

HEALTHY BROOKLINE
VOLUME XIII



COMMUNITY HEALTH INDICATORS

Brookline Department of Public Health
2011

Table of Contents

Acknowledgements	2
Executive Summary	3
Section 1: Socio-demographic Information	7
Section 2: Natality	15
Section 3: Mortality	23
Section 4: Chronic Disease	29
Section 5: Communicable Diseases	37
Section 6: Environmental Health	43

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Executive Summary

The Brookline Department of Health publishes *Healthy Brookline* on an annual basis. Each volume presents data on the health status of the Brookline community in regard to a particular health issue. Previous reports have focused on Brookline Youth's Risk Behaviors (Volumes IV, VIII, and XI), Environmental Health Indicators (Volume X), and Brookline's 85 and older Seniors (Volume XII).

Healthy Brookline Volume XIII provides an updated community health assessment for Brookline including information on: socio-demographics, natality, mortality, chronic disease, communicable disease, and environmental health.

Methods

The primary data source for the health indicators in this report was the Massachusetts Community Health Information Profile (MassCHIP), developed by the Massachusetts Department of Public Health. Data from the Behavioral Risk Factor Surveillance Survey (BRFSS) was also used for some indicators. Additional health indicator data was provided by Brookline's Public Health Nurse/Epidemiologist as well as the Environmental Health Division of the Brookline Department of Public Health. There were two sources for the socio-demographic data. The 2010 Census Redistricting data was used to identify population size and race/ethnicity data. Other demographic data was obtained from the 2005-2009 American Community Survey. In some instances, multiple years of data were combined to make the data more reliable. This was done for all BRFSS data as multiple years of surveys were combined for this report. For each indicator, the most recent data available was used in this report.

Whenever possible and appropriate, Brookline data was compared with Massachusetts. Efforts were also made to transform crude counts into rates; however this was not done if the counts were so small as to make the rates unstable.

Technical Language

While every effort was made to present this report using plain, non-scientific language, some technical terms are necessary. The following are some of the commonly-found technical terms in this report:

Prevalence: Prevalence is the proportion of individuals that have a disease or condition at a given time. This is often expressed as a percentage.

Incidence: Incidence is the number of new cases of a disease during a given time among an at-risk population. Incidence is most often expressed as a rate.

Incidence rate: The incidence rate is a way of standardizing incidence to account for the population size. This is done in this report in order to compare incidence between Brookline and Massachusetts. To calculate the incidence rate, we divide the crude count by the population of interest and then multiply by 1,000 or 100,000 to get a whole number. Thus, an incidence rate is often expressed as the number of cases per 1,000 or 100,000 people over a period of time.

Age-Adjusted Rate: Age-adjusted rates are used to make comparisons between groups with different age distributions. In calculating an age-adjusted rate, a standard population distribution is used to adjust the rates to make the groups more comparable. This is used most often in mortality or hospitalization rates.

Key Findings

Nativity:

- Among singleton births in Brookline, less than 10% of births were preterm or low birthweight births from 2005-2008. Among multiple births in Brookline, over 50% of births were preterm and over 60% were low birthweight from 2005-2008.
- Over 90% of Brookline mothers seek prenatal care beginning in the first trimester, and less than 1% report tobacco use during pregnancy.

Mortality:

- The Premature Mortality Rate (PMR) in Brookline, indicating the number of people who die before the age of 75, has remained lower than the PMR in Massachusetts from 2003-2007. A 2010 report noted that Brookline also has the lowest PMR among the 30 largest communities in Massachusetts.
- The leading causes of death among Brookline residents are similar to those among Massachusetts residents. Heart disease and cancer make up nearly half of all deaths in both Brookline and Massachusetts.

Chronic Disease:

- In both Brookline males and females, the incidence of skin cancer and thyroid cancer were significantly higher than the state rates. In addition, the incidence of leukemia in Brookline males was also significantly higher than the state rate. However, the incidence of lung cancer in both males and females was significantly lower than the state rates. Most other cancer incidence rates were similar to the rates in Massachusetts.
- The prevalence of diabetes in Brookline is 2.4%, lower than Massachusetts (6.8%). The prevalence of obesity is also lower in Brookline (8.6%) than in Massachusetts (21%). In 2010, the Metropolitan Area Planning Council reported that the prevalence of adult obesity in Brookline was 10.6%, the lowest in the 101-member community region.
- Data collected by the Brookline School Health Services in 2007-2008 indicate that 20.4% of Brookline 1, 4, 7, and 10th grade students were overweight. Massachusetts data from 2006-2007 for the same grades show that 35% of students were overweight and 15.5% were obese.
- Among Brookline adults, 7.5% report being a current smoker, compared to 17.1% of Massachusetts adults.
- Among Brookline adults, 68.8% report meeting the current recommendation to get regular physical activity (30 minutes of more of moderate activity most days a week), compared to 52% of Massachusetts adults.

Communicable Disease:

- The rate of active tuberculosis infection in Brookline has remained low from 2003-2010.
- Brookline continues to report a wide variety of communicable diseases each year, with Lyme Disease and Hepatitis C being the most prevalent. There was a sharp jump in the number of influenza cases in 2009 due to the H1N1 pandemic.
- The prevalence of HIV/AIDS increased slightly, in contrast to previous time periods, due to antiretroviral drugs and other therapies which have successfully extended the lifespan of those living with HIV infection.

Environmental Health:

- The number of Brookline children with elevated blood lead levels is low, with only one case of elevated blood lead levels in 2006, and zero cases of lead poisoning from 2006-2010.
- Over 90% of Brookline residents report they do not allow smoking anywhere in their home.
- Between 2003-2009, 681 animals (mostly bats) were tested for rabies after potential exposure to humans. Fourteen animals tested positive for rabies during this time period.

Section 1: Socio-demographic Information

This section will present basic socio-demographic information about the town of Brookline and how it compares to Massachusetts. Included in this section:

- Population Size
- Age
- Race/Ethnicity
- Citizenship/Geographic Mobility
- Languages Spoken
- Education Levels
- Marital Status
- Income and Poverty
- Hospital Use

