

# **HEALTHY BROOKLINE**

## **VOLUME VI**

### **HEALTH STATUS INDICATORS**

#### **BROOKLINE DEPARTMENT OF PUBLIC HEALTH 2002**

##### **Acknowledgements**

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## Executive Summary

Volume VI is a follow up on the first community health assessment of the Town of Brookline in 1996. This report provides an update of the data presented in Volume I with respect to demographic, socio-economic, morbidity, mortality, injury and risk factors between 1989 and 2000. Where possible and appropriate, Brookline was compared with Massachusetts. The national health promotion and disease prevention goals expressed in Healthy People (HP) 2010, are included also, so that we can measure the progress of important indicators in the Town of Brookline.

The primary data source was the Massachusetts Community Health Information Profile (MassCHIP) database, developed by the Massachusetts Department of Public Health, (DPH). This database allows for access to several health status, health outcome, program utilization, and demographic data sets.

Some of the key findings of this report include:

- Between 1990 and 2000, the population of Brookline grew from 54,718 to 57,107, an increase of 4.4%;
- In 2000, there were 3.1% low birth weight (LBW) babies born in the Town of Brookline (Healthy People 2010 goal is to reduce to an incidence of no more than 5% of live births);
- In Brookline, the percentage of women planning to breast-feed at hospital discharge increased from 84.2% (1989-93) to 91.1% (1995-199) (MA: 1989-1993, 56.7%; 1995-1999, 67.1%);

- As of October 2001, in the Town of Brookline the HIV/AIDS rate was 156 per 100,000 persons (Boston: 651 per 100,000, MA: 206 per 100,000);
- In 1998, there were 157 deaths associated with cardiovascular disease (cardiovascular disease includes heart disease and stroke) and the age-adjusted rate was 177.5 deaths per 100,000 persons, making this the leading cause of death;
- In 1999, there were a total of 94 deaths arising from cancer. The age-adjusted rate was 132.3 deaths per 100,000 persons, compared to 209.3 for the State;
- In 1999, breast cancer was the leading cause of cancer mortality among women in Brookline, accounting for a total of 16 deaths;
- Between 1991 and 1998, mortality arising from alcohol and drug abuse declined steadily in the Town of Brookline;
- In 1998, the asthma hospitalization rate was 66.7 per 100,000 population, compared to 127.9 per 100,000 for the State;
- The rate of hospitalization in Brookline for angina has dropped markedly between 1989 (227.7 per 100,000 population) and 1999 (16.5 per 100,000 population);
- Between 1998 and 2000, a total of 4,189 children were screened for lead exposure in the Town of Brookline, and 2 cases of lead poisoning were detected; and
- Between 1994 and 1998, there were a total of 2,164 deaths (581.4 per 100,000 persons) in Brookline. The leading causes of mortality were cancer (173.4 per 100,000) and heart disease (161.3 per 100,000).

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## Section 1: Demographic and Social Indicators

This section provides information on a broad range of demographic indicators. At the time of writing this report, the Census 2000 data on income and economic variables was not available. Therefore, some parts of this section rely on the 1990 census.

### 1.1 POPULATION

Between 1990 and 2000, the population of Brookline grew by 4.4%. The population is predominately white (78.6%) and half of the population is between the ages of 25 and 54 years old. English is the primary language spoken by 77.8% of households.

<b>Population trends</b>	<b>Persons</b>	<b>Percentage change</b>
1990	54,718	
2000	57,107	4.4%
<b>Persons by Sex (2000)</b>	<b>Persons</b>	<b>Percentage</b>
Male	25,832	45.2
Female	31,275	54.8
<b>Age Distribution (2000)</b>	<b>Number</b>	<b>Percentage</b>
Under 5 years	2,639	4.6
5-9 years	2,531	4.4
10-14 years	2,702	4.7
15-19 years	2,706	4.7
20-24 years	5,605	9.8
25-34 years	12,853	22.5
35-44 years	8,429	14.8
45-54 years	7,770	13.6
55-59 years	2,819	4.9
60-64 years	1,945	3.4
65-74 years	3,300	5.8
75-84 years	2,473	4.3
85 years and older	1,335	2.3
<b>Race and Ethnicity (One Race)</b>	<b>Persons</b>	<b>Percentage</b>
White	44,922	78.66
Black or African American	1,501	2.63
Hispanic or Latino	2,018	3.53
Asian	7,303	12.8
Native Hawaiian Pacific	14	0.02

Islander		
American Indian	44	0.08
Other	212	0.37
<b>Language Spoken at Home (1990)</b>		
	Brookline (number, %)	MA (number, %)
English as primary language	18,876 (77.2%)	1,827,335 (81.42%)

Source: U.S. Census Bureau, Census 2000 Summary File 1 (SF-1) 100-Percent Data

## 1.2 SOCIO-ECONOMIC

In 1990, more than 63.7% of Brookline residents aged 25 years and older had at least a college degree compared to the state average of 27.2%. With respect to income in 1990, per capita in the Town of Brookline was \$29,044 (State: \$17,224). In 1990, there were 6.9% of families with children under the age of 18 years, living below 100% of the poverty line in Brookline.<sup>1</sup> In 2000, there were 69 individual recipients of Transitional Aid to Families with Dependent Children (TAFDC).

	Brookline	MA
<b>EDUCATION (%)<sup>1</sup></b>		
Less than high school (1990)	6.8	20.0
High School Graduate (1990)	13.1	29.7
Some college (1990)	16.4	23.0
College graduate plus (1990)	63.7	27.2
<b>INCOME<sup>1</sup></b>		
Per capita income (1990)	\$29,044	\$17,224
Household income <\$10,000 (1990)	11.1	13.4
Household income >\$50,000 (1990)	45.9	34.3
<b>POVERTY (%)<sup>1</sup></b>		
Families with children <18 and below 100% poverty (1990)	6.9	11.1
Persons below 100% poverty (1990)	8.6	8.9
Persons below 200% poverty (1990)	17.9	21.0

<sup>1</sup> Population below 100% of the poverty line. The data on poverty status are derived from the 1990 U.S. Census for 1989. For every family size, an income threshold is established to determine “below 100% of the poverty line”. The poverty line was set at about 3 times the cost of a basic, nutritionally adequate economy food plan developed by the United States Department of Agriculture. The poverty threshold for a family of 4 persons was \$12,674 in 1989.



<b>Recipients of Temporary Aid to Families with Dependent Children (TAFDC): Count<sup>2</sup></b>		
1998	117	65,888
1999	92	53514
2000	69	43134
Unemployment (1990) (%)	1.5	3.9

Source: 1. Socio-Demographic Standard Report for Brookline, Massachusetts Community Health Information Profile, MassCHIP, 11/13/01

2. Department of Transitional Assistance (DTA), MassCHIP v2.8 r270.0, 5/6/2002

## **Section 2: Perinatal and Child Health Indicators**

The health and well-being of children has become increasingly recognized as a key indicator of social progress and development within and across countries. This section assesses infant and child health status in Brookline, with respect to a variety of indicators and the stated objectives of Healthy People 2010. The key indicators will include infant mortality rate (IMR), low birth weight (LBW), maternal health behavior, and maternal characteristics.

In assessing changes in child health status, trends between 1989 and 2000 in Brookline are examined. In addition data is also presented with respect to race/ethnicity and age of mother.

