	119.3
1999[6]	119.6[7]		73.7[7]		94.7[7]	
2000[6]	116.6[7]		68.0[7]		89.1[7]	
2001[6]	133.1[7]		70.3[7]		97.3[7]	

Hispanic

Year	Male		Female		Total	
	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1995	130.9	129.0	79.5	78.4	101.8	100.4
1996	135.9	134.0	78.9	77.8	102.6	101.1
1997	132.7	130.8	78.7	77.6	101.0	99.6
1998	114.0	112.4	71.3	70.3	91.3	90.0
1999[6]	143.4[7]		83.5[7]		108.2[7]	
2000[6]	124.4[7,8]		108.4[7,8]		117.8[7,8]	
2001[6]	164.4[7]		123.0[7]		141.2[7]	

1. Rates are per 100,000 age-adjusted to the 2000 US standard population. 2. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see 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 refer to the Technical Notes in the Appendix for a more detailed explanation. 3. Comparability unmodified rate: this rate has not been modified. 4. Comparability modified rate: this rate has been adjusted using the preliminary comparability ratio (CR) provided by the NCHS (February 2001). Please refer to the Appendix for a more detailed explanation. 5. NA: comparability ratio is not applicable for years prior to 1994. 6. 1999 and 2000 are coded according to ICD-10. 7. When comparing data over time between 1994 through 2000, please use the comparability modified rate for years 1994-1998. 8. The Census 2000 count for Hispanics 65+ years is lower than the number previously estimated. Thus, the death rate (the number of deaths divided by the population) is increased relative to past calculations.

Table 10 (continued). Heart Disease and Cancer Deaths by Race and Gender, Comparability Unmodified and Comparability Modified Age-Adjusted Rates,[1] Massachusetts: 1995-2001

Cancer

White, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified[3]	Comparability Modified[4]	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1995	286.1	288.0	191.3	192.6	226.5	228.0
1996	283.8	285.7	187.0	188.3	222.5	224.0
1997	269.5	271.3	186.6	187.9	216.9	218.4
1998	264.1	265.9	177.8	179.0	210.0	211.4
1999[6]	263.4[7]		174.3[7]		207.7[7]	
2000[6]	259.5[7]		178.9[7]		209.1[7]	
2001[6]	254.0[7]		176.2[7]		204.9[7]	

Black, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1995	394.0	396.7	245.0	246.7	303.8	305.9
1996	361.6	364.1	243.1	244.8	291.9	293.9
1997	396.2	398.9	235.5	237.1	297.1	299.1
1998	380.2	382.8	218.1	219.6	280.1	282.0
1999[6]	337.2[7]		195.7[7]		251.5[7]	
2000[6]	369.4[7]		177.7[7]		252.3[7]	
2001[6]	292.0[7]		193.5[7]		233.0[7]	

Asian, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified[3]	Comparability Modified[4]	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1995	198.6	200.0	161.6	162.7	179.2	180.4
1996	192.7	194.0	156.6	157.7	172.6	173.8
1997	185.1	186.4	133.0	133.9	156.7	157.8
1998	143.5	144.5	103.7	104.4	120.2	121.0
1999[6]	162.8[7]		116.9[7]		136.7[7]	
2000[6]	109.5[7]		95.7[7]		103.2[7]	
2001[6]	112.5[7]		118.4[7]		116.4[7]	

Hispanic

Year	Male		Female		Total	
	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1995	121.5	122.3	84.1	84.7	99.4	100.1
1996	136.5	137.4	54.6	55.0	90.0	90.6
1997	107.7	108.4	54.1	54.5	75.8	76.3
1998	160.2	161.3	89.5	90.1	117.2	118.0
1999[6]	141.8[7]		92.5[7]		113.8[7]	
2000[6]	155.0[7,8]		106.2[7,8]		126.0[7,8]	
2001[6]	157.8[7]		107.6[7]		128.5[7]	

1. Rates are per 100,000 age-adjusted to the 2000 US standard population. 2. Race and ethnicity data in this table are presented as mutually exclusive categories. Persons of Hispanic ethnicity are not included in a race category. Please see 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 refer to the Technical Notes in the Appendix for a more detailed explanation. 3. Comparability unmodified rate: this rate has not been modified. 4. Comparability modified rate: this rate has been adjusted using the preliminary comparability ratio (CR) provided by the NCHS (February 2001). Please refer to the Appendix for a more detailed explanation. 5. NA: comparability ratio is not applicable for years prior to 1994. 6. 1999 and 2000 are coded according to ICD-10. 7. When comparing data over time between 1994 through 2000, please use the comparability modified rate for years 1994-1998. The Census 2000 count for Hispanics 65+ years is lower than the number previously estimated. Thus, the death rate (the number of deaths divided by the population) is increased relative to past calculations.

Table 11. Number and Age-Adjusted Rates of Cancer Deaths by Selected Causes and Gender, Massachusetts: 2001

Cause of Death[1]	ICD-10 Code	Total		Female		Male	
		#	Rate[2,3]	#	Rate	#	Rate
Total Cancer Deaths	**C00-C97**	**13,745**	**202.8**	**6,967**	**174.0**	**6,778**	**251.4**
Bladder	C67	384	5.6	122	2.8	262	10.2
Brain and nervous system	C70-C72	267	4.0	114	3.0	153	5.3
Cervix	C53	61	1.6	61	1.6	0	0.0
Colorectal	C18-C21	1,451	21.1	747	17.6	704	26.3
Esophagus	C15	326	4.9	71	1.8	255	9.2
Female breast	C50[5]	1,047	26.9	1,047	26.9	0	0.0
Hodgkin's disease	C81	41	0.6	21	0.6	20	0.7
Kidney and other urinary organs	C64, C65	276	4.1	111	2.8	165	6.0
Leukemia	C91-C95	491	7.2	230	5.6	261	9.8
Lung	C33, C34	3,692	55.0	1,771	45.5	1,921	69.8
Melanoma of the skin	C43	196	2.9	75	1.9	121	4.4
Multiple myeloma	C88, C90	271	4.0	136	3.3	135	5.1
Non-Hodgkin's lymphoma	C82-C85	564	8.3	298	7.1	266	9.7
Ovary	C56	348	9.2	348	9.2	0	0.0
Pancreas	C25	761	11.2	419	10.2	342	12.4
Prostate	C61	753	30.5	0	0.0	753	30.5
Stomach	C16	343	5.0	150	3.6	193	7.2
Uterus	C54, C55	169	4.2	169	4.2	0	0.0
All other cancers	Residual	2,304	34.0	1,077	26.3	1,227	44.9

1. Common terms are used to describe the causes of cancer deaths. For detailed terminology of cancer sites, please refer to 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 C50, C53-C56, which are based on the total female population, and ICD-10 C61, which is based on the total male population. 4. Calculations based on fewer than five events are excluded. 5. Includes only female breast cancer.

Table 12. Selected Causes of Cancer Deaths by Age, Massachusetts: 2001

Age	Cause of death[1]	ICD-10 Code	Number	Age-specific rate[2]
1 – 14 years	**TOTAL**		**28**	**2.4**
	Brain and nervous system	C70-C72	7	0.6
	Leukemia	C91-C95	6	0.5
	Kidney and other urinary organs	C64, C65	1	--[3]
15 - 24 years	**TOTAL**		**26**	**3.2**
	Leukemia	C91-C95	7	**0.9**
	Hodgkin's disease	C81	3	--[3]
	Non-Hodgkin's lymphoma	C82-C85	3	--[3]
	Brain and nervous system	C70-C72	2	--[3]
25 – 44 years	**TOTAL**		**450**	**22.6**
	Female breast[4]	C50	80	7.9
	Lung	C33, C34	73	3.7
	Colorectal	C18-C21	35	1.8
	Non-Hodgkin's lymphoma	C82-C85	28	1.4
45 – 64 years	**TOTAL**		**3,113**	**219.3**
	Lung	C33, C34	884	62.3
	Female breast[4]	C50	309	42.0
	Colorectal	C18-C21	274	19.3
	Pancreas	C25	168	11.8
65 + years	**TOTAL**		**10,127**	**1,177.3**
	Lung	C33, C34	2,735	318.0
	Colorectal	C18-C21	1,141	132.6
	Prostate[5]	C61	700	205.0
	Female breast[4]	C50	658	126.9
65-74 years	**TOTAL**		**3,399**	**794.5**
	Lung	C33, C34	1,154	269.7
	Colorectal	C18-C21	302	70.6
	Female Breast[4]	C50	211	88.8
	Pancreas	C25	195	45.6
75-84 years	**TOTAL**		**4,426**	**1,402.2**
	Lung	C33, C34	1,209	383.0
	Colorectal	C18-C21	493	156.2
	Prostate[5]	C61	291	241.9
	Pancreas	C25	263	83.3
85+ years	**TOTAL**		**2,302**	**1,972.7**
	Lung	C33, C34	372	318.8
	Colorectal	C18-C21	346	296.5
	Prostate[5]	C61	239	772.3
	Female Breast[4]	C50	195	227.4

1. Common terms are used to describe causes of cancer death. For detailed terminology, please refer to 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 & Hispanic Ethnicity, Massachusetts: 2001

White, non-Hispanic[1]			Black, non-Hispanic[1]			Asian, non-Hispanic[1]			Hispanic		
Cause[2]	**#**	**Rate[3]**	**Cause**	**#**	**Rate**	**Cause**	**#**	**Rate**	**Cause**	**#**	**Rate**
Lung	3,499	56.1	Lung	116	54.2	Lung	42	35.0	Lung	35	26.8
Colorectal	1,365	21.3	Colorectal	48	23.7	Colorectal	19	16.8	Colorectal	18	11.5
Female Breast	983	27.4	Female Breast	43	33.1	Pancreas	12	10.3	Female Breast	13	10.9
Pancreas	703	11.1	Prostate	39	55.3	Stomach	9	7.9	Pancreas	12	8.8
Prostate	701	30.2	Pancreas	33	16.7	Female Breast	7	8.6	Prostate	10	22.4
Total Cancer	**12,910**	**204.9**	**Total Cancer**	**493**	**233.0**	**Total Cancer**	**145**	**116.4**	**Total Cancer**	**187**	**128.5**

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 refer to the Technical Notes in the Appendix for a more detailed explanation. 2. ICD-10 codes used. Please refer to 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.

INJURIES

Injuries

In 2001, 2,722 deaths were the result of injuries among Massachusetts residents. As seen on Table 14a, poisonings, which include drug overdoses, were the leading cause of injury death. Poisoning deaths continued to surpass motor vehicle-related deaths in the state, by 26% in 2001. The death rate for poisonings (which include drug overdoses) increased by 22% between 2000 and 2001, this was statistically significant. This increase can be explained in part by an increase of deaths among persons ages 25-44 who accounted for 61% of all poisonings in 2001. Seventy-four percent of poisoning deaths were due to narcotics and other hallucinogens.

The leading causes of injury deaths included poisonings (26%), motor vehicle-related deaths (21%), hanging, strangulation or suffocation (11%), falls (10%) and firearm-related deaths (7%) (Table 14a). Poisoning deaths were in fact the leading cause of death for persons ages 15-44 (500 deaths). About 55% of all injury-related deaths were due to unintentional injuries, 22% were injuries of undetermined intent, and 21% were intentional injuries (suicide and homicide) (Table 14c).

For all types of injuries, age-adjusted death rates for males were higher than for females irrespective of race and ethnicity. Males were almost 2.5 times more likely to die from an injury than females in Massachusetts (Table 14a and Table 14b). Injuries were also largely a disease of younger adults, they were the leading cause of death for persons ages 1- 44 years, accounting for 40% of all deaths among Massachusetts residents ages 1-44 years. Injuries in this age group accounted for 41% of all deaths among white non-Hispanics, 34% of deaths among black non-Hispanics, and 45% of deaths among Hispanics (data not shown).

Intentional injuries

In 2001, almost 3 out of 4 intentional injury deaths were suicides (73%) (Table 14b). There were 420 suicides in 2001, an increase of 5% from the previous year (not statistically significant). The increase was mostly observed among white non-Hispanics (357 deaths in 2000 compared to 382 in 2001). There were marked racial and ethnic variations: suicide accounted for 20% of the black non-Hispanic, 32% of the Hispanic, and 88% of the white non-Hispanic intentional injury deaths.

The suicide rate for males was more than four times the suicide rate for females: 10.9 deaths per 100,000 males compared with 2.5 for females. White non-Hispanic and black non-Hispanic males had the highest suicide rates among race-gender groups (11.6 and 8.8 deaths/100,000, respectively). Persons ages 45-64 years had the highest suicide death rate among age groups (9.4 deaths/100,000) (Table 14b).

Among suicide deaths, the leading causes of death were hanging, strangulation, or suffocation (35%), followed by firearm (26%), and poisoning (22%). In 2001, males were almost five times as likely to die from self-inflicted firearm wounds than females (Table 14c).

The total number of homicides also increased between 2000 and 2001 (125 compared to 153). This increase was due in part to an increase among black non-Hispanic and Hispanic males who accounted for 37% and 22%, respectively of all homicides in 2001. The homicide death rate also increased 20% between 2000 and 2001 (not statistically significant). Out of the 153 homicides, over half were a result of firearms (52%) while over a quarter of homicides were the result of stabbings (27%) (Table 14c).

The homicide rate for males was more than four times the homicide rate for females, 4.0 per 100,000 males vs. 0.9 per 100,000 females (Table 14b). In addition, there were large differences in homicide rates by race and ethnicity: the rates for black non-Hispanics (15.3 per 100,000) and Hispanics (6.5 per 100,000) were substantially higher than for white non-Hispanics (1.0 per 100,000). The homicide rate among black non-Hispanic males (28.5 per 100,000) was over 7 times higher than the overall male homicide rate (Table 14b).

In 2001, a total of 193 persons died from firearm injuries in Massachusetts. This number was 10% higher than the 175 deaths in 2000. Firearm suicide and homicide accounted for 55% and 41%, respectively, of all firearm deaths in 2001 (Table 14c). Firearm accidents and firearm deaths of undetermined intent accounted for 2.1% (4 deaths) and 1.6% (3 deaths), respectively. Of the firearm injury deaths in 2001, 60% were among white non-Hispanics, 23% were black non-Hispanics and 14% were Hispanics. The rate of all firearm-related deaths in Massachusetts was about one quarter the rate of firearm injury deaths in the United States (3.0 deaths per 100,000 compared to 10.1).

Unintentional injuries

In 2001, there were 1,496 unintentional injury deaths among Massachusetts residents. The death rate for these injuries increased 10% between 2000 and 2001 (not statistically significant). The leading causes of unintentional injury deaths were motor vehicle-related deaths (38%), falls (16%), and hanging, strangulation, or suffocation (9%) (Table 14c). In 2001, there were 568 motor vehicle-related deaths, an increase of 16% from 2000. The motor vehicle-related death rate also increased 16% between 2000 and 2001, yet this was not statistically significant. The motor vehicle-related death rate varied by gender, with the male rate almost three times the female rate (13.3 vs. 4.9 deaths/100,000). Although the greatest number of motor vehicle-related deaths occurred to men ages 25-44 years (175 deaths), males ages 75-84 years had the highest rate for motor vehicle-related deaths (35.7 deaths/100,000) followed by males ages 15-24 (27.9 deaths/100,000) (Table 14a).

Injuries of Undetermined Intent

About 22% of all injury-related deaths in 2001 were of undetermined intent, where investigation has not determined whether the injuries were accidental or purposely inflicted. Almost 95% of these deaths involved poisoning (568 deaths) which includes drug overdoses (Table 14c). The majority of poisoning deaths of undetermined intent was due to narcotics and other hallucinogens (87%) (Table 14e).

The poisoning death rate for males was over 2.5 times the poisoning death rate for females, 12.7 per 100,000 males vs. 4.9 per 100,000 females (Table 14c). Close to 64% of poisoning deaths occurred among persons ages 25-44 years (363 deaths). Males between the ages of 25-44 had the highest death rate from poisonings, 26.3 deaths per 100,000 males. The poisoning death rates among Hispanic and black non-Hispanic males (22.3 and 19.7 per 100,000) were over 1.6 times higher than the rate for white non-Hispanic males (12.4 per 100,000) (data not shown).

In 2001, 79% of Massachusetts poisoning deaths were of undetermined intent (Table 14c). This proportion has increased since the 1990's. When a death occurs under suspicious circumstances or as a result of violence, the medical examiner system becomes involved. The assignment of the intent of poisoning deaths is a function of the Massachusetts Medical Examiner's Office. If an individual dies of a drug overdose and there is no explicit suicide note or indication of self-intent to die, these deaths are often classified as injuries of undetermined intent and not as unintentional injuries.