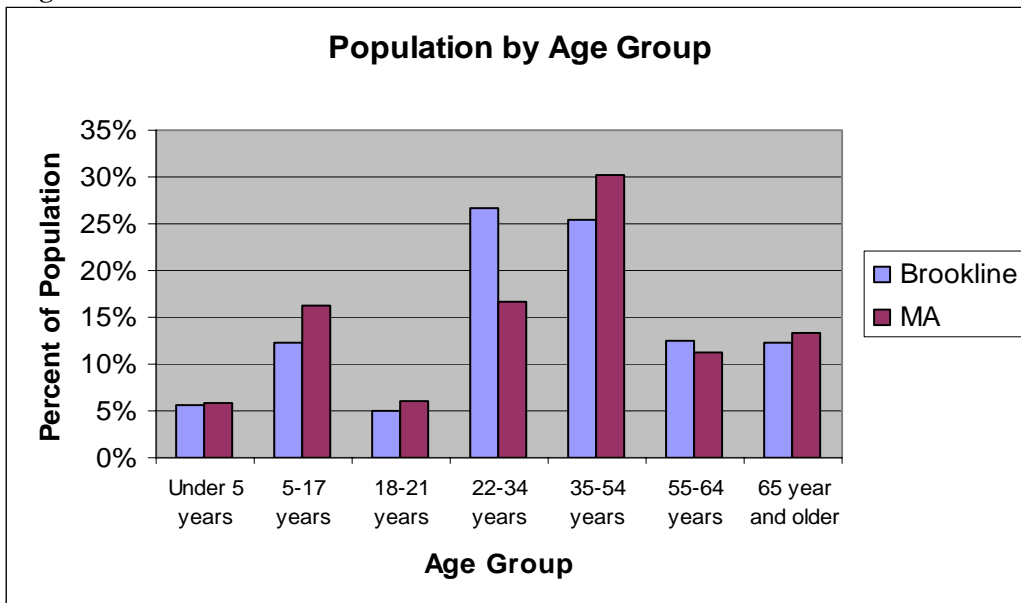
Population Size

According to the 2010 Census, the population of Brookline was 58,732. The population of Brookline has increased by about 3% since the 2000 Census (the 2000 Census population was 57,107).

Age/Sex

Figure 1.1 displays the population of Brookline and Massachusetts by age group. For most age groups, Brookline is similar to Massachusetts. However, Brookline has a higher percentage of young adults aged 22-34 (26.72%) than Massachusetts (16.7%).

Figure 1.1



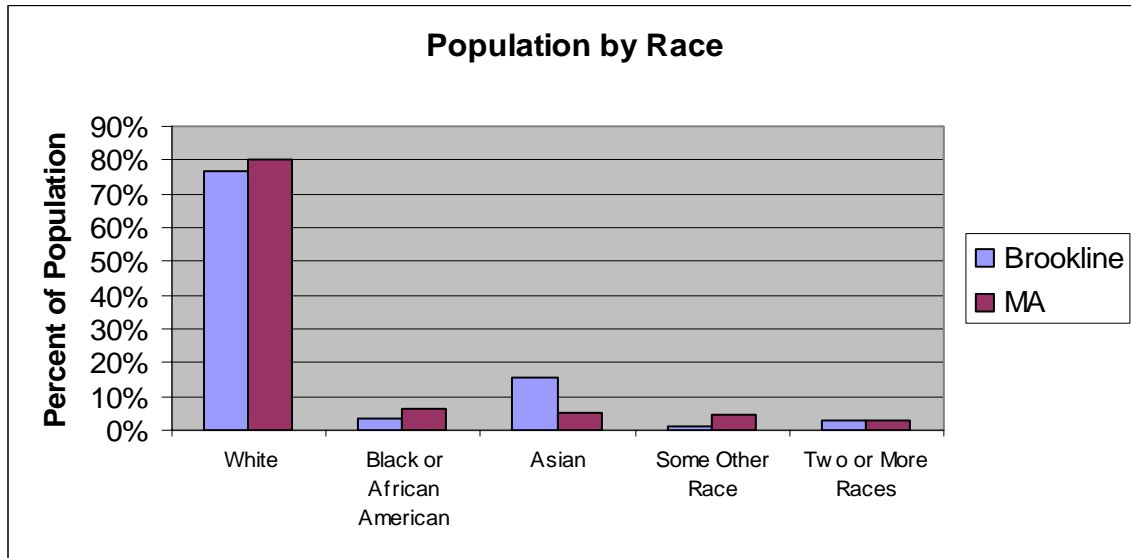
Source: U.S. Census Bureau; 2005-2009 American Community Survey 5-Year Estimates.

In both Brookline and Massachusetts, there are slightly more females than males (Brookline: 54.35% females, Massachusetts: 51.48% females).

Race/Ethnicity

White residents make up nearly 80% of the residents in Brookline. The next largest racial group in Brookline is Asian residents, making up 15% of the population. Figure 1.2 shows the racial groups in Brookline and Massachusetts, according to the 2010 Census.

Figure 1.2



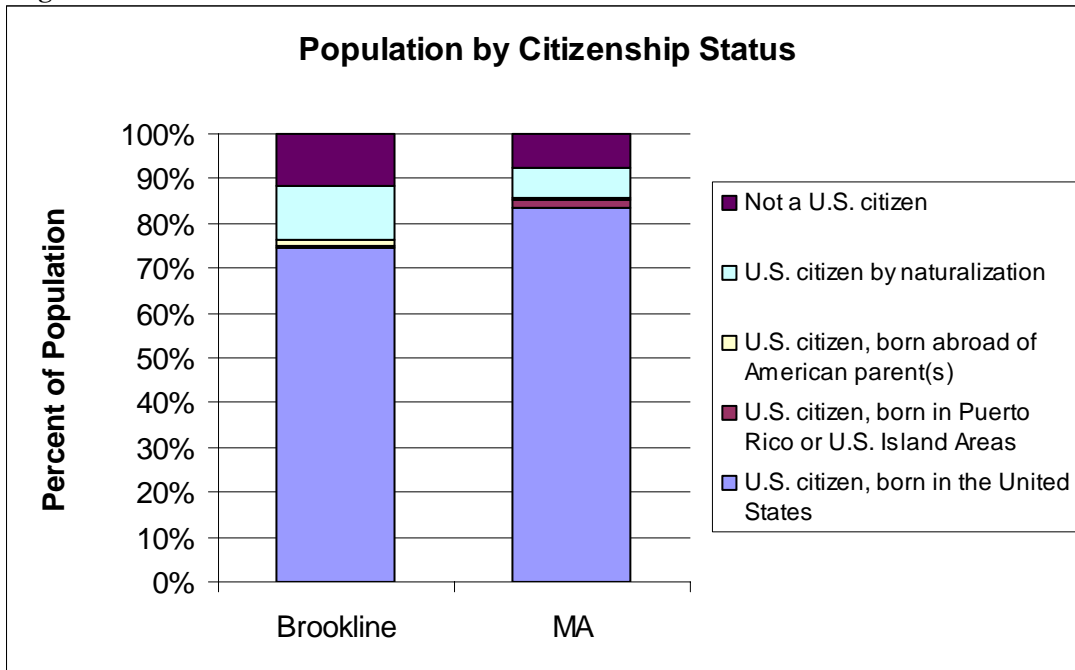
Source: U.S. Census Bureau; 2010 Census

Hispanic/Latino ethnicity is not included in the racial categories of the U.S. Census and is asked separately. As a part of the 2010 Census, 5% of Brookline residents and 9.6% of Massachusetts residents identified themselves as Hispanic or Latino.