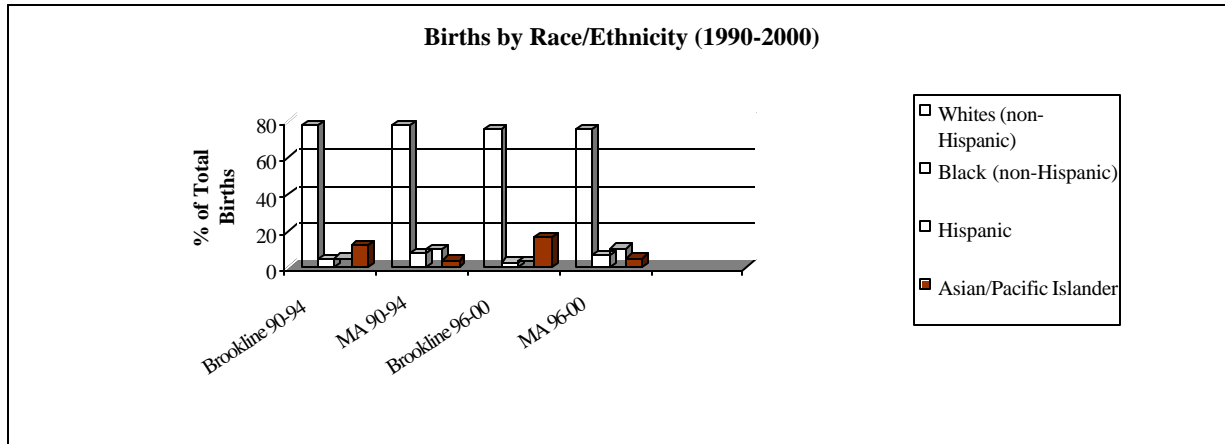
### **Healthy People 2010: Maternal and Child Health Indicators**

Reduce Infant Mortality Rate (IMR) to no more than 4.5 deaths per 1,000 deaths
Reduce Low Birth Weight (LBW) to an incidence of no more than 5% of live births
Increase in mothers who breastfeed in early postpartum period to 75%
Increase abstinence from alcohol use by pregnant women to at least 94%
Increase abstinence from tobacco use by pregnant women to at least 99%
Increase in maternal prenatal care beginning in first trimester of pregnancy to at least 90%
Increase the percentage of children fully immunized under the age of 2 years to at least 90%

Source: Healthy People 2010: Understanding and Improving, MassCHIP v2.7 r259.0, 1/28/2002

## 2.1 BIRTHS

In 2000, there were a total of 614 births in Brookline, 73.8% were White non-Hispanic, 19.1% were Asian/Pacific Islander, 2.3% were Black non-Hispanic, and 3.6% were Hispanic.



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v2.8 r270, 4/30/2002

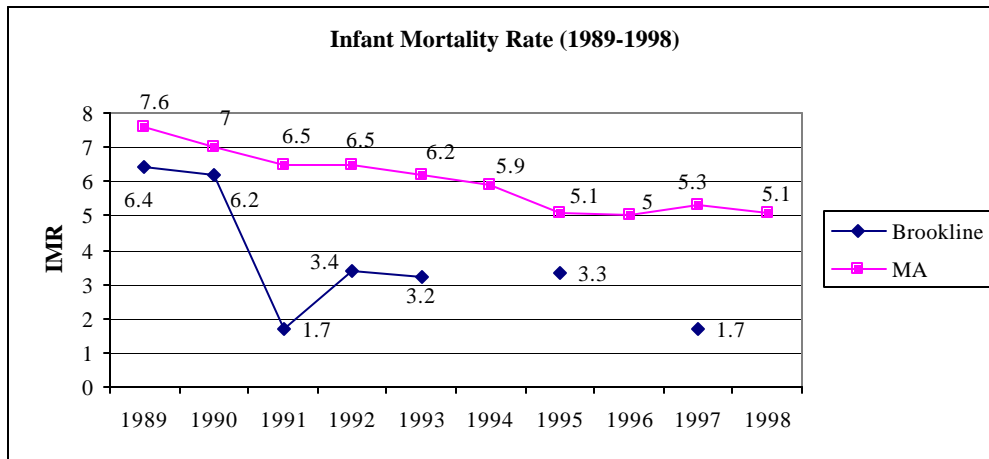
The table below depicts the birth rate (per 1,000 women between 15-44 years) with respect to the age of the mother. Brookline's birth rate pattern is markedly different from that of the State. Between 1989 and 1999, in Brookline, the highest birth rates were among women in the 30-34 year age category (1989-1993: 75.6 per 1,000 women, 1995-1999: 70.3 per 1,000 women). The next highest group was women between the ages of 35-39 years (1989-1993: 50.9 per 1,000 women, 1995-1999: 45.2 per 1,000 women).

### Birth Rate per 1,000 residents by Age of Mother (1989-1999)

Age Categories	Birth Rate per 1,000 women			
	1989-1993		1995-1999	
	Brookline	MA	Brookline	MA
15-19	5.7	34.9	5.3	28.4
20-24	12.1	64.8	9.6	50.6
25-29	38.8	103.1	36.2	83.4
30-34	75.6	93.1	70.3	102.5
35-39	50.9	40.1	45.2	49.1
40-44	13.4	6.9	15.3	9.5

## 2.2 INFANT MORTALITY

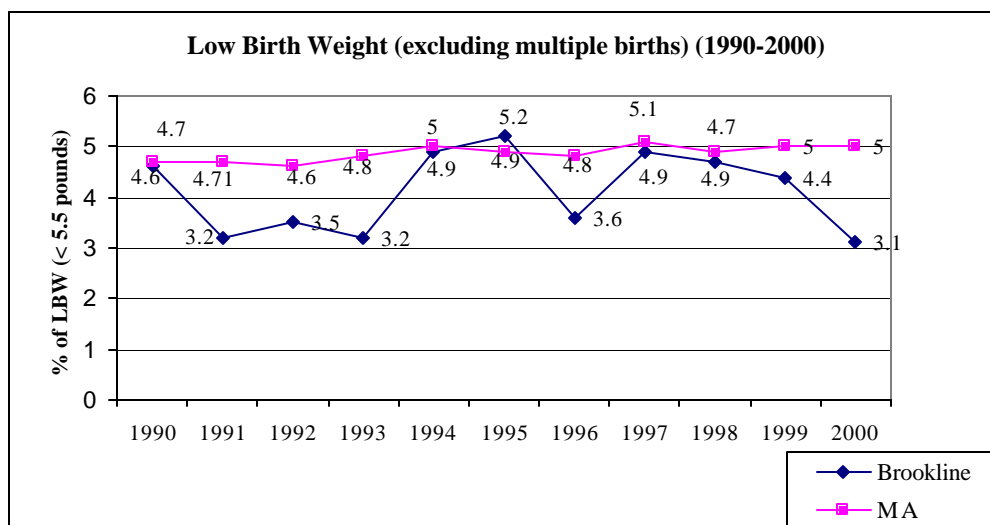
In the Town of Brookline, between 1989-1993, 1995 and 1997, there were 16 deaths amongst children under the age of one year. In Healthy People 2010, the goal was to reduce IMR to no more than 4.5 deaths per 1000 live births. The chart below indicates the annual IMR (expressed as deaths per 1000 live births). In Brookline, IMR has decreased steadily from 6.44 in 1989 to 1.67 in 1997, which is considerably lower than that for the State.



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v2.7 r259.0, 1/9/2002

### 2.3 LOW BIRTH WEIGHT

Low birth-weight (LBW) infants are those who weigh less than 5.5 pounds at birth. LBW is regarded as an important risk factor for infant mortality and morbidity, and has also been found to be associated with several developmental disabilities (e.g. cerebral palsy, autism etc.) The HP 2000 goal was to reduce LBW to 1% of births. Two significant confounders for LBW are plurality (or multiple births) and maternal age. In the figure where LBW is considered specifically with respect to single births only, Brookline (2000, 3.1%) compares favorably with the State (2000, 5%).



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP, v2.8 r270, 04/30/2002

The other important confounder of LBW was maternal age. By age, the percentage of LBWs increases among women 30 years and older in Brookline and the State, between 1996 and 2000.

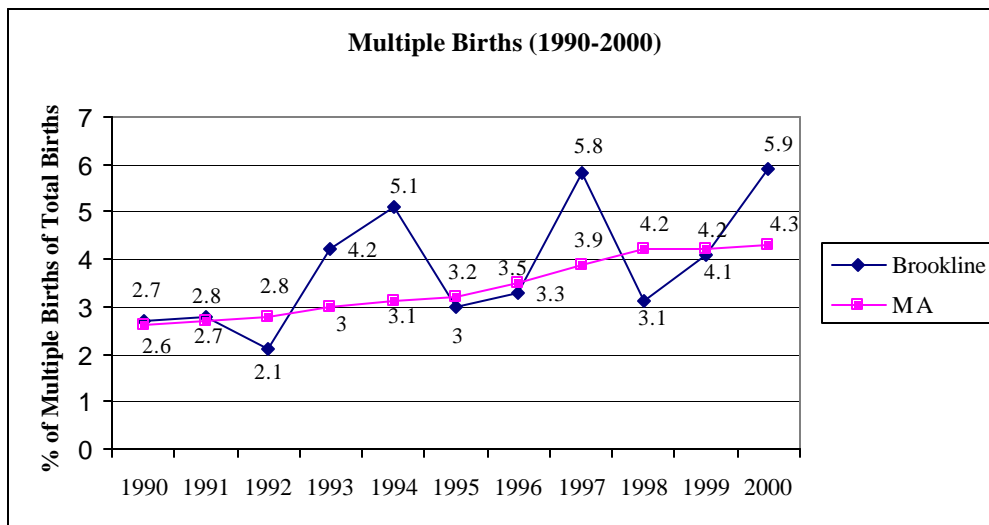
**LBW by Age of Mother (includes multiple births (1990-2000))**

Age Categories	1990-1994		1996-2000	
	Brookline (%)	MA (%)	Brookline (%)	MA (%)
15-19	NA	8.28	NA	9.11
20-24	5.98	6.37	5.79	6.89
25-29	5.22	5.32	5.54	6.17
30-34	3.95	5.59	6.07	6.29
35-39	6.1	6.49	7.3	7.63
40-44	8.38	7.7	6.95	8.85
45+	NA	13.11	38.89	20.98

Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP, v2.8 r270, 04/30/2002

**2.4 MULTIPLE BIRTHS**

In 2000, 5.9% of births were multiple births in Brookline, compared to 4.3% for the State. There does appear to be an upward trend in multiple births in both Brookline and the State.



