Massachusetts Deaths 1999

Argeo Paul Cellucci, Governor
Jane Swift, Lieutenant Governor
William D. O'Leary, Secretary of Health and Human Services
Howard K. Koh, MD, MPH, Commissioner of Public Health

Daniel J. Friedman, Assistant Commissioner, Bureau of Health Statistics, Research and Evaluation
Bruce B. Cohen, Director, Research and Epidemiology
Elaine B. Trudeau, Registrar, Registry of Vital Records and Statistics
Massachusetts Department of Public Health
617-624-5699

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250 Washington Street
Boston, MA 02108
(617) 624-5699

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TECHNICAL FOREWORD

Effective with this year's 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 with1999, 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, compared to ICD-9 which used only a numeric coding scheme.

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 1999 and previous years 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, when ICD-10 was used. In addition to comparing 1998 and 1999 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 if an increase or decrease in a cause of death is "real" or 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 66, 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 was 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 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 72-73. An example of how to apply the comparability ratios is found on page 64. A more detailed definition of comparability ratio is found in the Glossary on page 66.

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 only be used 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 65 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 re-calculated using the 2000 US standard population. 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 using 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 in this report 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 this 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/Pacific Islander, 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).

EXECUTIVE SUMMARY

Executive Summary

Overview

In 1999, 55,763 Massachusetts residents died: 29,786 females and 25,977 males. The number of resident deaths in 1999 increased by slightly more than 1% (559 deaths) from 1998, and constitutes a 5% increase since 1990.

The age-adjusted death rate in 1999 for Massachusetts was 815.9 deaths per 100,000 persons, a 7% decline since 1990 (please note: rates are age-adjusted to the 2000 US standard population). The 1999 Massachusetts age-adjusted death rate was 8% lower than the preliminary 1999 United States rate, and has been consistently lower than the US rate throughout the 1990's.

For the second year in a row, the largest number of deaths occurred among people ages 85 years and older. In 1999, life expectancy at birth in Massachusetts was 78.4 years. For men, the life expectancy at birth was 75.7 years and for women, 81.0 years.

There were 418 deaths to infants less than one year of age in 1999, 4 more deaths than in 1998, but 36% fewer than in 1990. The 1999 infant mortality rate (IMR) was 5.2 per 1,000 live births, about the same as 1998 (5.1).

Leading Causes of Death

Heart disease and cancer continue to be the leading causes of death among Massachusetts residents, accounting for 53% of all deaths. 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. For the third year in a row, HIV diseases (AIDS) were not among the four leading causes of death among persons ages 25-44 years. Injury-related deaths were the top four leading causes of death for persons ages 15-24 years and accounted for two-thirds of the deaths in this age group.

Patterns by Race and Ethnicity

Age-adjusted mortality rates varied markedly by race and Hispanic ethnicity in Massachusetts in 1999. Overall, persons of Hispanic ethnicity had the lowest death rate, 503.1 deaths per 100,000 persons; black, non-Hispanics had the highest rate (1,098.4).

The leading causes of death varied by race and ethnicity in 1999 as in previous years. Cancer was the leading cause among Asian/Pacific Islander, non-Hispanics; black, non-Hispanics; and Hispanics in 1999. Heart disease was the leading cause for white, non-Hispanics. HIV diseases (AIDS) remained the third leading cause of death among Hispanics and for the second consecutive year, more Hispanics died of HIV diseases (AIDS) than black, non-Hispanics.

Cancer

The leading cause of cancer death for both males and females was lung cancer. The second leading cause of cancer death was breast cancer for females and prostate cancer for males. Leukemia was the leading cause of cancer death for all persons under the age of 25 years, followed closely by brain cancer, while lung cancer was the leading cause of cancer death

for persons ages 45-84 years, and colorectal cancer was the leading cause of cancer death for persons ages 85 years and older.

HIV Diseases (AIDS)[1]

There were 242 Massachusetts residents who died from HIV diseases in 1999. This represents slight decrease in the number of HIV disease deaths from 1998, after taking the changes in the classification systems into account. The proportion of female HIV disease deaths has increased in 1999 compared to previous years and for the first time since 1994, the number of deaths among white, non-Hispanics increased. In 1999, there was an increase in the proportion of HIV disease deaths among persons ages 45 years and older compared to previous years.

Injuries

In 1999, 4% of all deaths to Massachusetts residents were the result of injuries (2,323 deaths). About 56% of injury-related deaths were due to unintentional injuries such as fires, falls, drownings, and motor vehicle-related injuries, while 19% were due to suicide and 6% to homicide.

Approximately 11% of all injury-related deaths occurred among persons ages 15-24 years. However, injuries accounted for two-thirds of the deaths in this age group. Injury-related death rates are highest among persons ages 85 years and older.

There were 430 suicides in 1999, the lowest number in the past decade. While the total number of homicides increased slightly between 1998 and 1999 (123 compared to 128, respectively), the number of female homicides increased greatly (20 in 1998 to 37 in 1999), while the number of male homicides decreased (103 in 1998 to 91 in 1999).

Causes of Infant Death

In 1999, 418 infant deaths occurred among Massachusetts residents, 4 more infant deaths than 1998. The 1999 infant mortality rate (IMR) was 5.2 per 1,000 live births, about the same as 1998 (5.1), but a 26% decline since 1990 (7.0). Disparities continue to exist by race and ethnicity. Black, non-Hispanics had the highest IMR (12.3 per 1,000 live births) while Asian/Pacific Islander, non-Hispanics had the lowest IMR (1.9 per 1,000 live births).

The leading causes of infant death are conditions arising in the perinatal period (62% of all infant deaths), followed by congenital malformations (16% of all infant deaths). Deaths occurring in the neonatal period (less than 28 days after birth) account for 79% of all infant deaths. The leading cause of death in the neonatal period was 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).

[1] Please note: the section on HIV Disease (AIDS) was updated June 2001 to reflect the revised comparability ratio issued by the National Center for Health Statistics.

TRENDS

Trends[2]

In 1999, 55,763 Massachusetts residents died (Table 1). The number of resident deaths in 1999 increased slightly more than 1% (559 deaths) over 1998 and a 5% increase since 1990. The age-adjusted death rate in 1999 was 815.9 deaths per 100,000 persons, a 7% decline since 1990. (please note: rates are age-adjusted to the 2000 US standard population). There were 418 deaths among infants less than one year of age in 1999, 4 more deaths than in 1998, but 36% fewer than in 1990. In 1999, the infant mortality rate (IMR) was 5.2 per 1,000 live births, a 26% decrease since 1990.

Age-adjusted death rates varied greatly by race/ethnicity in Massachusetts in 1999, and throughout the decade. Hispanics have had the lowest age-adjusted death rates of all race and ethnicity groups since 1990, followed by Asian/Pacific Islander, non-Hispanics; and white, non-Hispanics. In 1999, the age-adjusted death rate for Hispanics was 503.1 deaths per 100,000 persons, less than half the black, non-Hispanic rate of 1,098.4 per 100,000. With the exception of Hispanics, the age-adjusted death rates for all race/ethnicity groups declined since 1990. It is important to note however, that the collection of Hispanic ethnicity on the death certificate did not begin until 1989. Therefore, some of the increase in deaths to persons of Hispanic ethnicity may be due to more complete reporting of Hispanic ethnicity on the death certificate rather than an actual increase in the mortality rate of Hispanics.

The age-adjusted mortality rate for women continues to be substantially lower than for men: 679.9 compared to 1,017.3. However, men have experienced a larger decline in the age-adjusted rate since 1990 (10%) compared to women (5%).

The 1999 Massachusetts age-adjusted death rate was 8% lower than the preliminary 1999 United States rate, and has been consistently lower than the US rate throughout the 1990's (Table 2). Massachusetts comparability modified age-adjusted death rates have been consistently lower than the US rates for stoke and unintentional injuries, and higher than the US rates for cancer and pneumonia/influenza.

For the second year in a row, the largest number of deaths occurred among persons ages 85 years and older. In 1999, life expectancy at birth in Massachusetts was 78.4 years. For men, life expectancy was 75.7 years and for women, 81.0 years. Life expectancy varied by race as well (Figure 1). At birth, white, non-Hispanic women could expect to live 81.1 years; black, non-Hispanic women 75.9 years; white, non-Hispanic men 75.9 years; and black, non-Hispanic men 69.1 years. At age 65, men could expect to live an average of 16 more years while women could expect to live almost 20 more years.

Massachusetts has a rich history of collecting and reporting vital statistics, as demonstrated by Figure 2, 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% of all deaths were due to intentional

[2] 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 1999 and previous years must be interpreted with caution.

and unintentional injuries, 2% of all deaths were attributed to heart disease, and 1% of all deaths were due to cancer. In 1999, 28% of the deaths in Massachusetts were due to heart disease, 25% were due to cancer, 7% were due to infectious diseases, and 4% were due to intentional and unintentional injuries.

Table 1. Trends in Mortality Characteristics Massachusetts: 1990 - 1999

Year		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Resident deaths[1]											
	Number	53,004	53,011	53,805	55,557	54,914	55,296	55,187	54,634	55,204	55,763
	Crude rate[2,3,4]	881.0	880.9	891.2	916.2	899.2	900.2	892.4	877.3	877.5	886.4
	Age-adjusted rate[5]	878.4	884.2	877.4	885.7	868.2	866.2	853.0	834.8	808.8	815.9
Race/ethnicity of decedent[6,7]											
White, non-Hispanic	Number	50,178	50,142	50,815	52,371	51,600	51,785	51,917	51,398	51,829	52,282
	Percent[8]	94.7	94.6	94.4	94.3	94.0	93.7	94.1	94.1	93.9	93.8
	Age-adjusted rate	875.7	882.7	875.5	882.8	864.2	860.1	852.2	835.1	808.5	814.2
Black, non-Hispanic	Number	1,875	1,887	1,958	1,969	2,079	2,136	2,025	2,033	1,969	2,018
	Percent	3.5	3.6	3.6	3.5	3.8	3.9	3.7	3.7	3.6	3.6
	Age-adjusted rate	1,113.7	1,104.6	1,139.2	1,115.3	1,176.7	1,193.0	1,141.1	1,142.1	1,076.6	1,098.4
Asian/Pacific Islander, non-Hispanic	Number	294	269	284	360	335	403	398	403	413	449
	Percent	0.6	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.8
	Age-adjusted rate	570.8	462.7	463.8	613.4	521.2	565.2	534.5	512.0	500.7	511.5
Hispanic	Number	602	678	713	813	865	936	803	749	924	975
	Percent	1.1	1.3	1.3	1.5	1.6	1.7	1.5	1.4	1.7	1.7
	Age-adjusted rate	409.9	435.5	440.5	488.5	482.7	504.7	430.0	391.0	463.8	503.1
Gender of decedent[7]											
Female	Number	27,491	27,550	27,770	29,109	28,733	29,262	29,152	29,261	29,568	29,786
	Age-adjusted rate	713.6	720.9	711.1	724.5	712.6	717.6	702.7	699.0	678.0	679.9
Male	Number	25,513	25,461	26,035	26,448	26,181	26,034	26,035	25,373	25,635	25,977
	Age-adjusted rate	1,130.3	1,134.1	1,130.2	1,123.5	1,096.9	1,080.6	1,074.0	1,035.0	1,000.8	1,017.3
Age of decedent[7]											
<1 year	Number	651	577	569	523	499	419	403	425	414	418
1-14 years	Number	205	207	226	239	192	204	197	174	128	165
15-24 years	Number	586	538	470	464	473	452	434	422	413	407
25-44 years	Number	2,682	2,912	3,062	3,055	3,210	3,196	2,720	2,348	2,373	2,397
45-64 years	Number	8,138	7,877	7973	7,920	7,766	7,611	7,477	7,416	7,501	7,431
65-74 years	Number	11,707	11,415	11,515	11,509	11,394	10,858	10,711	10,286	10,216	9,782
75-84 years	Number	15,553	15,506	15,912	16,346	16,092	16,497	16,839	16,884	16,946	17,397
85+ years	Number	13,482	13,973	14,076	15,494	15,283	16,054	16,400	16,677	17,213	17,765

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), 1998 (released in Sept 2000). Residents death rates for 1998 have been recalculated using 1998 population estimates. 1999 rates are calculated using 1998 population estimates. 5. Rates are age-adjusted per 100,000 residents using the 2000 US standard population. 6. Race categories presented in this report for the years 1990-1999 differ from previously published data. 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 2*. Five Leading Causes of Death[1] Comparability Unmodified and Comparability Modified Age-Adjusted Rates Massachusetts and United States: 1990-1999

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]
1990	Rate[5]	294.6	NA[6]	325.9	NA	221.5	NA	213.9	NA	55.0	NA	65.5	NA
	% of Total	33.4		33.9		25.3		23.3		6.2		6.7	
1991	Rate	286.0	NA	317.9	NA	230.0	NA	213.7	NA	54.7	NA	63.4	NA
	% of Total	32.2		33.7		26.0		23.5		6.2		6.6	
1992	Rate	277.4	NA	310.5	NA	234.2	NA	212.3	NA	53.7	NA	62.1	NA
	% of Total	31.7		33.5		26.3		23.7		6.2		6.6	
1993	Rate	278.3	NA	314.6	NA	228.1	NA	212.5	NA	52.8	NA	63.2	NA
	% 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	223.8[7]		267.7[8]		209.5[7]		202.6[8]		50.5[7]		61.8[8]	
	% of Total	27.9		30.3		24.8		23.0		6.4		7.0	

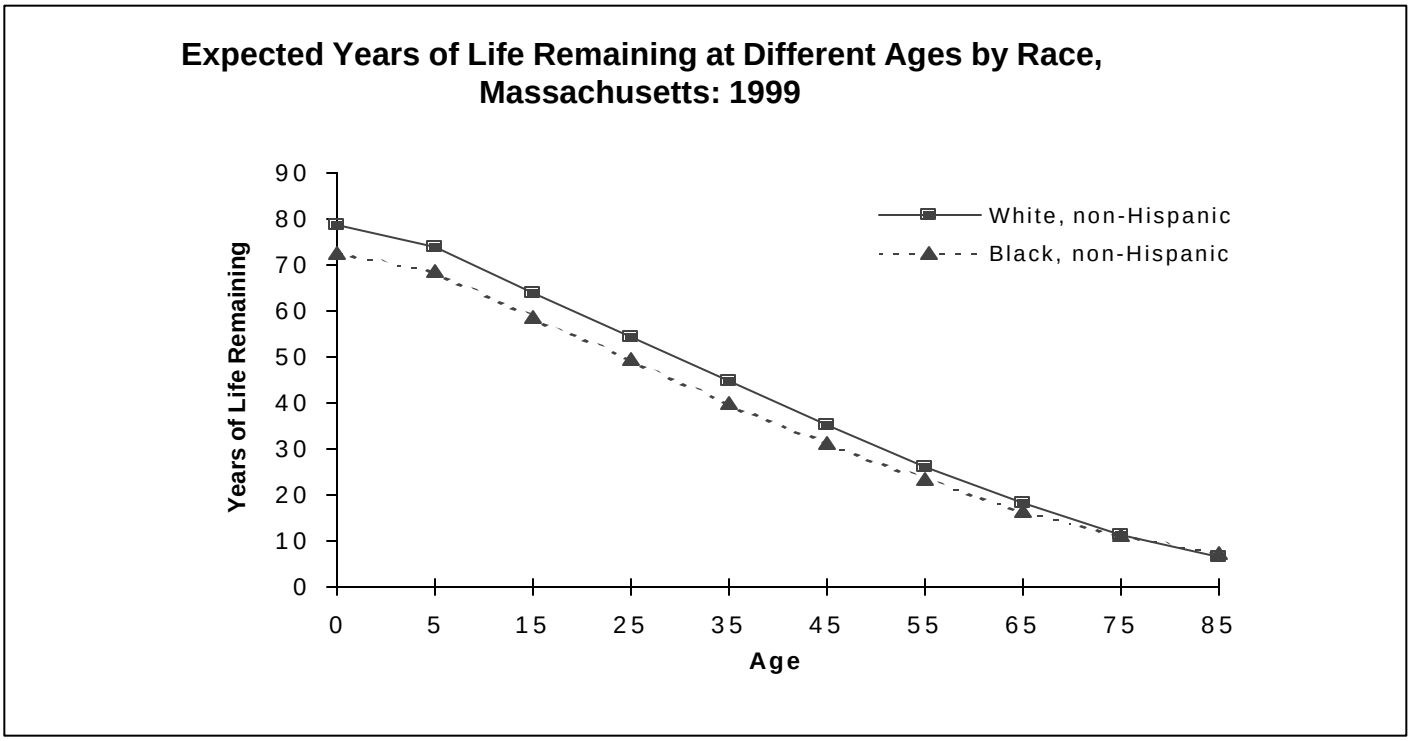
* Please note: this table was updated June 2001 to reflect the release of 1999 death data for the US. 1. Cause of death: the disease or injury that initiated the events leading to death; or the circumstances of the unintentional or intentional injury that resulted in the death. 2. 1990-1998 data coded according to ICD-9. 1999 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. 4. Comparability Modified Rate: this rate is adjusted using the preliminary comparability ratio (CR) from NCHS, February 2001. 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 1999, please use the comparability modified rates for years 1994-1998. 8. US data for 1999 obtained from NCHS. Deaths: Preliminary Data for 1999. National Vital Statistics Report, Vol. 49, No. 3, June 26,2001.

Table 2* (continued). Five Leading Causes of Death[1] Comparability Unmodified and Comparability Modified Age-Adjusted Rates, Massachusetts and United States: 1990-1999

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]		
1990	Rate[5]	38.9	NA[6]	35.8	NA	24.8	NA	37.5	NA	878.4	938.0
	% of Total	4.4		3.6		2.9		4.3			
1991	Rate	40.1	NA	34.4	NA	23.1	NA	36.0	NA	884.2	925.2
	% of Total	4.5		3.5		2.7		4.1			
1992	Rate	38.5	NA	32.7	NA	20.6	NA	34.6	NA	877.4	910.7
	% of Total	4.5		3.4		2.4		4.0			
1993	Rate	42.9	NA	34.8	NA	21.3	NA	35.7	NA	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		2.2		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		2.4		4.2			
1999	Rate	30.3[7]		23.5[8]		19.4[7]		35.7[8]		815.9	881.9
	% of Total	3.9		2.7		2.3		4.1			

* Please note: this table was updated June 2001 to reflect the release of 1999 death data for the US. 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 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. 4. Comparability Modified Rate: this rate is adjusted using the preliminary comparability ratio (CR) from NCHS, February 2001. 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 1999, please use the comparability modified rate for years 1994-1998. 8. US data for 1999 obtained from NCHS. Deaths: Preliminary Data for 1999. National Vital Statistics Report, Vol. 49, No. 3, June 26,2001.