Citizenship/Geographic Mobility

Approximately ten percent of Brookline residents are not US citizens and twelve percent are U.S. citizens by naturalization. As shown in Figure 1.3, these are both larger than the corresponding percentages among Massachusetts residents.

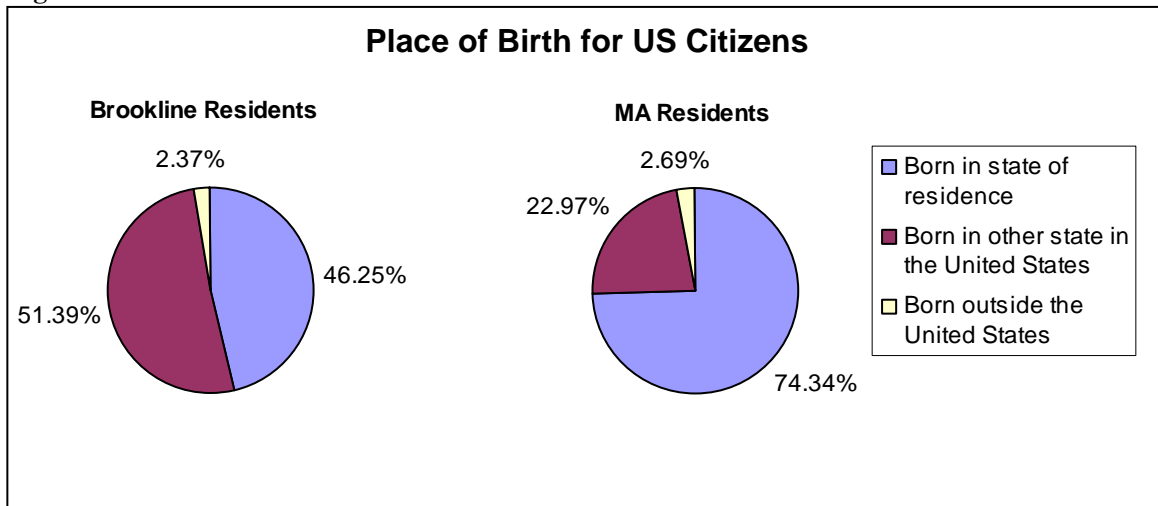
Figure 1.3



Source: U.S. Census Bureau; 2005-2009 American Community Survey 5-Year Estimates.

Even though the majority of residents in both Brookline and Massachusetts were born in the U.S., there are still differences in their place of birth, as shown in Figure 1.4. Less than half of Brookline residents who are U.S. citizens were born in Massachusetts compared to nearly three-quarters of Massachusetts residents.

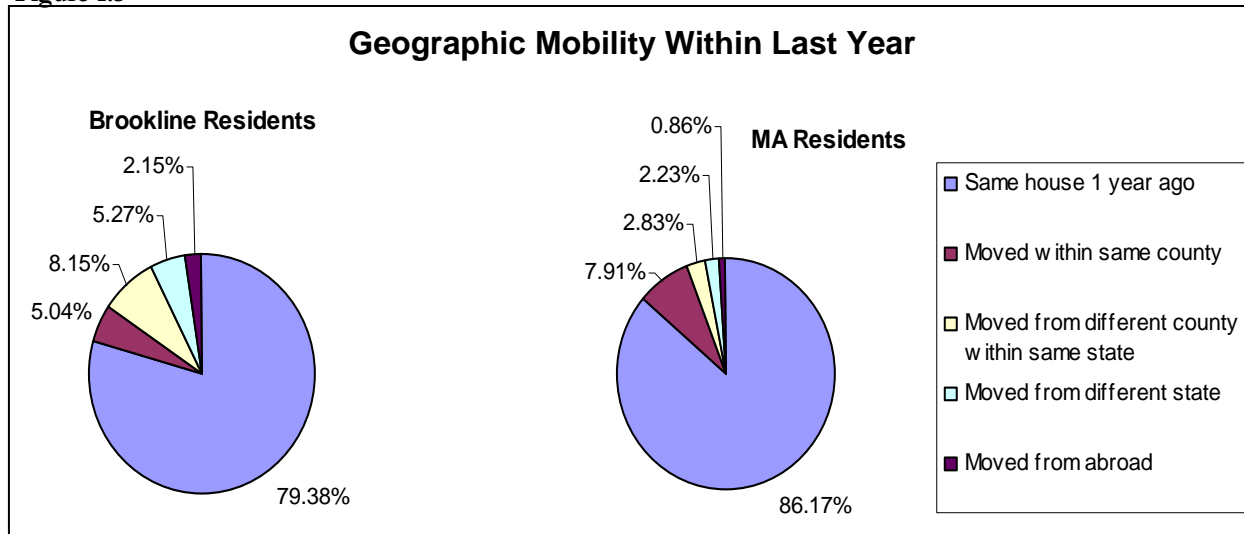
Figure 1.4



Source: U.S. Census Bureau; 2005-2009 American Community Survey 5-Year Estimates.

In addition, as displayed in Figure 1.5, Brookline residents show greater geographic mobility than Massachusetts residents. A greater percentage of Brookline residents moved to Brookline in the previous year from either another county in Massachusetts or another state than did Massachusetts residents in general. These data indicate that the population in Brookline is more transient than the population of Massachusetts in general.

Figure 1.5



Source: U.S. Census Bureau; 2005-2009 American Community Survey 5-Year Estimates.

Languages Spoken

Brookline residents speak a number of different languages at home. This is most likely due to the percentage of Brookline residents not born in the U.S. The percentage of residents who speak only English at home in Brookline (73.52%) is similar to Massachusetts (79.63%). However, languages spoken at home other than English differ between Brookline and the state. Figure 1.6 shows the most frequent languages spoken at home in both Brookline and Massachusetts. While there are some similarities, this chart shows that Brookline residents speak different languages than the state in general.