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP, v2.8 r270, 04/30/2002

## 2.5 BREAST-FEEDING

In Brookline, the percentage of women planning to breast-feed at hospital discharge increased from 84.2% (1989-1993, MA: 56.7%) to 91.1% (1995-1999, 67.1%). There is significant variation by race/ethnicity and age of mother. Breast-feeding rates among Black non-Hispanic and Asian/Pacific Islanders were 85% and 90% respectively, in comparison to 92% reported for White non-Hispanic mothers. With respect to maternal age, the lowest percentage of women planning to breast-feed is between the ages of 15-19 years.

### Percentage of Women Planning to Breast-feed at discharge from Hospital by Age of Mother (1989-1999)

Age Categories	1989-1993		1995-1999	
	Brookline (%)	MA (%)	Brookline (%)	MA (%)
15-19	46.2	34.8	71.4	51.2
20-24	67.4	43.6	86.1	56.1
25-29	80	56.7	91.7	65.5
30-34	87.4	65.3	91.9	72
35-39	89.2	70.4	91.1	75
40-44	86.9	71.9	90.7	78.1
45+	na/	64.1	83.3	82.7

Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v2.7 r259.0, 1/23/2002

## 2.6 TOBACCO USE DURING PREGNANCY

In 1999, only 1.2% of women living in Brookline reported that they smoked during their pregnancy, which was significantly lower than that reported for the State (10.6%).

### Percentage of Women Reported Using Tobacco during Pregnancy (1995-1999)

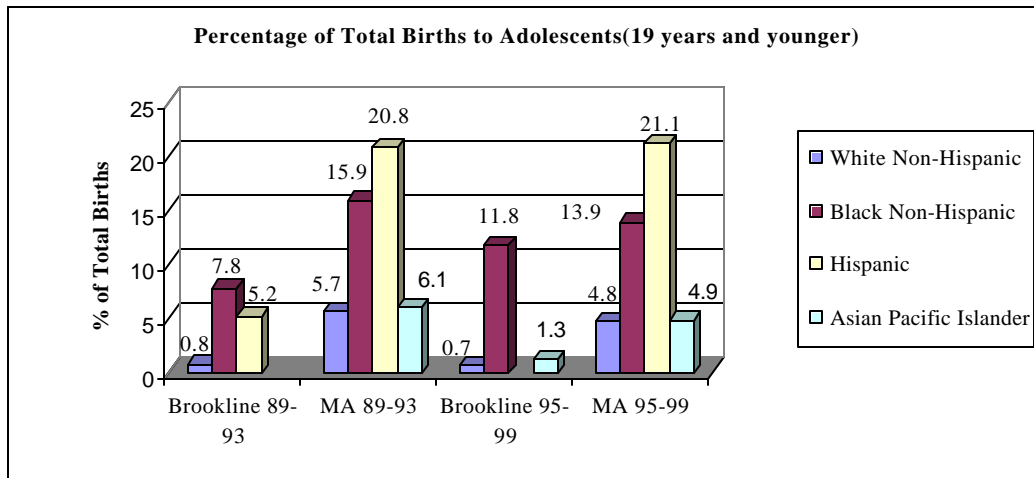
Year	Tobacco usage (%)	
	Brookline	MA
1995		13.5
1996	1.15	13.1
1997	1.17	12.2
1998	1.07	11.5

1999	1.19	10.6
------	------	------

Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v2.7 r259.0, 1/23/2002

## 2.7 BIRTHS TO TEENAGE GIRLS

Births to teens 19 years and younger accounted for 1.3% (35 cases) and 1.2% (39 cases) of total births between 1989-1993 and 1995-1999, respectively. In 2000, the teen birth rate for Brookline was 434 per 100,000 population, compared to 2,584 per 100,000 population for the State. By race/ethnicity, the highest reported percentages were for Black non-Hispanic adolescents (12%, 11 cases, 1995-1999) in Brookline.

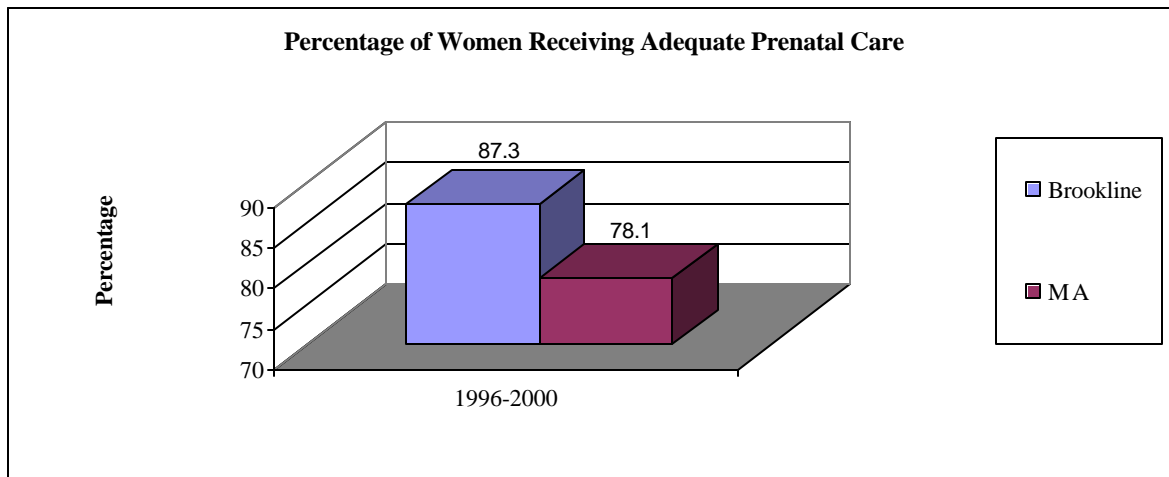


Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation,

Massachusetts Department of Public Health, MassCHIP v2.7 r259.0, 1/23/2002

## 2.8 PRENATAL CARE

Women seeking early prenatal care can benefit from early detection of maternal and infant risks. Adequate prenatal care refers to care that begins in the first trimester with 9 or more visits for the pregnant woman during the duration of the pregnancy. Between 1996 and 2000, the percentage of women receiving adequate prenatal care in Brookline was 87.3% compared to 78.1% for the State. Publicly funded prenatal care includes Medicaid, Medicare, Healthy Start and other government support for low income women. In 1994, 4.4% of women in Brookline were dependent on publicly financed prenatal care, compared with 26.8% reported for the State.



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v2.8 r270, 04/30/2002

## 2.9 IMMUNIZATION COVERAGE

Based on the Massachusetts DPH Immunization annual school survey for 2000-2001, the rate of fully immunized children under the age of 2 years old attending day care and kindergarten in Brookline is 92% and 93%, respectively. This compares favorably with the State, which has an immunization coverage of 81%.



### **Section 3: Infectious Disease Indicators**

This section provides an update on infectious diseases in Brookline. The diseases highlighted are HIV/AIDS, tuberculosis (TB) and sexually transmitted diseases (STDs). Since 1995, there has been a decline in the number of people diagnosed annually with AIDS, which has been attributed to a combination of preventive efforts and therapies (antiretrovirals). These efforts have been very successful in extending the life span of those with HIV infection. Nationally, the declines were greatest among whites (21%), followed by Hispanics (10%) and African-Americans (2%) (Healthy People 2000). AIDS cases among women have increased however, from 7% in 1985 to 20% in 1996, and were the third leading cause of death among women between the ages of 25 and 44 years.