Figure 1

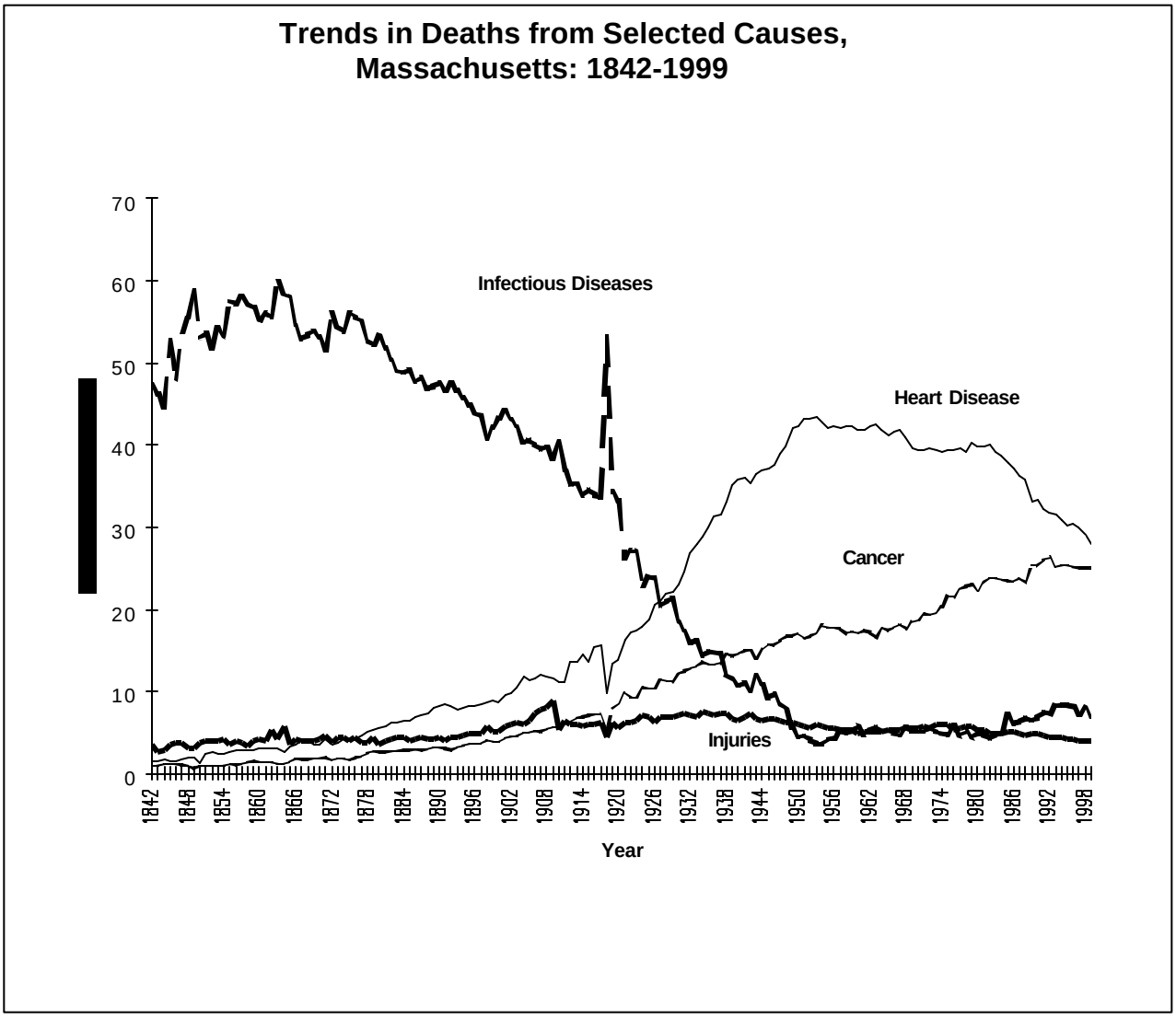


Years of Life Remaining[1], Massachusetts: 1999

At Age:	All	Females	White, non-Hispanic Females	Black, non-Hispanic Females	Males	White, non-Hispanic Males	Black, non-Hispanic Males
Birth	78.4	81.0	81.1	75.9	75.7	75.9	69.1
1 year old	77.8	80.4	80.5	75.9	75.1	75.3	69.0
5 years old	73.9	76.4	76.5	72.1	71.2	71.4	65.1
15 years old	64.0	66.4	66.5	62.3	61.2	61.4	55.1
25 years old	54.3	56.6	56.7	52.5	51.6	51.7	46.1
35 years old	44.6	46.9	46.9	42.9	42.0	42.1	36.9
45 years old	35.3	37.3	37.3	34.0	32.8	32.8	28.5
55 years old	26.3	28.2	28.1	25.4	24.1	24.0	21.0
65 years old	18.3	19.9	19.8	18.0	16.3	16.2	14.7
75 years old	11.5	12.5	12.4	12.1	10.0	9.8	9.9
85 years old	6.8	7.2	7.0	7.2	5.9	5.7	7.0

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.) 1998 MISER population estimates (released September 2000) are used as the denominator.

Figure 2


Trends in Deaths from Selected Causes,
Massachusetts: 1842-1999
70
60
50
40
30
20
10
0
Infectious Diseases
Heart Disease
Cancer
Injuries
1842
1848
1854
1860
1866
1872
1878
1884
1890
1896
1902
1908
1914
1920
1926
1932
1938
1944
1950
1956
1962
1968
1974
1980
1986
1992
1998
Year

LEADING CAUSES

Leading Causes

Heart disease and cancer continued to be the leading causes of death among Massachusetts residents, accounting for 53% of all deaths (Figure 3). In 1999, 15,539 Massachusetts residents died of heart disease yielding an age-adjusted death rate of 223.8 per 100,000 persons. Cancer was the second leading cause of death, with13,852 deaths, and age-adjusted death rate of 209.5 (Table 2). (Please note: rates are age-adjusted to the 2000 US standard population).

On an average day in 1999, 153 Massachusetts residents died (Figure 4). Approximately 43 of these deaths were due to heart disease, 38 were due to cancer, 18 were due to respiratory diseases, 10 were due stroke, 6 were due to injuries, 4 were due to diabetes, 3 were due to Alzheimer's Disease, 1 was an infant death, and 39 were due to other causes.

The lowest number of deaths (165) was seen among 1-14 year olds (Table 3a). In this group, the leading causes of death were cancer (30), unintentional injuries – excluding motor vehicle-related injuries (20), congenital malformations (17), and motor vehicle-related injuries (14).

For persons ages 15-24 years, there was a total of 407 deaths. Injuries accounted for two-thirds of these deaths. Motor vehicle-related deaths accounted for the highest percentage of deaths in this age group (26%), followed by suicide (11%), injuries of undetermined intent (11%) and homicide (10%).

In 1999, cancer remained the number one cause of death for Massachusetts residents ages 25-74 years (36%). Heart disease, injuries of undetermined intent, chronic liver disease, chronic lower respiratory disease and suicide were other leading causes.

Heart disease was the leading cause of death for Massachusetts residents ages 75 years and older (31%) (Table 3b). As expected, 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 45-65 years (550.7 vs. 130.0).

External causes of death such as motor vehicle-related injuries, unintentional injuries, suicide and homicide varied greatly as a leading cause of death by age. These accounted for 31% of deaths among 1-14 year olds, 66% of deaths to persons ages15-24 years, 34% of deaths to 25-44 years, and only 6% and 2% of deaths to persons ages 45-64 years and persons age 65 years and older, respectively.

The top ten leading causes of death accounted for 78% of all deaths in 1999 (Table 4). HIV 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. Newly among the 10 leading causes in 1999 was Alzheimer's disease as the 7th leading cause of death. The arrival of Alzheimer's Disease among the top 10 leading causes of death was expected due to the changes in the classification of diseases. Due to changes in the classification and tabulation of underlying causes of death, more deaths are classified as Alzheimer's Disease using the ICD-10, compared to ICD-9.

The leading causes of death also varied markedly by race and Hispanic ethnicity in Massachusetts in 1999 as in previous years (Table 4). Overall age-adjusted death rates

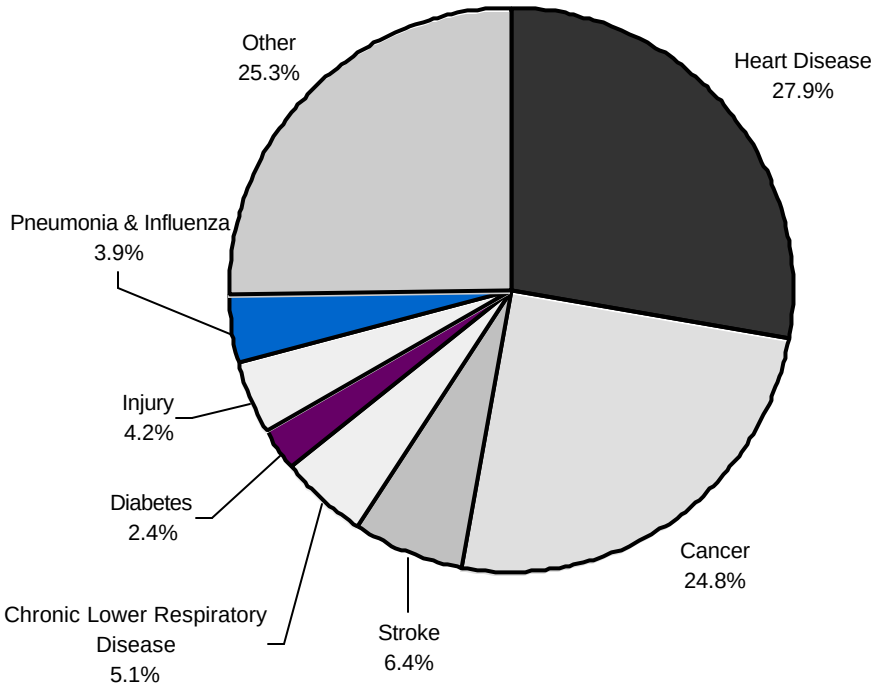
for black, non-Hispanics exceeded those of white, non-Hispanics by 35%. Age-adjusted death rates for black, non-Hispanics were higher for many of the leading causes of death.

Cancer was the number one cause of death among Asian/Pacific Islander, non-Hispanics and black, non-Hispanics in 1999, followed by heart disease and stroke. Cancer was also the leading cause of death for Hispanics, followed by heart disease and HIV diseases (AIDS). Heart disease was the leading cause of death for white, non-Hispanics followed by cancer and stroke. The leading causes of death for Hispanics included HIV disease, perinatal conditions, and homicide, all of which occur more frequently among younger people. Chronic liver disease was also among the leading causes of death for Hispanics. For Asian/Pacific Islander, non-Hispanics, suicide was among the top ten leading causes.

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 injuries, suicide and homicide as compared to white, non-Hispanics. Among persons over the age of 44 years, Hispanics and Asian/Pacific Islander, 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 5a and 5b).

Figure 3

Distribution of Leading Causes of Death[1]
Massachusetts: 1999



[1]Total Number of Deaths = 55,763
Causes of Death are classified according to ICD-10

Figure 4. Daily Death Statistics
Massachusetts: 1999

Every day in 1999, residents of Massachusetts experienced an average of the following:

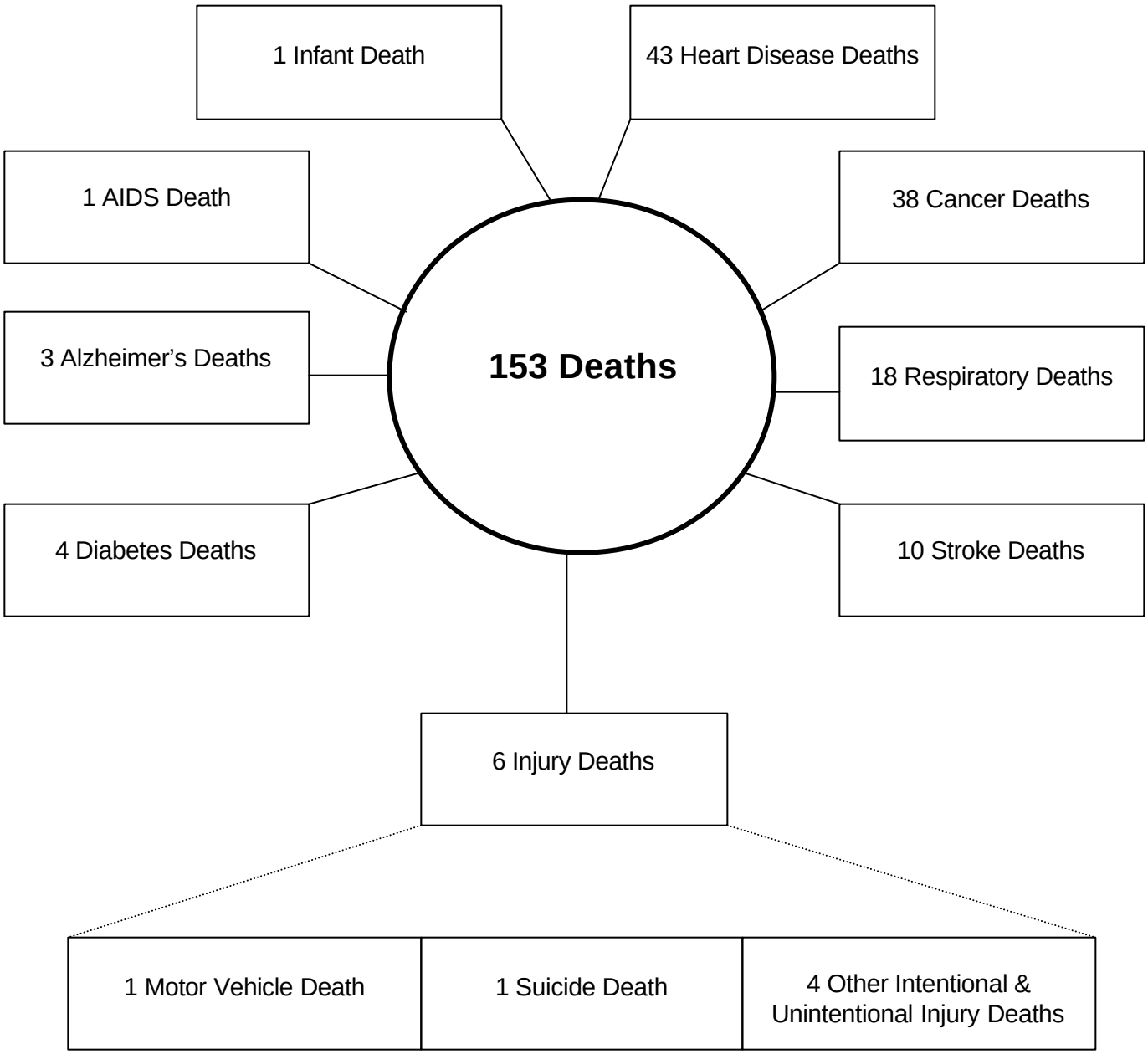


Table 3a. Leading Causes of Death, Numbers and Age-Specific Rates, Massachusetts: 1999

Age	Cause of death[1]	Deaths	
		Number	Rate[2]
1 – 14 years	**TOTAL**	**165**	**14.6**
	Cancer	30	2.7
	Unintentional non-transport injuries[3]	20	1.8
	Congenital malformations	17	1.5
	Motor vehicle-related injuries	14	1.2
15 - 24 years	**TOTAL**	**407**	**46.0**
	Motor vehicle-related injuries	107	12.1
	Suicide	45	5.1
	Injuries of undetermined intent[4]	44	5.0
	Homicide	40	4.5
25 – 44 years	**TOTAL**	**2,397**	**118.4**
	Cancer	461	22.8
	Heart Disease	320	15.8
	Injuries of undetermined intent[4]	277	13.7
	Suicide	189	9.3
45 – 64 years	**TOTAL**	**7,431**	**565.4**
	Cancer	2,951	224.5
	Heart Disease	1,708	130.0
	Chronic Liver Disease	249	18.9
	Chronic Lower Respiratory Disease[5]	246	18.7
65 + years[6]	**TOTAL**	**44,944**	**5,214.0**
	Heart Disease	13,476	1,563.4
	Cancer	10,377	1,203.8
	Stroke	3,321	385.3
	Chronic Lower Respiratory Disease[5]	2,579	299.2

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. Unintentional non-transport injuries include injuries such as falls, fires, and drownings that were not intended to occur. Motor vehicle-related injuries and other transportation-related injuries are not included in these numbers. 4. Injuries of undetermined intent include deaths from drug overdoses, falls, and fires where the investigation has not determined whether the injuries were unintentional or purposely inflicted. 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. See Table 3b for leading causes of death for detailed age groups for persons ages 65+ years.

Table 3b. Leading Causes of Death Among the Oldest Age Groups, Numbers and Age-Specific Rates, Massachusetts: 1999

Age	Cause of death[1]	Deaths	
		Number	Rate[2]
65-74 years	**TOTAL**	**9,782**	**2,213.1**
	Cancer	3,658	827.6
	Heart Disease	2,434	550.7
	Chronic Lower Respiratory Disease[3]	684	154.8
	Stroke	400	90.5
75-84 years	**TOTAL**	**17,397**	**5,809.0**
	Heart Disease	4,933	1,647.2
	Cancer	4,464	1,490.6
	Stroke	1,284	428.7
	Chronic Lower Respiratory Disease[3]	1,135	379.0
85+ years	**TOTAL**	**17,765**	**14,742.6**
	Heart Disease	6,109	5,069.7
	Cancer	2,255	1,871.4
	Stroke	1,637	1,358.5
	Influenza and Pneumonia	1,183	981.7

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 4. Leading Causes of Death[1] and Age-Adjusted Death Rates by Race and Hispanic Ethnicity, Massachusetts: 1999

White, non-Hispanic[2]

Cause[3]	#	Rate[4]
Total	**52,282**	**814.2**
Heart disease	14,804	225.8
Cancer	12,995	209.9
Stroke	3,385	50.5
Chronic Lower Resp. Disease[5]	2,773	43.0
Influenza and Pneumonia	2,104	30.9
Diabetes	1,182	18.7
Alzheimer's Disease	1,108	16.1
Nephritis	998	15.2
Septicemia	823	12.8
Unintentional non-transport injuries[6]	757	12.0

Black, non-Hispanic[2]

Cause	#	Rate
Total	**2,018**	**1,098.4**
Cancer	492	280.2
Heart Disease	470	273.1
Stroke	103	62.9
Diabetes	80	47.1
Nephritis	73	41.7
Perinatal Conditions	56	14.2
HIV Disease	51	19.4
Chronic Lower Resp. Disease[5]	50	28.9
Septicemia	49	28.0
Influenza and Pneumonia	43	24.7

Asian/Pacific Islander, non-Hispanic[2]

Cause	#	Rate
Total	**449**	**511.5**
Cancer	160	167.5
Heart Disease	93	113.8
Stroke	33	45.5
Influenza and Pneumonia	15	21.7
Diabetes	11	13.9
Septicemia	10	12.0
Suicide	9	4.5
Nephritis	8	12.1
Motor Vehicle related injuries	8	5.4
Unintentional non-transport injuries[6]	8	7.4

Hispanic

Cause	#	Rate
Total	**975**	**503.1**
Cancer	195	113.2
Heart Disease	164	103.8
HIV Disease	63	22.5
Diabetes	52	34.8
Stroke	50	31.7
Chronic Liver Disease	34	18.2
Injuries of Undetermined Intent	33	9.3
Homicide	31	7.4
Perinatal Conditions	29	4.7
Motor Vehicle-related injuries	29	8.3

Total

Cause	#	Rate
Total	**55,763**	**815.9**
Heart disease	15,539	223.8
Cancer	13,852	209.5
Stroke	3,573	50.5
Chronic Lower Respiratory Disease[5]	2,857	41.8
Influenza and Pneumonia	2,176	30.3
Diabetes	1,327	19.8
Alzheimer's Disease	1,137	15.7
Nephritis	1,103	15.9
Septicemia	894	13.1
Unintentional non-transport injuries[6]	814	12.0

1. Ranking based on number of deaths. 2. Race categories presented in this report differ from previously published data. 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 falls, fires, and drownings that were not intended to occur. Motor-vehicle-related injuries and other transportation-related injuries are not included in these numbers.