Figure 1.6

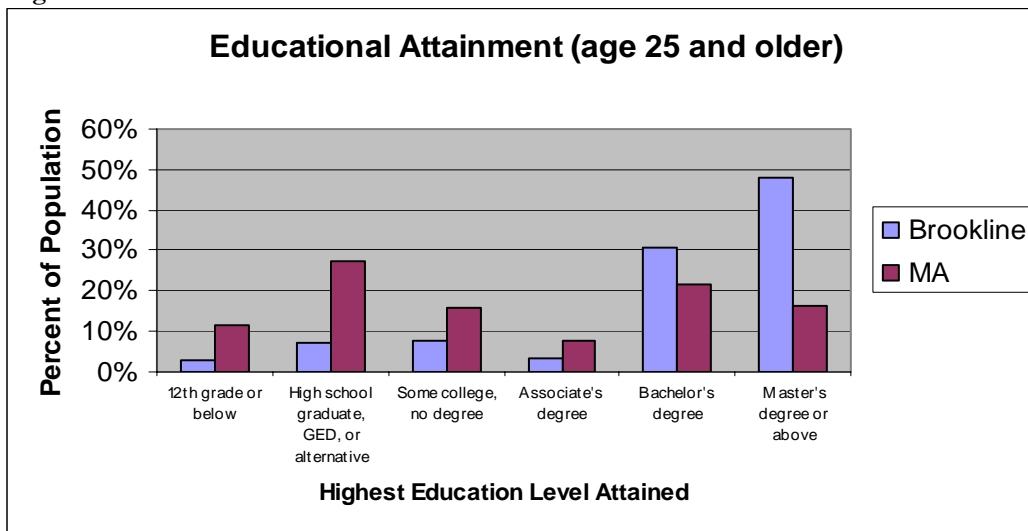
Languages Spoken at Home (other than English)				
	Brookline		Massachusetts	
	Language	Number (Percent of Population)	Language	Number (Percent of Population)
1	Chinese	3,207 (6.05%)	Spanish or Spanish Creole	431,636 (7.05%)
2	Spanish or Spanish Creole	2,292 (4.32%)	Portuguese or Portuguese Creole	188,290 (3.07%)
3	Russian	2,015 (3.80%)	Chinese	91,535 (1.49%)
4	Hebrew	901 (1.70%)	French (includes Patois, Cajun)	71,954 (1.17%)
5	Japanese	801 (1.51%)	French Creole	49,609 (0.81%)
6	French (includes Patois, Cajun)	696 (1.31%)	Italian	46,057 (0.75%)
7	Korean	688 (1.30%)	Russian	36,970 (0.60%)
8	Hindi	418 (0.79%)	Vietnamese	34,557 (0.56%)
9	German	329 (0.62%)	African languages	26,110 (0.43%)
10	Other Asian languages	273 (0.51%)	Greek	25,666 (0.42%)

Source: U.S. Census Bureau; 2005-2009 American Community Survey 5-Year Estimates.

Education Levels

Figure 1.7 displays the highest level of education achieved for residents over age 25 in Brookline and Massachusetts. More than three-quarters of Brookline residents have a bachelors degree or above, as compared to just over one-third of Massachusetts residents.

Figure 1.7

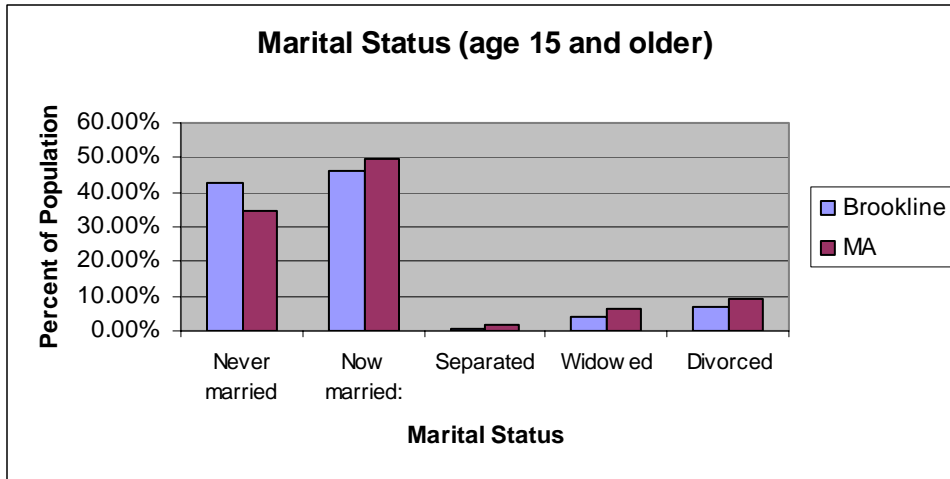


Source: U.S. Census Bureau; 2005-2009 American Community Survey 5-Year Estimates.

Marital Status

The marital status of Brookline and Massachusetts residents over 15 is shown in Figure 1.8. Brookline has a higher percentage of residents who have never been married than Massachusetts but is similar to the state in the other marital status categories.

Figure 1.8

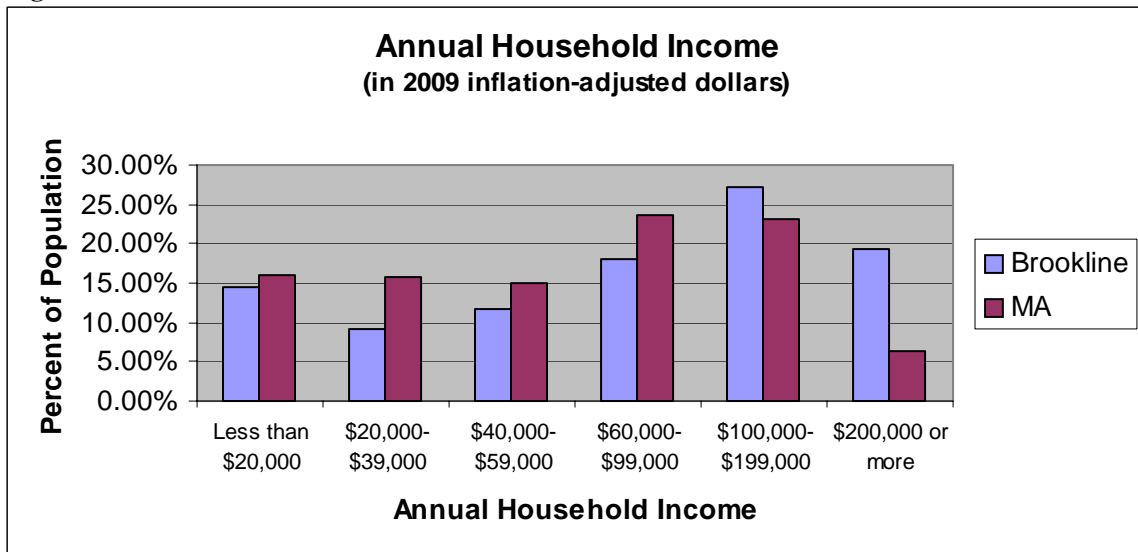


Source: U.S. Census Bureau; 2005-2009 American Community Survey 5-Year Estimates.

Income and Poverty

According to the U.S. Census Bureau, the median annual household income in the U.S. in 2008 was \$52,029. Figure 1.9 shows the annual household incomes for residents of Brookline and Massachusetts. More than half of the populations in both Brookline and Massachusetts have annual incomes above the median level. In addition, Brookline has a large number of high-income residents, as more than 45% of residents report an annual household income of over \$100,000.