Table 14a. Injury Deaths[1] by Leading Causes, Gender, Age, Race and Hispanic Ethnicity: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2001

	ALL		Poisoning[2]		Motor Vehicle-related [3]		Hanging, strangulation, or suffocation		Falls		Firearm		Other[4]	
	Number	Rate[5]	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
All Persons	**2,722**	**41.1**	**716**	**11.0**	**568**	**8.8**	**287**	**4.3**	**263**	**3.8**	**193**	**3.0**	**693**	**10.1**
<1	11	13.9	0	0.0	0	0.0	3	--[6]	1	--[6]	0	0.0	7	8.8
1-14	55	4.7	1	--[6]	21	1.8	13	1.1	2	--[6]	0	0.0	18	1.5
15-24	327	39.9	65	7.9	136	16.6	22	2.7	5	0.6	59	7.2	40	4.9
25-44	895	45.0	435	21.9	175	8.8	87	4.4	27	1.4	60	3.0	111	5.6
45-64	550	38.7	192	13.5	112	7.9	56	3.9	41	2.9	44	3.1	105	7.4
65-74	180	42.1	9	2.1	39	9.1	21	4.9	34	7.9	16	3.7	61	14.3
75-84	333	105.5	7	2.2	65	20.6	42	13.3	81	25.7	8	2.5	130	41.2
85+	369	316.2	7	6.0	20	17.1	43	36.8	72	61.7	6	5.1	221	189.4
All Females	**939**	**24.2**	**218**	**6.5**	**168**	**4.9**	**100**	**2.5**	**116**	**2.7**	**9**	**0.3**	**328**	**7.4**
<1	5	12.9	0	0.0	0	0.0	1	--[6]	0	0.0	0	0.0	4	--[6]
1-14	25	4.3	0	0.0	12	2.1	4	--[6]	0	0.0	0	0.0	9	1.6
15-24	59	14.4	21	5.1	22	5.4	4	--[6]	0	0.0	4	--[6]	8	1.9
25-44	234	23.1	131	12.9	46	4.5	18	1.8	8	0.8	3	--[6]	28	2.8
45-64	142	19.3	50	6.8	42	5.7	12	1.6	12	1.6	1	--[6]	25	3.4
65-74	54	22.7	5	2.1	12	5.1	9	3.8	10	4.2	0	0.0	18	7.6
75-84	166	85.0	5	2.6	22	11.3	21	10.8	45	23.0	1	--[6]	72	36.9
85+	254	296.2	6	7.0	12	14.0	31	36.2	41	47.8	0	0.0	164	191.3
All Males	**1,783**	**60.0**	**498**	**15.6**	**400**	**13.3**	**187**	**6.3**	**147**	**5.5**	**184**	**6.1**	**365**	**13.1**
<1	6	14.8	0	0.0	0	0.0	2	--[6]	1	--[6]	0	0.0	3	--[6]
1-14	30	5.0	1	--[6]	9	1.5	9	1.5	2	--[6]	0	0.0	9	1.5
15-24	268	65.5	44	10.8	114	27.9	18	4.4	5	1.2	55	13.4	32	7.8
25-44	661	67.6	304	31.1	129	13.2	69	7.1	19	1.9	57	5.8	83	8.5
45-64	408	59.6	142	20.7	70	10.2	44	6.4	29	4.2	43	6.3	80	11.7
65-74	126	66.2	4	--[6]	27	14.2	12	6.3	24	12.6	16	8.4	43	22.6
75-84	167	138.8	2	--[6]	43	35.7	21	17.5	36	29.9	7	5.8	58	48.2
85+	115	371.6	1	--[6]	8	25.8	12	38.8	31	100.2	6	19.4	57	184.2

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. 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 fewer than five events are excluded.

Table 14a. (continued) Injury Deaths[1] by Leading Causes, Gender, Age, Race and Hispanic Ethnicity: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2001

	ALL		Poisoning[2]		Motor Vehicle-related [3]		Hanging, strangulation, or suffocation		Falls		Firearm		Other[4]	
	Number	Rate[5]	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
White, non- Hispanic	**2,314**	**40.0**	**621**	**11.3**	**482**	**8.8**	**250**	**4.3**	**247**	**3.9**	**116**	**2.1**	**598**	**9.6**
Females	843	24.1	205	7.2	142	4.7	87	2.4	112	2.7	5	0.2	292	7.0
Males	1,471	57.7	416	15.5	340	13.4	163	6.4	135	5.6	111	4.3	306	12.5
Black, non- Hispanic	**186**	**61.0**	**38**	**11.8**	**32**	**10.0**	**16**	**5.8**	**6**	**2.4**	**45**	**12.3**	**49**	**18.7**
Females	46	31.2	6	3.1	8	5.2	7	5.0	3	--[6]	0	0.0	22	16.0
Males	140	94.6	32	22.3	24	15.4	9	6.5	3	--[6]	45	26.0	27	20.4
Asian, non- Hispanic	**47**	**23.6**	**5**	**1.6**	**13**	**5.0**	**5**	**3.1**	**4**	--[6]	**4**	--[6]	**16**	**9.6**
Females	20	19.2	1	--[6]	10	8.1	3	--[6]	1	--[6]	1	--[6]	4	--[6]
Males	27	28.8	4	--[6]	3	--[6]	2	--[6]	3	--[6]	3	--[6]	12	16.0
Hispanic	**167**	**43.8**	**52**	**13.0**	**36**	**9.3**	**16**	**4.8**	**6**	**2.3**	**27**	**5.1**	**30**	**9.3**
Females	29	14.4	6	3.1	8	4.0	3	--[6]	0	0.0	3	--[6]	9	5.3
Males	138	77.9	46	23.7	28	15.5	13	1.00	6	5.0	24	9.4	21	14.3

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. 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 fewer than five events are excluded.

Table 14b. Intentional Injury Deaths[1] by Gender, Age, Race and Hispanic Ethnicity: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2001

	All Intentional		Suicide		Homicide	
	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]
All Persons	**573**	**8.9**	**420**	**6.5**	**153**	**2.4**
<1	4	--[3]	0	0.0	4	--[3]
1-14	10	0.8	4	--[3]	6	0.5
15-24	105	12.8	52	6.3	53	6.5
25-44	234	11.8	171	8.6	63	3.2
45-64	155	10.9	133	9.4	22	1.5
65-74	32	7.5	27	6.3	5	1.2
75-84	24	7.6	24	7.6	0	0.0
85+	9	7.7	9	7.7	0	0.0
All Females	**114**	**3.4**	**86**	**2.5**	**28**	**0.9**
<1	1	--[3]	0	0.0	1	--[3]
1-14	5	0.9	0	0.0	5	0.9
15-24	16	3.9	9	2.2	7	1.7
25-44	54	5.3	42	4.2	12	1.2
45-64	26	3.5	23	3.1	3	--[3]
65-74	3	--[3]	3	--[3]	0	0.0
75-84	7	3.6	7	3.6	0	0.0
85+	2	--[3]	2	--[3]	0	0.0
All Males	**459**	**14.9**	**334**	**10.9**	**125**	**4.0**
<1	3	--[3]	0	0.0	3	--[3]
1-14	5	0.8	4	--[3]	1	--[3]
15-24	89	21.7	43	10.5	46	11.2
25-44	180	18.4	129	13.2	51	5.2
45-64	129	18.8	110	16.1	19	2.8
65-74	29	15.2	24	12.6	5	2.6
75-84	17	14.1	17	14.1	0	0.0
85+	7	22.6	7	22.6	0	0.0

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 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 fewer than five events are excluded.

Table 14b. (continued) Intentional Injury Deaths[1] by Gender, Age, Race and Hispanic Ethnicity: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 2001

	All Intentional		Suicide		Homicide	
	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]
White, non- Hispanic	**434**	**7.9**	**382**	**6.9**	**52**	**1.0**
Females	91	3.2	78	2.7	13	0.5
Males	343	13.1	304	11.6	39	1.5
Black, non- Hispanic	**71**	**19.8**	**14**	**4.6**	**57**	**15.3**
Females	7	4.1	2	--[3]	5	2.8
Males	64	37.2	12	8.8	52	28.5
Asian, non- Hispanic	**17**	**7.4**	**7**	**3.8**	**10**	**3.6**
Females	6	5.5	3	--[3]	3	--[3]
Males	11	8.7	4	--[3]	7	5.2
Hispanic	**50**	**10.1**	**16**	**3.6**	**34**	**6.5**
Females	10	3.5	3	--[3]	7	2.4
Males	40	17.2	13	6.2	27	11.1

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 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 fewer than five events are excluded.

Table 14c. Injury[1] Deaths by Intent, Method and Gender: Number and Age-Adjusted Rates[2], Massachusetts: 2001

Type of Injury	All		Female		Male	
	Number	Rate	Number	Rate	Number	Rate
Suicide	**420**	**6.5**	**86**	**2.5**	**334**	**10.9**
Hanging, strangulation or suffocation	149	2.3	29	0.8	120	3.8
Firearm	107	1.7	4	--[3]	103	3.5
Poisoning	96	1.5	39	1.2	57	1.8
Other and unspecified	68	1.0	14	0.4	54	1.8
Homicide*	**153**	**2.4**	**28**	**0.9**	**125**	**4.0**
Firearm	79	1.3	5	0.2	74	2.4
Cut or pierce	41	0.6	8	0.2	33	1.0
Other and unspecified	33	0.5	15	0.5	18	0.6
Unintentional Injuries (Accidents)	**1,496**	**22.3**	**624**	**14.9**	**872**	**30.8**
Falls	240	3.5	106	2.4	134	5.1
Hanging, strangulation or suffocation	129	1.9	67	1.5	62	2.3
Smoke, fire and flames	57	0.8	30	0.7	27	0.9
Poisoning	52	0.8	16	0.4	36	1.1
Drowning or submersion	48	0.8	11	0.3	37	1.2
Firearm	4	--[3]	0	0.0	4	--[3]
Motor Vehicle-related	568	8.8	168	4.9	400	13.3
Injury to pedestrian	86	1.3	31	0.9	55	1.9
Injury to pedal cyclist	6	0.1	1	--[3]	5	0.2
Injury to motorcyclist	55	0.9	8	0.2	47	1.5
Injury to occupant	94	1.5	27	0.8	67	2.2
Other and unspecified	327	5.1	101	2.9	226	7.5
Other and unspecified	398	5.6	226	4.7	172	6.7
Injury Deaths of Undetermined Intent	**601**	**9.2**	**171**	**5.1**	**430**	**13.5**
Poisoning	568	8.7	163	4.9	405	12.7
Drowning or submersion	8	0.1	1	--[3]	7	0.2
Other and unspecified	25	0.4	7	0.2	18	0.6
Legal Intervention	**0**	**0**	**0**	**0**	**0**	**0**
Firearm	0	0	0	0	0	0
Adverse Effects	**52**	**0.8**	**30**	**0.7**	**22**	**0.8**
Drugs	6	0.1	4	--[3]	2	--[3]
Medical Care	46	0.7	26	0.6	20	0.8
ALL INJURIES	**2,722**	**41.1**	**939**	**24.2**	**1,783**	**60.0**

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 persons; rates are adjusted to the 2000 US standard population. 3. Calculations based on fewer than five events are excluded. * Does not include terrorist-related deaths.

Table 14d. Type of Injury[1] Deaths by Method / Intent Categories: Number and Age-Adjusted Rates[2], Massachusetts: 2001

Manner	Intent											
	ALL		Unintentional		Intentional				Undetermined		Other[3]	
	Total		Accidents		Suicide		Homicide				Legal Intervention	
	Total Number	Rate	Total Number	Rate	Total Number	Rate	Total Number	Rate	Total Number	Rate	Total Number	Rate
Poisoning	716	11.0	52	0.8	96	1.5	0	0.0	568	8.7	0	0.0
Transport Injuries												
Motor vehicle-related	568	8.8	568	8.8	0	0.0	0	0.0	0	0.0	0	0.0
Injury to pedestrian	86	1.3	86	1.3	0	0.0	0	0.0	0	0.0	0	0.0
Injury to pedal cyclist	6	0.1	6	0.1	0	0.0	0	0.0	0	0.0	0	0.0
Injury to motorcyclist	55	0.9	55	0.9	0	0.0	0	0.0	0	0.0	0	0.0
Injury to occupant	94	1.5	94	1.5	0	0.0	0	0.0	0	0.0	0	0.0
Other and unspecified	327	5.1	327	5.1	0	0.0	0	0.0	0	0.0	0	0.0
Other transport	31	0.5	31	0.5	0	0.0	0	0.0	0	0.0	0	0.0
Hanging, strangulation or suffocation	287	4.3	129	1.9	149	2.3	5	0.1	4	--[3]	0	0.0
Falls	263	3.8	240	3.5	18	0.3	0	0.0	5	0.1	0	0.0
Firearm	193	3.0	4	--[3]	107	1.7	79	1.3	3	--[3]	0	0.0
Drowning and submersion	70	1.1	48	0.8	14	0.2	0	0.0	8	0.1	0	0.0
Smoke, fire and flames	62	0.9	57	0.8	3	--[3]	2	--[3]	0	0.0	0	0.0
Cut or pierce	52	0.8	1	--[3]	10	0.2	41	0.6	0	0.0	0	0.0
Other and unspecified	428	6.1	46	0.7	20	0.3	26	0.4	13	0.2	0	0.0
Adverse Effects	52	0.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ALL INJURIES	**2,722**	**41.1**	**1,496**	**22.3**	**420**	**6.5**	**153**	**2.4**	**601**	**9.2**	**0**	**0**

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 fewer than five events are excluded.

Table 14e. Poisoning Deaths[1] of Undetermined Intent by Manner , Massachusetts: 2001

Manner of Poisoning Death	Number	Percent
Narcotics and psychodysleptics	493	86.8
Other and unspecified drugs, medicaments, biological substances	38	6.7
Antiepileptic, sedative-hypnotic, antiparkinsonism & psychotropic	25	4.4
Nonopioid analgesics, antipyretics & antirheumatics	6	1.1
Alcohol	3	--[2]
Gases and vapours	2	--[2]
Other drugs acting on autonomic nervous system	1	--[2]
TOTAL	**568**	**100%**

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. Calculations based on fewer than five events are excluded.

TERRORIST-RELATED DEATHS

Terrorist-Related Deaths

This special section presents data on the deaths caused by the terrorism acts on September 11, 2001. This section is based on the 87 death certificates filed with the Massachusetts Registry of Vital Records and Statistics through October 15, 2002. These deaths represent more than 94% of the total number of deaths to Massachusetts residents that occurred on September 11, 2001 in New York city. All of these deaths occurred in New York City. Please note that as of May of this year, no additional death certificates had been received.

In order to classify a death as terrorist-related, it is necessary for the incident to be designated as such by the Federal Bureau of Investigation (FBI). If a death is labeled as such before the completion of the death certificate, it may be so described on the certificate. If the incident is described as terrorism after the death certificate is completed, the certificate can be re-coded later. The manner of death for all reported deaths will either be homicide for the victims, and suicide for the terrorists. The underlying cause of death will be coded according to the new developed ICD-10 Terrorism Codes (see Appendix).

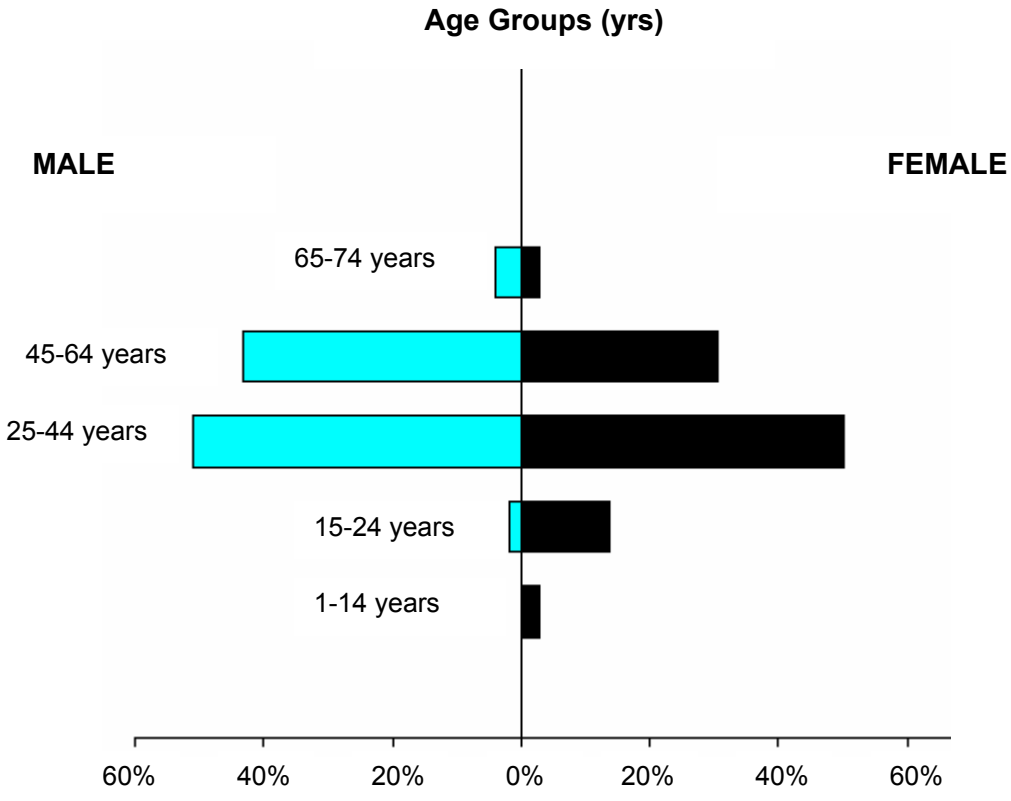
Close to 60% of terrorist-related deaths were among men (Table 15). Figure 13 shows that the majority of these deaths were among young persons- 51% were among persons between the ages of 25-44, and 38% between the ages of 45-64. Terrorist-related deaths did not have race or Hispanic ethnicity information, as the State of New York did not provide this information. Virtually all of the deaths occurred at the time of the attacks and only one occurred in Massachusetts later than September 11, 2001 (December 11).

Table 15. Terrorist-Related Deaths by Gender and Age group, Massachusetts: 2001

Age Group (yrs)	Male	Female	Total
1-14	0	1	1
15-24	1	5	6
25-44	26	18	44
45-64	22	11	33
65-74	2	1	3
75+	0	0	0
Total	51	36	87

Figure 13

Terrorist-Related Deaths by Age and Gender, Massachusetts: 2001



HIV/AIDS

HIV/AIDS

In 2001, 249 Massachusetts residents died from HIV/AIDS, an increase of 10% from the previous year (Table 16a). The age-adjusted death rate from HIV/AIDS increased by 9% from 2000 (this increase was not statistically significant). This represents a change in the trend in HIV/AIDS deaths, which had decreased between 1994 and 2000.

In 2001, sixty six percent of all HIV/AIDS deaths occurred in the hospital, an increase of 13% from 2000, while 19% occurred at home (Table 16a).

Almost half (45%) of HIV/AIDS deaths occurred among persons ages 35-44 years (Table 16b). In 2001, 44% of HIV/AIDS deaths were among persons ages 45 years and older. The proportion of HIV/AIDS deaths for persons ages 45 years and older has doubled since 1995 (44% vs. 22%). The increase in this age group was observed among black, non-Hispanics (30 deaths in 2000 compared to 37 deaths in 2001) and white, non-Hispanics (43 deaths in 2000 compared to 54 deaths in 2001).

In 2001, the proportion of male HIV/AIDS deaths (73%) increased 13% from 2000, indicating the first proportionate increase in male deaths in three years (Table 16c). This increase in deaths occurred among white non-Hispanic and black non-Hispanic males who accounted for 51% and 27% of male HIV/AIDS deaths in 2001, respectively (Table 16d).