Table 5a. Number and Age-Specific Rates for Selected Causes of Death by Race and Hispanic Ethnicity, Massachusetts: 1999

Selected Causes[2]	Total		White, non-Hispanic[1]		Black, non-Hispanic[1]		Asian/Pacific Islander, non-Hispanic[1]		Hispanic	
	#	Rate[3]	#	Rate	#	Rate	#	Rate	#	Rate
Age: 1-14, TOTAL	**165**	**14.6**	**113**	**12.4**	**19**	**27.4**	**9**	**22.6**	**22**	**21.1**
Cancer	30	2.7	20	2.2	1	--[5]	1	--[5]	7	6.7
Unintentional non-transport Injuries[4]	20	1.8	12	1.3	3	--[5]	2	--[5]	3	--[5]
Congenital Malformations	17	1.5	12	1.3	3	--[5]	1	--[5]	0	0.0
Motor Vehicle-related Injuries	14	1.2	10	1.1	1	--[5]	0	0.0	3	--[5]
Age: 15-24, TOTAL	**407**	**46.0**	**288**	**38.7**	**54**	**116.5**	**14**	**46.0**	**51**	**83.3**
Motor Vehicle-related Injuries	107	12.1	82	11.0	12	25.9	3	--[5]	10	16.3
Suicide	45	5.1	32	4.3	6	12.9	1	--[5]	6	9.8
Injuries of Undetermined Intent[6]	44	5.0	40	5.4	0	0.0	0	0.0	4	--[5]
Homicide	40	4.5	10	1.3	17	36.7	0	0.0	13	21.2
Age: 25-44, TOTAL	**2,397**	**118.4**	**1,901**	**109.0**	**241**	**258.0**	**47**	**72.0**	**205**	**173.7**
Cancer	461	22.8	394	22.6	29	31.1	17	26.0	21	17.8
Heart Disease	320	15.8	259	14.9	37	39.6	8	12.3	16	13.6
Injuries of Undetermined Intent[6]	277	13.7	238	13.6	16	17.1	0	0.0	23	19.5
Suicide	189	9.3	167	9.6	4	--[5]	7	10.7	10	8.5
Age: 45-64, TOTAL	**7,431**	**565.4**	**6,582**	**551.1**	**475**	**1,055.2**	**102**	**360.3**	**265**	**606.4**
Cancer	2,951	224.5	2,664	223.0	155	344.3	59	208.4	71	162.5
Heart Disease	1,708	130.0	1,522	127.4	117	259.9	18	63.6	51	116.7
Chronic Liver Disease	249	18.9	218	18.3	7	15.6	2	--[5]	21	48.1
Chronic Lower Respiratory Disease[7]	246	18.7	236	19.8	8	17.8	1	--[5]	1	--[5]
Age: 65+, TOTAL[8]	**44,944**	**5,214.0**	**43,112**	**5,299.8**	**1,154**	**5,577.0**	**269**	**2,794.2**	**383**	**2,258.1**
Heart Disease	13,476	1,563.4	12,995	1,597.5	312	1,507.8	66	685.6	96	566.0
Cancer	10,377	1,203.8	9,895	1,216.4	306	1,478.8	79	820.6	90	530.6
Stroke	3,321	385.3	3,177	390.6	81	391.5	29	301.2	32	188.7
Chronic Lower Respiratory Disease[7]	2,579	299.2	2,519	309.7	36	174.0	4	--[5]	20	117.9

1. Race categories presented in this report differ from previously published data. 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 non-transport injuries include injuries such as falls, fires, and drownings that were not intended to occur. Motor vehicle-related injuries and other transportation- related injuries are not included in these numbers. 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 5b for causes of death for detailed age groups for persons ages 65+ years.

Table 5b. Number and Age-Specific Rates for Selected Causes of Death Among the Oldest Age Groups by Race and Hispanic Ethnicity, Massachusetts: 1999

	Total		White, non-Hispanic[1]		Black, non-Hispanic[1]		Asian/Pacific Islander, non-Hispanic[1]		Hispanic	
Selected Causes[2]	**#**	**Rate[3]**	**#**	**Rate**	**#**	**Rate**	**#**	**Rate**	**#**	**Rate**
Age: 65-74, TOTAL	**9,782**	**2,213.1**	**9,112**	**2,199.9**	**406**	**3,424.1**	**101**	**1,690.9**	**156**	**1,690.9**
Cancer	3,658	827.6	3,428	827.6	143	1,206.0	41	686.4	44	476.9
Heart Disease	2,434	550.7	2,266	547.1	101	851.8	28	468.8	35	379.4
Chronic Lower Respiratory Disease[4]	684	154.8	659	159.1	15	126.5	1	--[5]	9	97.6
Stroke	400	90.5	364	87.9	18	151.8	9	150.7	9	97.6
Age: 75-84, TOTAL	**17,397**	**5,809.0**	**16,728**	**5,876.6**	**426**	**6,528.7**	**98**	**3,581.9**	**133**	**2,554.3**
Heart Disease	4,933	1,647.2	4,772	1,676.4	103	1,578.5	17	621.3	38	729.8
Cancer	4,464	1,490.6	4,295	1,508.9	110	1,685.8	28	1,023.4	28	537.7
Stroke	1,284	428.7	1,217	427.5	41	628.4	13	475.1	12	230.5
Chronic Lower Respiratory Disease[4]	1,135	379.0	1,111	390.3	17	260.5	1	--[5]	6	115.2
Age: 85+, TOTAL	**17,765**	**14,742.6**	**17,272**	**15,071.4**	**322**	**13,939.4**	**70**	**7,625.3**	**94**	**3,718.4**
Heart Disease	6,109	5,069.7	5,957	5,198.0	108	4,675.3	21	2,287.6	23	909.8
Cancer	2,255	1,871.4	2,172	1,895.3	53	2,294.4	10	1,089.3	18	712.0
Stroke	1,637	1,358.5	1,596	1,392.7	22	952.4	7	762.5	11	435.1
Influenza and Pneumonia	1,183	981.7	1,161	1,013.1	14	606.1	3	--[5]	5	197.8

1. . Race categories presented in this report differ from previously published data. 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.

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 1999: 15,539 heart disease deaths and 13,852 cancer deaths, yielding age-adjusted rates of 223.8 and 209.5 per 100,000 persons respectively (Table 2). Heart disease and cancer accounted for 53% of all deaths in Massachusetts in 1999. 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 3).

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 1999 data to previous years, the comparability modified data should be used.

The age-adjusted comparability modified death rates for heart disease have declined in Massachusetts since 1995 among white, non-Hispanic males (12%) and white, non-Hispanic females (13%) (Table 6). Black, non-Hispanic females experienced an overall decline in age-adjusted rates of 5% between 1995 and 1999, but these rates have fluctuated in the past few years. After experiencing increases in heart disease death rates between 1995 and 1998, the heart disease death rate among black, non-Hispanic males in 1999 has decreased 6% from 1998, and more closely resembles the 1995 comparability modified rate. Age-adjusted comparability modified heart disease death rates have fluctuated for Asian/Pacific Islander, non-Hispanics as well as Hispanics for both genders.

Age-adjusted comparability modified cancer death rates have decreased for white, non-Hispanic males and females since 1995, with declines of 7% and 9%, respectively. Black, non-Hispanics have also shown a decrease in the overall cancer death rates for both genders from 1995 to 1999. Black, non-Hispanic males experienced a decrease of 5% while black, non-Hispanic females experienced a decrease of 12% over this time period. Yet, black, non-Hispanics continue to have higher cancer death rates than white, non-Hispanics of both genders. In 1999 there were 377.0 cancer deaths per 100,000 black, non-Hispanic males compared to 267.8 per 100,000 white, non-Hispanic males and 217.5 cancer deaths per 100,000 black, non-Hispanic females compared to 175.6 cancer deaths per 100,000 white, non-Hispanic females.

Asian/Pacific Islander, non-Hispanic males and females had decreases in the age-adjusted comparability modified cancer death rates from 1995 to 1999. Age-adjusted comparability modified cancer death rates have fluctuated for Hispanics for both genders.

In 1999, there were 13,852 cancer deaths (Table 7). The overall leading cause of cancer death was lung cancer (26%), followed by colorectal cancer (11%). Lung cancer was also the leading cause of cancer death for both men (29%) and women (23%). Among women, the lung cancer mortality rate was 50% higher than the breast cancer mortality rate. The second leading cause of cancer death was breast cancer for females (15%) and prostate cancer for males (11%). The overall cancer death rate was 1.5 times higher for men compared to women. Men also had higher death rates than women for site-specific cancers of the bladder (9.7 vs. 2.7), esophagus (10.1 vs. 1.9), lung (75.0 vs. 41.7), stomach (7.3 vs. 3.5), colorectal (28.0 vs. 19.0) and leukemia (10.3 vs. 6.3).

The lowest number of cancer deaths was seen among persons under the age of 25 years (Table 8). Leukemia was the leading cause of cancer death for all persons under the age of 25 years, followed closely by brain cancer. 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 to 84 years. However, among females ages 25-44 years, breast cancer was the leading cause of cancer death (61 deaths) followed by lung cancer (30 deaths). Colorectal cancer was the leading cause of cancer death to persons 85 years and older.

Lung cancer was the leading cause of cancer death for each race and ethnicity group, followed by colorectal cancer (Table 9). However, the other leading causes of cancer death vary by race and ethnicity. Female breast cancer was the third leading cause of cancer deaths for white, non-Hispanics; Hispanics; and Asian/Pacific Islander, non-Hispanics; and the fifth leading cause of cancer death for black, non-Hispanics. Prostate cancer and pancreatic cancer were tied as the third leading cause of cancer deaths among black, non-Hispanics. Prostate cancer was the fourth leading cause of cancer deaths for white, non-Hispanics and the fifth leading cause of cancer death of Hispanics.

Black, non-Hispanics have the highest age-adjusted death rates for many cancer types. Compared to white, non-Hispanics, the age-adjusted prostate cancer death rate for black, non-Hispanics was approximately 1.7 times higher; the age-adjusted colorectal cancer death rate was 1.5 times higher and; the age-adjusted lung cancer death rate was 1.3 times higher.

Table 6. Heart Disease and Cancer Deaths by Race and Gender, Comparability Unmodified and Comparability Modified Age-Adjusted Rates,[1] Massachusetts: 1990, 1995-1999

Heart Disease

White, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified[3]	Comparability Modified[4]	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1990	357.4	NA[5]	223.7	NA	281.2	NA
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]	294.7[7]		178.5[7]		225.8[7]	

Black, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1990	398.4	NA	226.8	NA	294.0	NA
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]	329.8[7]		230.8[7]		273.1[7]	

Asian/Pacific Islander, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified[3]	Comparability Modified[4]	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1990	111.6	NA[5]	86.7	NA	100.8	NA
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]	144.8[7]		87.9[7]		113.8[7]	

Hispanic

Year	Male		Female		Total	
	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1990	100.2	NA	77.8	NA	88.2	NA
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]	137.8[7]		80.3[7]		104.3[7]	

1. Rates are per 100,000 age-adjusted to the 2000 US standard population. 2. Race categories presented in this report differ from previously published data. 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 are coded according to ICD-10. 7. When comparing data over time between 1994 through 1999, please use the comparability modified rate for years 1994-1998.

Table 6 (continued). Heart Disease and Cancer Deaths by Race and Gender, Comparability Unmodified and Comparability Modified Age-Adjusted Rates,[1] Massachusetts: 1990, 1995-1999

Cancer

White, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified[3]	Comparability Modified[4]	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1990	273.9	NA[5]	187.5	NA	220.5	NA
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]	267.8[7]		175.6[7]		209.9[7]	

Black, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1990	308.1	NA	187.1	NA	233.4	NA
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]	377.0[7]		217.5[7]		280.2[7]	

Asian/Pacific Islander, non-Hispanic[2]

Year	Male		Female		Total	
	Comparability Unmodified[3]	Comparability Modified[4]	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1990	126.3	NA	70.8	NA	96.3	NA
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]	199.6[7]		144.0[7]		167.5[7]	

Hispanic

Year	Male		Female		Total	
	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified	Comparability Unmodified	Comparability Modified
1990	64.7	NA	51.7	NA	57.3	NA
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]	141.2[7]		91.6[7]		113.2[7]	

1. Rates are per 100,000 age-adjusted to the 2000 US standard population. 2. Race categories presented in this report differ from previously published data. 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 are coded according to ICD-10. 7. When comparing data over time between 1994 through 1999, please use the comparability modified rate for years 1994-1998.

Table 7. Number and Age-Adjusted Rates of Cancer Deaths by Selected Causes and Gender, Massachusetts: 1999

Cause of Death[1]	ICD-10 Code	Total		Female		Male	
		#	Rate[2,3]	#	Rate	#	Rate
Total Cancer Deaths	**C00-C97**	**13,852**	**209.5**	**6,852**	**174.6**	**7,000**	**267.4**
Bladder	C67	349	5.1	111	2.7	238	9.7
Brain and nervous system	C70-C72	304	4.8	137	3.8	167	5.9
Cervix	C53	64	1.8	64	1.8	--[4]	--[4]
Colorectal	C18-C21	1,527	22.6	802	19.0	725	28.0
Esophagus	C15	350	5.4	77	1.9	273	10.1
Female breast	C50[5]	1,048	27.8	1,048	27.8	--[4]	--[4]
Hodgkin's disease	C81	49	0.8	22	0.7	27	0.9
Kidney and other urinary organs	C64, C65	270	4.1	121	3.1	149	5.6
Leukemia	C91-C95	524	7.9	252	6.3	272	10.3
Lung	C33, C34	3,592	55.0	1,586	41.7	2,006	75.0
Melanoma of the skin	C43	181	2.8	70	1.8	111	4.1
Multiple myeloma	C88, C90	252	3.8	126	3.2	126	4.8
Non-Hodgkin's lymphoma	C82-C85	590	8.9	300	7.5	290	10.9
Ovary	C56	334	8.9	334	8.9	--[4]	--[4]
Pancreas	C25	745	11.3	405	10.0	340	12.9
Prostate	C61	801	33.4	--[4]	--[4]	801	33.4
Stomach	C16	332	5.0	143	3.5	189	7.3
Uterus	C54, C55	161	4.1	161	4.1	--[4]	--[4]
All other cancers	Residual	1,803	27.0	913	22.4	890	34.0

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. PLEASE NOTE: the age-adjusted cancer mortality rates presented in this report cannot be compared to those published by the Massachusetts Cancer Registry (MCR). Age-adjusted rates published in this report are adjusted to the 2000 US standard population, consistent with the National Center for Health Statistics tabulation procedures. The MCR publishes age-adjusted cancer mortality rates adjusted to the 1970 US standard population for consistency with procedures used by the National Cancer Institute. 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 8. Selected Causes of Cancer Deaths by Age, Massachusetts: 1999

Age	Cause of death[1]	ICD-10 Code	Number	Age-specific rate[2]
1 – 14 years	**TOTAL**		**30**	**2.7**
	Brain and nervous system	C70-C72	10	0.9
	Leukemia	C91-C95	9	0.8
	Kidney and other urinary organs	C64, C65	1	--[3]
	Non-Hodgkin's lymphoma	C82-C85	1	--[3]
15 - 24 years	**TOTAL**		**31**	**3.5**
	Leukemia	C91-C95	7	0.8
	Brain and nervous system	C70-C72	4	--[3]
	Non-Hodgkin's lymphoma	C82-C85	4	--[3]
	Hodgkin's disease	C81	2	--[3]
25 – 44 years	**TOTAL**		**461**	**22.8**
	Lung	C33, C34	71	3.5
	Female breast	C50	61	6.0[4]
	Brain and nervous system	C70-C72	43	2.1
	Colorectal	C18-C21	35	1.7
45 – 64 years	**TOTAL**		**2,951**	**224.5**
	Lung	C33, C34	819	62.3
	Female breast	C50	320	47.1[4]
	Colorectal	C18-C21	232	17.7
	Pancreas	C25	167	12.7
65 + years	**TOTAL**		**10,377**	**1,203.8**
	Lung	C33, C34	2,701	313.3
	Colorectal	C18-C21	1,259	146.1
	Prostate	C61	769	227.2[5]
	Female breast	C50	667	127.4[4]
65-74 years	**TOTAL**		**3,658**	**827.6**
	Lung	C33, C34	1,212	274.2
	Colorectal	C18-C21	376	85.1
	Female Breast	C50	226	91.6[4]
	Pancreas	C25	188	42.5
75-84 years	**TOTAL**		**4,464**	**1,490.6**
	Lung	C33, C34	1,162	388.0
	Colorectal	C18-C21	525	175.3
	Prostate	C61	363	325.1[5]
	Pancreas	C25	256	85.5
85+ years	**TOTAL**		**2,255**	**1,871.4**
	Colorectal	C18-C21	358	297.1
	Lung	C33, C34	327	271.4
	Prostate	C61	251	798.2[5]
	Female Breast	C50	192	215.6[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 9. Leading Causes of Cancer Deaths and Age-Adjusted Rates by Race & Hispanic Ethnicity, Massachusetts: 1999

White, non-Hispanic[1]			Black, non-Hispanic[1]			Asian/Pacific Islander, non-Hispanic[1]			Hispanic		
Cause[2]	**#**	**Rate[3]**	**Cause**	**#**	**Rate**	**Cause**	**#**	**Rate**	**Cause**	**#**	**Rate**
Lung	3,399	55.6	Lung	129	73.8	Lung	35	38.5	Lung	28	17.3
Colorectal	1,432	22.6	Colorectal	59	35.0	Colorectal	13	14.9	Colorectal	21	13.7
Female Breast	994	28.3	Pancreas	31	16.8	Female Breast	10	16.4	Female Breast	18	17.5
Prostate	753	33.3	Prostate	31	55.6	Stomach	9	8.8	Non-Hodgkin's	12	5.9
Pancreas	707	11.4	Female Breast	26	23.6	Non-Hodgkin's	9	10.0	Prostate	11	20.5
Total Cancer	**12,995**	**209.9**	**Total Cancer**	**492**	**280.2**	**Total Cancer**	**160**	**167.5**	**Total Cancer**	**195**	**113.2**

1. Race categories presented in this report differ from previously published data. 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. PLEASE NOTE: the age-adjusted cancer mortality rates presented in this report cannot be compared to those published by the Massachusetts Cancer Registry (MCR). Age-adjusted rates published in this report are adjusted to the 2000 US standard population, consistent with the National Center for Health Statistics tabulation procedures. The MCR publishes age-adjusted cancer mortality rates adjusted to the 1970 US standard population for consistency with procedures used by the National Cancer Institute.