Figure 1.9



Source: U.S. Census Bureau; 2005-2009 American Community Survey 5-Year Estimates.

Despite this large percentage of high-income residents, there are also those in Brookline who live below the federal poverty level. Just under 13% of Brookline residents are below the poverty level. This is slightly higher than the percentage of Massachusetts residents (just over 10%).

Hospital Use

In 2006, there were 5,724 hospitalizations of Brookline residents. Hospitalization rates are often expressed using the standardized hospitalization ratio (SHR). The SHR is a measure of comparison between two rates: in this case, Brookline and Massachusetts. An SHR of 100 indicates that the rates are equal. The 2006 SHR for Brookline was 81.70. This indicates that the number of hospitalizations of Brookline residents is significantly less than the state hospital rate.

Figure 1.10 shows hospital utilization by Brookline residents in 2006 . As can be seen from this table, more than 60% of Brookline residents who were hospitalized in 2006 received care at either Beth Israel Deaconess or Brigham & Women’s Hospitals.

Figure 1.10

Hospital Utilization in Brookline 2006		
	Hospital	Number of Hospitalizations (Percent)
1	Beth Israel Deaconess	1,905 (33.28%)
2	Brigham & Women’s	1,667 (29.12%)
3	Caritas St. Elizabeth’s Hospital	537 (9.38%)
4	Massachusetts General Hospital	383 (6.69%)
5	Faulkner Hospital	242 (4.23%)
6	Children’s Hospital	241 (4.21%)
7	Newton Wellesley Hospital	206 (3.60%)
8	New England Baptist Hospital	121 (2.11%)
9	Mount Auburn Hospital	94 (1.64%)
10	New England Medical Center (Tufts)	67 (1.17%)
11	Boston Medical Center - East Newton Street/ Harrison Avenue	64 (1.12%)
12	Cambridge Health Alliance - Cambridge/ Somerville/Whidden Memorial	44 (0.77%)
13	Beth Israel Deaconess - Needham	20 (0.35%)
14	Massachusetts Eye & Ear	19 (0.33%)
15	Lahey Clinic - Burlington/North Shore	17 (0.30%)

Source: U.S. Census Bureau; 2005-2009 American Community Survey 5-Year Estimates.

Section 2: Natality

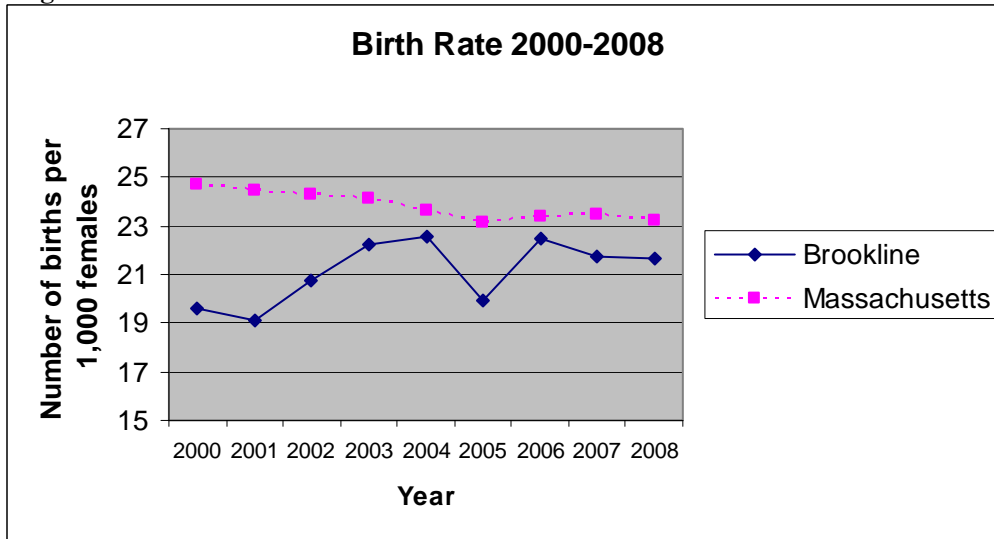
This section presents information about the Brookline birth population and maternal and infant health including:

- Birth rate
- Infant Mortality
- Preterm Births
- Low Birthweight Births
- Prenatal Care
- Breastfeeding
- Tobacco Use during Pregnancy

Births

In 2008, there were 666 births in Brookline, which equates to 21.66 births per 1,000 females. Figure 2.1 shows the birth rates in Brookline and Massachusetts from 2000-2008.

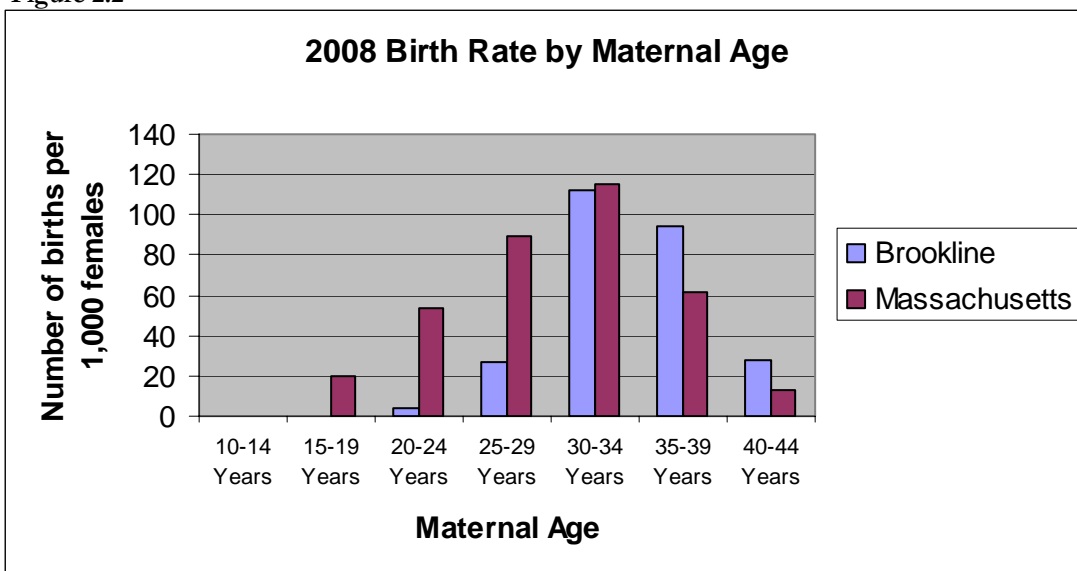
Figure 2.1



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 7/8/2010

Brookline differs from Massachusetts in regard to maternal age, as Brookline has more births in older women. As shown in Figure 2.2, in both Brookline and Massachusetts, the highest birth rates are in women between the ages of 30-34. However, Brookline has higher birth rates among women over age 35 than Massachusetts.