Disparities exist in the HIV/AIDS death rate among racial and ethnic groups, with Hispanics dying at a rate seven times higher than white non-Hispanics (14.7 vs. 2.2 deaths per 100,000) (Table 16d). For black non-Hispanics, the rate is 11 times higher than white non-Hispanics (23.4 vs. 2.2 deaths per 100,000). The disproportionate impact of mortality from HIV/AIDS on Hispanics and Blacks mirrors disproportionate rates of HIV prevalence in these communities relative to Whites.

In 2001, HIV/AIDS was the fifth leading cause of death for black non-Hispanics and Hispanics. It was the 23rd leading cause of death for white non-Hispanics and for the state overall. HIV/AIDS was the sixth leading cause of death for Massachusetts residents ages 25-44 years; just six years ago, it was the leading cause of death in this age group. HIV/AIDS was the second leading cause of death for black non-Hispanics and Hispanics ages 25-44 years.

The 2001 age-specific HIV/AIDS death rate among 25-44 year-olds varied considerably by race, Hispanic ethnicity, and gender (Table 17). The death rate increased for white non-Hispanics by 16% and for black non-Hispanics by 25% between 2000 and 2001. During the same time period, the death rate from HIV/AIDS for persons 25-44 years decreased for all Hispanics (a 22% decline from 27.9 to 21.7 deaths/100,000). The highest death rates occurred among black non-Hispanic and Hispanic males (35.6 and 32.7 deaths per 100,000, respectively) while the lowest death rate occurred among white non-Hispanic females (2.9 deaths per 100,000). All race-gender death rates in this age group increased from 2000 with the exception of the death rate for Hispanic females, which decreased by 38%.

Table 16a. HIV/AIDS[1] Deaths by Place of Occurrence, Massachusetts: 1989-2001

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]
1989	#	404	NA	79	NA	313	NA	7	NA	5	NA
	%	100.0		19.6		77.5		1.7		1.2	
1990	#	447	NA	90	NA	284	NA	9	NA	64	NA
	%	100.0		20.1		63.5		2.1		14.3	
1991	#	632	NA	159	NA	338	NA	4	NA	131	NA
	%	100.0		25.2		53.5		-		20.7	
1992	#	701	NA	171	NA	394	NA	14	NA	122	NA
	%	100.0		24.4		56.2		2.0		17.4	
1993	#	777	NA	218	NA	413	NA	14	NA	127	NA
	%	100.0		28.1		53.2		1.8		16.3	
1994	#	938	998	265	282	514	547	13	14	142	151
	%	100.0		28.3	28.3	54.8	54.8	1.4	1.4	15.1	15.1
1995	#	937	997	303	322	500	532	7	7	127	135
	%	100.0		32.3	32.3	53.4	53.4	0.7	0.7	13.6	13.5
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	-	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	-	-	16.4	16.4
1999	#	242[4]		55[4]		142[4]		2[4]		43[4]	
	%	100.0		22.7		58.7		-		17.8	
2000	#	226[4]		48[4]		145[4]		0[4]		33[4]	
	%	100.0		21.2		64.2		0.0		14.6	
2001	#	249[4]		47[4]		164[4]		4[4]		34[4]	
	%	100.0		18.9		65.9		-		13.7	

**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 1987-1998 were coded according to the ICD-9 classification schedule, which began with 1987 death data (codes 042-044). Deaths for 1999 and 2000 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 between 1994 through 2000, please use the comparability modified number for years 1994-1998. Please see Appendix for a detailed explanation.

Table 16b. HIV/AIDS[1] Deaths by Age, Massachusetts: 1989-2001

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]
1989	#	3	NA	16	NA	146	NA	167	NA	72	NA
	%	-		4.0		36.1		41.3		17.8	
1990	#	3	NA	4	NA	147	NA	197	NA	96	NA
	%	-		-		32.8		44.1		21.5	
1991	#	9	NA	19	NA	214	NA	298	NA	92	NA
	%	1.4		3.0		33.8		47.2		14.6	
1992	#	6	NA	5	NA	243	NA	304	NA	143	NA
	%	0.8		0.7		34.7		43.4		20.4	
1993	#	10	NA	5	NA	234	NA	359	NA	169	NA
	%	1.3		0.6		30.1		46.2		21.8	
1994	#	7	7	8	9	272	289	464	494	187	199
	%	0.7	0.7	0.9	0.9	29.0	29.0	49.5	49.5	19.9	19.9
1995	#	11	12	5	5	272	289	443	471	206	219
	%	1.2	1.2	0.5	0.5	29.0	29.0	47.3	47.2	22.0	22.0
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	-	-	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]	
	%	-		3.7		14.0		46.3		35.1	
2000	#	4[4]		0[4]		26[4]		104[4]		92[4]	
	%	-		0.0[4]		11.5[4]		46.0[4]		40.7[4]	
2001	#	1[4]		2[4]		25[4]		111[4]		110[4]	
	%	-[4]		--		10.0		44.6		44.2[4]	

**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 1987-1998 were coded according to the ICD-9 classification schedule, which began with 1987 death data (codes 042-044). Deaths for 1999 and 2000 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 between 1994 through 2000, please use the comparability modified number for years 1994-1998. Please see Appendix for a detailed explanation.

Table 16c. HIV/AIDS[1] Deaths by Gender and Race and Hispanic ethnicity, Massachusetts: 1989-2001

		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]
Year													
1989	#	359	NA	45	NA	290	NA	76	NA	NA	NA	37	NA
	%	88.9		11.1		71.8		18.8				9.2	
1990	#	390	NA	57	NA	301	NA	94	NA	1	NA	50	NA
	%	87.2		12.8		67.5		21.1		-		11.2	
1991	#	535	NA	97	NA	439	NA	118	NA	0	NA	74	NA
	%	84.6		15.4		69.5		18.7		0.0		11.7	
1992	#	605	NA	96	NA	463	NA	141	NA	2	NA	95	NA
	%	86.3		13.7		66.0		20.1		-		13.6	
1993	#	663	NA	114	NA	518	NA	160	NA	5	NA	94	NA
	%	85.3		14.7		66.7		20.6		0.6		12.1	
1994	#	763	812	175	186	581	618	193	205	7	7	157	167
	%	81.3	81.4	18.7	18.6	61.9	61.9	20.6	20.5	0.7	0.7	16.7	16.7
1995	#	753	801	184	196	554	589	223	237	5	5	155	165
	%	80.4	80.3	19.6	19.7	59.1	59.1	23.8	23.8	0.5	0.5	16.5	16.5
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	0.0	0.0	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	0.0	0.0	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		-		26.0	
2000	#	161[6]		65[6]		104[6]		61[6]		2[6]		59[6]	
	%	71.2		28.8		46.0		27.0		-		26.1	
2001	#	182[6]		67[6]		125[6]		73[6]		0		51[6]	
	%	73.1		26.9		50.2		29.3		0.0		20.5	

**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 1987-1998 were coded according to the ICD-9 classification schedule, which began with 1987 death data (codes 042-044). Deaths for 1999 and 2000 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 refer to the Technical Notes in the Appendix for a more detailed explanation. 3. The "Other" category represents Asian, non-Hispanics, American Indian, non-Hispanics, and Cape Verdean, 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. NA=not available. 6. When comparing data over time between 1994 through 2000, please use the comparability modified number for years 1994-1998. Please see Appendix for a detailed explanation.

Table 16d. HIV/AIDS[1] Deaths by Gender and Race and Hispanic ethnicity Numbers, Percent and Age-adjusted Rates, Massachusetts: 1999 – 2001

TOTAL	White, non-Hispanic[2]			Black, non-Hispanic[2]			Hispanic		
Year	**#**	**Percent**	**Rate[3]**	**#**	**Percent**	**Rate[3]**	**#**	**Percent**	**Rate[3]**
1999	126	52%	2.3	51	21%	17.0	63	27%	20.2
2000	104	46%	1.9	61	27%	19.5	59	26%	17.7
2001	125	50%	2.2	73	29%	23.4	51	20%	14.7
MALE									
1999	97	55%	3.6	33	19%	23.5	45	25%	31.3
2000	77	48%	2.8	40	25%	27.7	42	26%	28.1
2001	92	51%	3.4	50	27%	34.8	40	22%	24.5
FEMALE									
1999	29	45%	1.0	18	28%	11.0	18	28%	10.4
2000	27	42%	1.0	21	32%	12.3	17	26%	8.7
2001	33	49%	1.2	23	34%	13.5	11	16%	5.8

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 refer to 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.

Table 17. HIV/AIDS[1] Deaths by Race, Hispanic Ethnicity, and Gender
Persons Ages 25-44, Massachusetts: 1991 – 2001

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]	
1991	357	20.1	NA	NA	99	102.9	NA	NA	55	55.6	NA	NA
1992	362	20.5	NA	NA	105	111.0	NA	NA	79	78.3	NA	NA
1993	391	22.3	NA	NA	122	130.4	NA	NA	76	73.0	NA	NA
1994	451	25.6	480	27.2	152	162.0	162	172.3	127	118.3	135	125.8
1995	428	24.3	455	25.8	159	169.7	169	180.5	124	113.0	132	120.2
1996	251	14.2	267	15.1	113	121.1	120	128.8	85	75.4	90	80.2
1997	86	4.9	98	5.6	48	51.3	55	58.7	36	31.1	41	35.6
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[6]	3.7			28[6]	25.3			40[6]	27.9
2001			70[6]	4.3			35[6]	31.6			31[6]	21.7
MALE												
1991	322	36.7	NA	NA	71	150.7	NA	NA	39	79.5	NA	NA
1992	328	37.6	NA	NA	79	170.0	NA	NA	64	127.7	NA	NA
1993	350	40.3	NA	NA	91	197.6	NA	NA	57	110.3	NA	NA
1994	388	44.5	413	47.3	113	244.3	120	259.9	93	174.2	99	185.3
1995	367	42.1	390	44.8	112	242.2	119	257.6	90	164.5	96	175.0
1996	221	25.3	235	26.9	73	158.1	78	168.2	61	108.5	65	115.4
1997	71	8.1	81	9.3	30	64.6	34	74.0	28	48.5	32	55.5
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[6]	4.8			17[6]	31.9			27[6]	28.4
2001			46[6]	5.7			19[6]	35.6			23[6]	32.7
FEMALE												
1991	35	3.9	NA	NA	28	57.1	NA	NA	16	32.0	NA	NA
1992	34	3.8	NA	NA	26	54.0	NA	NA	15	29.5	NA	NA
1993	41	4.6	NA	NA	31	65.2	NA	NA	19	36.3	NA	NA
1994	63	7.1	67	7.6	39	82.0	41	87.2	34	63.0	36	67.0
1995	61	6.9	65	7.3	47	99.0	50	105.3	34	61.8	36	65.7
1996	30	3.4	32	3.6	40	84.9	43	90.3	24	42.4	26	45.1
1997	15	1.7	17	1.9	18	38.2	21	43.7	8	13.8	9	15.8
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[6]	2.5			11[6]	19.2			13[6]	17.8
2001			24[6]	2.9			16[6]	27.9			8[6]	11.0

1. AIDS and HIV disease deaths for years 1989-1998 coded using ICD-9: 042-044; 1999 and 2000 deaths coded using ICD-10: B20-B24. Please refer to 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 refer to 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. NA= not applicable. 6. When comparing data over time between 1994 through 2000, please use comparability modified data for years 1994-1998.

INFANT DEATHS

Causes of Infant Death

There were a total of 407 infant deaths (deaths of infants less than one year of age) and 81,014 live births among Massachusetts residents for an infant mortality rate (IMR) of 5.0 per 1,000 live births (Table 18). Although the 2001 infant mortality rate increased by 9% from the 2000 rate of 4.6 (the lowest rate in Massachusetts history), it is the second lowest rate since 1980 and it has decreased 29% since 1990. Massachusetts' infant mortality rate for 2001 was 24% lower than the preliminary infant mortality rate for the United States (6.6 deaths per 1,000 live births). White and Black infant mortality rates continue to be lower in Massachusetts compared to figures for the United States. (Please note: more information on 2001 births can be found in *Massachusetts Births: 2001*, published in April 2003, or online at www.state.ma.us/dph/bhsre/resep/.)

Infant mortality continued to vary by race and ethnicity. In 2001, the IMR for white non-Hispanics was 4.1 per 1,000 live births compared to 12.1 for black non-Hispanics, 7.3 for Hispanics, and 3.1 for Asian non-Hispanics (Table 18). The IMR increased for all race groups except for black non-Hispanics and Asian non-Hispanics who saw a decrease of 5% and 24%, respectively. The IMR for white non-Hispanic infants increased by 8% in 2001. The rate for Hispanic infants also increased by 40% in 2001. These changes were not statistically significant.

In 2001, the overall leading causes of infant death were conditions arising in the perinatal period (259) and congenital malformations (62) (Table 19). Other causes of infant death were Sudden Infant Death Syndrome (SIDS) (24), diseases of the respiratory system (7), nervous system and ear (6), and unintentional injuries (5).

The vast majority (76%) of infant deaths occurred in the neonatal period (birth to 27 days). Causes of infant death also varied by age of infant. Disorders relating to short gestation and low birthweight was the leading cause in the neonatal period, while SIDS was the leading cause of death in the post neonatal period (28-365 days).

Conditions originating in the perinatal period and congenital malformations were the leading causes of death for all race and ethnicity groups (Table 20). However, the distribution of these causes varied among race and ethnicity groups except for black non-Hispanics. Conditions originating in the perinatal period and symptoms, signs and ill-defined conditions, which includes SIDS were the leading causes of infant death for black non-Hispanics. Seventy-seven percent of all black non-Hispanic infant deaths were due to conditions originating in the perinatal period compared to 67% of all white non-Hispanic infant deaths, and 55% of all Hispanic infant deaths.

Table 18. Trends in Infant, Neonatal, and Post Neonatal Mortality, by Race and Hispanic Ethnicity, Massachusetts: 1992-2001

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]**
1992	569	6.5	371	5.5	110	16.4	67	7.9	16	4.9	5	5.1
1993	523	6.2	346	5.3	84	13.1	77	9.3	13	3.9	3	--[4]
1994	499	6.0	343	5.3	79	12.6	64	7.6	8	2.4	5	5.3
1995	419	5.1	275	4.4	65	11.1	58	7.2	19	5.5	2	--[4]
1996	403	5.0	289	4.7	63	11.4	40	5.1	8	2.2	2	--[4]
1997	425	5.3	294	4.8	64	11.7	55	6.7	10	2.6	2	--[4]
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

NEONATAL MORTALITY (birth to 27days)

	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]**
1992	415	4.8	274	4.0	76	11.4	51	6.0	10	3.0	4	--[4]
1993	375	4.4	245	3.7	64	10.0	55	6.7	9	2.7	2	--[4]
1994	349	4.2	240	3.7	58	9.3	40	4.7	7	2.1	4	--[4]
1995	298	3.6	198	3.1	50	8.5	39	4.8	10	2.9	1	--[4]
1996	290	3.6	222	3.6	34	6.2	27	3.5	5	1.4	1	--[4]
1997	323	4.0	228	3.7	44	8.0	43	5.2	7	1.8	1	--[4]
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]

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]**
1992	154	1.8	97	1.4	34	5.1	16	1.9	6	1.8	1	--[4]
1993	148	1.7	101	1.5	20	3.1	22	2.7	4	--[4]	1	--[4]
1994	150	1.8	103	1.6	21	3.3	24	2.8	1	--[4]	1	--[4]
1995	121	1.5	77	1.2	15	2.6	19	2.3	9	2.6	1	--[4]
1996	113	1.4	67	1.1	29	5.3	13	1.7	3	--[4]	1	--[4]
1997	102	1.3	66	1.1	20	3.7	12	1.5	3	--[4]	1	--[4]
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	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 fewer than five events are excluded.

Table 19. Infant, Neonatal, and Post Neonatal Deaths by Cause, Massachusetts: 2001

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		**407**	**100%**	**308**	**100%**	**99**	**100%**
Infectious and parasitic diseases	**A00-B99**	**8**	**2.0**	**2**	**--**	**6**	**6.1**
Cancer	**C00-C97**	**1**	**--**	**0**	0.0	**1**	**--**
Diseases of the blood and blood forming organs (anemia)	**D50-D89**	**3**	**--**	**0**	0.0	**3**	**--**
Diseases of nervous system and ear	**G00-G98, H60-H93**	**6**	1.5	**0**	0.0	**6**	**6.1**
Diseases of the respiratory system	**J00-J98**	**7**	**1.7**	**1**	**--**	**6**	**6.1**
Diseases of digestive system	**K00-K92**	**1**	**--**	**0**	0.0	**1**	**--**
Congenital malformations	**Q00-Q99**	**62**	**15.2**	**42**	**13.6**	**20**	**20.2**
Congenital malformations of nervous system	Q00-Q07	8	2.0	6	1.9	2	--
Anencephalus and similar malformations	Q00	3	--	3	--	0	0.0
Congenital malformations of eye, ear, face, and neck	Q10-Q18	1	--	1	--	0	0.0
Congenital malformations of heart	Q20-Q24	11	2.7	4	--	7	7.1
Other congenital malformations of circulatory system	Q25-Q28	1	--	1	--	0	0.0
Congenital malformations of respiratory system	Q30-Q34	16	3.9	14	4.5	2	--
Cleft palate and other digestive tract malformations	Q35-Q45	0	0.0	0	0.0	0	0.0
Congenital malformations of genitourinary system	Q50-Q64	1	--	1	--	0	0.0
Congenital malformations of musculoskeletal system	Q65-Q85	6	1.5	3	--	3	--
Chromosomal abnormalities	Q90-Q99	10	2.5	6	1.9	4	--
Certain conditions originating in the perinatal period	**P00-P96**	**259**	**63.6**	**253**	**82.1**	**6**	**6.1**
Newborn affected by maternal conditions which may be unrelated to present pregnancy	P00	1	--	1	--	0	0.0
Newborn affected by maternal complications of pregnancy	P01	23	5.7	23	7.5	0	0.0
Newborn affected by complications of placenta, cord and membrane	P02	18	4.4	18	5.8	0	0.0
Newborn affected by other complications of labor and delivery	P03	5	1.2	5	1.6	0	0.0
Disorders relating to short gestation and low birthweight	P07	92	22.6	91	29.5	1	--
Birth trauma	P10-P15	1	--	1	--	0	0.0
Intrauterine hypoxia and birth asphyxia	P20-P21	8	2.0	8	2.6	0	0.0
Respiratory distress of newborn	P22	19	4.7	19	6.2	0	0.0
Other respiratory conditions of newborn	P23-P28	17	4.2	16	5.2	1	--
Infections specific to the perinatal period	P35-P39	13	3.2	12	3.9	1	--
Neonatal hemorrhage	P50-P52, P54	9	2.2	9	2.9	0	0.0
Other and ill-defined conditions originating in the perinatal period	P90-P96	6	1.5	3	--	3	--
Symptoms, signs, and ill-defined conditions	**R00-R99**	**33**	**8.1**	**4**	**--**	**29**	**29.3**
Sudden Infant Death Syndrome (SIDS)	R95	24	5.9	1	--	23	23.2
Unintentional Injuries	**V01-X59**	**5**	**1.2**	**0**	0.0	**5**	**5.1**
Homicide	**X85-Y09**	**4**	**--**	**0**	0.0	**4**	**--**
All other causes	**Residual**	**18**	**4.4**	**6**	**1.9**	**12**	**12.1**

1. Please refer to the Technical Notes in the Appendix for an explanation of ICD-10 codes. 2. Percents not calculated for subcategories. 3. Calculations based on fewer than five events are excluded.