INJURIES

Injuries

In 1999, 4.2% of all deaths among Massachusetts residents were the result of injuries (2,323 deaths). Approximately 57% of injury deaths were due to falls, fires, drownings and other injuries, while 19% were due to suicide, 19% to motor vehicle-related injuries and 6% to homicide. For all types of injuries, age-adjusted death rates for males were higher than for females irrespective of race and ethnicity (Table 10).

The motor vehicle-related death rate varied by gender, with the male rate almost three times the female rate (10.2 vs. 3.6). Although the greatest number of motor vehicle-related deaths occurred to men ages 25-44 years (111), males age 75-84 years had the highest rate for motor vehicle-related deaths (26.9 deaths/100,000). The rate for all males ages 65 years and older was the same as for males ages 15-24 years (17.4 per 100,000).

Intentional injuries (suicide and homicide) comprised 24% of all injury-related deaths in 1999. Overall, suicide accounted for 77% of the intentional injury deaths. However, suicide accounted for 23% of the black, non-Hispanic intentional injury deaths, 39% of the Hispanic intentional injury deaths, and 88% of the white, non-Hispanic intentional injury deaths.

The suicide rate for males continues to be approximately four times the suicide rate for females: 10.9 deaths per 100,000 males compared with 3.1 for females. Hispanic and white, non-Hispanic males had the highest suicide rates among race-gender groups (11.1 and 9.0, respectively). Persons ages 85 years and older and ages 45-64 years had the highest suicide rate among age groups (10.8 and 9.8, respectively), while the largest number of suicides occurred among persons ages 25-44 years (189).

The number of homicides has declined in Massachusetts in the 1990s: there were less than half as many homicides in 1999 (128) as there were in 1990 (270). However, there was a slight increase of 4% (5 deaths) from 1998 to 1999. The largest increase in the number of homicide deaths between 1998 and 1999 was among women (from 20 to 37). The homicide rate for males was more than twice the homicide rate for females, 2.8 per 100,000 males vs. 1.2 per 100,000 females. In addition, there were large differences in homicide rates by race and ethnicity: the rates for black, non-Hispanics (12.6 per 100,000) and Hispanics (7.4 per 100,000) were substantially higher than for white, non-Hispanics (1.0 per 100,000). The homicide rate among black, non-Hispanic males (21.9 per 100,000) was nearly 8 times higher than the overall male homicide rate.

The rate of all injury-related deaths was almost three times greater for males than females (51.7 deaths per 100,000 compared to 20.8). For other injuries the age-specific death rates were dramatically higher for persons ages 75 years and older, and especially for the oldest old, ages 85 years and older. For females, the other injury death rate among women 85 years and older was 222.3 per 100,000 females, about 17 times higher than the rate for all females. For males, the other injury death rate was about ten times higher among men over the age of 85 years compared to the rate for all males.

Although only 11% of all injury-related deaths occurred among persons ages 15-24 years, injuries accounted for 66% of all deaths in that age group.

Table 10. Injury Deaths by Gender, Age, Race and Hispanic Ethnicity: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 1999

Cause of Death[1]	All Injuries		Motor Vehicle[2]		Suicide		Homicide		Other Injuries[3]	
Age/Gender	**#[4]**	**Rate[5]**	**#**	**Rate**	**#**	**Rate**	**#**	**Rate**	**#**	**Rate**
All Persons	**2,323**	**35.2**	**433**	**6.7**	**430**	**6.7**	**128**	**2.0**	**1,332**	**19.9**
<1[6]	12	14.8	1	--[7]	0	0.0	4	--[7]	7	8.7
1-14	51	4.5	14	1.2	10	0.9	5	0.4	22	2.0
15-24	267	30.2	107	12.1	45	5.1	40	4.5	75	8.5
25-44	814	40.2	148	7.3	189	9.3	58	2.9	419	20.7
45-64	438	33.3	70	5.3	129	9.8	18	1.4	221	16.8
65+	741	86.0	93	10.8	57	6.6	3	--[7]	588	68.2
65-74	161	36.4	32	7.2	20	4.5	1	--[7]	108	24.4
75-84	269	89.8	47	15.7	24	8.0	2	--[7]	196	65.4
85+	311	258.1	14	11.6	13	10.8	0	0.0	284	235.7
All Females	**796**	**20.8**	**124**	**3.6**	**101**	**3.1**	**37**	**1.2**	**534**	**13.0**
<1	6	15.2	1	--[7]	0	0.0	2	--[7]	3	--[7]
1-14	19	3.5	5	0.9	0	0.0	4	--[7]	10	1.8
15-24	65	14.7	30	6.8	12	2.7	7	1.6	16	3.6
25-44	206	20.2	37	3.6	44	4.3	16	1.6	109	10.7
45-64	111	16.4	17	2.5	32	4.7	8	1.2	54	8.0
65+	389	74.3	34	6.5	13	2.5	0	0.0	342	65.3
65-74	64	25.9	11	4.5	6	2.4	0	0.0	47	19.1
75-84	119	63.4	17	9.1	5	2.7	0	0.0	97	51.6
85+	206	231.3	6	6.7	2	--[7]	0	0.0	198	222.3
All Males	**1,527**	**51.7**	**309**	**10.2**	**329**	**10.9**	**91**	**2.8**	**798**	**27.9**
<1	6	14.5	0	0.0	0	0.0	2	--[7]	4	--[7]
1-14	32	5.5	9	1.6	10	1.7	1	--[7]	12	2.1
15-24	202	45.7	77	17.4	33	7.5	33	7.5	59	13.4
25-44	608	60.4	111	11.0	145	14.4	42	4.2	310	30.8
45-64	327	51.5	53	8.3	97	15.3	10	1.6	167	26.3
65+	352	104.0	59	17.4	44	13.0	3	--[7]	246	72.7
65-74	97	49.6	21	10.7	14	7.2	1	--[7]	61	31.2
75-84	150	134.3	30	26.9	19	17.0	2	--[7]	99	88.7
85+	105	333.9	8	25.4	11	35.0	0	0.0	86	273.5

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. Motor vehicle deaths to occupants, pedestrians, motorcyclists and bicyclists. 3. Other Injuries include deaths such as drownings, fires, falls and drug overdoses. This category includes deaths from unintentional injuries and injuries of undetermined intent (deaths where investigation has not determined whether the injuries were accidental or purposely inflicted). 4. Column sum may not equal total because age or race of some decedents was not known. 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. The denominator used in this age group is the number of 1999 resident births. 7. Calculations based on fewer than five events are excluded. 8. Race categories presented in this report differ from previously published data. 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.

Table 10. (continued) Injury Deaths by Gender, Age, Race and Hispanic Ethnicity: Numbers, Age-Adjusted, and Age-Specific Rates, Massachusetts: 1999

Cause of Death[1]	All Injuries		Motor Vehicle[2]		Suicide		Homicide		Other Injuries[3]	
Race/Gender[8]	**#[4]**	**Rate[5]**	**#**	**Rate**	**#**	**Rate**	**#**	**Rate**	**#**	**Rate**
White, non-Hispanic	**2,023**	**34.2**	**371**	**6.5**	**388**	**6.9**	**54**	**1.0**	**1,210**	**19.9**
Females	735	21.1	113	3.7	91	3.1	24	0.9	507	13.4
Males	1,288	49.4	258	9.7	297	11.1	30	1.1	703	27.5
Black, non-Hispanic	**133**	**48.8**	**25**	**9.2**	**12**	**3.9**	**41**	**12.6**	**55**	**23.0**
Females	23	17.1	3	--[7]	1	--[7]	6	3.6	13	10.7
Males	110	84.1	22	18.1	11	7.3	35	21.9	42	36.9
Asian, non-Hispanic	**28**	**18.5**	**8**	**5.4**	**9**	**4.5**	**2**	--[7]	**9**	**7.8**
Females	9	10.7	3	--[7]	4	--[7]	0	0.0	2	--[7]
Males	19	28.2	5	9.7	5	4.4	2	--[7]	7	12.5
Hispanics	**136**	**39.8**	**29**	**8.3**	**20**	**5.9**	**31**	**7.4**	**56**	**18.2**
Females	28	16.8	5	2.3	5	3.2	7	3.6	11	7.7
Males	108	63.8	24	14.8	15	9.0	24	11.3	45	28.7

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. Motor vehicle deaths to occupants, pedestrians, motorcyclists and bicyclists. 3. Other Injuries include deaths such as drownings, fires, falls and drug overdoses. This category includes deaths from unintentional injuries and injuries of undetermined intent (deaths where investigation has not determined whether the injuries were accidental or purposely inflicted). 4. Column sum may not equal total because age or race of some decedents was not known. 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. The denominator used in this age group is the number of 1999 resident births. 7. Calculations based on fewer than five events are excluded. 8 Race categories presented in this report differ from previously published data. 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.

HIV DISEASES (AIDS)

HIV Disease (AIDS)[3]

There were 242 Massachusetts residents who died from HIV disease in 1999. (Table 11a). This represents a slight decrease in the number of HIV disease deaths from 1998, after taking into account the differences in the classification of diseases between ICD-10 and ICD-9. Using the revised comparability modified number of deaths, there was less than 1% decrease in the number of HIV disease deaths between 1998 and 1999.

Almost half (46%) of all HIV disease deaths occurred among people ages 35-44 years. (Table 11b). In 1999, 35% of HIV disease deaths were among persons ages 45 years and older. This represents a shift from previous years. The number of HIV disease deaths to persons ages 45 years and older increased 23% from 1998, after taking into account the differences in classification of diseases. The increase in this age group primarily occurred among Hispanics and white, non-Hispanics (data not shown).

Another shift occurring in 1999 is an increase in the proportion of female HIV disease deaths. In 1999 females accounted for 27% of all HIV disease deaths. This increase is partially due to an increase in deaths among female white, non-Hispanics who accounted for nearly 45% of all female HIV disease deaths in 1999 (data not shown).

For the second year in a row in Massachusetts, more Hispanics died of HIV disease than black, non-Hispanics. (Table 11c). For the first time since 1994, there was an increase in the number of HIV disease deaths among white, non-Hispanics. This was due to an increase in the number of deaths among female white, non-Hispanics.

In 1999, HIV disease was the third leading cause of death for Hispanics and seventh leading cause of death for black, non-Hispanics. It was the 26th leading cause of death for white, non-Hispanics and 24th leading cause of death overall. HIV disease was the sixth leading cause of death for Massachusetts residents ages 25-44 years; just four years ago, it was the leading cause of death in this age group. HIV disease remained the leading cause of death for persons of Hispanic ethnicity ages 25-44 years. For black, non-Hispanics in this same age group, HIV disease was the second leading cause of death.

The 1999 age-specific HIV disease death rate among 25-44 year-olds varied considerably by race, Hispanic ethnicity, and gender (Table 12). The highest rates occurred among Hispanic and black, non-Hispanic males (50.9 and 43.1 deaths per 100,000, respectively) and the lowest rate occurred among white, non-Hispanic females (2.3 deaths per 100,000). However, the rate for white, non-Hispanic females increased 53% between 1998 and 1999, even after taking the new classification system into account. Furthermore, after taking changes in the classification system into account, the largest decline in death rates for persons 25-44 years from 1998 to 1999 was among black, non-Hispanic men [66.6 (comparability modified rate) to 43.1 deaths/100,000]. (Please note: caution should be used when interpreting year-to-year changes, especially between 1998 and 1999 due to coding and classification changes as well as year-to-year fluctuation of rates based on relatively small numbers of deaths).

[3] Please note: this chapter was updated June 2001 to reflect the revised comparability ratio issued by the National Center for Health Statistics

Table 11a. HIV Disease Deaths (AIDS)[1] by Place of Occurrence, Massachusetts: 1987-1999

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]
1987	#	241	NA[3]	26	NA	207	NA	5	NA	3	NA
	%	100.0		10.8		85.9		2.1		-	
1988	#	315	NA	67	NA	234	NA	7	NA	7	NA
	%	100.0		21.3		74.3		2.2		2.2	
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		54.8		1.4		15.1	
1995	#	937	997	303	322	500	532	7	7	127	135
	%	100.0		32.3		53.4		0.7		13.6	
1996	#	609	648	154	164	336	357	9	10	110	117
	%	100.0		25.3		55.2		1.5		18.1	
1997	#	242	277	59	68	158	181	4	5	21	24
	%	100.0		24.4		65.3		-		8.6	
1998	#	213	244	46	53	130	149	2	2	35	40
	%	100.0		21.6		61.0		-		16.4	
1999	#	242[4]		55[4]		142[4]		2[4]		43[4]	
	%	100.0		22.7		58.7		-		17.8	

**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 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 1999, please use the comparability modified number for years 1994-1998. Please see Appendix for a detailed explanation.

Table 11b. HIV Disease Deaths (AIDS)[1] by Age, Massachusetts: 1987-1999

Year		Age (in years) <15 Comparability Unmodified	<15 Comparability Modified[2]	15-24 Comparability Unmodified	15-24 Comparability Modified[2]	25-34 Comparability Unmodified	25-34 Comparability Modified[2]	35-44 Comparability Unmodified	35-44 Comparability Modified[2]	45+ Comparability Unmodified	45+ Comparability Modified[2]
1987	#	5	NA[3]	8	NA	105	NA	78	NA	45	NA
	%	2.1		3.3		43.6		32.3		18.7	
1988	#	5	NA	12	NA	111	NA	127	NA	60	NA
	%	1.6		3.8		35.2		40.3		19.1	
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		0.9		29.0		49.5		19.9	
1995	#	11	12	5	5	272	289	443	471	206	219
	%	1.2		0.5		29.0		47.3		22.0	
1996	#	4	4	8	9	154	164	300	319	143	152
	%	0.7		1.3		25.3		49.3		23.5	
1997	#	5	6	1	1	35	40	135	155	66	76
	%	2.1		-		14.5		55.8		27.3	
1998	#	0	0	0	0	47	54	106	121	60	69
	%	0.0		0.0		22.1		49.8		28.2	
1999	#	2[4]		9[4]		34[4]		112[4]		85[4]	
	%	-		3.7		14.0		46.3		35.1	

**PLEASE NOTE: this table has been updated June 2001 to reflect the revised comparability ratio of HIV Disease Deaths, issued by the National Center for Health Statistics. 1. AIDS: Acquired Immune Deficiency Syndrome, HIV: Human Immunodeficiency Virus. The deaths reported are cases for which AIDS or HIV-related disease was the underlying cause of death. Deaths for 1987-1998 were coded according to the ICD-9 classification schedule, which began with 1987 death data (codes 042-044). Deaths for 1999 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 1999, please use the comparability modified number for years 1994-1998. Please see Appendix for a detailed explanation.

Table 11c. HIV Disease Deaths (AIDS)[1] by Gender and Race/Ethnicity, Massachusetts: 1987-1999

Year		Gender				Race and Ethnicity							
		Male		Female		White, non-Hispanic[2]		Black, non-Hispanic[2]		Other[3]		Hispanic[2]	
		Comparability Unmodified	Comparability Modified[4]	Comparability Unmodified	Comparability Modified[4]	Comparability Unmodified	Comparability Modified[4]	Comparability Unmodified	Comparability Modified[4]	Comparability Unmodified	Comparability Modified[4]	Comparability Unmodified	Comparability Modified[4]
1987	#	209	NA	32	NA[5]	NA	NA	NA	NA	NA	NA	NA	NA
	%	86.7		13.3									
1988	#	281	NA	34	NA	NA	NA	NA	NA	NA	NA	NA	NA
	%	89.2		10.8									
1989	#	359	NA	45	NA	290	NA	76	NA	1	NA	37	NA
	%	88.9		11.1		71.8		18.8		-		9.2	
1990	#	390	NA	57	NA	301	NA	94	NA	0	NA	50	NA
	%	87.2		12.8		67.5		21.1		0.0		11.2	
1991	#	535	NA	97	NA	439	NA	118	NA	1	NA	74	NA
	%	84.6		15.4		69.5		18.7		-		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		18.7		61.9		20.6		0.7		16.7	
1995	#	753	801	184	196	554	589	223	237	5	5	155	165
	%	80.4		19.6		59.1		23.8		0.5		16.5	
1996	#	494	525	115	122	341	363	161	171	5	5	101	107
	%	81.1		18.9		56.0		26.4		0.8		16.6	
1997	#	190	218	52	60	121	139	74	85	0	0	47	54
	%	78.5		21.5		50.0		30.6		0.0		19.4	
1998	#	169	193	44	50	104	119	51	58	0	0	58	66
	%	79.3		20.7		48.8		23.9		0.0		27.2	
1999	#	177[6]		65[6]		126[6]		51[6]		2[6]		63[6]	
	%	73.1		26.9		52.1		21.1		-		26.0	

**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 were coded according to the ICD-10 (codes B20-B24). 2. Race categories presented in this report differ from previously published data. 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/Pacific Islander, non-Hispanics and American Indian, 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 1999, please use the comparability modified number for years 1994-1998. Please see Appendix for a detailed explanation.

Table 12. HIV Disease Deaths (AIDS)[1] by Race, Hispanic Ethnicity, and Gender
Persons Ages 25-44, Massachusetts: 1989 – 1999

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]	
1989	221	12.8	NA[5]	NA	60	65.1	NA	NA	32	36.0	NA	NA
1990	230	13.0	NA	NA	73	76.5	NA	NA	40	42.4	NA	NA
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]	4.2			32[6]	34.3			40[6]	33.9
MALE												
1989	206	24.1	NA	NA	43	95.8	NA	NA	26	59.4	NA	NA
1990	212	24.3	NA	NA	50	107.2	NA	NA	36	77.2	NA	NA
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]	6.2			20[6]	43.1			30[6]	50.9
FEMALE												
1989	15	1.7	NA	NA	17	36.0	NA	NA	6	13.3	NA	NA
1990	18	2.0	NA	NA	23	47.1	NA	NA	4	--[5]	NA	NA
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]	25.5			10[6]	16.9

**Please Note: This table has been updated June 2001 to reflect the revised comparability ratio of HIV Disease Deaths, issued by NCHS. 1. AIDS and HIV disease deaths for years 1989-1998 coded using ICD-9: 042-044; 1999 deaths coded using ICD-10: B20-B24. Please refer to Appendix for comparability ratios. 2. Race categories presented in this report differ from previously published data. 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. 1998 rates have been recalculated using 1998 MISER population estimates (released September 2000). 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 1999, please use comparability modified data for years 1994-1998.