The Massachusetts Department of Public Health verified 285 cases of TB (4.48 per 100,000 population) in 2000. After an initial decline in the case rate of 35% between 1992 and 1996, there has been an upward trend in TB cases since 1996. High-risk groups include the homeless, foreign born, injection drug users, the elderly and minority groups. Drug resistant strains have emerged that have contributed to the rise in incidence of TB.

STDs are regarded as behavior-linked diseases that result from unprotected sex. Between 1995 and 1996, STDs were the most commonly reported disease in the US (Healthy People 2010), and the associated costs of STD and HIV care were estimated at approximately \$17 billion annually. Women are at higher risk than men for most STDs, and for some STDs younger women are at higher risk than older women.

## Healthy People 2010 Objectives

### **HIV/AIDS**

- Reduce AIDS among adolescents and adults to no more than 1 new case per 100,000 persons
- Reduce the number of new AIDS cases among adolescent and adult men who have sex with men to no more than 13,385 new cases
- Reduce the number of new AIDS cases among adolescent and adult men who have sex with men and inject drugs to no more than 1,592 new cases.
- Reduce deaths from HIV infection to no more than 0.7 deaths per 100,000 persons
- Increase the proportion of sexually active persons who use condoms to 50%
- Increase the proportion of adults with TB who have been tested for HIV to 85%

### **Tuberculosis**

- Reduce TB infection to no more than 1 new case per 100,000 population

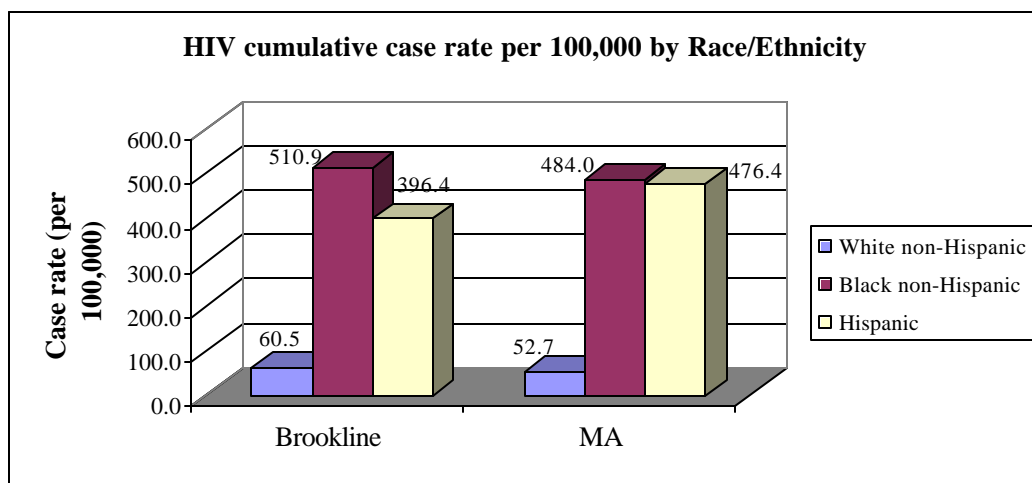
### **Sexually Transmitted Diseases**

- Reduce the incidence of chlamydia trachomatis infections among males and females (15-24 years) attending STD and family planning clinics to no more than 3%
- Reduce the incidence of gonorrhea to no more than 19 new cases per 100,000 population

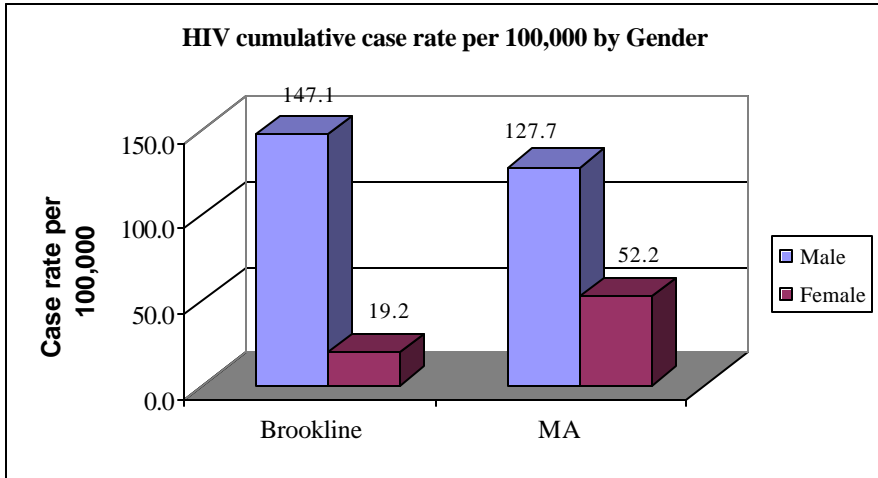
Source: Healthy People 2010: Understanding and Improving, MassCHIP v2.7 r259.0, 1/28/2002

### 3.1 HIV/AIDS

As of October 2001, there were 44 cases of HIV infections and 45 cases of AIDS in the Town of Brookline. The HIV/AIDS rate was 156 per 100,000 persons (Boston: 651 per 100,000, MA: 206 per 100,000). By gender, 86% of the HIV cases were male (38 cases). By race/ethnicity, 64% of the cases were White non-Hispanic, followed by Black non-Hispanic (18%) and Hispanic (18%). Approximately 61% of the HIV cases, male-to-male sex was reported as the mode of exposure. Between 1994 and 1998, there was 20 deaths from HIV infection (Brookline: 6.17 deaths per 100,000 population, MA: 9.26 per 100,000 population) (MassCHIP Vital Records, 3/6/2002).



Source: US Bureau of the Census 2000, MA HIV/AIDS Surveillance Program. Cases reported as of 10/01/2001



Source: US Bureau of the Census, 2000, MA HIV/AIDS Surveillance Program. Cases reported as of 10/01/2001

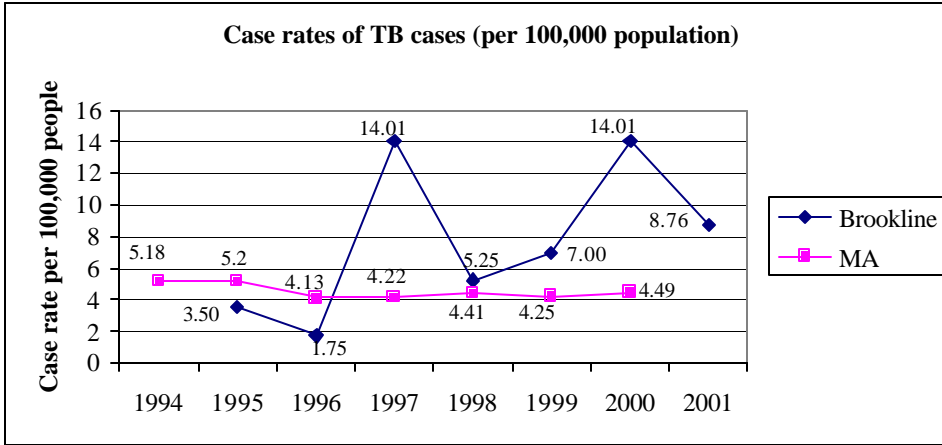
**AIDS-related mortality per 100,000 population (age adjusted)**

	Brookline	Massachusetts
HIV/AIDS cases as of 10/1/2001		
White	65	4,713
Black	14	3,352
Hispanic	8	3,161
AIDS-related mortality per 100,000 population age adjusted) (1994-1998) <sup>1</sup>		
Male	13.55	15.27
Female	0	3.47
Age-specific AIDS-related mortality per 100,000 population (1994-1998) <sup>1</sup>		
0-19	0.00	0.37
20-29	1.79	3.83
30-39	12.88	26.32
40-49	15.40	22.94
50+	5.07	3.70

Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Mass Dept of Public Health, MassCHIP, v2.7 r259, 3/6/2002

### 3.2 TUBERCULOSIS

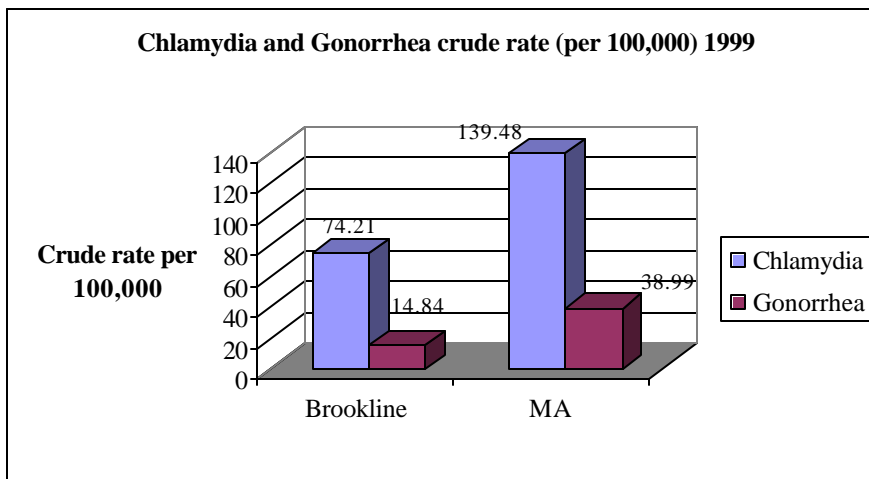
In 2000, there were 285 cases of TB in the State, 8 of which were in Brookline (Mass Department of TB Prevention and Control, Mass Dept of Public Health, Barbara Wesley).