Table 20. Infant Deaths by Major Causes, Race and Hispanic Ethnicity, Massachusetts: 2001

Cause of Death[2]	ICD-10 Code	White, non-Hispanic[1] #	White, non-Hispanic[1] %	Black, non-Hispanic[1] #	Black, non-Hispanic[1] %	Asian, non-Hispanic[1] #	Asian, non-Hispanic[1] %	Hispanic #	Hispanic %
TOTAL		**245**	**100%**	**71**	**100%**	**15**	**100%**	**69**	**100%**
Congenital malformations	Q00-Q99	39	15.6	6	8.5	5	33.3	11	15.9
Certain conditions originating in the perinatal period	P00-P96	164	67.2	47	66.2	8	53.3	38	55.1
Symptoms, signs, and ill-defined conditions	R00-R99	16	6.6	10	14.1	0	0.0	5	7.2
Unintentional Injuries	V01-X59	2	--[3]	0	0.0	0	0.0	1	--[3]
Homicide	X85-Y09	1	--[3]	2	--[3]	0	0.0	1	--[3]
All other causes	Residual	23	9.4	6	8.5	2	--[3]	13	18.8

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 refer to the Technical Notes in the Appendix for a more detailed explanation. 2. Deaths are coded according to ICD-10. Please refer to Appendix for comparability ratios. 3. Calculations based on fewer than five events are excluded.

HEALTHY PEOPLE 2010

Healthy People 2010 Objectives

In January 2000, the US Department of Health and Human Services launched Healthy People 2010 (HP2010), a comprehensive, nationwide health promotion and disease prevention agenda. Healthy People 2010 contains 467 objectives designed to serve as a road map for improving the health of all people in the United States. In its report, the US Department of Health and Human Services set mortality target objectives to be met by the year 2010. These objectives have two overarching goals: 1) to increase quality and years of healthy life, and 2) to eliminate health disparities.

Table 21 presents the two most recent Massachusetts data for selected HP2010 Mortality Objectives. This report only presents mortality objectives that use underlying cause of death data. Massachusetts either achieved or moved toward many of these targets. Out of 40 objectives presented, Massachusetts 2001 death data showed that the state had already met many of the 2010 targets (15 total): Uterine cervix cancer, oropharyngeal cancer, coronary heart disease, firearm deaths, motor vehicle crashes, homicide, child and adolescent mortality death rates (1-4, 5-9, and 15-19 years old), postneonatal deaths, deaths due to birth defects, congenital heart defects, and asthma death rates for children under 5 years of age, 5-14 years of age and persons 65 years and older.

For ten objectives, the 2001 Massachusetts indicators were within 25% of the target goals. These objectives included: lung cancer, female breast cancer, prostate cancer, malignant melanoma, stroke deaths, drownings, infant mortality rate, SIDS deaths, and child and adolescent mortality death rates (10-14, and 20-24 years old).

The fifteen indicators for which Massachusetts was the furthest from the HP2010 targets were: overall cancer death rates, colorectal cancer, cirrhosis deaths, HIV deaths, unintentional injuries, poisoning deaths, suffocation deaths, fall deaths, fire deaths, suicide deaths, drug-induced deaths, neonatal deaths, maternal deaths, and asthma death rates for person ages 15-34 and 35-64 years. Although these rates were over 25% from the target goals, most were still lower than the rates for the United States overall.

Table 21. Target Status for Selected Healthy People 2010 Mortality Objectives

Objective Number	HEALTHY PEOPLE 2010 OBJECTIVE	TARGET 2010[1]	MA 2000[3]	MA 2001[3]	US 2001[4]	TARGET STATUS
	Age-adjusted rates (per 100,000 population)					
3-1	Overall Cancer death rate	159.9	206.9	202.8	195.8	●
3-2	Lung Cancer	44.9	56.2	55.0	55.3	○
3-3	Female Breast Cancer (per 100,000 females)	22.3	27.0	26.9	14.8	○
3-4	Uterine Cervix (per 100,000 females)	2.0	2.0	1.6	1.4	✓
3-5	Colorectal Cancer	13.9	22.0	21.1	20.1	●
3-6	Oropharyngeal Cancer	2.7	2.8	2.7	2.7	✓
3-7	Prostate Cancer (per 100,000 males)	28.8	31.0	30.5	10.9	○
3-8	Malignant Melanoma	2.5	3.4	2.9	2.7	○
12-1	Coronary Heart Disease	166.0	149.6	146.2	247.7	✓
12-7	Stroke	48.0	51.2	49.7	57.9	○
13-14	HIV/AIDS	0.7	3.5	3.8	5.0	●
26-2	Cirrhosis	3.0	5.3	5.6	NA[6]	●
26-3	Drug-induced deaths	1.0	8.7	10.6	6.6	●
	Injury Deaths					
15-3	Firearm- related	4.1	2.7	3.0	10.1	✓
15-8	Poisonings	1.5	9.0	11.0	NA[6]	●
15-9	Hanging, strangulation or suffocation	3.0	4.1	4.3	NA[6]	●
15-13	Unintentional injuries (Accidents)	17.5	20.3	22.3	34.3	●
15-15	Motor vehicle crashes	9.0	7.6	8.8	14.7	✓
15-25	Residential fire deaths	0.2	0.8	0.6	NA[6]	●
15-27	Falls	3.0	2.9	3.8	5.1	●
15-29	Drowning	0.9	1.0	1.1	NA[6]	○
15-32	Homicide	3.0	2.0	2.4	6.9	✓
18-1	Suicide	5.0	6.2	6.5	10.3	●
	Death Rates (per 1,000 live births)					
16-1c	Infant deaths	4.5	4.6	5.0	6.9	○
16-1d	Neonatal deaths	2.9	3.5	3.8	4.6	●
16-1e	Postneonatal deaths	1.2	1.1	1.2	2.3	✓
16-1f	Birth defects	1.1	0.7	0.8	1.39	✓
16-1g	Congenital heart defects	0.38	0.18	0.14	0.39	✓
16-1h	Sudden infant death syndrome (SIDS)	0.25	0.32	0.30	0.49	○
16-4	Maternal deaths (per 100,000 live births)	3.3	1.2	4.9	NA[6]	●
	Child/Adolescent/Young Adults Death Rates (per 100,000 pop)					
16-2a	1-4 years old	25.0	22.5	19.5	33.4	✓
16-2b	5-9 years old	14.3	12.3	7.9	NA[6]	✓
16-3a	10-14 years old	16.8	13.2	16.9	NA[6]	○
16-3b	15-19 years old	43.2	39.5	42.8	NA[6]	✓
16-3c	20-24 years old	57.3	59.1	65.8	NA[6]	○
24-1	Asthma deaths (per million)					
24-1a	Children under age 5 years	1.0	--[5]	--[5]	NA[6]	✓
24-1b	Children aged 5-14 years	1.0	--[5]	--[5]	NA[6]	✓
24-1c	Ages 15-34 years	3.0	2.9	4.6	NA[6]	●
24-1d	Ages 35-64 years	9.0	16.5	13.3	NA[6]	●
24-1e	Ages 65+ years	60.0	66.3	45.3	NA[6]	✓

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

1. Data 2010 the Healthy People 2010 Database. CDC Wonder website. 2. Residents death rates for 1999 have been recalculated using 1999 DPH population estimates. 3. 2000 rates are calculated using 2000 population estimates. 4. US data for 2001 obtained from NCHS. Deaths: Preliminary Data for 2001. National Vital Statistics Report, Vol. 51, No. 5, March 14, 2003. 5. Calculations based on fewer than 5 events are excluded. 6. Not available at time of publication.

CAUSES OF DEATH BY CITY/TOWN, COMMUNITY HEALTH NETWORK AREA (CHNA), COUNTY

Premature Mortality Rate in the 30 Largest Massachusetts Cities and Towns

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

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 premature mortality rates would also tend to report poorer general health status, greater number of symptoms, and more illness both at the subjective self-reported level and the objective illness level[6].

In 2001, among the 30 largest communities in Massachusetts, the age-adjusted premature rates (number of deaths before age 75 per 100,000 population adjusted to the 2000 US Standard Population) were significantly higher in Lynn (467.9), Lowell (466.4), Springfield (459.3), Fall River (459.2), Worcester (453.6), New Bedford (450.3), Brockton (444.2), Taunton (439.6), and Boston (430.5) compared to the state overall (347.3). Age-adjusted death rates were significantly lower in Barnstable (274.7), Brookline (232.7) and Newton (218.0) compared to Massachusetts overall (347.3) (Table 22).

[6] 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.

Table 22. Rank of Premature Mortality Rates for the Largest 30 Communities*, Massachusetts: 2001

(Sorted by PMR)

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City/Town	Number of Deaths	PMR** (per 100,000 population)
Lynn	367	467.86[1]
Lowell	396	466.44[1]
Springfield	591	459.34[1]
Fall River	400	459.24[1]
Worcester	679	453.56[1]
New Bedford	399	450.27[1]
Brockton	366	444.23[1]
Taunton	224	439.63[1]
Boston	2,018	430.51[1]
Attleboro	162	422.74[1]
Lawrence	219	416.89[1]
Somerville	244	413.75[1]
Haverhill	200	394.14
Malden	208	393.27
Revere	192	389.77
Chicopee	221	388.81
Quincy	349	383.78
Medford	211	371.68
Plymouth	158	357.74
Weymouth	204	354.84
Methuen	145	346.44
Cambridge	247	332.02
Waltham	178	327.84
Peabody	173	317.63
Pittsfield	154	313.91
Framingham	185	295.26
Arlington	131	286.88
Barnstable	160	274.68[1]
Brookline	119	232.66[1]
Newton	182	217.95[1]
STATE	**20,918**	**347.25**

*Selected from among the 30 Massachusetts communities with the largest populations. Based on 2000 Census.

**Rates are age-adjusted to the 2000 US Standard Population for person ages 0-74 years.
[1] PMR is statistically significant different from State.

Table 23. Selected Causes of Death by Community, Massachusetts: 2001

COMMUNITY	Total Deaths	Age- adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
Massachusetts	**56,733**	**818.2**	**15,136**	**13,745**	**3,692**	**1,047**	**3,534**	**2,806**	**1,422**	**1,769**	**568**	**153**	**420**
Abington	139	945.2	43	26	9	3	11	6	2	4	1	0	0
Acton	94	702.4	18	30	8	3	11	5	3	5	0	0	1
Acushnet	100	910.9	34	27	6	3	8	4	2	3	1	0	0
Adams	139	1,041.4	45	31	8	1	10	5	2	1	1	0	2
Agawam	322	793.3	78	63	15	10	21	17	9	15	3	0	5
Alford	8	1,642.5	2	2	0	0	1	2	0	0	1	0	0
Amesbury	171	1,043.6	46	42	6	3	7	10	4	4	1	0	2
Amherst	106	515.6	33	21	6	3	9	4	2	3	0	0	2
Andover	203	621.7	53	49	12	7	11	13	1	6	1	0	1
Arlington	436	764.4	97	135	35	9	28	18	8	18	1	0	0
Ashburnham	23	624.4	4	7	1	0	0	0	0	0	1	0	0
Ashby	21	920.8	8	7	1	0	2	0	2	0	0	0	0
Ashfield	11	652.0	5	1	1	0	0	0	0	1	0	0	0
Ashland	78	738.6	23	19	5	3	2	2	1	4	1	0	2
Athol	133	891.2	33	32	11	3	12	6	3	7	3	0	0
Attleboro	384	879.2	102	90	30	8	27	27	4	11	2	1	1
Auburn	193	866.4	62	37	11	2	10	10	6	6	3	0	4
Avon	56	1,007.0	14	20	4	1	4	1	0	1	1	0	1
Ayer	56	795.1	20	11	4	1	7	2	0	3	0	0	0
Barnstable	488	698.7	104	138	38	9	34	22	11	17	5	0	5
Barre	41	780.5	7	14	4	1	3	5	1	1	0	0	0
Becket	16	972.8	3	7	2	2	1	1	1	0	0	0	0
Bedford	140	720.7	38	34	9	3	8	7	4	4	0	0	1
Belchertown	83	888.5	19	23	5	2	4	8	4	2	0	0	1
Bellingham	90	836.6	18	22	4	2	5	3	1	2	0	0	3
Belmont	238	687.5	53	53	8	3	24	4	4	5	1	0	2
Berkley	27	826.3	0	9	1	2	2	3	0	0	2	0	1
Berlin	20	972.1	4	5	1	1	0	2	0	0	1	0	0
Bernardston	16	573.1	8	1	0	0	2	0	1	0	0	0	0
Beverly	440	855.8	115	91	23	10	40	20	10	9	5	1	5
Billerica	262	963.5	50	75	24	6	26	17	4	5	1	0	4
Blackstone	65	924.7	18	19	3	3	2	0	3	7	0	0	0
Blandford	8	735.5	2	3	0	0	0	0	0	0	0	0	2
Bolton	17	828.8	3	10	1	1	0	0	0	1	0	0	0
Boston	4,572	899.5	1112	1030	257	69	251	182	107	167	36	62	32

Table 23. Selected Causes of Death by Community, Massachusetts: 2001 (continued)

COMMUNITY	Total Deaths	Age- adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
Bourne	224	938.5	65	55	20	3	13	9	3	8	2	0	0
Boxborough	13	418.6	2	7	2	0	1	0	1	0	0	0	1
Boxford	35	655.4	4	16	3	2	1	2	3	1	2	0	0
Boylston	26	734.4	5	7	0	1	2	3	1	0	0	0	1
Braintree	424	896.0	101	122	34	9	16	28	8	17	4	0	1
Brewster	146	715.8	30	32	10	1	10	8	6	3	1	0	2
Bridgewater	121	676.6	31	30	7	1	5	12	4	4	2	1	3
Brimfield	27	883.1	7	12	5	2	1	0	0	0	2	0	0
Brockton	851	934.0	246	191	60	14	49	49	33	27	10	6	9
Brookfield	24	796.3	7	9	1	2	1	0	1	0	0	0	0
Brookline	420	643.2	110	104	23	8	24	10	6	22	4	0	4
Buckland	18	851.8	3	6	2	0	4	0	0	0	1	0	0
Burlington	149	718.6	37	41	12	5	5	0	6	6	2	0	3
Cambridge	604	773.2	155	142	46	9	44	28	19	15	1	3	7
Canton	208	688.7	59	60	11	8	8	4	3	6	2	0	2
Carlisle	15	570.4	4	4	2	0	0	0	0	1	1	0	1
Carver	125	1,038.7	34	27	8	3	9	9	4	4	0	0	2
Charlemont	10	823.8	1	5	1	1	2	0	0	0	0	0	0
Charlton	86	1,065.9	22	19	4	2	4	4	4	0	1	0	0
Chatham	133	849.5	38	30	7	5	11	7	2	4	0	0	2
Chelmsford	258	735.1	56	56	11	3	29	14	6	8	2	0	3
Chelsea	324	979.3	78	63	18	3	15	21	9	9	2	3	1
Cheshire	31	853.1	16	6	1	0	1	0	1	1	1	0	0
Chester	9	687.8	4	2	0	0	0	0	0	0	1	0	0
Chesterfield	5	668.5	3	0	0	0	0	1	0	0	0	0	0
Chicopee	585	835.9	159	153	42	14	37	35	15	11	4	0	4
Chilmark	7	658.6	2	1	0	0	2	0	0	0	0	0	0
Clarksburg	12	618.9	2	4	1	0	0	1	1	0	0	0	1
Clinton	130	816.2	41	23	6	1	4	12	7	7	0	0	0
Cohasset	70	811.1	21	19	4	1	4	2	1	1	2	0	0
Colrain	14	924.8	3	6	2	1	1	1	0	1	0	0	0
Concord	155	650.3	36	37	7	4	16	8	2	5	1	0	2
Conway	13	839.0	3	6	2	0	2	0	0	0	0	0	0
Cummington	10	1,163.6	5	3	1	1	1	0	0	0	0	0	0
Dalton	79	875.5	20	17	7	1	1	5	1	5	1	0	0
Danvers	304	886.0	81	73	23	6	24	16	9	3	2	1	1
Dartmouth	274	735.5	84	68	16	3	19	14	5	8	4	0	3

Table 23. Selected Causes of Death by Community, Massachusetts: 2001 (continued)