INFANT DEATH

Causes of Infant Death

In 1999, there were 418 deaths among infants under one year of age, representing 4 more infant deaths from the previous year (Table 13). The infant mortality rate (IMR) for 1999 was 5.2 deaths per 1,000 live births, approximately the same as in 1998 (5.1 per 1,000) and a 26% decrease since 1990. (Please note: more information on 1999 births can be found in *Massachusetts Births: 1999*, published in January 2001.)

Infant mortality continues to vary by race and ethnicity. In 1999, the IMR for white, non-Hispanics was 4.7/1,000 compared to 12.3 for black, non-Hispanics, 5.5 for Hispanics, and 1.9 for Asian/Pacific Islander, non-Hispanics (Table 13).

In 1999, the overall leading causes of infant death were conditions arising in the perinatal period (261) and congenital malformations (67) (Table 14). Other causes of infant death were sudden infant death syndrome (SIDS) (24), unintentional injuries (6) and homicide (4).

The vast majority (79%) of infant deaths occurred in the neonatal period (birth to 27 days). Causes of infant death vary 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 15). However, the distribution of these causes among race and ethnicity groups vary. Three-quarters of all black, non-Hispanic infant deaths were due to conditions originating in the perinatal period compared to 60% of all white, non-Hispanic infant deaths, and 57% of all Hispanic infant deaths.

Table 13. Trends in Infant, Neonatal, and Post Neonatal Mortality, by Race and Hispanic Ethnicity, Massachusetts: 1990-1999

INFANT MORTALITY

	State Total[1]		White, non-Hispanic		Black, non-Hispanic		Hispanic		Asian/Pacific Islander, non-Hispanic		Other[2]	
Year	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]
1990	649	7.0	442	6.1	98	13.7	77	9.1	24	7.0	8	9.5
1991	577	6.5	381	5.5	101	15.0	80	9.4	14	4.2	1	--[4]
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]

NEONATAL MORTALITY

	State Total[1]		White, non-Hispanic		Black, non-Hispanic		Hispanic		Asian/Pacific Islander, non-Hispanic		Other[2]	
Year	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]
1990	446	4.8	298	4.1	75	10.5	49	5.8	19	5.5	5	5.5
1991	401	4.5	266	3.9	72	10.7	53	6.2	10	3.0	0	0.0
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]

POST NEONATAL MORTALITY

	State Total[1]		White, non-Hispanic		Black, non-Hispanic		Hispanic		Asian/Pacific Islander, non-Hispanic		Other[2]	
Year	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]	#	Rate[3]
1990	203	2.2	144	2.0	23	3.2	28	3.3	5	1.5	3	--[4]
1991	176	2.0	115	1.7	29	4.3	27	3.2	4	--[4]	1	--[4]
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

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 14. Infant, Neonatal, and Post Neonatal Deaths by Cause, Massachusetts: 1999

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		**418**	**100%**	**332**	**100%**	**86**	**100%**
Infectious and parasitic diseases	**A00-B99**	**4**	**--**	**2**	**--**	**2**	**--**
Cancer	**C00-C97**	**2**	**--**	**0**	**0.0**	**2**	**--**
Diseases of the blood and blood forming organs (anemia)	**D50-D89**	**1**	**--**	**0**	**0.0**	**1**	**--**
Diseases of nervous system and ear	**G00-G98, H60-H93**	**3**	**--**	**0**	**0.0**	**3**	**--**
Diseases of the respiratory system	**J00-J98**	**11**	**2.6**	**1**	**--**	**10**	**11.6**
Diseases of digestive system	**K00-K92**	**4**	**--**	**1**	**--**	**3**	**--**
Congenital malformations	**Q00-Q99**	**67**	**16.0**	**59**	**17.8**	**8**	**9.3**
Congenital malformations of nervous system	Q00-Q07	11	--	9	--	2	--
Anencephalus and similar malformations	Q00	7	--	7	--	0	0.0
Congenital malformations of eye, ear, face, and neck	Q10-Q18	0	--	0	--	0	0.0
Congenital malformations of heart	Q20-Q24	12	--	11	--	1	--
Other congenital malformations of circulatory system	Q25-Q28	1	--	1	--	0	0.0
Congenital malformations of respiratory system	Q30-Q34	15	--	14	--	1	--
Cleft palate and other digestive tract malformations	Q35-Q45	4	--	2	--	2	--
Congenital malformations of genitourinary system	Q50-Q64	3	--	3	--	0	0.0
Congenital malformations of musculoskeletal system	Q65-Q85	4	--	3	--	1	--
Chromosomal abnormalities	Q90-Q99	11	--	10	--	1	--
Certain conditions originating in the perinatal period	**P00-P96**	**261**	**62.4**	**252**	**75.9**	**9**	**10.5**
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	21	--	21	--	0	0.0
Newborn affected by complications of placenta, cord and membrane	P02	18	--	17	--	1	--
Newborn affected by other complications of labor and delivery	P03	3	--	3	--	0	0.0
Disorders relating to short gestation and low birthweight	P07	94	--	94	--	0	0.0
Birth trauma	P10-P15	0	--	0	--	0	0.0
Intrauterine hypoxia and birth asphyxia	P20-P21	13	--	12	--	1	--
Respiratory distress of newborn	P22	19	--	18	--	1	--
Other respiratory conditions of newborn	P23-P28	18	--	16	--	2	--
Infections specific to the perinatal period	P35-P39	16	--	13	--	3	--
Neonatal hemorrhage	P50-P52, P54	4	--	4	--	0	0.0
Other and ill-defined conditions originating in the perinatal period	P90-P96	13	--	12	--	1	--
Symptoms, signs, and ill-defined conditions	**R00-R99**	**30**	**7.2**	**5**	**1.5**	**25**	**29.1**
Sudden Infant Death Syndrome (SIDS)	R95	24	--	4	--	20	--
Unintentional Injuries	**V01-X59,Y85-Y86**	**6**	**1.4**	**0**	0.0	**6**	**7.0**
Homicide	**X85-Y09, Y87.1**	**4**	**--**	**0**	**--**	**4**	**--**
All other causes	**Residual**	**25**	**6.0**	**12**	**3.6**	**13**	**15.1**

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 15. Infant Deaths by Major Causes, Race and Hispanic Ethnicity, Massachusetts: 1999

Cause of Death[2]	ICD-10 Code	White, non-Hispanic[1] #	White, non-Hispanic[1] %	Black, non-Hispanic[1] #	Black, non-Hispanic[1] %	Asian/Pacific Islander, non-Hispanic[1] #	Asian/Pacific Islander, non-Hispanic[1] %	Hispanic #	Hispanic %
TOTAL		**285**	**100%**	**75**	**100%**	**8**	**100%**	**49**	**100%**
Congenital malformations	Q00-Q99	52	18.2	4	--[3]	0	0.0	11	22.4
Certain conditions originating in the perinatal period	P00-P96	172	60.4	56	74.7	4	--[3]	28	57.1
Symptoms, signs, and ill-defined conditions	R00-R99	19	6.7	4	--[3]	1	--[3]	6	12.2
Unintentional Injuries	V01-X59, Y85-Y86	4	--[3]	2	--[3]	0	0.0	0	0.0
Homicide	X85-Y09, Y87.1	3	--[3]	1	--[3]	0	0.0	0	0.0
All other causes	Residual	35	12.3	8	10.7	3	--[3]	4	--[3]

1. Race categories presented in this report differ from previously published data. 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 refer to Appendix for comparability ratios. 3. Calculations based on fewer than five events are excluded.

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

Table 16. Selected Causes of Death by Community, 1999

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	**55,763**	**815.9**	**15,539**	**13,852**	**3,592**	**1,048**	**3,573**	**2,857**	**1,327**	**2,176**	**433**	**128**	**430**
Abington	104	693.2	26	31	10	1	4	12	3	3	0	0	2
Acton	88	714.4	19	31	7	3	3	4	3	5	1	0	1
Acushnet	69	581.5	22	14	3	1	6	4	1	1	1	0	1
Adams	145	1,057.2	56	33	6	1	11	4	2	7	2	0	1
Agawam	350	966.9	101	82	28	6	22	22	7	18	2	0	5
Alford	1	--[4]	0	1	0	0	0	0	0	0	0	0	0
Amesbury	164	1,137.5	42	37	9	0	4	16	8	1	2	0	4
Amherst	126	742.6	35	26	7	1	6	9	5	6	1	0	0
Andover	234	991.3	67	63	17	6	19	16	5	8	3	0	2
Arlington	467	724.9	143	113	31	10	30	17	8	24	1	0	0
Ashburnham	38	880.9	7	11	1	1	4	3	1	0	0	0	1
Ashby	23	1,019.2	4	6	2	0	0	0	0	1	2	0	0
Ashfield	11	615.4	2	6	3	0	0	0	0	1	1	0	0
Ashland	73	665.9	17	21	7	0	2	3	1	3	1	0	2
Athol	125	813.6	32	25	2	1	9	11	5	3	0	0	1
Attleboro	346	918.0	107	79	19	5	23	15	11	11	7	0	7
Auburn	168	843.0	51	40	7	2	7	9	4	10	0	0	1
Avon	36	737.2	12	4	1	0	5	3	2	2	1	0	0
Ayer	82	1,866.2	20	21	4	2	6	6	0	1	0	0	0
Barnstable	525	690.1	134	150	36	12	33	32	10	6	7	0	4
Barre	30	549.0	10	10	3	0	0	2	0	1	0	0	0
Becket	10	665.8	5	0	0	0	0	1	0	0	1	0	0
Bedford	139	987.7	23	38	12	4	7	6	3	7	0	0	0
Belchertown	78	799.5	23	17	3	0	1	5	5	2	0	0	2
Bellingham	87	771.8	29	23	7	5	1	2	1	1	3	0	1
Belmont	213	537.7	51	63	10	4	15	4	4	11	0	0	1
Berkley	17	725.3	2	4	0	1	1	1	0	2	0	0	0
Berlin	12	509.6	7	4	3	0	0	0	0	0	0	0	0
Bernardston	14	515.8	5	3	1	0	1	1	0	1	0	0	0
Beverly	420	925.5	120	93	24	5	31	23	11	19	1	0	2
Billerica	255	1,102.2	66	67	14	7	13	15	8	5	5	0	3
Blackstone	64	840.4	17	13	2	2	5	3	0	5	0	0	2
Blandford	8	1,632.4	1	3	0	1	2	0	0	0	0	0	1
Bolton	18	868.6	3	7	3	0	1	1	1	1	0	0	1
Boston	4,491	914.1	1,166	1,057	292	68	239	212	108	173	21	31	31

Table 16. Selected Causes of Death by Community, 1999 (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	199	956.7	62	53	17	6	10	8	3	4	2	0	1
Boxborough	9	783.8	2	4	0	0	0	0	0	0	0	0	0
Boxford	29	539.8	6	8	3	0	3	1	1	1	0	0	2
Boylston	23	774.5	10	2	0	0	2	3	0	1	0	0	0
Braintree	423	941.2	112	117	33	7	24	23	6	21	3	0	4
Brewster	123	743.6	29	33	8	2	8	7	4	7	0	0	0
Bridgewater	132	806.6	31	37	7	4	10	8	3	5	7	1	1
Brimfield	29	809.8	6	5	0	1	4	2	2	1	1	0	0
Brockton	840	863.2	253	185	47	11	48	41	22	28	7	8	6
Brookfield	40	1,096.7	11	9	2	0	4	0	1	3	3	0	1
Brookline	405	490.7	111	94	17	16	26	19	7	23	2	0	4
Buckland	21	1,052.0	5	11	1	3	1	0	0	1	0	0	0
Burlington	149	872.1	43	41	6	4	12	4	1	5	0	0	3
Cambridge	648	747.5	173	158	32	14	36	26	19	25	3	1	8
Canton	238	1,793.4	62	52	12	4	16	8	4	17	2	0	1
Carlisle	13	522.6	3	6	0	0	0	0	0	2	0	0	0
Carver	110	905.6	29	46	14	2	7	7	1	2	1	0	1
Charlemont	10	777.1	2	3	0	0	1	0	0	0	0	0	0
Charlton	72	1,250.9	18	13	2	2	4	9	3	3	0	0	1
Chatham	133	680.0	33	36	4	2	8	6	3	6	1	0	2
Chelmsford	259	940.3	72	63	19	9	18	13	5	7	2	0	3
Chelsea	307	1,086.7	82	67	14	5	20	11	7	12	1	2	0
Cheshire	31	808.2	13	7	5	0	0	3	0	2	0	0	0
Chester	9	1,901.0	5	2	0	0	0	0	0	0	0	0	0
Chesterfield	3	--[4]	2	1	0	0	0	0	0	0	0	0	0
Chicopee	674	934.4	166	180	48	12	54	37	20	24	11	4	3
Chilmark	8	863.1	3	1	1	0	2	0	0	0	0	0	0
Clarksburg	14	637.1	0	6	2	0	2	1	0	1	0	0	1
Clinton	129	910.2	32	37	8	3	4	6	4	4	0	0	1
Cohasset	74	850.6	27	13	3	0	5	4	1	3	0	0	0
Colrain	10	721.1	5	4	0	2	0	0	0	1	0	0	0
Concord	160	892.5	34	47	3	4	19	6	4	6	0	0	0
Conway	11	808.3	3	3	1	0	1	1	0	0	0	0	0
Cummington	4	--[4]	1	0	0	0	0	0	0	1	0	0	0
Dalton	81	996.9	28	15	0	5	5	3	2	4	1	0	1
Danvers	269	986.8	81	67	17	5	14	14	2	10	2	0	1
Dartmouth	257	690.9	91	66	12	4	13	10	6	8	4	0	1

Table 16. Selected Causes of Death by Community, 1999 (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	248	849.2	68	77	24	8	15	10	6	9	1	1	3
Deerfield	35	539.1	13	8	2	0	3	2	0	0	0	0	0
Dennis	243	784.6	52	69	13	3	14	21	2	7	1	0	0
Dighton	41	645.2	10	12	4	1	2	3	0	2	1	0	0
Douglas	37	627.2	14	6	0	1	1	2	1	1	1	0	1
Dover	31	583.8	11	6	1	0	2	2	1	1	0	0	0
Dracut	204	960.4	50	53	18	2	17	13	3	11	2	0	5
Dudley	94	959.1	27	27	11	3	3	4	3	0	2	0	0
Dunstable	8	1,290.2	3	3	0	1	1	0	0	0	0	0	0
Duxbury	123	895.8	25	29	4	0	8	6	3	11	0	0	2
East Bridgewater	97	1,094.4	30	23	8	2	4	3	4	2	0	0	2
East Brookfield	26	1,129.8	9	3	1	0	1	2	0	1	0	0	0
East Longmeadow	158	802.7	45	37	13	7	14	7	3	8	0	0	2
Eastham	59	758.8	6	17	6	2	4	7	2	1	2	0	0
Easthampton	153	887.5	39	39	10	3	11	10	1	8	2	1	2
Easton	131	800.0	36	29	6	3	16	11	4	2	0	0	2
Edgartown	28	737.8	8	6	1	1	3	4	0	1	1	0	0
Egremont	20	924.5	9	8	1	1	0	0	0	2	1	0	0
Erving	14	797.7	6	6	4	0	0	0	0	0	0	0	0
Essex	25	750.0	9	5	1	1	2	0	1	3	0	0	1
Everett	356	812.9	104	94	31	9	15	17	10	15	1	2	3
Fairhaven	213	991.2	65	47	9	5	19	10	4	11	1	0	0
Fall River	1,109	920.4	337	254	59	12	81	57	33	39	9	5	10
Falmouth	387	818.4	95	113	24	6	30	20	11	12	4	0	3
Fitchburg	439	913.3	111	102	28	10	34	23	17	11	5	0	0
Florida	8	956.5	2	4	1	1	0	1	0	0	0	0	0
Foxborough	128	843.3	32	30	7	1	6	2	2	1	5	0	2
Framingham	533	762.5	125	136	27	23	36	24	11	38	1	0	2
Franklin	178	1,035.7	42	49	14	9	11	8	2	12	2	0	1
Freetown	40	525.0	8	7	1	1	4	3	1	0	2	0	1
Gardner	247	908.7	65	52	13	3	14	12	10	13	2	1	3
Gay Head (Aquinnah)	1	--[4]	0	1	0	0	0	0	0	0	0	0	0
Georgetown	40	735.6	12	12	4	0	2	4	0	1	2	0	0
Gill	8	531.1	3	1	1	0	2	0	0	0	0	0	1
Gloucester	296	802.9	74	78	20	5	18	20	10	10	2	0	4
Goshen	7	747.4	2	2	1	0	0	1	0	1	0	0	0

Table 16. Selected Causes of Death by Community, 1999 (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	0	0.0	0	0	0	0	0	0	0	0	0	0	0
Grafton	111	796.3	27	34	9	4	5	3	3	3	1	0	0
Granby	46	928.4	15	9	0	1	1	0	2	0	0	0	0
Granville	7	512.3	4	1	0	0	0	0	0	0	0	0	0
Great Barrington	114	994.3	35	21	4	0	14	1	1	3	2	0	2
Greenfield	257	1,004.9	69	52	9	4	29	20	4	11	0	1	2
Groton	40	684.2	13	13	2	4	5	0	0	0	1	0	1
Groveland	42	935.9	11	12	6	1	4	2	3	0	0	0	0
Hadley	60	948.4	19	11	0	1	5	2	2	1	0	0	0
Halifax	62	791.2	14	17	3	2	5	4	3	6	0	0	0
Hamilton	35	511.0	7	10	4	0	7	1	0	3	0	0	0
Hampden	44	995.4	11	11	5	0	3	1	1	0	0	1	1
Hancock	6	1,965.7	2	1	0	0	0	2	0	0	0	0	0
Hanover	99	1,020.5	24	23	5	2	7	9	3	4	0	0	1
Hanson	60	790.3	15	14	0	0	6	2	3	4	1	1	3
Hardwick	32	1,077.4	10	10	3	0	1	1	2	0	1	0	1
Harvard	25	893.4	6	8	1	1	0	1	1	0	1	0	0
Harwich	201	802.6	49	54	14	3	22	4	7	3	2	0	0
Hatfield	32	822.9	11	6	0	1	3	0	3	1	0	0	0
Haverhill	569	984.5	150	137	32	16	39	44	20	22	9	1	2
Hawley	3	--[4]	0	1	0	0	0	1	0	0	0	0	0
Heath	7	906.5	2	3	1	0	1	0	0	0	0	0	0
Hingham	187	849.8	62	42	12	3	18	6	3	10	2	0	1
Hinsdale	19	789.6	4	7	1	1	2	0	0	1	1	0	0
Holbrook	115	940.9	24	38	11	5	4	8	2	5	1	0	0
Holden	105	539.7	28	26	3	3	6	4	1	8	0	0	2
Holland	10	444.0	4	3	3	0	0	1	1	0	0	0	0
Holliston	78	1,007.2	30	21	4	3	4	3	0	3	1	0	1
Holyoke	557	1,167.4	158	113	28	10	42	33	22	22	3	7	5
Hopedale	58	871.3	16	8	2	1	5	0	1	8	0	0	3
Hopkinton	55	1,051.8	12	15	4	1	3	1	1	4	2	0	0
Hubbardston	19	847.3	2	3	1	1	2	2	1	2	0	0	1
Hudson	112	630.0	32	38	13	4	6	5	6	6	0	1	0
Hull	80	802.3	13	30	10	2	1	11	2	2	1	0	0