Figure 2.2



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 7/8/2010

The teen birth rate for Brookline is 2.41 births to teens 19 and younger per 1,000 female teens from 2005-2008. This is lower than the state teen birth rate from the same time period of 21.27 births per 1,000 female teens.

Infant Mortality

Infant Mortality is defined as the death of an infant prior to one year of age from any cause. This is usually expressed as the Infant Mortality Rate (IMR), calculated as the number of infant deaths per 1,000 live births.

In Brookline, the IMR is very low. As there are very few infant deaths each year in Brookline, multiple years of data were combined for this report. From 2005-2008, the IMR in Brookline was 2.27 deaths per 1,000 live births, which is lower than the state IMR for the same period (4.92 deaths per 1,000 live births). The IMR in Brookline from 2000-2004 was 2.46 deaths per 1,000 live births.

Multiple Births

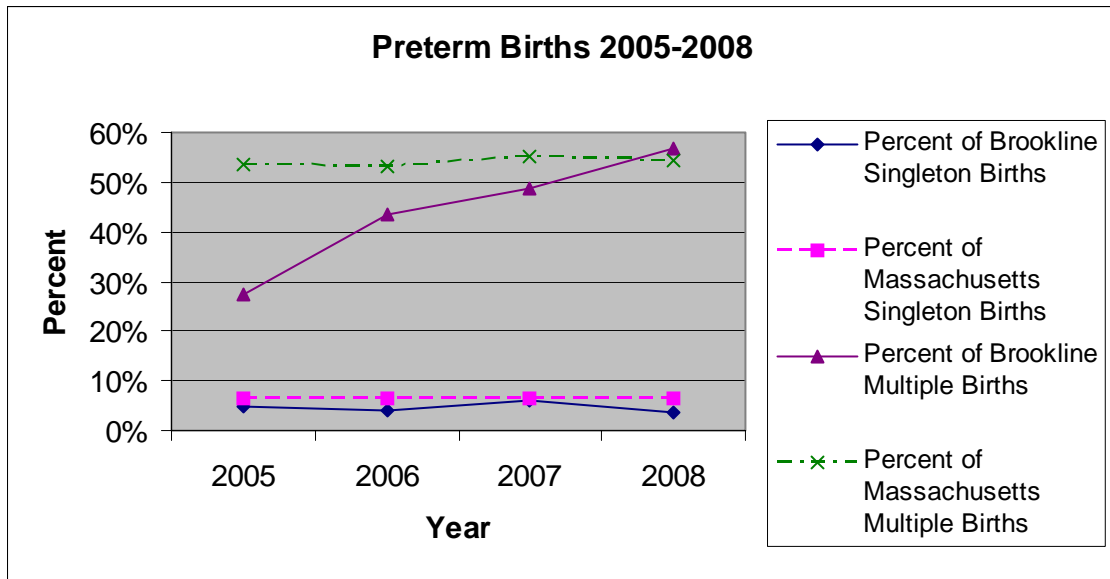
In 2008, 7.66% of births in Brookline were multiple births (twins or more), compared to 4.54% of births in Massachusetts. Multiple births can be a factor in both preterm and low birthweight births.

Preterm Births

A preterm birth is commonly defined as an infant born at less than 37 weeks gestational age. This is a leading cause of infant death and can put an infant at an increased risk of lifetime health problems, including breathing problems, mental retardation, and other conditions.

The preterm birth rate in Brookline in 2008 was 76.58 preterm births per 1,000 live births and the rate in Massachusetts was 85.18 preterm births per 1,000 live births. As multiple births are a confounder for preterm birth, preterm births are examined separately for singleton and multiple births. Figure 2.3 shows the percentage of preterm births in Brookline and Massachusetts from 2005-2008, stratified by multiple birth status. Among singleton births, the percentage of preterm births in both Brookline and Massachusetts was below 10% in 2008. Among multiple births, however, the percentage of preterm births was over 50% in both Brookline and the state in 2008.

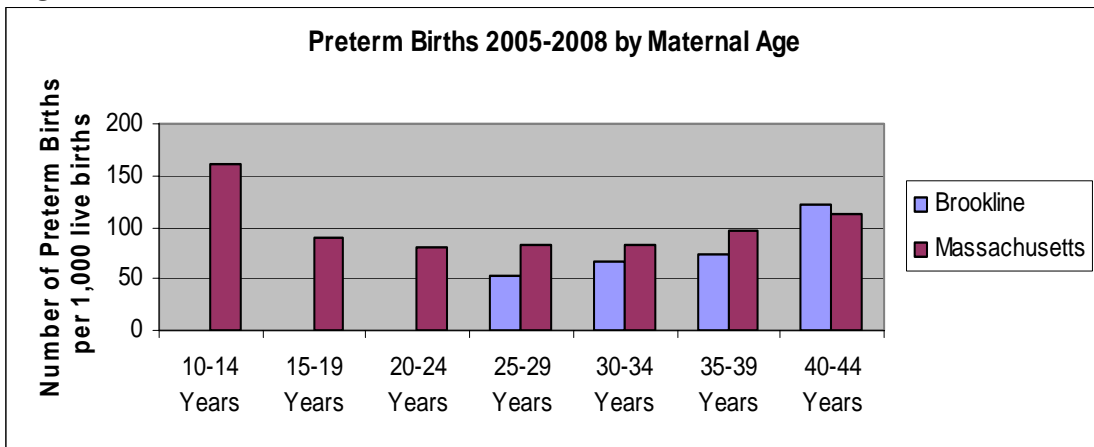
Figure 2.3



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

Another important confounder for preterm birth is maternal age, as the risk of preterm birth increases as a woman gets older. Figure 2.4 shows preterm birth rates by maternal age. For most age categories, Brookline has a lower preterm birth rate than the state. However, for births to women aged 40-44, Brookline has a higher preterm birth rate than the state.