Source: Brookline Health Department, Mass Department of TB Prevention and Control 2002

### 3.3 SEXUALLY TRANSMITTED DISEASES

Brookline STD rates (chlamydia and gonorrhea) are considerably lower than those of the State.



Source: Sexually Transmitted Disease Program, Bureau of Communicable Control Registries, MassCHIP v2.7 r259, 0 2/11/2002



## Section 4: Injury Indicators

In 1995, more than 143,000 Americans died from injuries as a result of motor vehicle crashes, falls, drownings, poisonings, homicides and suicides. Of the total number of deaths, 65% were classified as unintentional and the remaining 35% as intentional. Death from injuries was a leading cause of mortality, and caused almost 50% of all deaths for children between the ages of one and 4 years. Injuries can be classified according to those that cut across intent (e.g., nonfatal head injuries), unintentional (e.g., motor vehicle crashes) and violence/abusive (e.g., homicides) (Healthy People 2010).

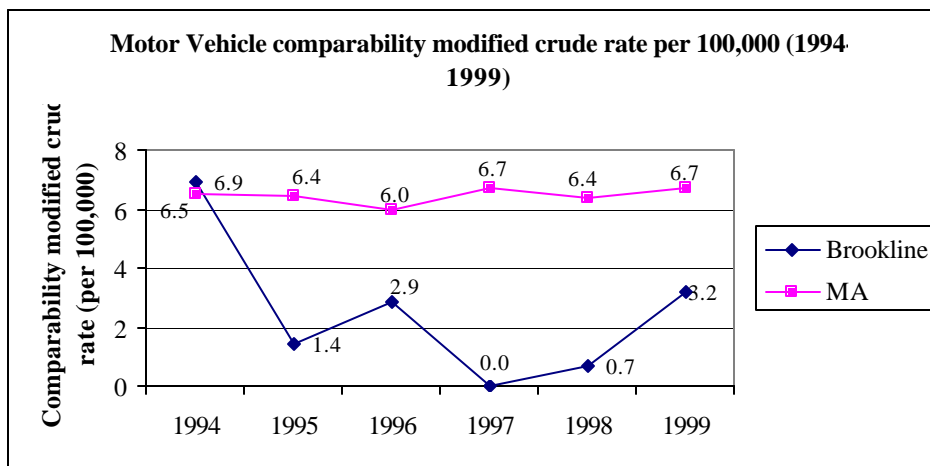
### Healthy People 2010

Reduce the number of pedestrian deaths on public roads to no more than 1 pedestrian death per 100,000 population
Reduce non-fatal injuries due to motor vehicle crashes to no more than 933 nonfatal injuries per 100,000 population
Reduce the deaths caused by motor vehicle crashes to no more than 9.2 deaths per 100,000 population
Increase use of safety belts to 92%
Increase use of child restraints by children 4 years and younger to 100%
Increase the proportion of motorcyclists using helmets to 79%
Increase the number of States and the District of Columbia with laws requiring bicycle helmets for bicycle riders under the age of 15
Reduce homicides to 3 homicides per 100,000 population
Reduce hospitalization for non-fatal head injuries to no more than 45 hospitalizations per 100,000
Reduce hospital emergency department visits caused by injuries to no more than 126 hospital emergency department visits per 100,000 population

Source: Healthy People 2010: Understanding and Improving, MassCHIP v2.7 r259.0, 1/28/2002

#### 4.1 MOTOR VEHICLE

In 1999, there were a total of 433 deaths arising from motor vehicle crashes in Massachusetts, 2 of which occurred in Brookline. In the US, motor vehicle crashes account for almost 50% of the deaths from unintentional injuries. The National Safe Kids Campaign found the following, “Every child safety belt saves this country \$85 in direct medical costs and an additional \$1,275 in other costs to society and every bicycle helmet saves this country \$395 in direct medical and other costs to society”.

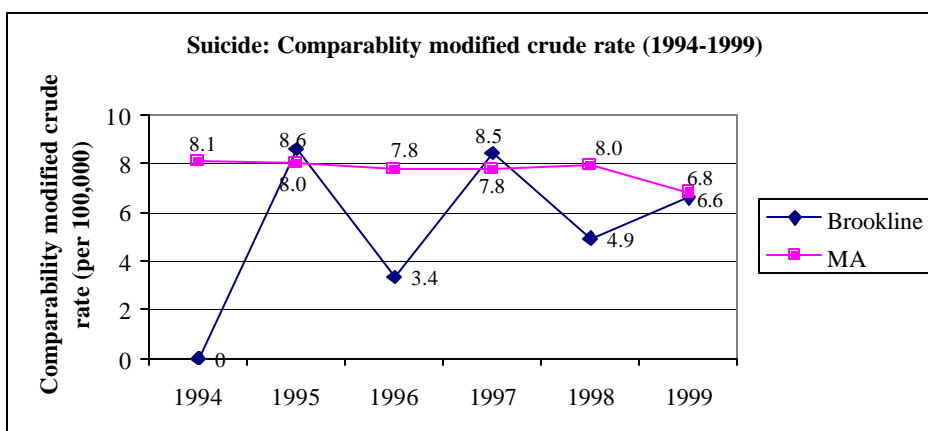


Source: Mortality Vital Records, Mass Department of Public Health, Bureau of Health Statistics, Research and Evaluation, MassCHIP 2/11/2002



## 4.2 SUICIDE

Following motor vehicle crashes, suicides are the second leading cause of injury death in Massachusetts. In 1999, there were 4 suicide deaths in Brookline (Brookline: 6.6 per 100,000, MA: 6.8 per 100,000).



Source: Mortality Vital Records, Mass Department of Public Health, Bureau of Health Statistics, Research and Evaluation, MassCHIP 2/11/2002

## 4.3 INJURIES ARISING FROM VIOLENCE AND ABUSE

Elder abuse is defined by the West Suburban Elder Services (WSES) as elders who are at risk from physical, emotional neglect, and financial exploitation. Between March 2001 and February 2002 there were 37 reported cases of elder abuse and neglect in the Town of Brookline (Jeff Ryan, WSES). With respect to domestic violence, there were 170 calls for assistance for domestic violence in 2001 (Doreen Galagher, Brookline Police Department).

## Section 5: Chronic Disease Indicators

This section provides information on three important measures of chronic disease: cancer (lung, cancer, breast, and prostate), cardiovascular disease and Non-Hodgkins Lymphoma. Heart disease and cancer are the first and second leading of death in the US. More than 50% of all of cancer deaths involved the lung, breast, prostate, or colon/rectum (Healthy People 2010). Current public health efforts aimed at changing health behaviors (smoking, high fat diets, overweight and obesity) have attempted to reduce morbidity and mortality associated with chronic disease.