Table 16. Selected Causes of Death by Community, 1999 (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	12	605.1	3	1	0	0	1	0	0	0	2	0	0
Ipswich	128	842.4	38	35	13	3	6	10	1	4	0	0	0
Kingston	110	1,080.2	39	27	8	2	3	7	0	3	1	0	0
Lakeville	75	1,108.4	22	19	5	0	5	2	1	5	0	0	1
Lancaster	48	765.6	9	13	3	0	3	3	3	3	0	0	0
Lanesborough	18	524.1	5	5	1	1	2	1	0	1	0	0	0
Lawrence	517	753.2	144	103	24	7	26	29	17	18	11	3	3
Lee	81	1,091.5	20	18	6	3	4	5	4	4	2	0	0
Leicester	90	1,053.4	25	25	5	3	2	5	5	2	0	2	0
Lenox	98	989.4	30	19	2	2	8	6	3	5	0	0	0
Leominster	346	805.7	106	66	14	8	32	26	10	9	3	0	1
Leverett	5	316.9	4	1	0	0	0	0	0	0	0	0	0
Lexington	269	601.3	79	52	6	1	23	14	7	15	0	0	2
Leyden	5	704.5	4	1	0	0	0	0	0	0	0	0	0
Lincoln	34	503.7	10	9	2	0	1	1	1	2	0	0	0
Littleton	64	887.4	22	16	7	2	5	1	4	3	0	0	0
Longmeadow	203	1,161.4	48	42	10	4	14	2	4	11	2	0	0
Lowell	916	974.0	249	213	66	17	63	46	13	35	7	3	8
Ludlow	180	835.9	48	49	12	2	13	6	6	5	0	0	2
Lunenburg	58	634.2	19	16	3	1	7	1	1	2	1	0	1
Lynn	819	891.1	226	215	54	15	54	40	19	30	7	7	9
Lynnfield	75	507.6	13	27	11	0	8	5	5	1	0	0	0
Malden	496	768.6	136	125	42	12	24	27	14	13	5	2	1
Manchester	43	621.2	5	16	3	0	0	2	0	3	0	0	0
Mansfield	95	846.8	24	28	8	2	1	5	3	3	1	2	0
Marblehead	158	562.5	45	35	7	2	11	12	3	7	0	0	0
Marion	51	1,994.3	22	12	2	2	4	0	1	2	0	0	2
Marlborough	238	774.3	72	56	20	1	14	16	4	11	6	0	2
Marshfield	152	907.5	38	57	22	5	11	6	4	4	3	0	0
Mashpee	96	818.0	20	39	17	1	7	4	3	1	0	0	1
Mattapoisett	53	653.7	17	15	2	3	6	2	0	1	0	0	0
Maynard	64	573.9	16	22	3	2	2	4	2	1	0	0	1
Medfield	70	851.4	21	19	7	1	5	6	3	2	0	0	3
Medford	573	786.7	169	132	36	10	40	27	11	18	5	0	10
Medway	67	846.6	20	18	4	1	4	3	1	5	0	0	1
Melrose	300	786.3	92	68	14	9	23	16	9	11	2	1	1
Mendon	27	672.1	6	7	4	0	1	0	0	1	0	0	0

Table 16. Selected Causes of Death by Community, 1999 (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	34	631.2	11	13	3	0	0	4	0	1	0	0	0
Methuen	406	735.9	148	92	18	7	17	27	11	19	1	1	2
Middleborough	159	920.9	56	29	5	2	14	8	2	11	0	0	1
Middlefield	0	0.0	0	0	0	0	0	0	0	0	0	0	0
Middleton	32	568.1	10	11	3	0	1	0	1	0	2	0	0
Milford	216	815.2	65	54	24	8	12	6	1	10	1	0	2
Millbury	129	837.7	43	29	11	3	9	5	1	3	4	0	0
Millis	40	811.0	20	8	1	1	3	1	0	1	1	0	1
Millville	16	829.4	4	2	0	0	4	0	0	0	0	0	0
Milton	231	608.0	72	58	19	5	13	15	4	5	2	1	0
Monroe	2	--[4]	0	1	0	0	0	1	0	0	0	0	0
Monson	50	746.2	14	13	6	2	3	2	3	3	0	0	1
Montague	85	885.1	23	20	3	2	1	7	2	8	2	0	1
Monterey	4	--[4]	1	2	0	0	0	1	0	0	0	0	0
Montgomery	8	1,017.1	3	2	1	0	2	0	0	0	0	0	0
Mount Washington	1	--[4]	0	0	0	0	0	0	0	0	0	0	0
Nahant	34	627.5	7	14	3	1	0	1	0	1	0	0	1
Nantucket	77	971.2	17	12	7	1	9	3	4	3	0	0	0
Natick	282	858.6	80	74	18	7	19	15	11	12	1	0	2
Needham	312	768.0	96	72	15	3	21	16	7	17	1	0	2
New Ashford	3	--[4]	1	1	0	0	0	0	0	1	0	0	0
New Bedford	1,156	910.1	376	269	73	21	70	64	25	34	5	2	6
New Braintree	7	935.0	3	2	0	0	1	0	0	1	0	0	0
New Marlborough	15	839.0	3	5	1	0	0	3	0	1	0	0	0
New Salem	7	924.8	1	1	0	0	1	2	0	0	0	0	0
Newbury	40	644.9	15	7	0	1	4	3	2	0	0	0	2
Newburyport	166	859.3	43	38	14	3	11	7	2	3	0	0	0
Newton	661	617.4	192	184	40	14	47	20	15	25	1	1	4
Norfolk	27	706.0	10	6	1	0	2	3	0	1	0	0	0
North Adams	201	950.0	52	51	12	7	19	11	5	12	4	0	3
North Andover	229	1,134.2	70	57	17	4	13	12	6	10	1	1	1
North Attleboro	172	801.7	46	51	16	5	9	13	2	1	5	0	0
North Brookfield	37	730.5	7	16	4	2	3	3	0	1	0	0	1

Table 16. Selected Causes of Death by Community, 1999 (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	88	826.1	22	26	9	1	6	5	4	1	1	0	0
Northampton	325	959.7	94	60	22	3	29	19	7	17	3	1	5
Northborough	81	885.5	20	25	6	2	5	2	1	1	0	0	1
Northbridge	163	1,025.6	43	20	6	1	11	9	9	26	1	0	1
Northfield	37	938.3	14	12	2	1	1	1	4	2	0	0	0
Norton	95	909.4	25	26	5	2	5	4	0	6	2	0	3
Norwell	80	1,593.3	26	22	5	0	4	6	1	2	0	0	0
Norwood	316	839.7	74	82	25	2	29	12	9	12	2	1	2
Oak Bluffs	39	1,002.0	7	9	1	3	4	1	2	1	0	0	0
Oakham	9	707.1	2	2	0	0	0	1	0	0	0	0	0
Orange	69	807.7	22	14	2	2	3	6	1	2	0	0	0
Orleans	104	656.9	26	25	5	5	8	5	2	4	0	0	0
Otis	10	1,030.3	1	4	0	0	1	1	0	0	1	0	0
Oxford	126	1,024.2	33	35	4	5	2	6	3	4	0	0	0
Palmer	125	837.5	32	32	2	0	3	6	4	6	1	0	3
Paxton	29	594.7	8	9	1	1	1	2	0	2	0	0	0
Peabody	500	845.4	132	156	46	9	32	25	6	16	5	1	2
Pelham	13	973.8	2	2	0	0	1	0	0	1	0	1	0
Pembroke	87	752.0	23	33	13	1	3	0	1	2	1	0	0
Pepperell	41	631.4	9	11	3	0	2	5	0	0	1	0	0
Peru	0	0.0	0	0	0	0	0	0	0	0	0	0	0
Petersham	13	723.6	2	4	0	1	5	0	0	0	0	0	0
Phillipston	4	--[4]	1	1	0	0	1	1	0	0	0	0	0
Pittsfield	553	839.6	149	132	38	9	34	43	15	17	3	0	6
Plainfield	6	1,003.2	2	1	1	0	0	0	1	0	0	0	0
Plainville	46	571.1	12	17	7	3	1	4	0	0	0	0	1
Plymouth	401	797.5	128	111	27	7	25	25	5	10	0	1	2
Plympton	11	558.8	5	3	1	0	0	0	0	0	1	0	0
Princeton	14	873.9	4	3	1	1	2	0	0	1	0	0	0
Provincetown	55	984.3	16	13	0	3	3	4	0	2	1	0	0
Quincy	892	848.9	224	235	67	12	60	31	16	44	8	1	11
Randolph	279	743.8	97	77	30	5	10	9	4	11	1	0	1
Raynham	92	984.5	36	27	7	3	6	1	1	2	0	0	1
Reading	195	780.9	51	63	18	3	13	9	3	5	1	0	2
Rehoboth	52	656.6	17	18	5	3	3	0	0	0	0	0	1
Revere	529	1,085.5	149	155	54	12	38	26	10	14	1	1	3
Richmond	6	296.7	2	1	0	0	1	0	0	0	0	0	0
Rochester	20	523.7	5	7	3	1	1	2	0	0	1	0	0

Table 16. Selected Causes of Death by Community, 1999 (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	154	950.2	38	42	15	8	8	9	2	4	3	0	0
Rockport	83	522.6	26	16	1	0	11	1	2	5	0	0	1
Rowe	4	--[4]	1	1	0	0	1	0	0	0	0	0	0
Rowley	56	1,383.4	16	13	3	0	4	5	5	1	2	0	1
Royalston	9	851.4	3	0	0	0	0	1	0	0	1	0	1
Russell	16	1,034.3	5	4	2	0	2	2	0	0	0	0	0
Rutland	37	839.1	12	14	2	2	2	2	1	0	0	0	0
Salem	367	822.6	110	94	29	2	25	16	9	16	2	0	1
Salisbury	61	975.7	23	11	2	1	6	1	1	0	1	0	0
Sandisfield	8	727.7	3	1	0	0	0	2	0	1	0	0	0
Sandwich	126	560.5	39	29	2	0	13	5	1	2	2	0	0
Saugus	302	931.5	88	83	21	5	21	16	4	14	1	0	2
Savoy	4	--[4]	2	1	0	0	0	1	0	0	0	0	0
Scituate	173	901.5	53	42	11	4	8	11	1	10	0	0	2
Seekonk	112	744.5	36	33	8	3	6	4	2	1	1	0	2
Sharon	89	550.5	28	21	4	1	4	1	0	6	1	0	1
Sheffield	34	881.8	10	11	4	0	1	3	0	0	0	0	0
Shelburne	21	659.9	7	2	0	1	2	0	1	3	0	0	1
Sherborn	20	565.3	6	7	1	1	1	0	1	0	0	0	0
Shirley	38	827.6	7	10	3	1	2	5	1	2	0	0	0
Shrewsbury	232	878.3	58	60	17	7	19	13	2	8	2	0	2
Shutesbury	5	385.2	2	2	0	0	0	0	1	0	0	0	0
Somerset	194	732.5	47	53	10	2	15	8	3	7	2	0	1
Somerville	564	771.9	149	165	54	8	36	35	16	17	3	0	1
South Hadley	163	736.5	56	41	12	5	18	8	4	7	1	0	0
Southampton	34	762.9	13	7	2	0	1	4	1	1	0	0	0
Southborough	41	721.7	13	8	1	0	1	0	1	1	2	0	1
Southbridge	192	816.0	65	41	7	3	16	7	7	5	5	0	0
Southwick	61	915.8	18	17	3	1	2	3	0	6	1	0	0
Spencer	98	853.9	23	27	9	1	4	5	4	4	3	0	0
Springfield	1,469	965.8	383	302	72	20	105	65	38	66	8	7	9
Sterling	41	737.9	10	9	3	1	5	6	1	0	0	0	0
Stockbridge	26	737.3	6	7	0	1	1	2	0	1	1	0	0
Stoneham	235	750.2	58	70	21	9	11	13	4	9	0	1	2
Stoughton	241	786.5	73	52	21	1	14	12	9	20	3	0	0
Stow	21	573.9	5	5	1	1	1	1	0	1	1	0	0
Sturbridge	60	775.1	18	16	2	1	5	4	1	2	0	0	0
Sudbury	86	971.6	23	24	1	1	7	6	3	5	0	0	0

Table 16. Selected Causes of Death by Community, 1999 (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	723.3	4	5	1	2	0	0	1	0	0	0	2
Sutton	43	748.8	13	11	5	1	4	5	0	2	0	1	0
Swampscott	172	856.3	56	41	10	2	16	4	4	11	1	0	0
Swansea	112	605.6	30	33	10	2	4	11	2	1	0	0	0
Taunton	515	896.7	150	144	48	7	28	23	13	28	6	0	2
Templeton	72	1,030.1	23	14	5	1	2	9	1	5	1	0	0
Tewksbury	230	924.7	59	56	21	3	11	10	7	10	3	0	2
Tisbury	49	925.4	20	8	1	3	3	2	1	2	0	0	0
Tolland	2	--[4]	0	1	0	0	0	1	0	0	0	0	0
Topsfield	40	413.9	13	11	3	0	2	6	1	1	0	0	0
Townsend	43	773.4	8	13	1	0	3	2	1	1	1	0	2
Truro	22	744.0	4	8	1	0	1	1	0	1	0	0	0
Tyngsborough	66	1,189.4	14	23	7	2	7	2	1	3	0	0	1
Tyringham	3	--[4]	1	0	0	0	0	0	1	0	0	0	0
Upton	39	823.9	9	13	3	0	0	3	2	3	1	0	0
Uxbridge	60	525.3	12	14	6	3	4	9	1	6	1	0	1
Wakefield	233	692.0	68	69	9	5	14	13	4	7	1	0	1
Wales	13	1,880.1	4	4	2	0	0	0	0	0	1	0	1
Walpole	180	1,132.1	46	46	9	7	11	12	4	8	1	0	2
Waltham	485	759.9	123	123	21	11	35	24	15	20	5	2	3
Ware	93	809.7	34	16	4	0	1	9	2	3	0	1	1
Wareham	242	951.3	74	55	17	4	11	13	9	11	1	0	1
Warren	33	710.8	11	7	1	0	1	5	1	0	0	0	0
Warwick	8	1,164.0	1	1	0	0	1	1	0	0	0	0	1
Washington	3	--[4]	0	1	0	1	0	0	0	1	0	0	0
Watertown	293	748.3	77	72	15	9	26	9	9	11	1	0	1
Wayland	89	803.0	29	24	3	4	9	3	3	5	1	0	0
Webster	171	742.3	52	39	6	3	11	7	5	7	1	1	2
Wellesley	219	648.4	59	58	7	5	15	3	5	12	0	2	1
Wellfleet	27	549.7	8	6	2	0	1	4	0	0	0	0	0
Wendell	1	--[4]	1	0	0	0	0	0	0	0	0	0	0
Wenham	34	622.2	12	8	3	0	2	3	1	2	0	0	0
West Boylston	74	906.4	25	14	4	2	7	4	2	2	0	0	1
West Bridgewater	65	841.4	17	15	2	2	6	5	2	1	3	0	0
West Brookfield	40	797.2	13	6	2	0	3	2	0	0	1	0	0
West Newbury	13	538.2	3	5	2	0	0	2	3	0	0	0	0

Table 16. Selected Causes of Death by Community, 1999 (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	303	860.1	76	69	22	6	13	13	5	12	3	0	4
West Stockbridge	15	699.6	7	4	2	0	1	0	1	0	0	0	0
West Tisbury	6	310.5	2	3	0	1	1	0	0	0	0	0	0
Westborough	159	1,015.3	28	42	5	5	9	8	4	15	1	0	1
Westfield	356	723.9	114	95	29	1	13	26	6	11	5	0	6
Westford	98	911.9	27	30	6	2	2	3	1	4	2	0	2
Westhampton	14	1,660.8	4	7	3	1	0	0	1	0	0	0	0
Westminster	47	819.9	15	5	3	0	3	2	1	1	0	0	0
Weston	105	800.2	26	28	3	3	8	7	2	4	0	0	1
Westport	129	745.7	44	36	11	2	5	4	5	1	5	0	0
Westwood	158	1,534.0	48	42	12	2	11	7	3	8	0	1	0
Weymouth	515	861.5	150	127	40	10	28	32	12	24	2	0	9
Whately	15	912.6	3	6	1	0	1	0	0	2	0	1	0
Whitman	97	815.5	25	29	10	1	3	4	3	1	1	1	1
Wilbraham	114	808.1	29	26	8	1	5	3	3	2	0	0	1
Williamsburg	21	781.6	2	4	2	0	3	0	1	1	0	0	0
Williamstown	85	653.7	26	15	4	1	7	3	2	6	1	0	0
Wilmington	154	2,624.5	42	38	15	2	10	8	4	5	0	0	0
Winchendon	62	701.6	15	17	6	0	6	6	1	1	0	0	1
Winchester	192	718.1	55	46	14	4	25	9	4	4	0	0	1
Windsor	6	645.1	2	2	0	0	0	0	0	0	0	0	1
Winthrop	214	900.0	54	66	17	7	14	7	4	8	0	0	1
Woburn	351	930.1	92	99	30	4	30	24	14	11	3	0	6
Worcester	1,845	957.9	555	375	102	20	94	96	44	79	14	8	17
Worthington	4	--[4]	2	1	0	0	0	1	0	0	0	0	0
Wrentham	82	998.5	18	22	4	3	4	5	4	1	0	0	0
Yarmouth	372	699.5	105	100	24	6	31	17	9	7	1	0	3

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 17. Selected Causes of Death by Community Health Network Area (CHNA), 1999