Figure 2.4



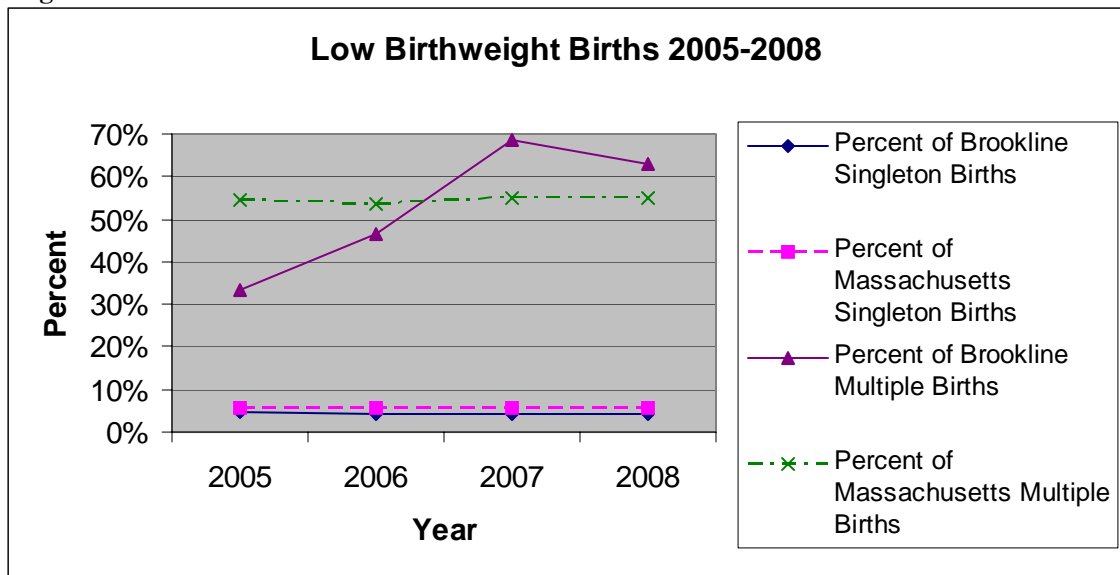
Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 7/8/2010

Low Birthweight Births

Low birthweight infants (LBW) are infants who weigh less than 2,500 grams (5.5 pounds) at birth. Similar to preterm births, LBW infants are at an increased risk for infant mortality and morbidity, and have an increased risk of delayed development compared with infants of normal weight.

In 2008 the LBW rate in Brookline was 87.09 low birthweight births per 1,000 live births and the state rate of 77.37 low birthweight births per 1,000 live births. Similar to preterm births, multiple births are a confounder for LBW births, so once again, singletons and multiple births will be examined separately. Figure 2.5 shows the percentage of LBW births in Brookline and Massachusetts from 2005-2008, stratified by multiple birth status. Among singleton birth, the percentage of LBW births in both Brookline and Massachusetts was below 10% in 2008. Among multiple births in 2008, however, the percentage of preterm births was over 60% in Brookline and over 50% in Massachusetts.

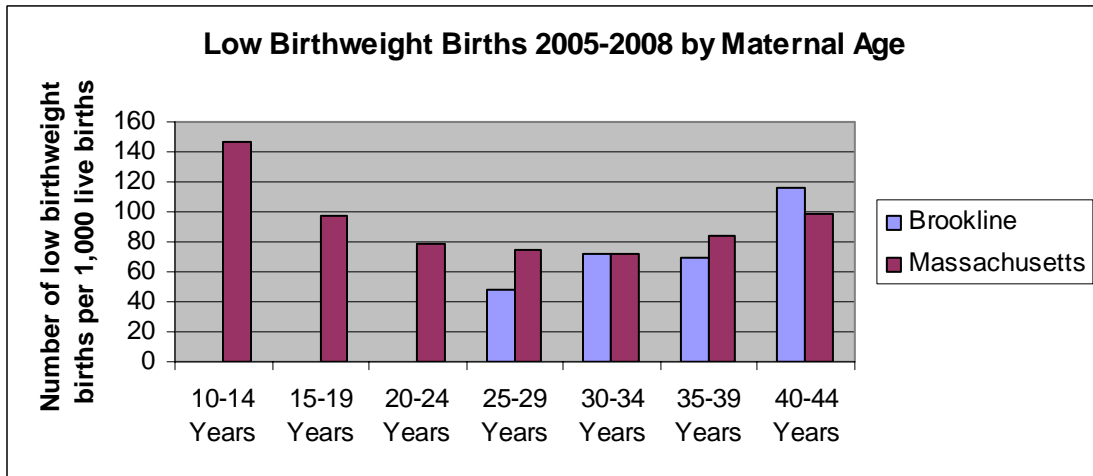
Figure 2.5



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 3/21/2011

Maternal age is also a confounder for LBW birth. Figure 2.6 shows LBW by maternal age from 2005-2008. For most age categories, Brookline has a lower LBW rate than the state, with the exception of women ages 30-34 and 40-44. The Brookline numbers for women under age 24 were too small to be included in this analysis.

Figure 2.6

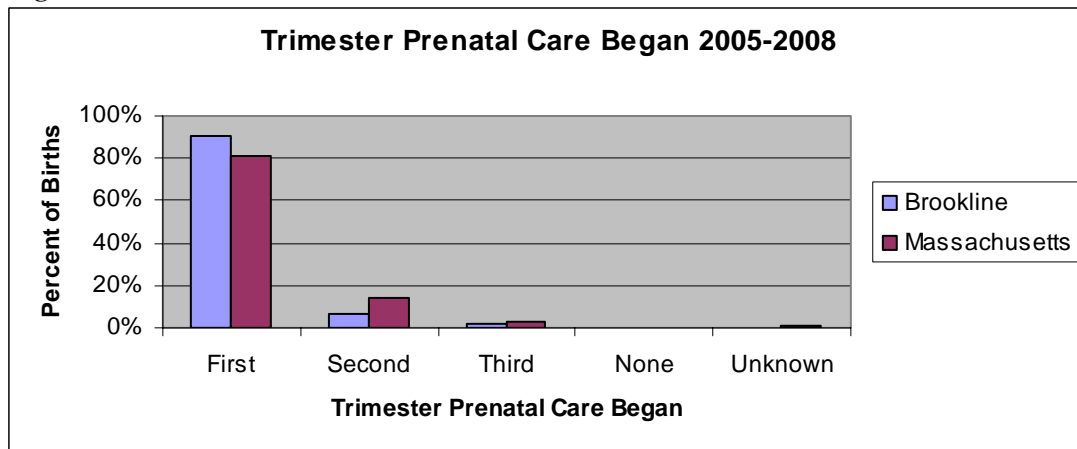


Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 7/8/2010

Prenatal Care

It is recommended that women seek prenatal care beginning in the first trimester of pregnancy, as this can improve the health of both the mother and fetus. As shown in Figure 2.7, over 90% of women in Brookline start prenatal care in the first trimester, compared to 83% in Massachusetts.