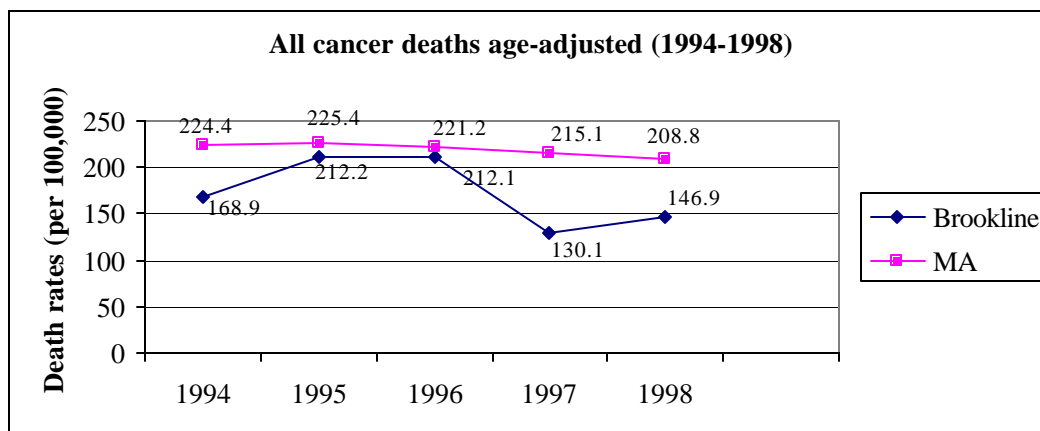
### Healthy People 2010 objectives

<b>Cancer Mortality</b>
• Reduce the overall cancer death rate to no more than 159.9 deaths per 100,000 population
• Reduce the lung cancer death rate to no more than 44.9 deaths per 100,000 population
• Reduce the breast cancer death rate to no more than 22.3 deaths per 100,000 population
• Reduce the prostate cancer death rate to no more than 28.8 deaths per 100,000 population
<b>Cardiovascular Disease</b>
• Reduce coronary heart disease deaths to no more than 166 deaths per 100,000 population
• Reduce stroke deaths to no more than 48 deaths per 100,000 population

Source: Healthy People 2010: Understanding and Improving, MassCHIP v2.7 r259.0, 1/28/2002

## 5.1 CANCER MORTALITY- ALL TYPES

All data presented here are age-adjusted rates, which is a comprehensive measure that can be compared across all geographic levels, by minimizing the distortions which arise from differences in age distribution when comparing rates for different populations or geographic areas. In 1998, the age-adjusted rate was 146.9 deaths per 100,000 persons for Brookline, compared to 208.8 for the State. Deaths arising from cancer dropped significantly between 1994 and 1998 in Brookline.



Source: Massachusetts Cancer Registry, Mass Department of Public Health, Bureau of Health Statistics, Research and Evaluation, MassCHIP 2/5/2002

## 5.2 MORTALITY FROM LUNG, BREAST AND PROSTATE CANCER

In 1998, cancer of the prostate, breast and lung were the leading causes of cancer mortality in Brookline.

### Deaths from Lung, Breast and Prostate Cancer between 1994-1998 (age-adjusted, per 100,000 population).

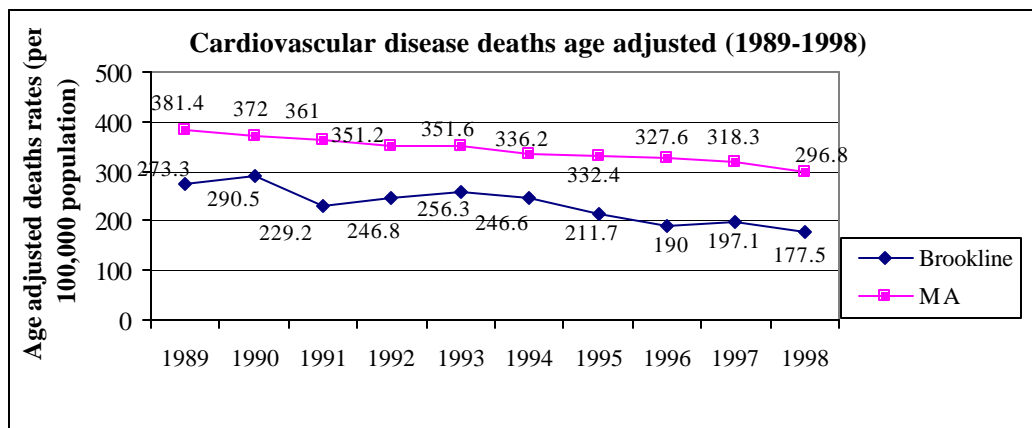
	1994	1995	1996	1997	1998
<b>Lung Cancer</b>					
Brookline	42.77	41.06	41.65	35.14	23.86
MA	59	59.73	59.29	57.87	56.91
<b>Breast Cancer</b>					
Brookline	23.47	48.93	39.7	7.59	23.92
MA	35.21	34.45	31.49	30.77	28.98
<b>Prostate cancer</b>					
Brookline	24.3	28.38	40.55	38.3	24.36
MA	37.24	34.67	35.82	33.88	31.55
<b>Non-Hodgkins Lymphoma</b>					
Brookline	16.07	4.68	7.5	10.85	11.14
MA	9.67	9.35	9.5	9.46	9.04

Source: Massachusetts Cancer Registry, Bureau of Health Statistics, Research and Evaluation, Mass Department of Public Health MassCHIP 2/5/2002

Public health efforts aimed at reducing the incidence of cancer have been very intense over the past decade. Women between the ages of 20-39 years are encouraged to do breast self-examinations monthly as well have a clinical breast examination done by a health care professional every 3 years. For women 40 years and older, mammography and clinical breast examination are encouraged every year, as well as breast self examinations conducted monthly. The major risk factors for female breast cancer are late age for first child birth, late age at menopause, other breast disease and exposure to ionizing radiation. With respect to lung cancer, smoking has been recognized as the single major cause and the public health efforts are focused on reducing the numbers of people smoking and exposure to second hand smoke. Prostate cancer can be detected in its early stages with tests and screening which begins at age 50 years, unless there is a history of prostate cancer in close family members.

### 5.3 CARDIOVASCULAR DISEASE (CVD)

CVD includes both heart disease and stroke. Between 1989 and 1999, there appeared to be a downward trend in CVD in both Brookline and the State. In 1998, there were 157 deaths associated with CVD and the age-adjusted rate was 177.5 deaths per 100,000 persons.



Source: Vital Records (Mortality), Bureau of Health Statistics, Research and Evaluation, Mass Department of Public Health MassCHIP 3/13/2002

## Section 6: Substance Abuse Indicators

Substance abuse has been described as “among society’s most pervasive health and social concerns” (Healthy People 2010). It has been estimated that approximately 100,000 people die from alcohol-related illnesses in the US each year. The health consequences of substance abuse (tobacco, alcohol, illicit drug use) range from cancer-related deaths, heart disease, stroke, hypertension, and liver disorders, to name but a few. In addition to mortality, substance abuse impacts various social health problems, including productivity loss, crime, child abuse and neglect, and domestic violence.

### Healthy People 2010: Substance Abuse

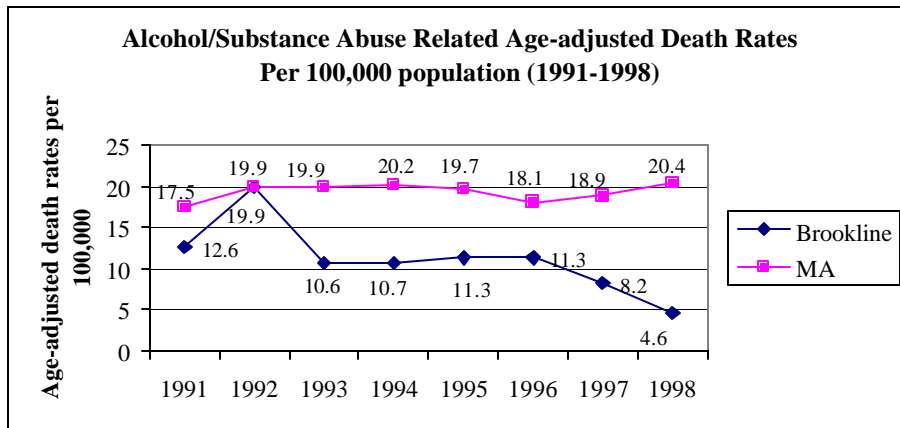
Reduce alcohol-related deaths as a consequence of motor vehicle crashes to a rate of no more than 4 per 100,000 population
Reduce alcohol-related injuries as a consequence of motor vehicle crashes to a rate of no more than 65 per 100,000 population
Reduce drug-induced deaths to no more than 1 per 100,000 population
Reduce the proportion of adolescent students in grades 9-12 who have reported that they rode, during the previous 30 days, with a driver who has been drinking alcohol to no more than 30%
Increase in high school seniors never having had alcohol beverages to 29%
Increase in high school seniors never using illicit drugs to 56%
Increase the number of communities using partnerships or coalition models to conduct comprehensive substance abuse prevention efforts

Source: Healthy People 2010: Understanding and Improving, MassCHIP v2.7 r259.0, 1/28/2002