COMMUNITY	Total Deaths	Age-adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
Dedham	254	834.3	66	47	11	6	11	16	5	7	2	0	2
Deerfield	23	423.3	6	6	2	0	0	1	1	1	1	0	0
Dennis	211	710.2	61	54	13	5	13	11	5	5	0	0	1
Dighton	58	909.2	16	15	6	3	2	4	2	1	0	1	0
Douglas	37	764.4	13	8	3	0	2	2	0	0	1	0	0
Dover	26	575.9	4	10	2	0	4	4	0	0	0	0	0
Dracut	213	954.1	58	48	16	2	17	17	7	4	3	0	1
Dudley	77	783.9	24	20	4	2	6	7	2	1	1	0	0
Dunstable	13	652.9	4	6	2	0	0	0	0	0	1	0	0
Duxbury	121	777.3	35	30	3	3	4	0	3	4	4	0	0
East Bridgewater	111	1,003.9	30	31	11	1	10	4	3	3	1	0	1
East Brookfield	19	859.3	5	5	1	0	3	1	0	0	0	0	1
East Longmeadow	176	825.5	46	45	9	2	8	6	3	7	2	0	3
Eastham	58	659.3	20	15	4	2	3	3	2	0	1	0	0
Easthampton	131	729.3	47	32	10	0	9	6	2	3	0	0	0
Easton	143	853.5	36	40	8	3	9	11	3	4	2	0	1
Edgartown	17	484.2	4	6	2	0	2	2	0	1	0	0	0
Egremont	7	521.7	1	3	2	0	1	0	0	0	1	0	0
Erving	9	532.8	1	1	0	0	1	1	0	0	0	0	0
Essex	31	981.9	4	13	1	2	2	3	0	1	0	0	2
Everett	411	966.4	104	106	39	7	25	22	13	8	5	0	4
Fairhaven	257	962.9	104	47	12	4	19	6	5	5	1	0	1
Fall River	1,127	933.4	333	246	72	20	77	55	44	30	9	2	5
Falmouth	414	798.1	100	122	32	11	38	27	14	8	10	1	0
Fitchburg	436	959.7	119	104	27	4	31	22	17	7	2	0	1
Florida	6	1,165.6	2	1	0	0	0	0	0	1	1	0	0
Foxborough	117	803.9	36	34	9	2	6	7	2	2	1	0	0
Framingham	541	739.1	135	130	24	8	33	17	13	20	2	2	8
Franklin	176	912.2	50	50	15	6	8	6	4	6	0	1	2
Freetown	45	707.2	14	12	3	1	0	2	3	0	0	0	0
Gardner	258	987.9	64	65	17	8	16	13	15	8	3	0	2
Gay Head (Aquinnah)	5	2,070.9	2	1	0	0	0	0	1	0	0	0	0
Georgetown	43	758.9	12	12	6	0	3	1	0	3	0	0	0
Gill	8	499.3	2	1	0	0	0	2	0	0	0	0	0
Gloucester	264	718.6	68	72	15	4	21	16	6	5	1	0	2
Goshen	7	951.9	1	4	1	1	0	0	0	0	0	0	0

Table 23. Selected Causes of Death by Community, Massachusetts: 2001 (continued)

COMMUNITY	Total Deaths	Age- adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
Gosnold	1	2242.1	0	0	0	0	0	0	0	0	0	0	0
Grafton	107	815.9	28	34	9	3	4	3	5	5	1	1	1
Granby	42	795.5	15	8	5	0	2	3	1	2	0	0	1
Granville	6	492.4	1	2	1	0	1	0	0	1	0	0	0
Great Barrington	122	1,045.6	25	24	5	4	10	13	7	5	1	0	2
Greenfield	231	833.0	56	48	11	3	24	18	5	14	0	0	3
Groton	46	711.4	5	15	2	1	3	0	0	0	2	0	3
Groveland	26	568.1	7	5	1	0	2	2	0	2	0	0	0
Hadley	65	873.8	22	12	2	2	6	1	2	1	4	0	0
Halifax	56	775.1	17	17	4	1	0	4	0	1	0	0	0
Hamilton	40	640.8	11	13	1	0	2	1	0	1	0	0	0
Hampden	48	843.0	19	4	1	0	2	5	0	0	1	0	1
Hancock	4	582.6	0	2	1	0	0	0	0	0	0	0	1
Hanover	91	825.7	23	22	4	5	4	5	2	3	1	0	2
Hanson	63	925.0	17	14	7	0	4	2	2	3	0	0	3
Hardwick	31	1,106.9	13	5	0	1	0	1	4	1	0	0	1
Harvard	28	719.0	8	10	3	0	0	1	1	0	0	0	0
Harwich	180	668.9	36	52	12	7	8	13	2	7	1	0	1
Hatfield	41	989.0	9	13	3	0	2	1	1	1	1	0	0
Haverhill	570	894.5	166	134	35	6	29	31	18	16	3	0	4
Hawley	7	1,632.6	3	0	0	0	1	1	0	0	0	0	0
Heath	4	680.6	0	2	0	0	0	0	0	0	0	0	0
Hingham	182	783.4	45	42	12	1	14	13	1	8	1	0	1
Hinsdale	14	957.2	6	4	0	1	1	0	2	0	0	0	0
Holbrook	109	917.1	34	32	12	2	5	8	1	1	0	0	0
Holden	137	766.1	27	29	6	2	8	13	4	7	1	0	0
Holland	9	539.4	3	4	2	0	0	2	0	0	0	0	0
Holliston	78	833.2	23	28	3	4	3	2	2	2	2	0	0
Holyoke	480	918.7	144	99	30	12	41	23	9	26	3	3	1
Hopedale	76	975.1	18	14	5	2	4	1	3	2	1	0	0
Hopkinton	62	767.3	12	23	9	1	0	4	0	1	0	0	1
Hubbardston	16	621.3	3	7	2	2	0	2	0	0	0	0	0
Hudson	116	702.6	29	35	8	1	8	9	2	2	1	0	0
Hull	100	984.1	21	26	10	2	6	5	2	4	1	0	0

Table 23. Selected Causes of Death by Community, Massachusetts: 2001 (continued)

COMMUNITY	Total Deaths	Age- adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
Huntington	13	741.3	4	5	1	1	1	0	0	0	0	0	0
Ipswich	118	739.9	33	28	7	1	10	7	2	3	2	0	0
Kingston	112	800.6	27	26	5	2	8	8	1	3	0	1	0
Lakeville	81	866.1	18	20	8	1	6	7	1	2	2	0	3
Lancaster	53	808.8	9	11	4	1	6	3	1	3	1	0	0
Lanesborough	20	728.2	4	5	0	1	1	2	0	0	1	0	0
Lawrence	516	836.4	145	110	34	7	29	23	21	18	8	5	1
Lee	84	1,129.9	19	21	5	0	4	5	5	3	0	0	0
Leicester	97	914.2	22	29	6	4	10	8	3	5	3	0	0
Lenox	85	747.7	22	14	3	0	6	10	2	2	0	0	1
Leominster	398	896.7	108	77	14	4	37	28	11	12	5	2	3
Leverett	8	521.8	3	4	0	0	1	0	0	0	0	0	0
Lexington	265	555.8	52	71	11	4	18	12	10	8	0	0	1
Leyden	1	227.7	0	1	1	0	0	0	0	0	0	0	0
Lincoln	26	467.0	8	7	0	1	2	1	0	2	0	0	0
Littleton	70	862.4	21	13	2	0	8	2	4	2	2	0	3
Longmeadow	187	746.0	41	37	6	3	13	5	1	11	3	0	2
Lowell	890	966.7	250	195	61	15	55	50	17	23	15	5	6
Ludlow	179	762.3	52	42	12	3	11	8	5	4	2	0	0
Lunenburg	69	849.1	14	22	4	1	1	3	2	2	4	0	2
Lynn	821	913.7	215	210	55	16	45	41	25	31	8	2	5
Lynnfield	118	799.9	26	32	7	4	4	7	5	2	1	0	0
Malden	515	838.3	146	130	37	9	36	30	13	14	4	0	4
Manchester	44	663.2	11	12	1	1	2	2	0	2	0	0	0
Mansfield	97	771.5	27	26	5	1	4	6	1	4	2	0	1
Marblehead	168	660.3	45	43	9	4	15	5	1	3	0	0	2
Marion	69	910.0	26	15	4	3	3	5	3	2	0	0	0
Marlborough	296	840.9	82	70	22	2	13	20	7	7	4	0	2
Marshfield	176	941.2	46	58	23	2	8	10	1	4	2	0	3
Mashpee	120	782.6	33	31	8	3	9	7	0	3	3	1	1
Mattapoisett	50	628.0	18	11	1	1	0	4	0	2	1	0	0
Maynard	51	481.6	11	14	3	0	3	5	2	2	0	0	0
Medfield	58	680.2	14	16	6	4	3	2	2	1	0	0	2
Medford	600	800.5	150	154	49	17	39	26	14	22	2	0	4
Medway	84	916.8	24	15	7	3	2	5	2	6	1	1	0
Melrose	285	758.9	88	69	21	8	12	14	8	12	0	0	1
Mendon	28	694.6	7	14	3	1	1	1	0	1	0	0	1

Table 23. Selected Causes of Death by Community, Massachusetts: 2001 (continued)

COMMUNITY	Total Deaths	Age-adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
Merrimac	32	626.6	7	11	3	1	2	4	1	0	0	0	0
Methuen	432	807.9	139	101	24	8	27	16	6	11	0	0	3
Middleborough	193	1,073.6	62	44	13	2	5	6	4	6	7	0	1
Middlefield	4	719.6	1	2	2	0	0	0	1	0	0	0	0
Middleton	40	728.4	14	9	3	0	3	2	0	1	0	0	0
Milford	186	640.5	49	56	19	3	15	6	4	3	2	1	1
Millbury	127	773.2	39	24	7	4	6	10	1	4	2	0	1
Millis	40	726.0	11	10	3	2	0	2	0	0	2	0	0
Millville	12	674.5	2	5	0	1	0	0	0	1	0	0	0
Milton	244	690.3	73	62	11	4	14	11	5	6	4	0	1
Monroe	0	0.0	0	0	0	0	0	0	0	0	0	0	0
Monson	53	743.4	21	7	4	1	4	3	0	2	2	0	0
Montague	99	972.4	32	13	6	1	5	6	3	7	0	0	1
Monterey	4	1,033.9	2	1	1	0	0	0	0	0	0	0	0
Montgomery	9	2,110.2	4	2	0	0	0	0	0	0	0	0	0
Mount Washington	0	0.0	0	0	0	0	0	0	0	0	0	0	0
Nahant	40	670.7	8	14	4	1	3	0	1	4	0	1	0
Nantucket	66	819.9	11	22	6	0	4	3	0	4	0	0	0
Natick	279	761.1	83	69	22	5	18	13	5	6	0	0	3
Needham	287	613.1	76	59	14	7	15	18	5	10	0	0	0
New Ashford	1	398.7	0	0	0	0	0	0	0	0	0	0	0
New Bedford	1,182	977.0	387	246	67	17	70	60	36	31	13	5	6
New Braintree	5	478.6	0	1	0	0	0	1	0	0	2	0	0
New Marlborough	7	437.7	3	2	0	1	0	0	0	0	2	0	0
New Salem	5	615.4	1	2	0	0	0	1	0	0	0	0	0
Newbury	47	813.8	11	19	8	0	1	3	1	1	0	0	0
Newburyport	176	845.7	59	35	6	5	5	10	7	4	0	1	0
Newton	647	594.1	167	183	28	18	42	32	12	13	6	0	1
Norfolk	36	715.6	12	9	4	0	2	2	0	2	0	0	1
North Adams	183	862.0	53	32	6	1	15	7	5	7	3	0	1
North Andover	241	725.2	64	54	14	1	17	8	5	10	2	0	0
North Attleboro	183	829.9	47	48	11	4	4	14	5	3	4	0	1
North Brookfield	30	630.7	10	6	3	0	0	2	0	0	1	0	1

Table 23. Selected Causes of Death by Community, Massachusetts: 2001 (continued)

COMMUNITY	Total Deaths	Age-adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
North Reading	102	895.3	23	34	9	2	8	4	2	2	2	0	4
Northampton	281	812.7	81	60	14	3	15	13	6	17	2	0	2
Northborough	92	922.9	24	20	6	4	6	5	0	5	4	0	0
Northbridge	165	1,049.4	44	28	8	1	14	11	5	10	0	0	2
Northfield	28	887.2	9	7	2	1	3	0	0	1	0	0	0
Norton	110	878.8	21	25	8	2	10	8	3	8	3	1	0
Norwell	100	857.8	31	23	4	1	7	5	1	2	1	0	2
Norwood	311	767.1	69	80	28	7	21	15	11	6	1	0	3
Oak Bluffs	42	1,066.8	11	10	3	1	8	0	1	1	2	0	0
Oakham	7	649.8	3	2	0	0	1	0	0	0	0	0	0
Orange	63	796.4	21	14	5	2	4	4	0	1	2	0	2
Orleans	113	691.5	29	35	5	3	6	2	3	2	0	0	0
Otis	12	914.2	2	5	1	0	0	1	0	0	0	0	1
Oxford	103	897.4	26	24	7	3	7	9	1	5	2	0	2
Palmer	134	894.7	41	28	9	1	4	7	9	8	1	0	2
Paxton	36	812.7	9	11	1	3	6	2	0	2	1	0	1
Peabody	518	822.9	170	123	38	4	44	20	12	11	3	1	2
Pelham	8	507.8	4	2	2	0	0	0	0	0	0	0	0
Pembroke	114	1,037.7	36	31	10	6	5	5	3	5	2	0	0
Pepperell	61	869.6	20	15	1	1	5	1	2	0	1	0	0
Peru	5	902.6	0	2	0	0	0	0	0	2	0	0	0
Petersham	10	610.0	3	4	1	0	2	0	0	0	0	0	0
Phillipston	6	463.4	4	1	0	0	0	0	0	0	0	0	0
Pittsfield	545	809.5	147	124	33	7	28	32	23	9	4	1	5
Plainfield	2	390.7	1	1	1	0	0	0	0	0	0	0	0
Plainville	56	796.3	11	18	3	1	1	5	0	1	1	0	1
Plymouth	466	895.0	134	114	32	9	30	27	11	15	7	0	6
Plympton	14	815.9	2	8	4	0	0	1	0	0	1	0	0
Princeton	9	370.6	1	3	1	0	2	1	2	0	0	0	0
Provincetown	54	1,064.8	12	13	6	0	1	0	0	4	0	0	2
Quincy	934	834.2	255	228	81	10	49	41	15	34	7	0	10
Randolph	296	846.0	78	70	21	6	18	15	11	7	5	0	3
Raynham	103	854.7	22	28	6	1	3	9	4	1	1	0	0
Reading	214	809.2	61	53	13	5	15	11	6	8	3	0	1
Rehoboth	58	739.6	13	17	3	1	8	4	1	0	0	0	0
Revere	499	838.3	126	152	47	9	34	15	18	18	4	0	4
Richmond	8	424.7	2	2	0	0	1	0	0	0	0	0	0
Rochester	20	595.9	5	2	1	0	3	0	2	1	2	0	1

Table 23. Selected Causes of Death by Community, Massachusetts: 2001 (continued)

COMMUNITY	Total Deaths	Age- adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
Rockland	177	1,002.6	51	53	15	8	9	8	4	5	0	0	0
Rockport	91	662.0	30	25	5	2	8	6	0	1	0	0	0
Rowe	4	755.3	2	1	0	0	0	0	0	0	0	0	0
Rowley	46	1,023.4	14	8	1	1	4	1	1	3	2	0	1
Royalston	12	1,017.8	4	4	2	0	0	0	0	0	1	0	0
Russell	10	851.3	3	3	2	0	0	1	0	0	0	0	1
Rutland	32	748.1	8	13	5	0	1	1	0	0	0	0	1
Salem	354	784.7	82	101	25	9	32	18	4	9	0	2	3
Salisbury	66	902.6	18	19	6	1	5	2	2	1	1	1	1
Sandisfield	13	1,353.3	4	4	2	0	0	2	0	0	0	0	0
Sandwich	157	740.6	50	41	15	2	12	7	2	1	2	2	0
Saugus	277	815.2	77	69	13	7	14	11	3	15	2	0	5
Savoy	9	1,342.7	2	4	2	1	1	0	0	0	0	0	0
Scituate	155	758.0	50	40	13	4	10	12	2	8	2	0	1
Seekonk	94	744.2	31	19	6	1	4	3	5	7	2	0	2
Sharon	110	718.2	34	27	8	3	4	5	3	7	0	0	0
Sheffield	27	763.9	6	9	3	1	1	1	0	1	3	0	0
Shelburne	31	901.2	5	7	2	0	6	0	1	3	0	0	0
Sherborn	19	523.9	5	1	0	0	1	0	0	2	0	0	0
Shirley	48	1,047.1	12	15	2	0	2	4	1	1	0	0	1
Shrewsbury	222	651.0	55	49	7	3	15	13	9	7	2	0	2
Shutesbury	5	639.6	3	0	0	0	1	0	0	0	1	0	0
Somerset	193	683.3	59	50	13	5	7	9	2	5	2	0	0
Somerville	565	857.9	127	147	39	7	30	24	15	21	5	2	5
South Hadley	160	716.5	58	38	9	3	19	7	2	3	0	0	0
Southampton	42	898.7	11	12	2	1	3	3	0	0	0	0	0
Southborough	35	615.4	5	13	2	1	2	2	3	1	0	0	0
Southbridge	178	843.3	53	40	13	7	12	8	4	4	4	0	2
Southwick	70	856.3	22	20	5	1	3	1	2	3	0	0	0
Spencer	110	1,005.1	20	25	7	1	8	9	4	3	1	0	0
Springfield	1,414	953.9	378	270	69	24	66	57	49	42	22	12	9
Sterling	43	820.1	11	14	0	3	3	2	0	2	0	0	0
Stockbridge	18	464.0	6	7	2	1	0	1	0	1	0	0	0
Stoneham	222	709.1	48	70	14	7	7	12	12	7	1	0	0
Stoughton	248	778.5	69	57	16	3	11	10	5	9	5	0	3
Stow	35	905.2	12	8	2	1	3	2	0	2	2	0	0
Sturbridge	81	998.9	22	22	7	2	6	3	2	3	1	0	1
Sudbury	109	808.9	19	40	10	5	8	4	1	6	0	0	1

Table 23. Selected Causes of Death by Community, Massachusetts: 2001 (continued)