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	**55,763**	**815.9**	**15,539**	**13,852**	**3,592**	**1,048**	**3,573**	**2,857**	**1,327**	**2,176**	**433**	**128**	**430**
Community Health Network of Berkshire (1)	1,623	854.9	475	383	90	34	113	98	36	70	20	0	15
Upper Valley Health Web (Franklin County) (2)	832	801.8	240	198	34	19	65	56	19	35	4	2	10
Partnership for Health in Hampshire County (Northampton) (3)	1,182	821.3	356	250	67	16	80	68	35	50	7	4	10
The Community Health Connection (Springfield) (4)	2,918	911.6	770	642	172	48	190	127	68	132	17	8	27
Community Health Network of Southern Worcester County (5)	1,041	833.6	301	251	56	21	61	57	31	31	17	1	6
Community Partners for Health (Milford) (6)	1,055	822.8	290	238	77	32	63	50	19	80	10	1	13
Community Health Network of Greater Metro West (Framingham) (7)	2,505	786.9	667	666	150	71	151	124	62	120	24	1	22
Community Wellness Coalition (Worcester) (8)	2,806	871.9	830	614	159	45	152	144	62	118	21	10	23
Fitchburg/Gardner Community Health Network (9)	1,997	810.5	532	479	119	40	141	125	58	60	19	1	14
Greater Lowell Community Health Network (10)	2,036	937.4	540	508	151	43	132	102	38	75	21	3	24
Greater Lawrence Community Health Network (11)	1,418	775.6	439	326	79	24	76	84	40	55	18	5	8
Greater Haverhill Community Health Network (12)	1,214	912.4	332	293	78	22	77	89	45	30	16	1	11
Community Health Network North (Beverly/Gloucester) (13)	1,104	756.4	304	272	72	14	79	66	27	50	3	0	8
North Shore Community Health Network (14)	2,696	817.4	758	732	198	41	181	133	52	106	18	8	16
Greater Woburn/Concord/Littleton Community Health Network (15)	1,622	808.7	424	427	102	28	135	77	45	65	4	0	13
North Suburban Health Alliance (Medford/Malden/Melrose) (16)	2,476	765.0	700	647	180	58	146	127	59	79	16	6	20
Greater Cambridge/Somerville Community Health Network (17)	2,185	726.6	593	571	142	45	143	91	56	88	8	1	11
West Suburban Health Network (Newton/Waltham) (18)	2,219	717.3	623	590	123	46	154	89	54	96	8	7	14
Alliance for Community Health (Boston/Chelsea/Revere/Winthrop) (19)	5,946	887.0	1,562	1,439	394	108	337	275	136	230	25	34	39
Blue Hills Community Health Alliance (Greater Quincy) (20)	3,577	827.9	1,000	918	271	55	220	169	63	167	24	3	32
Four (For) Communities (Holyoke, Chicoppe, Ludlow, Westfield) (21)	1,788	918.8	494	440	117	25	123	102	54	62	21	11	16
Greater Brockton Community Health Network (22)	1,858	816.9	527	443	123	30	114	107	54	69	23	10	14
South Shore Community Partners in Prevention (Plymouth) (23)	1,369	861.3	378	402	112	29	83	75	25	50	11	2	9
Greater Attleboro-Taunton Health & Education Response (24)	1,771	853.4	531	470	130	34	103	79	35	72	23	2	18
Partners for a Healthier Community (Fall River) (25)	1,544	834.4	458	376	90	18	105	80	43	48	16	5	11
Greater New Bedford Health & Human Services Coalition (26)	2,101	833.2	680	492	122	42	134	108	47	68	15	2	12
Cape Cod & Islands Community Health Network (27)	2,880	730.4	735	785	184	60	215	155	64	70	24	0	14

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 18. Selected Causes of Death by County, 1999

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	**55,763**	**815.9**	**15,539**	**13,852**	**3,592**	**1,048**	**3,573**	**2,857**	**1,327**	**2,176**	**433**	**128**	**430**
Barnstable	2,672	726.5	678	745	173	51	193	145	57	63	23	0	14
Berkshire	1,623	854.9	475	383	90	34	113	98	36	70	20	0	15
Bristol	4,947	826.9	1,509	1,230	314	85	317	251	116	160	52	9	38
Dukes	131	772.6	40	28	4	8	13	7	3	4	1	0	0
Essex	6,432	811.3	1,833	1,623	427	101	413	372	164	241	55	14	43
Franklin	681	807.7	202	168	32	17	50	43	14	32	3	2	8
Hampden	4,746	910.6	1,275	1,093	294	74	316	232	125	195	38	19	44
Hampshire	1,194	818.4	359	251	67	16	81	68	35	50	9	4	10
Middlesex	11,488	767.3	3,106	3,005	756	257	768	547	275	450	74	14	89
Nantucket	77	971.2	17	12	7	1	9	3	4	3	0	0	0
Norfolk	5,727	779.0	1,598	1,463	403	117	350	261	115	272	42	7	51
Plymouth	3,824	849.8	1,110	995	268	71	230	209	82	144	34	12	29
Suffolk	5,541	935.3	1,451	1,345	377	92	311	256	129	207	23	34	35
Worcester	6,680	834.5	1,886	1,511	380	124	409	365	172	285	59	13	54

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: 1999

Cause	ICD-10 Code	White[2]			Black[2]		
		Total	Male	Female	Total	Male	Female
All Deaths		**812.4**	**1,014.8**	**676.8**	**988.1**	**1,222.0**	**816.5**
Heart Disease	I00-I09, I11, I13, I20-I51	224.0	292.0	177.1	245.7	293.8	209.4
Cancer	C00-C97	208.5	266.0	174.3	254.1	340.3	197.8
Stroke	I60-I69	50.3	52.6	48.4	57.6	73.6	46.7
Chronic Lower Respiratory Disease[3]	J40-J47	42.5	52.5	37.8	27.5	48.9	14.2
Influenza and Pneumonia	J10-J18	30.6	39.1	25.6	21.9	19.6	22.8
Diabetes	E10-E14	19.2	24.2	15.9	42.4	48.7	39.9
Alzheimer's Disease	G30	15.8	12.9	16.8	16.0	12.2	17.8
Nephritis	N00-N07, N17-N19, N25-N27	15.2	21.1	12.2	37.5	39.4	35.7
Septicemia	A40-A41	12.7	15.2	11.3	25.0	30.4	21.0
HIV Diseases	B20-B24	3.2	5.0	1.5	16.7	22.7	11.1
Perinatal Conditions	P00-P96	4.0	3.9	4.0	12.0	12.4	11.7
All Injuries	V01-Y98	35.2	51.1	21.3	41.8	72.3	14.6
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	6.7	10.0	3.7	8.2	16.3	--[4]
Suicide	X60-X84, Y87.0	6.9	11.2	3.1	3.3	6.1	--[4]
Homicide	X85-Y09, Y87.1	1.5	1.9	1.1	10.4	18.1	3.0

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, Public Document No. 1 (an annual report of Massachusetts vital statistics), the U.S. 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

Death rates for 1998 were re-calculated using 1998 population estimates from MISER (released in September 2000 and modified by the Massachusetts Department of Public Health, Bureau of Health Statistics Research and Evaluation, Division of Research and Epidemiology).

Race and Ethnicity Data

Beginning with this report, race and ethnicity data are presented as mutually exclusive categories, except for Table A1, which presents data by race according to Federal definitions of race and ethnicity. According to Federal definitions of race and ethnicity, persons of Hispanic ethnicity are of any race. All data for years 1989-1999 published in this report have been updated to reflect this change.

MISER estimates do not include Hispanics in any race category. MISER population estimates are made for the following mutually exclusive categories: white, non-Hispanic; black, non-Hispanic; Asian/Pacific Islander and American Indian, non-Hispanic; and Hispanics. Asian/Pacific Islanders were separated from the combined category of Asian/Pacific Islanders and American Indians by using the proportions from the 1990 US Census. In order to calculate total white, total black, total Asian/Pacific Islander, total American Indian population estimates, Hispanics were assigned a race category based on 1990 US Census proportions of Hispanics by race.

1999 Death Rates

Death rates for 1999 are calculated using the most recent MISER population estimates available, 1998 (released September 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 72-73 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, 1996-1999**

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		

1. Influenza and pneumonia defined as ICD-9: 480-487 for years 1996-1998 and ICD-10: J10-J18 for year 1999.
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 rate, we see that deaths to influenza and pneumonia have remained fairly constant between 1996-1999, 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 75-77 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 64 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 64 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 1999 is on page 80) In a properly completed death certificate, the immediate cause of death is recorded on the first line, followed by conditions giving rise to the immediate cause. Beginning with 1999, this information is coded according to the International Classification of Diseases, Tenth Revision, then processed by a software program developed by the National Center for Health Statistics. The result of the coding and programming procedures is the determination of the underlying cause of death.

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 70-71.

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 70-71.

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

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.

NCHS

National Center for Health Statistics (U.S. 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 records are used for statistical purposes only and allow each state or province to track the births and deaths of residents.

Population

Population counts are based on U.S. 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 are based on MISER's annual estimates released in September 2000.

The population estimates from MISER are categorized by white non-Hispanic, black non-Hispanic, Asian/Pacific Islanders and American Indian non-Hispanic and Hispanic. Race and ethnicity data presented in this report are white, non-Hispanic, black, non-Hispanic, Asian/Pacific Islander, non-Hispanic, and Hispanics; except for Table A1 where race is presented according to Federal definitions of race and ethnicity. In Table A1, data are presented for whites and blacks where persons of Hispanic ethnicity can be included in any race. In order to estimate the 1991-1998 population distribution for the race/ethnicity categories that are used in this publication, the age-sex-race distribution from the 1990 US Census (MARS

file) were applied to the 1991-1998 population estimates. This technique was used to separate Asian/Pacific Islanders from the combined category of Asian/Pacific Islanders and American Indians, and to add Hispanics back into the estimates of whites and blacks for use in Table A1 (The 1998 Massachusetts population estimates used in this publication appear on pages 78-79).

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 this 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 1989-1999 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.

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
Sudden infant death syndrome (SIDS)	R95	798.0
External causes of injuries and poisonings (intentional, unintentional and of undetermined intent)	V01-Y98	E800-E999
Unintentional Injuries	V01-X59, Y85-Y86	E800-E949
Motor Vehicle-related injuries	V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0-V88.8, V89.0, V89.2	E810-E825
Unintentional non-transport injuries	W00-X59, Y86	E850-E869, E880-E928, E929.2-E929.9
Suicide	X60-X84, Y87.0	E950-E959
Homicide	X85-Y09, Y87.1	E960-E969
Injuries of undetermined intent	Y10-Y34,Y87.2,Y89.9	E980-E989

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

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
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
Unintentional non-transport injuries	W00-X59, Y86	E850-E869, E880-E928, E929.2-E929.9
Heart Disease	I00-I09, I11, I13, I20-I51	390-398, 402, 404-429
Infectious and parasitic diseases	A00-B99	001-139
Human Immunodeficiency Virus (HIV) disease (AIDS)	B20-B24	042-044
Septicemia	A40-A41	038
Influenza and pneumonia	J10-J18	480-487
Nephritis	N00-N07, N17-N19, N25-N27	580-589
Stroke (Cerebrovascular disease)	I60-I69	430-438
Sudden infant death syndrome (SIDS)	R95	798.0

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

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
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	0.8527
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 64 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).

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
Unintentional Injuries	V01-X59, Y85-Y86	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	0.8673
Homicide	X85-Y09, Y87.1	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 64 for an example of how to apply comparability ratios

Population Estimates for Massachusetts Community Health Network Areas (CHNA) and Counties, 1998[1]

CHNA	POPULATION	COUNTY	POPULATION
1. Community Health Network of Berkshire	138,938	Barnstable	205,920
2. Upper Valley Health Web (Franklin County)	87,167	Berkshire	138,938
3. Partnership for Health in Hampshire County	156,532	Bristol	528,904
4. The Community Health Connection (Springfield)	292,714	Dukes	14,272
5. Community Health Network of Southern Worcester County	114,693	Essex	715,669
6. Community Partners for Health (Milford Area)	150,141	Franklin	71,615
7. Community Health Network of Greater Metro West	366,847	Hampden	454,635
8. Community Wellness Coalition (Worcester Area)	283,166	Hampshire	158,777
9. Fitchburg/Gardner Area Community Health Network	261,025	Middlesex	1,464,685
10. Greater Lowell Community Health Network	271,240	Nantucket	7,705
11. Greater Lawrence Community Health Network	176,819	Norfolk	657,683
12. Greater Haverhill Community Health Network	141,633	Plymouth	470,158
13. Community Health Network North (Beverly/Gloucester)	119,363	Suffolk	649,733
14. North Shore Community Health Network	277,854	Worcester	752,569
15. Greater Woburn/Concord/Littleton	212,366		
16. North Suburban Health Alliance (Medford/Malden/Melrose)	258,793	**STATE**	**6,291,263**
17. Greater Cambridge/Somerville Community Health Network	274,988		
18. West Suburban Health Network (Newton/Waltham)	260,082		
19. Alliance for Community Health (Boston/Chelsea/Revere/Winthrop)	710,372		
20. Blue Hills Community Health Alliance (Quincy Area)	367,516		
21. Four (For) Communities (Holyoke, Chicopee, Ludlow, Westfield)	156,760		
22. Greater Brockton Community Health Network	232,912		
23. South Shore Community Partners in Prevention (Greater Plymouth Area)	178,277		
24. Greater Attleboro-Taunton Health & Education Response	234,841		
25. Partners for a Healthier Community (Fall River Area)	138,621		
26. Greater New Bedford Health & Human Services Coalition	199,706		
27. Cape and Islands Community Health Network	227,897		

1. 1998 population estimates from MISER (released September 2000).

Population Estimates for Massachusetts Communities, 1998

TOWN NAME	COUNTY	CHNA	POPULATION
Abington	Plymouth	22	15,531
Acton	Middlesex	15	19,980
Acushnet	Bristol	26	10,970
Adams	Berkshire	1	8,778
Agawam	Hampden	4	29,457
Alford	Berkshire	1	410
Amesbury	Essex	12	15,997
Amherst	Hampshire	3	40,827
Andover	Essex	11	31,857
Arlington	Middlesex	17	43,066
Ashburnham	Worcester	9	6,280
Ashby	Middlesex	9	2,683
Ashfield	Franklin	2	1,863
Ashland	Middlesex	7	14,081
Athol	Worcester	2	11,269
Attleboro	Bristol	24	40,412
Auburn	Worcester	8	15,581
Avon	Norfolk	22	4,401
Ayer	Middlesex	9	5,210
Barnstable	Barnstable	27	46,461
Barre	Worcester	9	5,122
Becket	Berkshire	1	1,701
Bedford	Middlesex	15	11,898
Belchertown	Hampshire	3	12,642
Bellingham	Norfolk	6	15,743
Belmont	Middlesex	17	25,787
Berkley	Bristol	24	5,680
Berlin	Worcester	9	2,338
Bernardston	Franklin	2	2,052
Beverly	Essex	13	40,476
Billerica	Middlesex	10	38,304
Blackstone	Worcester	6	9,159
Blandford	Hampden	4	1,172
Bolton	Worcester	9	4,274
Boston	Suffolk	19	563,876
Bourne	Barnstable	27	16,857
Boxborough	Middlesex	15	4,645
Boxford	Essex	12	8,763
Boylston	Worcester	8	3,739
Braintree	Norfolk	20	34,278
Brewster	Barnstable	27	10,044
Bridgewater	Plymouth	22	25,680
Brimfield	Hampden	5	3,325
Brockton	Plymouth	22	91,008
Brookfield	Worcester	5	3,168
Brookline	Norfolk	19	60,639
Buckland	Franklin	2	1,899
Burlington	Middlesex	15	25,208
Cambridge	Middlesex	17	96,292
Canton	Norfolk	20	20,196
Carlisle	Middlesex	15	4,489
Carver	Plymouth	23	11,577
Charlemont	Franklin	2	1,230
Charlton	Worcester	5	11,149
Chatham	Barnstable	27	6,742
Chelmsford	Middlesex	10	35,093
Chelsea	Suffolk	19	28,747
Cheshire	Berkshire	1	3,851
Chester	Hampden	21	1,459
Chesterfield	Hampshire	3	1,084
Chicopee	Hampden	21	53,003
Chilmark	Dukes	27	759
Clarksburg	Berkshire	1	1,825
Clinton	Worcester	9	13,506
Cohasset	Norfolk	20	7,604
Colrain	Franklin	2	1,800
Concord	Middlesex	15	19,463
Conway	Franklin	2	1,765
Cummington	Hampshire	3	819
Dalton	Berkshire	1	6,777
Danvers	Essex	14	25,758
Dartmouth	Bristol	26	31,278
Dedham	Norfolk	18	23,019
Deerfield	Franklin	2	5,397
Dennis	Barnstable	27	14,222
Dighton	Bristol	24	6,382
Douglas	Worcester	6	6,381
Dover	Norfolk	18	5,897
Dracut	Middlesex	10	28,527
Dudley	Worcester	5	9,902
Dunstable	Middlesex	10	2,911
Duxbury	Plymouth	23	15,398
East Bridgewater	Plymouth	22	13,590
East Brookfield	Worcester	5	2,188
East Longmeadow	Hampden	4	14,693
Eastham	Barnstable	27	4,816
Easthampton	Hampshire	3	15,834
Easton	Bristol	22	22,503
Edgartown	Dukes	27	3,890
Egremont	Berkshire	1	1,234
Erving	Franklin	2	1,458
Essex	Essex	13	3,165
Everett	Middlesex	16	36,866
Fairhaven	Bristol	26	15,985
Fall River	Bristol	25	89,276
Falmouth	Barnstable	27	29,186
Fitchburg	Worcester	9	40,032
Florida	Berkshire	1	823
Foxborough	Norfolk	7	16,595
Framingham	Middlesex	7	66,554
Franklin	Norfolk	6	28,892
Freetown	Bristol	26	9,253
Gardner	Worcester	9	21,454
Gay Head (Aquinnah)	Dukes	27	234
Georgetown	Essex	12	7,637
Gill	Franklin	2	1,635
Gloucester	Essex	13	29,456
Goshen	Hampshire	3	897
Gosnold	Dukes	27	145
Grafton	Worcester	8	14,787
Granby	Hampshire	3	5,917
Granville	Hampden	4	1,477
Great Barrington	Berkshire	1	8,056
Greenfield	Franklin	2	17,805
Groton	Middlesex	9	9,175
Groveland	Essex	12	5,974
Hadley	Hampshire	3	4,459
Halifax	Plymouth	23	7,469
Hamilton	Essex	13	8,472
Hampden	Hampden	4	4,552
Hancock	Berkshire	1	701
Hanover	Plymouth	23	13,591
Hanson	Plymouth	23	9,292
Hardwick	Worcester	9	2,692
Harvard	Worcester	9	13,706
Harwich	Barnstable	27	11,194
Hatfield	Hampshire	3	3,105
Haverhill	Essex	12	57,186
Hawley	Franklin	2	306
Heath	Franklin	2	807
Hingham	Plymouth	20	21,101
Hinsdale	Berkshire	1	2,101
Holbrook	Norfolk	22	11,164
Holden	Worcester	8	16,058