### 6.1 DEATH RELATED TO ALCOHOL AND DRUGS

Between 1991 and 1998, mortality arising from alcohol and drug abuse has declined steadily in the Town of Brookline. In 1998, there were 3 alcohol and drug related deaths

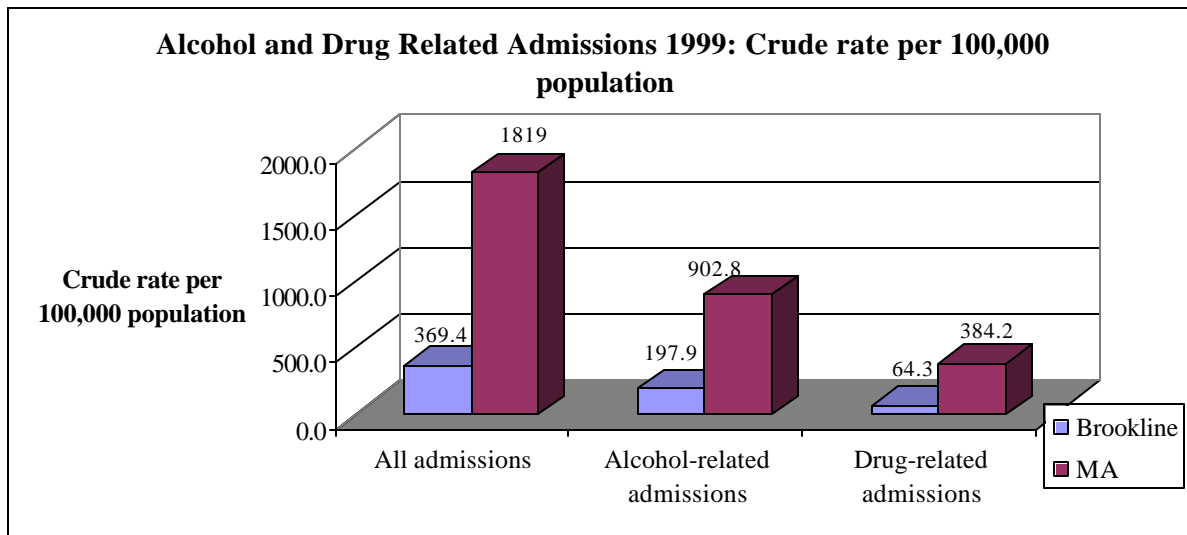
(Brookline: 4.6 deaths per 100,000, MA: 20.4 deaths per 100,000). Between 1994 and 1998, 21 males died from alcohol and drug related causes compared to 7 females (Brookline: males 16.3 per 100,00 population, females 4.0 per 100,000 population; MA: males: 29 per 100,00 population, females 11.1 per 100,000 population).



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v2.7 r259.0, 2/13/2002

## 6.2 ALCOHOL AND DRUG RELATED ADMISSIONS

In 1999 there were 224 admissions to all Massachusetts publicly-funded substance abuse treatment programs, 120 of which were alcohol users, and 39 were injection-drug users. It should be noted that this data does not include admissions to privately-funded substance abuse treatment programs and therefore underestimates the number of admissions.



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v2.7 r259.0, 2/13/2002



## **Section 7: Preventable Hospital Discharges**

Preventable Hospital Discharges (PHD) refer to conditions that can be easily treated, managed or prevented in primary care settings without inpatient care. This does not imply that specific hospitalizations were not required, but rather specific conditions can usually be managed in an outpatient setting. This section focuses on Asthma, Bacterial Pneumonia, and Angina. PHD is an important indicator of access to and quality of care, since often people are admitted for inpatient care because they have not received adequate preventive services. This can occur for a variety of reasons, ranging from financial (e.g., being uninsured), structural (e.g., lack of providers) and personal (e.g., language) (Healthy People 2010).

### **Healthy People 2010 objectives**

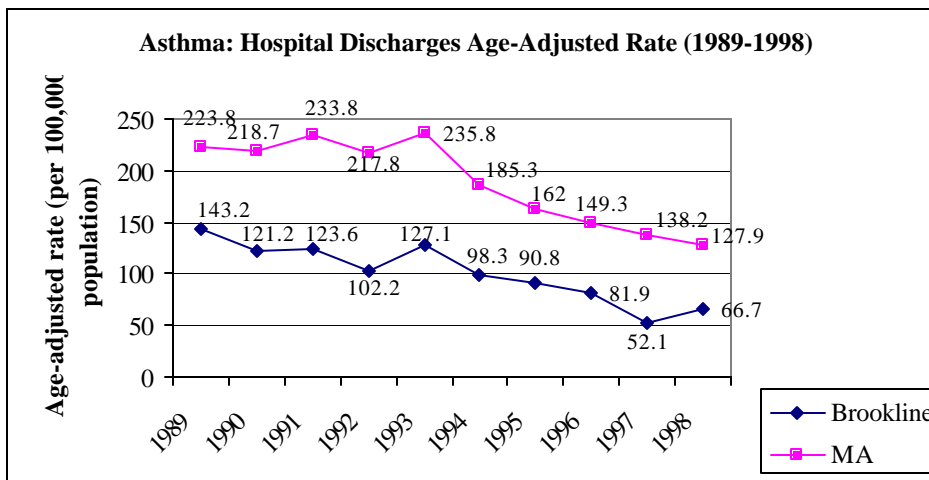
Reduce hospitalization for asthma among children and adults aged 5 to 64 years to no more than 7.7 hospitalizations per 10,000
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Reduce hospitalization for asthma among adults aged 65 years and older, to no more than 11 hospitalizations per 10,000
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Source: Healthy People 2010: Understanding and Improving, MassCHIP v2.7 r259.0, 1/28/2002

## 7.1 ASTHMA

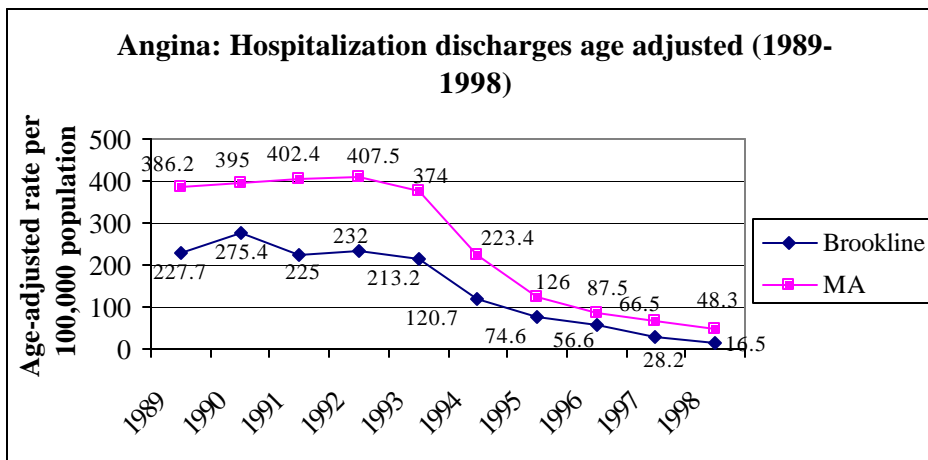
Asthma is a lung disease with recurrent airway constriction, mucous secretion and chronic inflammation of the airways, resulting in reduced airflow that causes symptoms of wheezing, cough, chest tightness and difficulty breathing (Healthy People 2010). In the United States asthma is a leading cause of chronic illness in children. Between 1989 and 1998, rates of asthma hospitalization have been declining steadily in the Town of Brookline and the State. One possible explanation is that more asthma cases are being treated on an outpatient basis. In 1998, the asthma hospitalization rate was 66.7 per 100,000 population, compared to 127.9 per 100,000 for the State.