COMMUNITY	Total Deaths	Age- adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
Sunderland	16	560.5	4	5	1	0	1	0	0	0	0	0	2
Sutton	45	846.0	13	14	3	0	3	1	1	1	3	0	0
Swampscott	154	656.3	43	31	6	5	10	8	3	4	0	0	1
Swansea	146	768.4	49	33	8	3	12	5	4	3	3	0	1
Taunton	523	909.8	147	117	35	11	30	22	18	19	13	1	5
Templeton	76	1,103.0	21	19	8	0	7	3	1	3	1	0	0
Tewksbury	220	869.8	57	56	18	4	10	14	3	8	4	0	2
Tisbury	39	740.4	7	17	5	2	1	4	1	2	0	0	0
Tolland	2	608.7	1	0	0	0	0	1	0	0	0	0	0
Topsfield	57	809.6	17	13	4	1	1	2	2	1	1	0	0
Townsend	45	860.3	10	13	4	0	4	3	0	1	2	1	1
Truro	18	673.4	0	5	1	0	2	3	0	1	1	0	0
Tyngsborough	62	992.9	22	17	4	2	6	0	1	2	2	0	2
Tyringham	6	852.5	1	1	1	0	1	1	0	0	0	0	0
Upton	37	836.4	14	7	2	0	2	2	2	2	0	0	0
Uxbridge	86	946.3	23	28	7	2	5	4	4	3	2	0	0
Wakefield	254	828.9	69	51	12	2	19	12	9	8	3	0	0
Wales	13	1,014.5	4	5	2	0	1	0	0	0	0	1	0
Walpole	202	753.8	51	54	17	5	12	11	5	1	0	0	0
Waltham	512	827.7	113	120	34	7	41	23	16	11	2	3	4
Ware	104	899.2	33	30	10	3	6	4	4	0	0	0	1
Wareham	271	1,099.9	80	73	37	4	17	15	6	7	4	0	4
Warren	46	963.3	11	11	3	0	2	2	3	0	2	1	1
Warwick	1	196.5	0	0	0	0	0	0	0	0	0	0	0
Washington	5	1,460.4	1	0	0	0	1	0	0	1	0	0	0
Watertown	300	683.2	78	72	25	6	25	14	3	13	2	0	1
Wayland	98	680.7	20	34	8	1	8	3	2	3	1	0	0
Webster	190	863.8	48	38	6	0	11	5	7	1	2	0	2
Wellesley	154	504.9	36	35	6	5	8	7	3	3	4	0	2
Wellfleet	35	824.9	4	9	1	1	6	3	2	1	0	0	1
Wendell	0	0.0	0	0	0	0	0	0	0	0	0	0	0
Wenham	36	795.9	3	12	4	2	3	2	0	1	0	0	0
West Boylston	77	851.6	17	18	7	4	8	6	1	6	0	0	1
West Bridgewater	91	964.6	22	23	9	2	1	3	2	5	2	1	1
West Brookfield	34	458.8	10	11	2	1	1	2	0	1	0	0	0
West Newbury	25	822.8	4	13	4	0	1	1	0	1	0	0	0

Table 23. Selected Causes of Death by Community, Massachusetts: 2001 (continued)

COMMUNITY	Total Deaths	Age-adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Female Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
West Springfield	328	973.5	98	79	19	4	18	21	7	13	1	0	5
West Stockbridge	14	752.8	3	5	1	1	1	0	0	0	1	0	0
West Tisbury	8	413.3	2	3	0	0	1	0	0	0	0	0	0
Westborough	161	783.8	30	28	9	3	10	13	4	9	1	0	0
Westfield	380	867.2	118	88	26	9	20	14	5	8	6	0	2
Westford	102	758.8	21	39	10	4	6	4	2	3	1	0	2
Westhampton	9	719.3	0	3	2	0	1	1	0	0	0	0	0
Westminster	41	697.7	12	6	0	2	5	4	0	0	2	0	0
Weston	110	604.5	31	13	3	0	15	5	2	4	1	0	0
Westport	117	764.8	38	30	3	2	4	6	3	5	1	0	0
Westwood	161	682.2	38	44	11	1	12	9	3	6	0	0	1
Weymouth	523	829.5	151	120	43	7	21	28	10	23	4	0	5
Whately	6	359.5	2	3	0	0	0	0	0	0	0	0	0
Whitman	100	925.6	21	29	11	2	5	6	1	5	1	0	0
Wilbraham	114	627.9	39	20	5	3	8	5	2	0	2	0	0
Williamsburg	14	548.9	2	3	1	0	1	1	0	1	1	0	1
Williamstown	84	604.9	25	13	4	1	10	5	2	4	0	0	1
Wilmington	177	960.8	47	48	18	3	7	13	6	2	1	0	1
Winchendon	77	930.5	23	18	6	0	0	8	3	1	0	1	0
Winchester	192	603.5	51	52	12	0	17	8	4	7	3	0	1
Windsor	6	870.3	0	3	0	0	0	0	0	0	1	0	0
Winthrop	180	736.5	44	55	14	3	9	6	2	5	1	0	0
Woburn	345	833.9	96	88	28	5	32	15	7	12	2	2	2
Worcester	1,901	956.2	490	395	91	27	114	94	61	60	24	6	7
Worthington	9	805.5	3	2	0	1	1	1	0	0	0	0	0
Wrentham	79	694.3	19	24	4	5	3	5	0	4	0	0	0
Yarmouth	415	755.9	90	120	45	9	30	23	16	8	2	0	2

1. All rates are age adjusted using the 2000 US standard population. 2. Includes only female breast cancer. 3. The title of this cause of changed between ICD-10 an ICD-9. Chronic Lower Respiratory Disease (ICD-10 title) corresponds to Chronic Obstructive Pulmonary Disease (COPD) (ICD-9 title). 4. Age-adjusted rates based on fewer than five events are excluded.

Table 24. Selected Causes of Death by Community Health Network Area (CHNA), Massachusetts: 2001

CHNA (Name and Number)	Total Deaths	Age-adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
Massachusetts	**56,733**	**818.2**	**15,136**	**13,745**	**3,692**	**1,047**	**3,534**	**2,806**	**1,422**	**1,769**	**568**	**153**	**420**
Community Health Network of Berkshire (1)	1,574	820.4	424	355	91	24	96	94	52	43	22	1	15
Upper Valley Health Web (Franklin County) (2)	792	767.3	217	181	52	12	72	41	14	36	9	0	8
Partnership for Health in Hampshire County (Northampton) (3)	1,123	756.9	348	269	76	20	79	54	25	33	8	0	8
The Community Health Connection (Springfield) (4)	2,881	885.1	794	583	145	49	148	129	82	102	37	12	30
Community Health Network of Southern Worcester County (5)	1,027	840.0	272	251	67	22	63	54	28	18	17	2	10
Community Partners for Health (Milford) (6)	1,087	835.8	293	280	79	24	63	42	29	44	10	3	9
Community Health Network of Greater Metro West (Framingham) (7)	2,638	747.3	667	697	179	58	145	135	51	83	22	2	21
Community Wellness Coalition (Worcester) (8)	2,923	877.8	754	633	145	53	183	162	91	102	37	7	18
Fitchburg/Gardner Community Health Network (9)	2,087	868.9	551	512	118	33	140	122	70	53	27	4	15
Greater Lowell Community Health Network (10)	2,020	893.9	518	492	146	36	149	116	40	53	29	5	20
Greater Lawrence Community Health Network (11)	1,432	765.3	415	323	87	23	87	62	33	46	11	5	5
Greater Haverhill Community Health Network (12)	1,237	863.8	348	314	79	19	60	67	37	36	9	2	8
Community Health Network North (Beverly/Gloucester) (13)	1,121	762.9	292	279	61	23	89	59	20	24	9	1	9
North Shore Community Health Network (14)	2,754	822.5	747	696	180	56	191	126	63	82	16	7	19
Greater Woburn/Concord/Littleton Community Health Network (15)	1,641	690.0	410	432	111	28	125	71	47	54	12	2	17
North Suburban Health Alliance (Medford/Malden/Melrose) (16)	2,603	820.2	689	667	194	57	161	131	77	81	20	0	18
Greater Cambridge/Somerville Community Health Network (17)	2,143	770.9	510	549	153	34	151	88	49	72	10	5	15
West Suburban Health Network (Newton/Waltham) (18)	2,151	664.1	531	511	109	44	148	114	46	54	15	3	10
Alliance for Community Health (Boston/Chelsea/Revere/Winthrop) (19)	5,995	871.3	1,470	1,404	359	92	333	234	142	221	47	65	41
Blue Hills Community Health Alliance (Greater Quincy) (20)	3,657	805.2	988	919	280	63	192	184	73	129	34	0	29
Four (For) Communities (Holyoke, Chicoppe, Ludlow, Westfield) (21)	1,646	855.8	481	389	111	39	110	80	34	49	16	3	7
Greater Brockton Community Health Network (22)	1,969	883.9	546	479	147	32	110	110	54	63	25	8	19
South Shore Community Partners in Prevention (Plymouth) (23)	1,515	902.0	422	400	115	39	81	79	31	47	17	1	16
Greater Attleboro-Taunton Health & Education Response (24)	1,911	863.9	506	458	132	37	105	113	48	62	38	4	15
Partners for a Healthier Community (Fall River) (25)	1,583	854.2	479	359	96	30	100	75	53	43	15	2	6
Greater New Bedford Health & Human Services Coalition (26)	2,268	919.8	752	501	147	36	139	110	62	59	26	5	15
Cape Cod & Islands Community Health Network (27)	2,951	748.0	711	812	233	64	214	154	71	80	30	4	17

1. All rates are age adjusted using the 2000 US standard population. 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).

Table 25. Selected Causes of Death by County, Massachusetts: 2001

County	Total Deaths	Age- adjusted Death Rate[1]	Heart Disease	Total Cancer	Lung Cancer	Breast Cancer[2]	Stroke	Chronic Lower Respiratory Disease[3]	Diabetes	Influenza & Pneumonia	Motor Vehicle	Homicide	Suicide
Massachusetts	**56,733**	**818.2**	**15,136**	**13,745**	**3,692**	**1,047**	**3,534**	**2,806**	**1,422**	**1,769**	**568**	**153**	**420**
Barnstable	2,766	749.2	672	752	217	61	196	145	68	72	28	4	17
Berkshire	1,574	820.4	424	355	91	24	96	94	52	43	22	1	15
Bristol	5,221	867.3	1,564	1,193	319	95	319	272	150	148	65	11	28
Dukes	119	711.9	28	38	10	3	14	6	3	4	2	0	0
Essex	6,544	804.2	1,802	1,612	407	121	427	314	153	188	45	15	41
Franklin	631	754.4	173	140	38	9	58	35	11	29	5	0	8
Hampden	4,563	873.9	1,285	988	264	89	259	211	116	151	55	16	37
Hampshire	1,136	756.1	352	274	77	21	80	54	25	33	8	0	8
Middlesex	11,715	772.1	2,967	3,003	799	214	807	557	283	350	98	18	97
Nantucket	66	819.9	11	22	6	0	4	3	0	4	0	0	0
Norfolk	5,773	760.4	1,534	1,448	412	118	291	280	111	191	50	2	47
Plymouth	4,149	900.1	1,171	1,026	325	81	233	231	98	137	55	9	43
Suffolk	5,575	892.6	1,360	1,300	336	84	309	224	136	199	43	65	37
Worcester	6,897	857.2	1,792	1,594	391	127	441	380	216	220	92	12	42

1 All rates are age adjusted using the 2000 US standard population. 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).

APPENDIX

Table A1. Age-Adjusted Death Rates[1] for Selected Causes of Death by Race and Gender, Massachusetts: 2001

Cause	ICD-10 Code	White[2]			Black[2]		
		Total	Male	Female	Total	Male	Female
All Deaths		**814.9**	**985.7**	**695.2**	**981.7**	**1,171.0**	**833.7**
Heart Disease	I00-I09, I11, I13, I20-I51	215.8	272.5	175.1	235.8	305.2	187.2
Cancer	C00-C97	203.8	252.9	174.9	218.0	272.7	181.8
Stroke	I60-I69	49.3	53.5	46.3	61.1	52.0	63.3
Chronic Lower Respiratory Disease[3]	J40-J47	41.2	47.6	38.2	26.0	34.0	20.8
Influenza and Pneumonia	J10-J18	24.7	30.5	21.7	23.1	28.8	20.0
Diabetes	E10-E14	19.8	23.9	17.1	45.8	43.1	46.8
Alzheimer's Disease	G30	21.1	18.4	22.1	24.1	18.7	26.5
Nephritis	N00-N07, N17-N19, N25-N27	16.7	21.8	13.7	35.2	32.2	36.7
Septicemia	A40-A41	13.5	15.5	12.0	22.8	21.0	22.9
HIV Diseases	B20-B24	2.9	4.5	1.4	21.6	32.3	12.3
Perinatal Conditions	P00-P96	4.1	4.2	3.9	10.9	12.1	9.6
All Injuries	V01-Y98	40.7	59.4	24.1	56.7	87.4	29.4
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	8.9	13.6	4.7	9.3	13.8	5.2
Suicide	X60-X84, Y87.0	6.8	11.4	2.7	4.2	8.2	1.2
Homicide	X85-Y09, Y87.1	1.5	2.4	0.7	13.6	25.1	2.8

1. 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). 4. Rate not calculated, based on fewer than 5 deaths.

Technical Notes

Data Sources

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

Differences from Previously Published Data

Age-Adjusted Rates

A new standard population is used in the calculation of age-adjusted rates. The 2000 US projected population replaces the 1940 US projected population as the standard population for age-adjustment. All age-adjusted rates published in this report have been re-calculated with the new standard population. Age-adjusted rates can only be compared to age-adjusted rates that have been calculated using the same standard population. **Therefore, comparisons of age-adjusted rates published in this report using the 2000 US standard population to age-adjusted rates previously published using the 1940 standard population are not valid!**

Population Estimates

The Massachusetts Department of Public Health (DPH) Population 2000 file is a preliminary file of 2000 population estimates for Massachusetts. It is based upon the US Census 2000 SF1 file (released June, 2001) for Massachusetts, which contains data on population and housing for the 351 towns, 14 counties, and the state overall.

The DPH file was derived from the Census 2000 file by allocating persons who indicated "some other race" or multiple races to the conventional DPH race categories: "White", "Black or African American", "Asian" and "Native American." In Census 2000, unlike previous censuses, respondents were able to classify themselves by Hispanic ethnicity and by single or multi-race categories, including "some other race." In order make the DPH Population 2000 file consistent with previous years' population files, the DPH Population 2000 file maintains the prior race and Hispanic categories. The DPH Population 2000 file used in this report is preliminary. A final file will be released later this year.

1999 rates in this publication are based on the DPH 1999 Population file, which is a linear interpolation between the preliminary draft Population 2000 file and the 1998 MISER population estimates. All 1999 population-based rates in this year's report have been recalculated using the DPH 1999 Population file.

2000 Death Rates

Death rates for 2000 are calculated using the preliminary DPH Population 2000.

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 with1999, 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 Appendix pages 114-115 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 to 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 the1999 or 2000 rate, we see that deaths to influenza and pneumonia have remained fairly constant between 1996-2000, and have actually increased between 1998 and 1999 (28.1 to 30.3 per 100,000, respectively) after taking the changes in the classification system into account.

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

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 to age-adjusted rates previously published which 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 actual number of deaths in a given year for a specific age group by the population in that age group 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. Community Health Network Areas 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, the table on pages 93-95 provides the appropriate 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.

Please see page 102 for an example of how to calculate a comparability modified rate.
See also, comparability ratio.

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 (ie. ICD-10) by the number of deaths for a selected cause of death classified by the old revision (ie. ICD-9).

More specifically, the comparability ratios 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 doubled 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 comparability ratio 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 to 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.

Please see page 102 for an example of how to calculate a comparability ratio.
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 2001 is on page 123) In a properly completed death certificate, the immediate cause of death is recorded on line 29a. The other mentioned cause (s) 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.

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 pages 109-110.

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 pages 109-110.

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.

MISER

MISER is the acronym for Massachusetts Institute for Social and Economic Research, which is the state data center. The 1991-1995 Massachusetts annual population estimates (released in September 1999), 1996-1997 population estimates (released in November 1999) and 1998 population estimates (released in September 2000) used in this publication are from this Institute. All 1999 death rates in last year's publication (*Massachusetts Deaths 1999*) were calculated using 1998 MISER population estimates as denominators (the latest available population estimates at the time of publication). These rates have been recalculated in *Massachusetts Deaths 2000* using the DPH 1999 Population estimates as denominators.

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 their own residents.

Population

Population counts are based on US decennial census counts, and population estimates are calculated for intercensal years. For 1981-1989, population estimates are derived as linear interpolations from the 1980 and 1990 census. For 1991-1995, population estimates are based on MISER's annual estimates released in September 1999. Population estimates for 1996 and 1997 are based on MISER's annual estimates released in November 1999. Population estimates for 1998 population are based on MISER's annual estimates released in September 2000.

The Massachusetts Department of Public Health (DPH) Population 2000 file is a preliminary file of 2000 population estimates for Massachusetts. It is based upon the US Census 2000 SF1 file (released June, 2001) for Massachusetts, which contains data on population and housing for the 351 towns, 14 counties, and the state overall.
The DPH file was derived from the Census 2000 file by allocating persons who indicated "some other race" or multiple races to the conventional DPH race categories: "White", "Black or African American", "Asian" and "Native American." In Census 2000, unlike previous censuses, respondents were able to classify themselves by Hispanic ethnicity and by single or multi-race categories, including "some other race." In order make the DPH Population 2000 file consistent with previous years' population files, the DPH Population 2000 file maintains the prior race and Hispanic categories. The DPH Population 2000 file used in this report is preliminary. A final file will be released later this year.

1999 rates in this publication are based on the DPH 1999 Population file, which is a linear interpolation between the preliminary draft Population 2000 file and the 1998 MISER population estimates.

Potential Years of Life Lost

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. 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).

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 last year's 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 1989-2000 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 and Canada 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.