Population Estimates for Massachusetts Communities, 1998, continued

TOWN NAME	COUNTY	CHNA	POPULATION
Holland	Hampden	5	2,360
Holliston	Middlesex	7	14,984
Holyoke	Hampden	21	41,081
Hopedale	Worcester	6	6,165
Hopkinton	Middlesex	7	12,083
Hubbardston	Worcester	9	3,726
Hudson	Middlesex	7	17,706
Hull	Plymouth	20	11,266
Huntington	Hampshire	21	2,245
Ipswich	Essex	13	12,074
Kingston	Plymouth	23	10,625
Lakeville	Plymouth	24	9,445
Lancaster	Worcester	9	7,410
Lanesborough	Berkshire	1	3,165
Lawrence	Essex	11	70,325
Lee	Berkshire	1	5,822
Leicester	Worcester	8	10,320
Lenox	Berkshire	1	4,705
Leominster	Worcester	9	41,875
Leverett	Franklin	2	2,014
Lexington	Middlesex	15	31,751
Leyden	Franklin	2	753
Lincoln	Middlesex	15	8,985
Littleton	Middlesex	15	7,842
Longmeadow	Hampden	4	15,210
Lowell	Middlesex	10	106,449
Ludlow	Hampden	21	18,104
Lunenburg	Worcester	9	9,303
Lynn	Essex	14	83,464
Lynnfield	Essex	14	11,991
Malden	Middlesex	16	53,703
Manchester	Essex	13	5,505
Mansfield	Bristol	24	20,455
Marblehead	Essex	14	21,093
Marion	Plymouth	26	5,918
Marlborough	Middlesex	7	33,980
Marshfield	Plymouth	23	23,225
Mashpee	Barnstable	27	10,107
Mattapoisett	Plymouth	26	6,150
Maynard	Middlesex	7	10,659
Medfield	Norfolk	7	12,078
Medford	Middlesex	16	57,983
Medway	Norfolk	6	11,679
Melrose	Middlesex	16	26,598
Mendon	Worcester	6	4,908
Merrimac	Essex	12	6,472
Methuen	Essex	11	42,050
Middleborough	Plymouth	24	19,937
Middlefield	Hampshire	3	437
Middleton	Essex	11	6,292
Milford	Worcester	6	24,904
Millbury	Worcester	8	12,412
Millis	Norfolk	7	7,699
Millville	Worcester	6	2,788
Milton	Norfolk	20	27,309
Monroe	Franklin	2	94
Monson	Hampden	4	9,240
Montague	Franklin	2	7,629
Monterey	Berkshire	1	868
Montgomery	Hampden	4	735
Mt. Washington	Berkshire	1	150
Nahant	Essex	14	3,798
Nantucket	Nantucket	27	7,705
Natick	Middlesex	7	31,940
Needham	Norfolk	18	27,851
New Ashford	Berkshire	1	201
New Bedford	Bristol	26	94,835
New Braintree	Worcester	9	1,040
New Marlborough	Berkshire	1	1,553
New Salem	Franklin	2	822
Newbury	Essex	12	6,543
Newburyport	Essex	12	16,705
Newton	Middlesex	18	90,506
Norfolk	Norfolk	7	10,478
North Adams	Berkshire	1	16,589
North Andover	Essex	11	26,295
North Attleboro	Bristol	24	26,491
North Brookfield	Worcester	5	5,037
North Reading	Middlesex	16	12,594
Northampton	Hampshire	3	29,816
Northborough	Worcester	7	13,299
Northbridge	Worcester	6	13,879
Northfield	Franklin	2	2,912
Norton	Bristol	24	16,317
Norwell	Plymouth	20	10,129
Norwood	Norfolk	20	28,878
Oak Bluffs	Dukes	27	3,602
Oakham	Worcester	9	1,797
Orange	Franklin	2	7,826
Orleans	Barnstable	27	6,453
Otis	Berkshire	1	1,152
Oxford	Worcester	5	13,475
Palmer	Hampden	4	12,548
Paxton	Worcester	8	4,654
Peabody	Essex	14	50,979
Pelham	Hampshire	3	1,470
Pembroke	Plymouth	23	15,863
Pepperell	Middlesex	9	11,657
Peru	Berkshire	1	853
Petersham	Worcester	2	1,198
Phillipston	Worcester	2	1,958
Pittsfield	Berkshire	1	46,691
Plainfield	Hampshire	3	577
Plainville	Norfolk	7	8,073
Plymouth	Plymouth	23	51,103
Plympton	Plymouth	23	2,670
Princeton	Worcester	9	3,531
Provincetown	Barnstable	27	3,249
Quincy	Norfolk	20	87,018
Randolph	Norfolk	20	32,212
Raynham	Bristol	24	11,233
Reading	Middlesex	16	24,106
Rehoboth	Bristol	24	10,131
Revere	Suffolk	19	39,987
Richmond	Berkshire	1	1,822
Rochester	Plymouth	26	4,603
Rockland	Plymouth	23	17,464
Rockport	Essex	13	8,252
Rowe	Franklin	2	371
Rowley	Essex	12	5,296
Royalston	Worcester	2	1,127
Russell	Hampden	4	1,770
Rutland	Worcester	9	5,818
Salem	Essex	14	40,210
Salisbury	Essex	12	7,212
Sandisfield	Berkshire	1	745
Sandwich	Barnstable	27	19,600
Saugus	Essex	14	25,644
Savoy	Berkshire	1	656
Scituate	Plymouth	20	16,808
Seekonk	Bristol	24	14,061
Sharon	Norfolk	20	17,047
Sheffield	Berkshire	1	3,282
Shelburne	Franklin	2	2,256
Sherborn	Middlesex	7	4,297
Shirley	Middlesex	9	7,830

Population Estimates for Massachusetts Communities, 1998, continued

TOWN NAME	COUNTY	CHNA	POPULATION
Shrewsbury	Worcester	8	29,053
Shutesbury	Franklin	2	2,024
Somerset	Bristol	25	17,822
Somerville	Middlesex	17	78,112
South Hadley	Hampshire	3	18,070
Southampton	Hampshire	3	5,183
Southborough	Worcester	7	7,988
Southbridge	Worcester	5	17,681
Southwick	Hampden	4	8,852
Spencer	Worcester	5	12,036
Springfield	Hampden	4	150,414
Sterling	Worcester	9	7,505
Stockbridge	Berkshire	1	2,292
Stoneham	Middlesex	16	21,742
Stoughton	Norfolk	22	29,034
Stow	Middlesex	7	5,467
Sturbridge	Worcester	5	8,244
Sudbury	Middlesex	7	15,603
Sunderland	Franklin	2	3,730
Sutton	Worcester	6	7,992
Swampscott	Essex	14	14,917
Swansea	Bristol	25	16,182
Taunton	Bristol	24	54,297
Templeton	Worcester	9	7,050
Tewksbury	Middlesex	10	30,268
Tisbury	Dukes	27	3,507
Tolland	Hampden	4	326
Topsfield	Essex	13	6,433
Townsend	Middlesex	9	9,575
Truro	Barnstable	27	1,783
Tyngsborough	Middlesex	10	10,266
Tyringham	Berkshire	1	398
Upton	Worcester	6	5,373
Uxbridge	Worcester	6	12,278
Wakefield	Middlesex	16	25,201
Wales	Hampden	5	1,721
Walpole	Norfolk	7	23,266
Waltham	Middlesex	18	59,165
Ware	Hampshire	3	9,855
Wareham	Plymouth	26	20,714
Warren	Worcester	5	4,785
Warwick	Franklin	2	773
Washington	Berkshire	1	561
Watertown	Middlesex	17	31,731
Wayland	Middlesex	7	13,067
Webster	Worcester	5	16,120
Wellesley	Norfolk	18	28,734
Wellfleet	Barnstable	27	2,557
Wendell	Franklin	2	1,084
Wenham	Essex	13	5,530
West Boylston	Worcester	8	7,471
West Bridgewater	Plymouth	22	6,805
West Brookfield	Worcester	5	3,502
West Newbury	Essex	12	3,848
West Springfield	Hampden	4	28,854
West Stockbridge	Berkshire	1	1,432
West Tisbury	Dukes	27	2,135
Westborough	Worcester	7	16,555
Westfield	Hampden	21	40,868
Westford	Middlesex	10	19,422
Westhampton	Hampshire	3	1,525
Westminster	Worcester	9	7,053
Weston	Middlesex	18	11,076
Westport	Bristol	25	15,341
Westwood	Norfolk	18	13,834
Weymouth	Norfolk	20	53,670
Whately	Franklin	2	1,310
Whitman	Plymouth	22	13,196
Wilbraham	Hampden	4	13,414
Williamsburg	Hampshire	3	2,717
Williamstown	Berkshire	1	8,967
Wilmington	Middlesex	15	20,237
Winchendon	Worcester	9	9,383
Winchester	Middlesex	15	20,903
Windsor	Berkshire	1	777
Winthrop	Suffolk	19	17,123
Woburn	Middlesex	15	36,965
Worcester	Worcester	8	169,091
Worthington	Hampshire	3	1,298
Wrentham	Norfolk	7	10,395
Yarmouth	Barnstable	27	22,649

1. 1998 MISER population estimates (released September 2000).

1998 Massachusetts Population Estimates[1] By Age Group, Gender, Race[2] and Hispanic Ethnicity[3]

AGE	GENDER	TOTAL	Non-Hispanic WHITE	Non-Hispanic BLACK	Non-Hispanic ASIAN	HISPANIC
UNDER 1	MALE	40,953	32,011	2,778	1,691	4,383
	FEMALE	38,907	30,390	2,660	1,603	4,178
	TOTAL	79,860	62,401	5,438	3,294	8,561
1 TO 4	MALE	164,030	128,035	11,178	6,793	17,620
	FEMALE	155,970	121,581	10,707	6,465	16,854
	TOTAL	320,000	249,616	21,885	13,258	34,474
5 TO 14	MALE	413,424	339,322	23,934	13,601	35,561
	FEMALE	393,246	321,580	23,504	13,044	34,165
	TOTAL	806,670	660,902	47,438	26,645	69,726
15 TO 24	MALE	441,912	372,149	22,843	14,945	30,984
	FEMALE	441,918	371,677	23,494	15,501	30,251
	TOTAL	883,830	743,826	46,337	30,446	61,235
25 TO 34	MALE	502,456	425,696	24,964	17,147	33,686
	FEMALE	502,881	426,432	25,245	16,888	33,303
	TOTAL	1,005,337	852,128	50,209	34,035	66,989
35 TO 44	MALE	503,355	439,816	21,417	15,708	25,224
	FEMALE	516,010	451,726	21,769	15,520	25,790
	TOTAL	1,019,365	891,542	43,186	31,228	51,014
45 TO 54	MALE	398,558	360,980	13,616	9,392	13,682
	FEMALE	420,102	379,782	15,010	9,477	14,908
	TOTAL	818,660	740,762	28,626	18,869	28,590
55 TO 64	MALE	236,809	217,327	7,286	4,785	6,920
	FEMALE	258,746	236,335	9,102	4,657	8,194
	TOTAL	495,555	453,662	16,388	9,442	15,114
65 TO 74	MALE	195,369	183,546	4,889	2,611	4,016
	FEMALE	246,634	230,661	6,968	3,362	5,210
	TOTAL	442,003	414,207	11,857	5,973	9,226
75 TO 84	MALE	111,651	106,011	2,366	1,200	1,946
	FEMALE	187,831	178,642	4,159	1,536	3,261
	TOTAL	299,482	284,653	6,525	2,736	5,207
85 +	MALE	31,447	29,493	674	343	884
	FEMALE	89,054	85,108	1,636	575	1,644
	TOTAL	120,501	114,601	2,310	918	2,528
ALL AGES	MALE	3,039,964	2,634,386	135,945	88,216	174,906
	FEMALE	3,251,299	2,833,914	144,254	88,628	177,758
	TOTAL	6,291,263	5,468,300	280,199	176,844	352,664

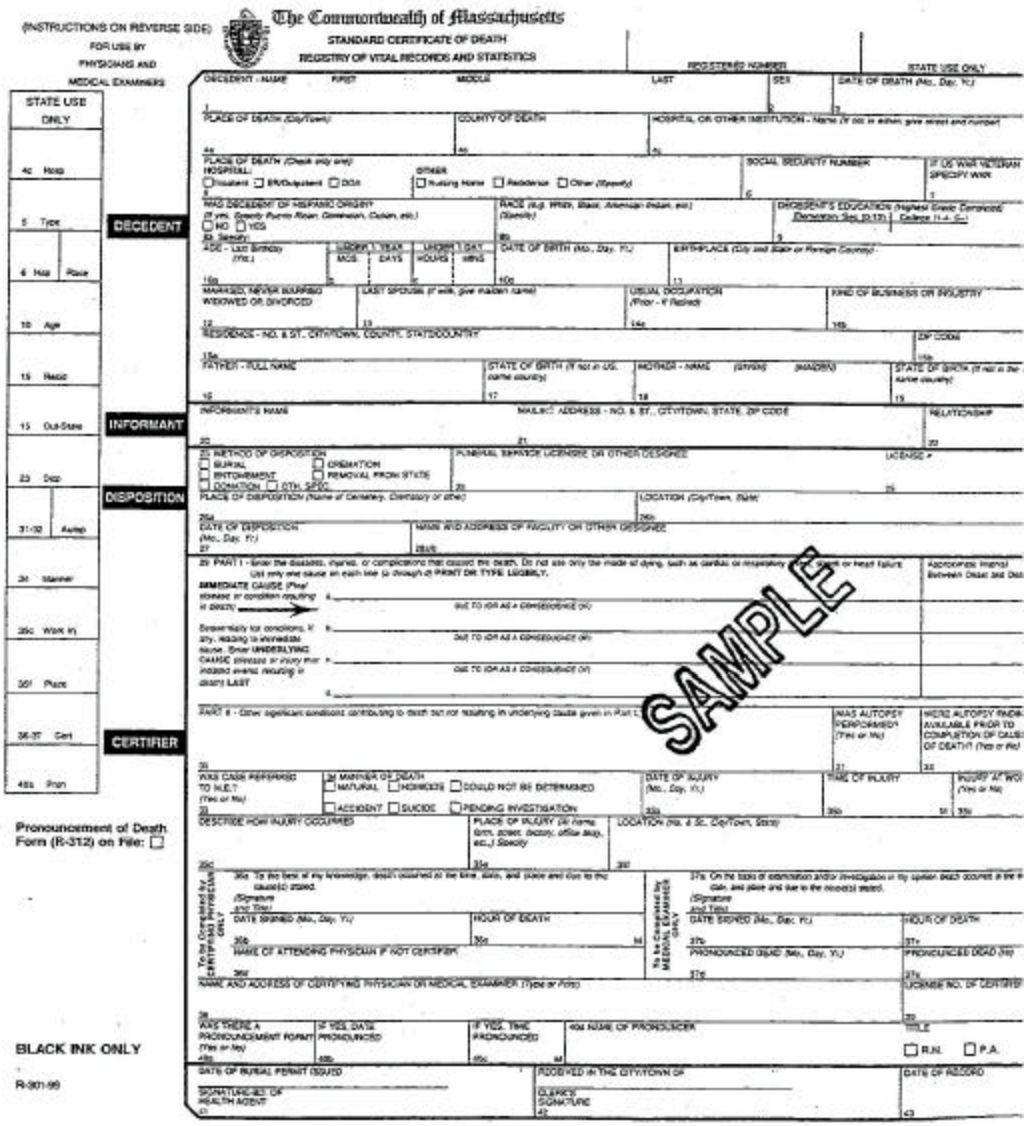
1. 1998 Population estimates from MISER (September 2000), modified by MDPH-BHSR&E. 2. The age-gender-race distributions from the 1990 US Census (MARS) file were applied to the 1998 population estimates to separate Asians from the combined category of Asian and American Indian. 3. Persons of Hispanic 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.

1998 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	40,953	35,506	3,577	1,748	4,383
	FEMALE	38,907	33,710	3,427	1,668	4,178
	TOTAL	79,860	69,216	7,004	3,416	8,561
1 TO 4	MALE	164,030	142,039	14,399	7,032	17,620
	FEMALE	155,970	134,911	13,806	6,750	16,854
	TOTAL	320,000	276,950	28,205	13,782	34,474
5 TO 14	MALE	413,424	367,995	29,959	14,162	35,561
	FEMALE	393,246	348,880	29,455	13,648	34,165
	TOTAL	806,670	716,875	59,414	27,810	69,726
15 TO 24	MALE	441,912	397,357	27,776	15,554	30,984
	FEMALE	441,918	396,225	28,352	16,115	30,251
	TOTAL	883,830	793,582	56,128	31,669	61,235
25 TO 34	MALE	502,456	453,059	30,426	17,727	33,686
	FEMALE	502,881	453,169	31,023	17,461	33,303
	TOTAL	1,005,337	906,228	61,449	35,188	66,989
35 TO 44	MALE	503,355	460,064	25,693	16,156	25,224
	FEMALE	516,010	472,449	26,057	16,077	25,790
	TOTAL	1,019,365	932,513	51,750	32,233	51,014
45 TO 54	MALE	398,558	372,252	15,687	9,648	13,682
	FEMALE	420,102	391,876	17,446	9,734	14,908
	TOTAL	818,660	764,128	33,133	19,382	28,590
55 TO 64	MALE	236,809	222,985	8,379	4,892	6,920
	FEMALE	258,746	242,930	10,524	4,778	8,194
	TOTAL	495,555	465,915	18,903	9,670	15,114
65 TO 74	MALE	195,369	186,900	5,472	2,657	4,016
	FEMALE	246,634	234,959	7,778	3,435	5,210
	TOTAL	442,003	421,859	13,250	6,092	9,226
75 TO 84	MALE	111,651	107,680	2,623	1,212	1,946
	FEMALE	187,831	181,467	4,525	1,577	3,261
	TOTAL	299,482	289,147	7,148	2,789	5,207
85 +	MALE	31,447	30,280	753	347	884
	FEMALE	89,054	86,565	1,809	582	1,644
	TOTAL	120,501	116,845	2,562	929	2,528
ALL AGES	MALE	3,039,964	2,776,117	164,744	91,135	174,906
	FEMALE	3,251,299	2,977,141	174,202	91,825	177,758
	TOTAL	6,291,263	5,753,258	338,946	182,960	352,664

1. 1998 Population estimates from MISER (September 2000), modified by MDPH-BHSR&E. 2. The age-gender-race distributions from the 1990 US Census (MARS) file were applied to the 1998 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: 1999



Massachusetts Deaths: 1999 Evaluation Form

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Jennifer M. Norton, MS
Division of Research and Epidemiology
Bureau of Health Statistics, Research and Evaluation
Massachusetts Department of Public Health
250 Washington Street, 6th Floor
Boston, MA 02108-4619