Source: Uniform Hospital Discharge Data Set. Division of Health Care Finance and Policy. MassCHIP v2.7 r259.0, 2/20/2002

## 7.2 ANGINA

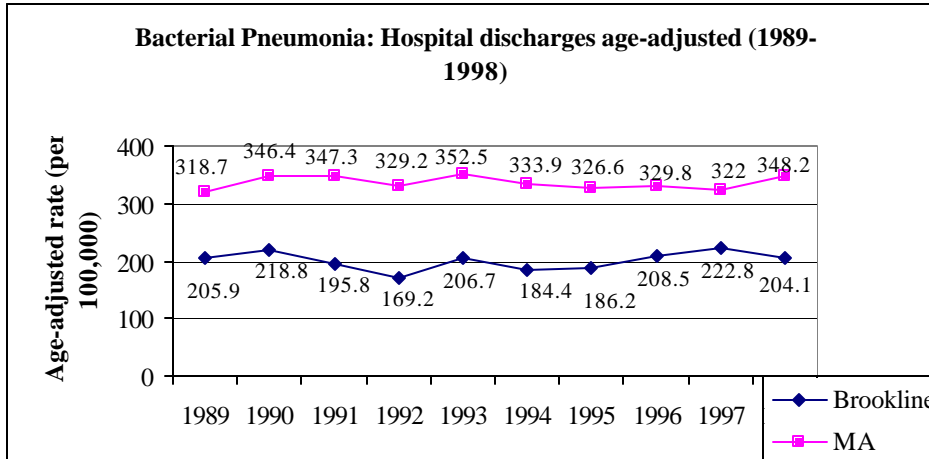
Angina, or chest pain as it is commonly known, occurs when reduced blood flow caused by narrowing of the coronary artery from atherosclerosis results in too little oxygen to the heart muscle for its needs (Healthy People 2010). The rate of hospitalization in Brookline for angina has dropped markedly between 1989 (227.7 per 100,000 population) and 1999 (16.5 per 100,000 population).



Source: Uniform Hospital Discharge Data Set. Division of Health Care Finance and Policy. MassCHIP v2.7 r259.0, 2/20/2002

### 7.3 BACTERIAL PNEUMONIA

Hospital discharge rates for bacterial pneumonia have remained fairly constant for the Town of Brookline and the State. In 1998, hospitalization rates were 204.1 per 100,000 for the Town of Brookline compared to 348.2 per 100,000 for the State.



Source: Uniform Hospital Discharge Data Set. Division of Health Care Finance and Policy. MassCHIP v2.7 r259.0, 2/20/2002

## **Section 8: Environmental Health**

The World Health Organization (WHO) defines environmental health as “those aspects of human health, diseases, and injury that are determined or influenced by factors in the environment. This includes the study of both the direct pathological effects of various chemical, physical and biological agents, as well as the effects on health of the broad physical and social environment, which includes housing, urban development, land use and transportation, industry and agriculture” (WHO, Indicators for Policy and Decision Making in Environmental Health, 1997).

Air pollution is recognized as a public health and environmental problem in the US and can cause premature death, cancer, long term damage to respiratory and reproductive systems and difficulty with breathing (HP 2010).

Drinking water can be a large source of exposure to bacteria and toxins, which can cause illness. Between 1989 and 1994 there were 30 waterborne disease outbreaks nationally which affected 427,468 people. Compliance with established EPA regulations represents one way of ensuring that the public receives safe drinking water.

Elevated blood lead levels (BLLs) is another environmental health issue. About 1 million US children under the age of 6 years have BLLs of at least 10 dL, which is high enough to affect them adversely in terms of learning and behavior.

### **Healthy People 2010**

Reduce lead (harmful air pollutant) to 0%
Increase the proportion of persons served by community water systems who receive a supply of drinking water that meet the regulations of the Safe Drinking Water Act to 95%
Reduce water-borne disease outbreaks arising from water intended for drinking among persons served by community water systems to 2 outbreaks per year
Eliminate elevated blood levels in children to zero children

## 8.1 WATER QUALITY

The Water and Sewer Division in the Brookline Department of Public Works together with the Massachusetts Water Resources Authority (MWRA) supply wholesale water to the Town of Brookline. The MWRA's 3rd annual report which summarizes tests taken on the quality of its drinking water in 2000 found few contaminants in the reservoir water, and those found were within the EPA standards. The MWRA also tests reservoir water for pathogens or germs as they are commonly called, and all test results were well within State and federal standards.

## 8.2 LEAD AND CHILDREN

Between 1998 and 2000, a total of 4,189 children were screened for lead exposure in the Town of Brookline, and 2 cases of leading poisoning were detected.

### Lead and Children (1998-2000)

	Brookline	MA
Total Cases of elevated BLLs (>15DI)	13	3,788
Total number of children screened for lead exposure	4,189	732,243
Total number of lead poisoning cases (>25DI)	2	690

Childhood Lead Poisoning Prevention Program, Mass Department of Public Health, MassCHIP

v2.7 r259, 4/1/02

## **Section 9: Mortality**

Some of the leading causes of mortality and the associated risk factors have been discussed in the previous chapters. This chapter describes cause-specific mortality, and where appropriate, analyzes the data by age and gender.

### **Healthy People 2010**

Reduce coronary heart disease deaths to 166 per 100,000 population
Reduce stroke deaths to no more than 48 deaths per 100,000 population
Reduce the overall cancer death rate to no more than 159.9 deaths per 100,000 population
Reduce death from HIV infection to no more than 0.7 deaths per 100,000 population
Reduce death from chronic obstructive pulmonary disease (COPD) among adults to no more than 60 deaths per 100,000 population (aged 45 years and older)

Source: Healthy People 2010: Understanding and Improving, MassCHIP v2.7 r259.0, 1/28/2002

## 9.1 LEADING CAUSES OF MORTALITY

Between 1994 and 1998, there were a total of 2,164 deaths (581.4 per 100,000 persons) in Brookline. The leading causes of mortality were cancer (173.4 per 100,000) and heart disease (161.3 per 100,000).

### Cause specific mortality Age-Adjusted Rate Per 100,000 (1994-1998)

Cause of Death	Brookline		Massachusetts	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)
All causes	2,164	581.4	275,235	844.5
Heart disease	640	161.3	82,880	251.6
Cancer	566	173.4	69,325	218.9
Respiratory system diseases	260	62.2	30,289	91.0
Cerebrovascular disease	130	32.1	16,867	50.4
COPD	65	17	12,102	37.1
AIDS-related	20	6.2	2,939	9.3
Diabetes	38	9.5	6,797	21.1
Unintentional injury	36	10.4	6,193	19.1
Motor vehicle related	9	2.8	2,432	7.6
Suicide	15	5.4	2,477	7.8
Homicide	6	2.5	907	2.8
Age-Specific Mortality				
	Brookline		Massachusetts	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)
15-24	15	40.8	2,194	49.8
25-44	78	66.2	13,847	136.3
45-64	203	337.6	37,771	606.7
65-74	297	1638	53,465	2439.8
75+	1,562	6972	164,885	8346.3



## 9.2 AGE-SPECIFIC MORTALITY

Cause of mortality differs significantly with respect to those under and over the age of 44 years old. Suicide was a leading cause of mortality in those between the ages of 15-24 years (4 cases, 1994-1998). Cancer (all types) and heart disease were leading causes of death in people over 45 years of age.

### Leading Causes of Death By Age Age-Specific Rate Per 100,000 (1994-1998)

Cause of death	Brookline		MA	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)
<b>15-24 years old</b>				
Unintentional injuries	3	8.2 (0.0 - 17.4)	755	17.1 (15.9 - 18.4)
Suicide	4	10.9 (0.2 - 21.5)	319	7.24 (6.5 - 8.0)
<b>25-44 years old</b>				
AIDS/HIV	14	11.9 (5.7 - 18.1)	2,228	21.9 (21.0 - 22.9)
All Cancers	18	15.3 (8.2 - 22.3)	2,328	22.9 (22.0 - 23.9)
<b>45-64 years old</b>				
All Cancers	102	169.6 (136.7 - 202.5)	15,263	245.2 (241.3 - 249.0)
Heart disease	37	61.5 (41.7 - 81.3)	9,489	152.4 (149.4 - 155.5)
<b>65-74 years old</b>				
All Cancers	118	650.8 (533.7 - 767.8)	19,888	907.6 (895.0 - 920.1)
Heart disease	73	402.6 (310.4 - 494.8)	15,041	686.4 (675.4 - 697.3)
<b>75 years and older</b>				
All Cancers	326	1455.2 (1298.4 - 1611.9)	31,535	1596.3 (1578.8 - 1613.8)
Heart disease	522	2330.1 (2132.1 - 2527.6)	56,635	2866.8 (2843.5 - 2890.1)

### Leading causes of death by Gender 1999 (Comparability modified age-adjusted rate per 100,000)

	Brookline		MA	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)
<b>Cancer all</b>				
Male	40	158.84	7000	268.4
Female	54	119.61	6852	174.1

Circulatory heart disease				
Male	43	172.4	7256	292.13
Female	68	99.13	8283	176.4

Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation.  
Mass Dept of Public Health. MassCHIP, v2.7 r259.0, 3/4/2002