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's Disease	C81	201
Non-Hodgkin's 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, 404-429
Stroke (Cerebrovascular disease)	I60-I69	430-438
Influenza and pneumonia	J10-J18	480-487
Chronic lower respiratory diseases[1]	J40-J47	490-496
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
Signs and symptoms	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-Y98	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
Terrorism	U01-U02 (homicide), U03 (suicide)	—

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 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's 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's 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-E928, E929.2-E929.9
Unintentional non-transport injuries	W00-X59, Y86	
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
Signs and symptoms	R00-R99	780-797, 798.1-798.9, 799
Sudden infant death syndrome (SIDS)	R95	798.0
Terrorism	U01-U02 (homicide), U03 (suicide)	--

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	Y93-Y95
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	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
Terrorism	U01-U02 (homicide), U03 (suicide)

Table A5. ICD-10 Poisoning Codes Used in this Publication

Manner of Death	ICD-10 Code
All Poisoning Deaths	X40-X49, X60-X69, X85-X90, Y87.0, Y10-Y19, Y35.2
Narcotics and psychodysleptics	X42, X62, Y12
Other and unspecified drugs, medicaments, biological substances	X44, X64, X89, Y14
Antiepileptic, sedative-hypnotic, antiparkinsonism & psychotropic	X41, X61, Y11
Gases and vapours	X47, X67, X86, X88, Y17, Y35.2
Nonopioid analgesics, antipyretics & antirheumatics	X40, X60, Y10
Alcohol	X45, X65, Y15
Organic solvents and halogenated hydrocarbons	X46, X66, Y16
Other drugs acting on autonomic nervous system	X43, X63, Y13
Other and unspecified chemicals and noxious substances	Remaining causes

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, Y93-Y95
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
15-29	Drownings	W65-W74, X71, X92, Y21, V90, V92
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's Disease	C81	201	0.9855
Non-Hodgkin's lymphoma	C82-C85	200, 202	0.9781
Leukemia	C91-C95	204-208	1.0119
Multiple myeloma and immunoproliferative neoplasms	C88, C90	203	1.0383
Diabetes Mellitus	E10-E14	250	1.0082
Alzheimer's Disease	G30	331.0	1.5536
Heart Disease	I00-I09, I11, I13, I20-I51	390-398, 402, 404, 410-429	0.9858
Stroke (Cerebrovascular disease)	I60-I69	430-434, 436-438	1.0588
Influenza and pneumonia	J10-J18	480-487	0.6982
Chronic lower respiratory diseases	J40-J47	490-494,496	1.0478
Chronic liver disease and cirrhosis	K70, K73-K74	571	1.0367
Nephritis	N00-N07, N17-N19, N25-N27	580-589	1.2320
Congenital malformations, deformations, and chromosomal abnormalities	Q00-Q99	740-759	0.8470
Certain conditions originating in the perinatal period (Perinatal Conditions)	P00-P96	760-771.2, 771.4-779	1.0658
External causes of injuries and poisonings (intentional, unintentional and of undetermined intent)	V01-Y98	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 page 80 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	480-487	0.7624
Certain conditions originating in the perinatal period (Perinatal Conditions)	P00-P96	760-771.2, 771.4-779	1.0581
Newborn affected by maternal complications of pregnancy	P01	761	1.0295
Newborn affected by complications of placenta, cord and membranes	P02	762	1.0470
Disorders relating to short gestation and low birthweight	P07	765	1.1060
Intrauterine hypoxia and birth asphyxia	P20-P21	768	1.4477
Respiratory distress of newborn	P22	769	1.0257
Other respiratory conditions originating in perinatal period	P23-P28	770	0.8455
Infections specific to the perinatal period	P35-P39	771.0-771.2, 771.4-771.8	1.0199
Neonatal hemorrhage	P50-P52, P54	772	1.4369
Congenital malformations, deformations, and chromosomal abnormalities	Q00-Q99	740-759	0.9064
Anecephaly 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-Y98	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 page 80 for an example of how to apply comparability ratios

Table A9. Population Estimates for Massachusetts Community Health Network Areas (CHNA) and Counties, 2000[1]

CHNA	POPULATION	COUNTY	POPULATION
1. Community Health Network of Berkshire	134,953	Barnstable	222,230
2. Upper Valley Health Web (Franklin County)	86,889	Berkshire	134,953
3. Partnership for Health in Hampshire County	150,077	Bristol	534,678
4. The Community Health Connection (Springfield)	291,665	Dukes	14,987
5. Community Health Network of Southern Worcester County	113,702	Essex	723,419
6. Community Partners for Health (Milford Area)	152,117	Franklin	71,535
7. Community Health Network of Greater Metro West	374,478	Hampden	456,228
8. Community Wellness Coalition (Worcester Area)	289,834	Hampshire	152,251
9. Fitchburg/Gardner Area Community Health Network	250,362	Middlesex	1,465,396
10. Greater Lowell Community Health Network	270,083	Nantucket	9,520
11. Greater Lawrence Community Health Network	182,025	Norfolk	650,308
12. Greater Haverhill Community Health Network	144,275	Plymouth	472,822
13. Community Health Network North (Beverly/Gloucester)	118,280	Suffolk	689,807
14. North Shore Community Health Network	278,839	Worcester	750,963
15. Greater Woburn/Concord/Littleton	208,406		
16. North Suburban Health Alliance (Medford/Malden/Melrose)	261,844	**STATE**	**6,349,097**
17. Greater Cambridge/Somerville Community Health Network	278,402		
18. West Suburban Health Network (Newton/Waltham)	253,187		
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	746,914		
20. Blue Hills Community Health Alliance (Quincy Area)	365,457		
21. Four (For) Communities (Holyoke, Chicopee, Ludlow, Westfield)	159,254		
22. Greater Brockton Community Health Network	232,260		
23. South Shore Community Partners in Prevention (Greater Plymouth Area)	180,609		
24. Greater Attleboro-Taunton Health & Education Response	242,659		
25. Partners for a Healthier Community (Fall River Area)	140,256		
26. Greater New Bedford Health & Human Services Coalition	195,533		
27. Cape and Islands Community Health Network	246,737		

1. MDPH 2000 Preliminary Population Estimates (released January 2002).

Table A10. Population Estimates for Massachusetts Communities, 2000

TOWN NAME	COUNTY	CHNA	POPULATION
Abington	Plymouth	22	14,605
Acton	Middlesex	15	20,331
Acushnet	Bristol	26	10,161
Adams	Berkshire	1	8,809
Agawam	Hampden	4	28,144
Alford	Berkshire	1	399
Amesbury	Essex	12	16,450
Amherst	Hampshire	3	34,874
Andover	Essex	11	31,247
Arlington	Middlesex	17	42,389
Ashburnham	Worcester	9	5,546
Ashby	Middlesex	9	2,845
Ashfield	Franklin	2	1,800
Ashland	Middlesex	7	14,674
Athol	Worcester	2	11,299
Attleboro	Bristol	24	42,068
Auburn	Worcester	8	15,901
Avon	Norfolk	22	4,443
Ayer	Middlesex	9	7,287
Barnstable	Barnstable	27	47,821
Barre	Worcester	9	5,113
Becket	Berkshire	1	1,755
Bedford	Middlesex	15	12,595
Belchertown	Hampshire	3	12,968
Bellingham	Norfolk	6	15,314
Belmont	Middlesex	17	24,194
Berkley	Bristol	24	5,749
Berlin	Worcester	9	2,380
Bernardston	Franklin	2	2,155
Beverly	Essex	13	39,862
Billerica	Middlesex	10	38,981
Blackstone	Worcester	6	8,804
Blandford	Hampden	4	1,214
Bolton	Worcester	9	4,148
Boston	Suffolk	19	589,141
Bourne	Barnstable	27	18,721
Boxborough	Middlesex	15	4,868
Boxford	Essex	12	7,921
Boylston	Worcester	8	4,008
Braintree	Norfolk	20	33,828
Brewster	Barnstable	27	10,094
Bridgewater	Plymouth	22	25,185
Brimfield	Hampden	5	3,339
Brockton	Plymouth	22	94,304
Brookfield	Worcester	5	3,051
Brookline	Norfolk	19	57,107
Buckland	Franklin	2	1,991
Burlington	Middlesex	15	22,876
Cambridge	Middlesex	17	101,355
Canton	Norfolk	20	20,775
Carlisle	Middlesex	15	4,717
Carver	Plymouth	23	11,163
Charlemont	Franklin	2	1,358
Charlton	Worcester	5	11,263
Chatham	Barnstable	27	6,625
Chelmsford	Middlesex	10	33,858
Chelsea	Suffolk	19	35,080
Cheshire	Berkshire	1	3,401
Chester	Hampden	21	1,308
Chesterfield	Hampshire	3	1,201
Chicopee	Hampden	21	54,653
Chilmark	Dukes	27	843
Clarksburg	Berkshire	1	1,686
Clinton	Worcester	9	13,435
Cohasset	Norfolk	20	7,261
Colrain	Franklin	2	1,813
Concord	Middlesex	15	16,993
Conway	Franklin	2	1,809
Cummington	Hampshire	3	978
Dalton	Berkshire	1	6,892
Danvers	Essex	14	25,212
Dartmouth	Bristol	26	30,666
Dedham	Norfolk	18	23,464
Deerfield	Franklin	2	4,750
Dennis	Barnstable	27	15,973
Dighton	Bristol	24	6,175
Douglas	Worcester	6	7,045
Dover	Norfolk	18	5,558
Dracut	Middlesex	10	28,562
Dudley	Worcester	5	10,036
Dunstable	Middlesex	10	2,829
Duxbury	Plymouth	23	14,248
East Bridgewater	Plymouth	22	12,974
East Brookfield	Worcester	5	2,097
East Longmeadow	Hampden	4	14,100
Eastham	Barnstable	27	5,453
Easthampton	Hampshire	3	15,994
Easton	Bristol	22	22,299
Edgartown	Dukes	27	3,779
Egremont	Berkshire	1	1,345
Erving	Franklin	2	1,467
Essex	Essex	13	3,267
Everett	Middlesex	16	38,037
Fairhaven	Bristol	26	16,159
Fall River	Bristol	25	91,938
Falmouth	Barnstable	27	32,660
Fitchburg	Worcester	9	39,102
Florida	Berkshire	1	676
Foxborough	Norfolk	7	16,246
Framingham	Middlesex	7	66,910
Franklin	Norfolk	6	29,560
Freetown	Bristol	26	8,472
Gardner	Worcester	9	20,770
Gay Head (Aquinnah)	Dukes	27	344
Georgetown	Essex	12	7,377
Gill	Franklin	2	1,363
Gloucester	Essex	13	30,273
Goshen	Hampshire	3	921
Gosnold	Dukes	27	86
Grafton	Worcester	8	14,894
Granby	Hampshire	3	6,132
Granville	Hampden	4	1,521
Great Barrington	Berkshire	1	7,527
Greenfield	Franklin	2	18,168
Groton	Middlesex	9	9,547
Groveland	Essex	12	6,038
Hadley	Hampshire	3	4,793
Halifax	Plymouth	23	7,500
Hamilton	Essex	13	8,315
Hampden	Hampden	4	5,171
Hancock	Berkshire	1	721
Hanover	Plymouth	23	13,164
Hanson	Plymouth	23	9,495
Hardwick	Worcester	9	2,622
Harvard	Worcester	9	5,981
Harwich	Barnstable	27	12,386
Hatfield	Hampshire	3	3,249
Haverhill	Essex	12	58,969
Hawley	Franklin	2	336
Heath	Franklin	2	805
Hingham	Plymouth	20	19,882
Hinsdale	Berkshire	1	1,872
Holbrook	Norfolk	22	10,785
Holden	Worcester	8	15,621

Table A10. Population Estimates for Massachusetts Communities, 2000, continued

TOWN NAME	COUNTY	CHNA	POPULATION
Holland	Hampden	5	2,407
Holliston	Middlesex	7	13,801
Holyoke	Hampden	21	39,838
Hopedale	Worcester	6	5,907
Hopkinton	Middlesex	7	13,346
Hubbardston	Worcester	9	3,909
Hudson	Middlesex	7	18,113
Hull	Plymouth	20	11,050
Huntington	Hampshire	21	2,174
Ipswich	Essex	13	12,987
Kingston	Plymouth	23	11,780
Lakeville	Plymouth	24	9,821
Lancaster	Worcester	9	7,380
Lanesborough	Berkshire	1	2,990
Lawrence	Essex	11	72,043
Lee	Berkshire	1	5,985
Leicester	Worcester	8	10,471
Lenox	Berkshire	1	5,077
Leominster	Worcester	9	41,303
Leverett	Franklin	2	1,663
Lexington	Middlesex	15	30,355
Leyden	Franklin	2	772
Lincoln	Middlesex	15	8,056
Littleton	Middlesex	15	8,184
Longmeadow	Hampden	4	15,633
Lowell	Middlesex	10	105,167
Ludlow	Hampden	21	21,209
Lunenburg	Worcester	9	9,401
Lynn	Essex	14	89,050
Lynnfield	Essex	14	11,542
Malden	Middlesex	16	56,340
Manchester	Essex	13	5,228
Mansfield	Bristol	24	22,414
Marblehead	Essex	14	20,377
Marion	Plymouth	26	5,123
Marlborough	Middlesex	7	36,255
Marshfield	Plymouth	23	24,324
Mashpee	Barnstable	27	12,946
Mattapoisett	Plymouth	26	6,268
Maynard	Middlesex	7	10,433
Medfield	Norfolk	7	12,273
Medford	Middlesex	16	55,765
Medway	Norfolk	6	12,448
Melrose	Middlesex	16	27,134
Mendon	Worcester	6	5,286
Merrimac	Essex	12	6,138
Methuen	Essex	11	43,789
Middleborough	Plymouth	24	19,941
Middlefield	Hampshire	3	542
Middleton	Essex	11	7,744
Milford	Worcester	6	26,799
Millbury	Worcester	8	12,784
Millis	Norfolk	7	7,902
Millville	Worcester	6	2,724
Milton	Norfolk	20	26,062
Monroe	Franklin	2	93
Monson	Hampden	4	8,359
Montague	Franklin	2	8,489
Monterey	Berkshire	1	934
Montgomery	Hampden	4	654
Mt. Washington	Berkshire	1	130
Nahant	Essex	14	3,632
Nantucket	Nantucket	27	9,520
Natick	Middlesex	7	32,170
Needham	Norfolk	18	28,911
New Ashford	Berkshire	1	247
New Bedford	Bristol	26	93,768
New Braintree	Worcester	9	927
New Marlborough	Berkshire	1	1,494
New Salem	Franklin	2	929
Newbury	Essex	12	6,717
Newburyport	Essex	12	17,189
Newton	Middlesex	18	83,829
Norfolk	Norfolk	7	10,460
North Adams	Berkshire	1	14,681
North Andover	Essex	11	27,202
North Attleboro	Bristol	24	27,143
North Brookfield	Worcester	5	4,683
North Reading	Middlesex	16	13,837
Northampton	Hampshire	3	28,978
Northborough	Worcester	7	14,013
Northbridge	Worcester	6	13,182
Northfield	Franklin	2	2,951
Norton	Bristol	24	18,036
Norwell	Plymouth	20	9,765
Norwood	Norfolk	20	28,587
Oak Bluffs	Dukes	27	3,713
Oakham	Worcester	9	1,673
Orange	Franklin	2	7,518
Orleans	Barnstable	27	6,341
Otis	Berkshire	1	1,365
Oxford	Worcester	5	13,352
Palmer	Hampden	4	12,497
Paxton	Worcester	8	4,386
Peabody	Essex	14	48,129
Pelham	Hampshire	3	1,403
Pembroke	Plymouth	23	16,927
Pepperell	Middlesex	9	11,142
Peru	Berkshire	1	821
Petersham	Worcester	2	1,180
Phillipston	Worcester	2	1,621
Pittsfield	Berkshire	1	45,793
Plainfield	Hampshire	3	589
Plainville	Norfolk	7	7,683
Plymouth	Plymouth	23	51,701
Plympton	Plymouth	23	2,637
Princeton	Worcester	9	3,353
Provincetown	Barnstable	27	3,431
Quincy	Norfolk	20	88,025
Randolph	Norfolk	20	30,963
Raynham	Bristol	24	11,739
Reading	Middlesex	16	23,708
Rehoboth	Bristol	24	10,172
Revere	Suffolk	19	47,283
Richmond	Berkshire	1	1,604
Rochester	Plymouth	26	4,581
Rockland	Plymouth	23	17,670
Rockport	Essex	13	7,767
Rowe	Franklin	2	351
Rowley	Essex	12	5,500
Royalston	Worcester	2	1,254
Russell	Hampden	4	1,657
Rutland	Worcester	9	6,353
Salem	Essex	14	40,407
Salisbury	Essex	12	7,827
Sandisfield	Berkshire	1	824
Sandwich	Barnstable	27	20,136
Saugus	Essex	14	26,078
Savoy	Berkshire	1	705
Scituate	Plymouth	20	17,863
Seekonk	Bristol	24	13,425
Sharon	Norfolk	20	17,408
Sheffield	Berkshire	1	3,335
Shelburne	Franklin	2	2,058
Sherborn	Middlesex	7	4,200
Shirley	Middlesex	9	6,373

Table A10. Population Estimates for Massachusetts Communities, 2000, continued

TOWN NAME	COUNTY	CHNA	POPULATION	TOWN NAME	COUNTY	CHNA	POPULATION
Shrewsbury	Worcester	8	31,640	Warwick	Franklin	2	750
Shutesbury	Franklin	2	1,810	Washington	Berkshire	1	544
Somerset	Bristol	25	18,234	Watertown	Middlesex	17	32,986
Somerville	Middlesex	17	77,478	Wayland	Middlesex	7	13,100
South Hadley	Hampshire	3	17,196	Webster	Worcester	5	16,415
Southampton	Hampshire	3	5,387	Wellesley	Norfolk	18	26,613
Southborough	Worcester	7	8,781	Wellfleet	Barnstable	27	2,749
Southbridge	Worcester	5	17,214	Wendell	Franklin	2	986
Southwick	Hampden	4	8,835	Wenham	Essex	13	4,440
Spencer	Worcester	5	11,691	West Boylston	Worcester	8	7,481
Springfield	Hampden	4	152,082	West Bridgewater	Plymouth	22	6,634
Sterling	Worcester	9	7,257	West Brookfield	Worcester	5	3,804
Stockbridge	Berkshire	1	2,276	West Newbury	Essex	12	4,149
Stoneham	Middlesex	16	22,219	West Springfield	Hampden	4	27,899
Stoughton	Norfolk	22	27,149	West Stockbridge	Berkshire	1	1,416
Stow	Middlesex	7	5,902	West Tisbury	Dukes	27	2,467
Sturbridge	Worcester	5	7,837	Westborough	Worcester	7	17,997
Sudbury	Middlesex	7	16,841	Westfield	Hampden	21	40,072
Sunderland	Franklin	2	3,777	Westford	Middlesex	10	20,754
Sutton	Worcester	6	8,250	Westhampton	Hampshire	3	1,468
Swampscott	Essex	14	14,412	Westminster	Worcester	9	6,907
Swansea	Bristol	25	15,901	Weston	Middlesex	18	11,469
Taunton	Bristol	24	55,976	Westport	Bristol	25	14,183
Templeton	Worcester	9	6,799	Westwood	Norfolk	18	14,117
Tewksbury	Middlesex	10	28,851	Weymouth	Norfolk	20	53,988
Tisbury	Dukes	27	3,755	Whately	Franklin	2	1,573
Tolland	Hampden	4	426	Whitman	Plymouth	22	13,882
Topsfield	Essex	13	6,141	Wilbraham	Hampden	4	13,473
Townsend	Middlesex	9	9,198	Williamsburg	Hampshire	3	2,427
Truro	Barnstable	27	2,087	Williamstown	Berkshire	1	8,424
Tyngsborough	Middlesex	10	11,081	Wilmington	Middlesex	15	21,363
Tyringham	Berkshire	1	350	Winchendon	Worcester	9	9,611
Upton	Worcester	6	5,642	Winchester	Middlesex	15	20,810
Uxbridge	Worcester	6	11,156	Windsor	Berkshire	1	875
Wakefield	Middlesex	16	24,804	Winthrop	Suffolk	19	18,303
Wales	Hampden	5	1,737	Woburn	Middlesex	15	37,258
Walpole	Norfolk	7	22,824	Worcester	Worcester	8	172,648
Waltham	Middlesex	18	59,226	Worthington	Hampshire	3	1,270
Ware	Hampshire	3	9,707	Wrentham	Norfolk	7	10,554
Wareham	Plymouth	26	20,335	Yarmouth	Barnstable	27	24,807
Warren	Worcester	5	4,776				

1. MDPH 2000 Preliminary Population Estimates (released January 2002).

Table A11. 2000 Massachusetts Population Estimates[1] By Age Group, Gender, Race[2] and Hispanic Ethnicity[3] (mutually exclusive)

AGE	GENDER	TOTAL	Non-Hispanic WHITE	Non-Hispanic BLACK	Non-Hispanic ASIAN	HISPANIC
UNDER 1	MALE	40,562	31,453	2,688	1,786	4,576
	FEMALE	38,802	29,928	2,573	1,821	4,421
	TOTAL	79,380	61,383	5,272	3,622	8,997
1 TO 4	MALE	162,500	125,841	10,818	7,194	18,326
	FEMALE	155,404	119,721	10,352	7,327	17,689
	TOTAL	317,888	245,560	21,159	14,506	36,015
5 TO 14	MALE	442,313	346,975	31,244	17,177	45,943
	FEMALE	419,795	328,413	30,016	16,581	43,861
	TOTAL	862,108	675,388	61,260	33,758	89,804
15 TO 24	MALE	409,216	316,832	27,274	21,837	42,383
	FEMALE	410,800	317,555	27,300	24,041	41,028
	TOTAL	820,016	634,387	54,574	45,878	83,411
25 TO 34	MALE	455,762	361,176	26,273	27,673	39,796
	FEMALE	471,026	373,241	28,531	27,825	40,578
	TOTAL	926,788	734,417	54,804	55,498	80,374
35 TO 44	MALE	522,345	443,898	27,033	19,958	30,445
	FEMALE	540,650	458,600	28,814	19,825	32,368
	TOTAL	1,062,995	902,498	55,847	39,783	62,813
45 TO 54	MALE	424,234	376,230	17,982	12,471	16,738
	FEMALE	449,119	395,740	20,049	13,419	19,089
	TOTAL	873,353	771,970	38,031	25,890	35,827
55 TO 64	MALE	260,345	235,352	9,868	6,739	7,968
	FEMALE	286,062	256,633	12,339	6,963	9,717
	TOTAL	546,407	491,985	22,207	13,702	17,685
65 TO 74	MALE	190,298	176,813	5,695	3,892	3,654
	FEMALE	237,532	219,645	7,961	4,517	5,161
	TOTAL	427,830	396,458	13,656	8,409	8,815
75 TO 84	MALE	120,293	114,513	2,650	1,555	1,454
	FEMALE	195,347	185,929	4,769	2,142	2,343
	TOTAL	315,640	300,442	7,419	3,697	3,797
85 +	MALE	30,948	29,488	669	352	418
	FEMALE	85,744	82,609	1,656	644	773
	TOTAL	116,692	112,097	2,325	996	1,191
ALL AGES	MALE	3,058,816	2,558,571	162,194	120,634	211,701
	FEMALE	3,290,281	2,768,014	174,360	125,105	217,028
	TOTAL	6,349,097	5,326,585	336,554	245,739	428,729

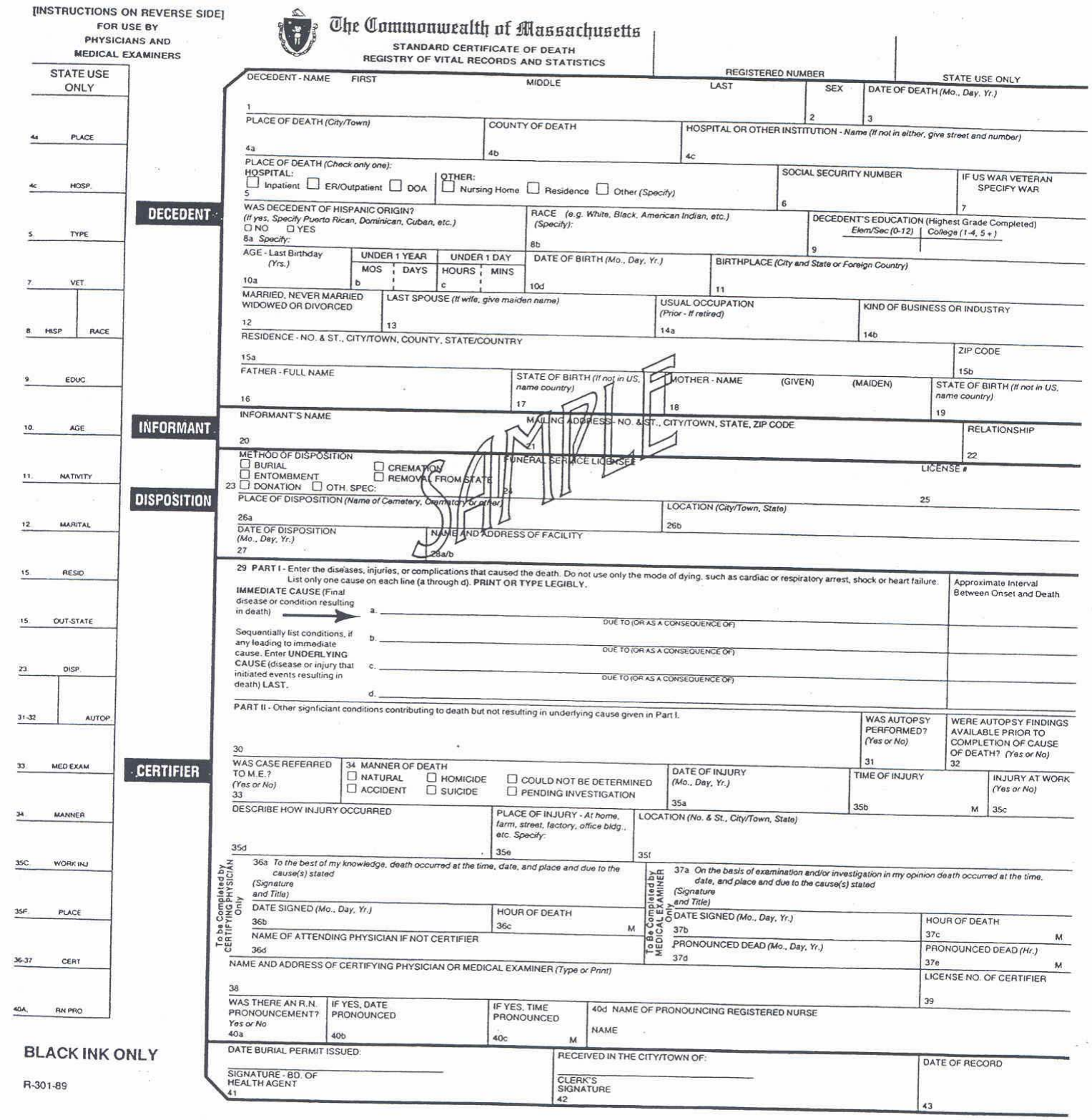
1. MDPH 2000 Preliminary Population Estimates (released January 2002). 2. The age-gender-race distributions from the 2000 US Census (MARS) file were applied to the1999 population estimates to separate Asians from the combined category of Asian and American Indian. 3. Persons of Hispanic ethnicity are NOT included in the race categories. These estimates are used to calculate population based rates in published in this report, except for Table A1.

Table A12. 2000 Massachusetts Population Estimates[1] By Age Group, Gender, Race[2] and Hispanic Ethnicity [3]

AGE	GENDER	TOTAL	WHITE	BLACK	ASIAN	HISPANIC ETHNICITY
UNDER 1	MALE	40,562	35,280	3,318	1,831	4,576
	FEMALE	38,802	33,621	3,169	1,861	4,421
	TOTAL	79,380	68,901	6,487	3,692	8,997
1 TO 4	MALE	162,500	141,131	13,332	7,373	18,326
	FEMALE	155,404	134,518	12,730	7,520	17,689
	TOTAL	317,888	275,649	26,062	14,893	36,015
5 TO 14	MALE	442,313	385,148	37,674	17,584	45,943
	FEMALE	419,795	364,731	36,206	17,023	43,861
	TOTAL	862,108	749,879	73,880	34,607	89,804
15 TO 24	MALE	409,216	352,490	32,755	22,266	42,383
	FEMALE	410,800	351,768	32,912	24,476	41,028
	TOTAL	820,016	704,258	65,667	46,742	83,411
25 TO 34	MALE	455,762	395,029	31,113	28,059	39,796
	FEMALE	471,026	407,402	33,858	28,197	40,578
	TOTAL	926,788	802,431	64,971	56,256	80,374
35 TO 44	MALE	522,345	469,686	30,889	20,213	30,445
	FEMALE	540,650	485,760	33,110	20,143	32,368
	TOTAL	1,062,995	955,446	63,999	40,356	62,813
45 TO 54	MALE	424,234	390,340	20,191	12,608	16,738
	FEMALE	449,119	411,880	22,503	13,582	19,089
	TOTAL	873,353	802,220	42,694	26,190	35,827
55 TO 64	MALE	260,345	242,128	10,862	6,800	7,968
	FEMALE	286,062	264,891	13,578	7,038	9,717
	TOTAL	546,407	507,019	24,440	13,838	17,685
65 TO 74	MALE	190,298	179,918	6,168	3,920	3,654
	FEMALE	237,532	224,004	8,647	4,562	5,161
	TOTAL	427,830	403,922	14,815	8,482	8,815
75 TO 84	MALE	120,293	115,787	2,798	1,569	1,454
	FEMALE	195,347	187,978	5,030	2,158	2,343
	TOTAL	315,640	303,765	7,828	3,727	3,797
85 +	MALE	30,948	29,856	705	359	418
	FEMALE	85,744	83,280	1,735	656	773
	TOTAL	116,692	113,136	2,440	1,015	1,191
ALL AGES	MALE	3,058,816	2,736,793	189,805	122,582	211,701
	FEMALE	3,290,281	2,949,833	203,478	127,216	217,028
	TOTAL	6,349,097	5,686,626	393,283	249,798	428,729

1. MDPH 2000 Preliminary Population Estimates (released January 2002). 2. The age-gender-race distributions from the 2000 US Census (MARS) file were applied to the1999 population estimates to separate Asians from the combined category of Asian and American Indian, and to add Hispanics back into the estimates of white, black, and Asian populations. 3. Persons of Hispanic ethnicity are also included in the race categories, consistent with NCHS and US Census population classification of race and ethnicity. These estimates are used to calculate population based rates in Table A1.

Massachusetts Death Certificate: 2001



[INSTRUCTIONS ON REVERSE SIDE]
FOR USE BY PHYSICIANS AND MEDICAL EXAMINERS

The Commonwealth of Massachusetts
STANDARD CERTIFICATE OF DEATH
REGISTRY OF VITAL RECORDS AND STATISTICS

REGISTERED NUMBER

STATE USE ONLY

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

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

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

SOCIAL SECURITY NUMBER (6) | IF US WAR VETERAN SPECIFY WAR (7)

DECEDENT

WAS DECEDENT OF HISPANIC ORIGIN? (If yes, Specify Puerto Rican, Dominican, Cuban, etc.) ☐ NO ☐ YES 8a Specify:

RACE (e.g. White, Black, American Indian, etc.) (Specify): (8b)

DECEDENT'S EDUCATION (Highest Grade Completed) Elem/Sec (0-12) | College (1-4, 5+) (9)

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

MARRIED, NEVER MARRIED WIDOWED OR DIVORCED (12) | LAST SPOUSE (If wife, give maiden name) (13) | USUAL OCCUPATION (Prior - If retired) (14a) | KIND OF BUSINESS OR INDUSTRY (14b)

RESIDENCE - NO. & ST., CITY/TOWN, COUNTY, STATE/COUNTRY (15a) | ZIP CODE (15b)

FATHER - FULL NAME (16) | STATE OF BIRTH (If not in US, name country) (17) | MOTHER - NAME (GIVEN) (MAIDEN) (18) | STATE OF BIRTH (If not in US, name country) (19)

INFORMANT

INFORMANT'S NAME (20) | MAILING ADDRESS - NO. & ST., CITY/TOWN, STATE, ZIP CODE (21) | RELATIONSHIP (22)

DISPOSITION

METHOD OF DISPOSITION (23) ☐ BURIAL ☐ CREMATION ☐ ENTOMBMENT ☐ REMOVAL FROM STATE ☐ DONATION ☐ OTH. SPEC: | FUNERAL SERVICE LICENSEE (24) | LICENSE # (25)

PLACE OF DISPOSITION (Name of Cemetery, Crematory or other) (26a) | LOCATION (City/Town, State) (26b)

DATE OF DISPOSITION (Mo., Day, Yr.) (27) | NAME AND ADDRESS OF FACILITY (28a/b)

CERTIFIER

29 PART I - Enter the diseases, injuries, or complications that caused the death. Do not use only the mode of dying, such as cardiac or respiratory arrest, shock or heart failure. List only one cause on each line (a through d). PRINT OR TYPE LEGIBLY. | Approximate Interval Between Onset and Death

IMMEDIATE CAUSE (Final disease or condition resulting in death) → a. ____ DUE TO (OR AS A CONSEQUENCE OF)

Sequentially list conditions, if any leading to immediate cause. Enter UNDERLYING CAUSE (disease or injury that initiated events resulting in death) LAST.
b. ____ DUE TO (OR AS A CONSEQUENCE OF)
c. ____ DUE TO (OR AS A CONSEQUENCE OF)
d. ____

PART II - Other signficiant conditions contributing to death but not resulting in underlying cause given in Part I. (30) | WAS AUTOPSY PERFORMED? (Yes or No) (31) | WERE AUTOPSY FINDINGS AVAILABLE PRIOR TO COMPLETION OF CAUSE OF DEATH? (Yes or No) (32)

WAS CASE REFERRED TO M.E.? (Yes or No) (33) | 34 MANNER OF DEATH ☐ NATURAL ☐ HOMICIDE ☐ COULD NOT BE DETERMINED ☐ ACCIDENT ☐ SUICIDE ☐ PENDING INVESTIGATION | DATE OF INJURY (Mo., Day, Yr.) (35a) | TIME OF INJURY (35b) M | INJURY AT WORK (Yes or No) (35c)

DESCRIBE HOW INJURY occurred (35d) | PLACE OF INJURY - At home, farm, street, factory, office bldg., etc. Specify: (35e) | LOCATION (No. & St., City/Town, State) (35f)

To be Completed by CERTIFYING PHYSICIAN Only
36a To the best of my knowledge, death occurred at the time, date, and place and due to the cause(s) stated (Signature and Title)
DATE SIGNED (Mo., Day, Yr.) (36b) | HOUR OF DEATH (36c) M
NAME OF ATTENDING PHYSICIAN IF NOT CERTIFIER (36d)

To Be Completed by MEDICAL EXAMINER Only
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 and Title)
DATE SIGNED (Mo., Day, Yr.) (37b) | HOUR OF DEATH (37c) M
PRONOUNCED DEAD (Mo., Day, Yr.) (37d) | PRONOUNCED DEAD (Hr.) (37e) M

NAME AND ADDRESS OF CERTIFYING PHYSICIAN OR MEDICAL EXAMINER (Type or Print) (38) | LICENSE NO. OF CERTIFIER (39)

WAS THERE AN R.N. PRONOUNCEMENT? Yes or No (40a) | IF YES, DATE PRONOUNCED (40b) | IF YES, TIME PRONOUNCED (40c) M | 40d NAME OF PRONOUNCING REGISTERED NURSE NAME

DATE BURIAL PERMIT ISSUED: | RECEIVED IN THE CITY/TOWN OF: | DATE OF RECORD (43)

SIGNATURE - BD. OF HEALTH AGENT (41) | CLERK'S SIGNATURE (42)

SAMPLE

STATE USE ONLY
4a PLACE
4c HOSP.
5. TYPE
7. VET.
8. HISP. RACE
9. EDUC.
10. AGE
11. NATIVITY
12. MARITAL
15. RESID.
15. OUT-STATE
23. DISP.
31-32 AUTOP.
33. MED EXAM
34. MANNER
35C. WORK INJ.
35F. PLACE
36-37 CERT.
40A. RN PRO.

BLACK INK ONLY

R-301-89

Massachusetts Deaths: 2001 Evaluation Form

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

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

Please return your comments to:

Malena Orejuela, MPH
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