Figure 2.7

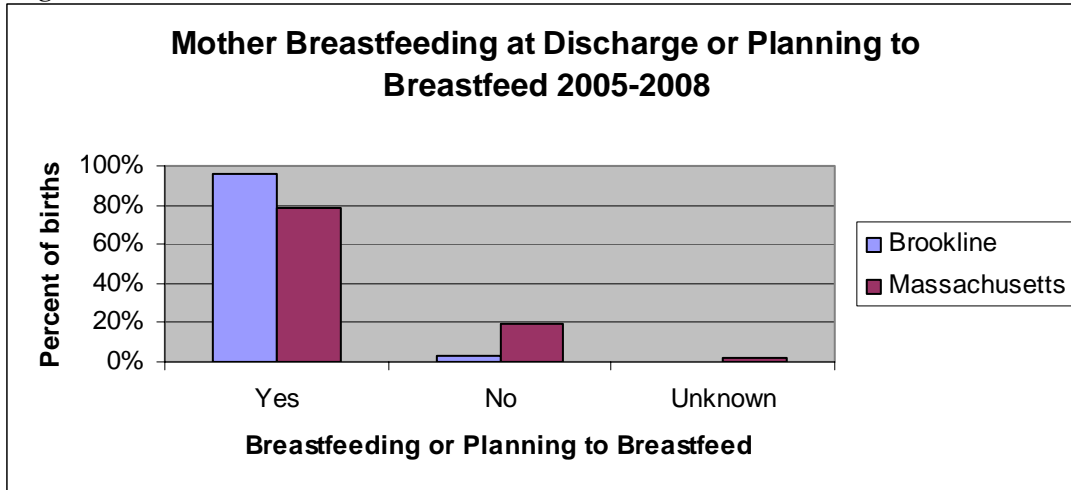


Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 7/15/2010

Breastfeeding

Breastfeeding has many known health benefits for both the mother and infant. Figure 2.8 displays the percentage of women who are breastfeeding at hospital discharge or who are planning to breastfeed. Over 95% of Brookline mother breastfeed at discharge or plan to, compared to 78% of all Massachusetts mothers.

Figure 2.8



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 7/15/2010

Tobacco Use During Pregnancy

From 2005-2008, only 0.42% of women in Brookline reported using tobacco during pregnancy. In Massachusetts, the percentage was 7.24%.

Section 3: Mortality

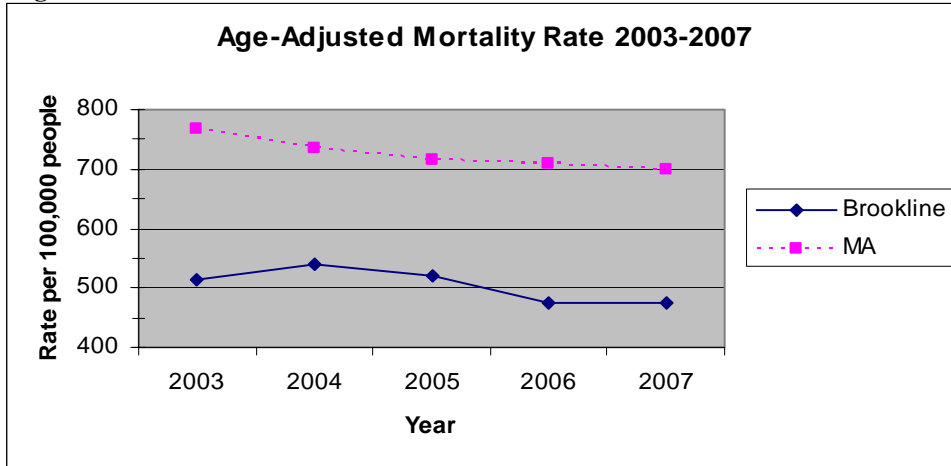
This section presents information about mortality in Brookline. It includes the following indicators:

- Mortality Rate
- Premature Mortality Rate
- Leading Causes of Death
- Motor Vehicle Related Deaths
- Suicides

Mortality Rate

In 2007 the mortality rate in Brookline was 475 deaths per 100,000 people. In Massachusetts the mortality rate was 699 deaths per 100,000 people. Figure 3.1 shows the mortality rates in Brookline and Massachusetts from 2003-2007.

Figure 3.1

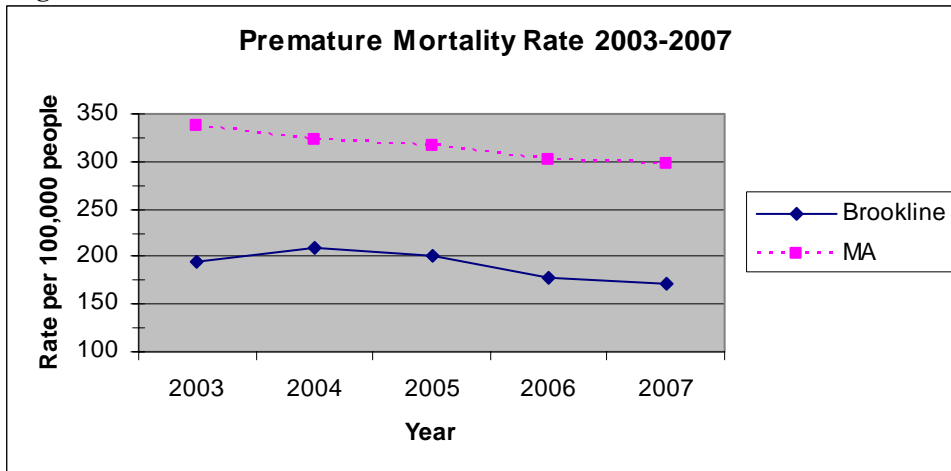


Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 8/24/2010

Premature Mortality Rate

Another measure of mortality in a community is the Premature Mortality Rate (PMR). This indicates the number of people who die before the age of 75. The PMR is considered to be a good measure of the health status of a population. Figure 3.2 displays the Premature Mortality Rate in Brookline and Massachusetts from 2003-2007.

Figure 3.2



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 8/24/2010

The PMR in Brookline is not only lower than the state, but also lower than other similar communities. A 2010 report by the Massachusetts Department of Public Health noted that Brookline has the lowest PMR among the 30 Massachusetts communities with the largest populations.

Leading Causes of Death

Figure 3.3 shows the leading causes of death in Brookline as compared to Massachusetts. The leading causes of death are similar, with heart disease and cancer making up nearly half of all deaths in both Brookline and Massachusetts from 2005-2007.

Figure 3.3

Leading Causes of Death 2005-2007				
	Brookline		Massachusetts	
	Cause	Number (Percent of All Causes)	Cause	Number (Percent of All Causes)
1	Heart Disease	244 (24.18%)	Cancer	39,495 (24.72%)
2	Cancer	240 (23.79%)	Heart Disease	38,874 (24.33%)
3	Mental Disorders	77 (7.63%)	Stroke	8,557 (5.36%)
4	Stroke	65 (6.44%)	Mental Disorders	7,837 (4.91%)
5	Pneumonia and Influenza	57 (5.65%)	Chronic Lower Respiratory Diseases	7,497 (4.69%)
6	Heart Failure	38 (3.77%)	Unintentional Injuries	6,166 (3.86%)
7	Alzheimer's Disease	30 (2.97%)	Heart Failure	5,290 (3.31%)
8	Nephritis	26 (2.58%)	Pneumonia and Influenza	5,208 (3.26%)
9	Chronic Lower Respiratory Disease	25 (2.48%)	Alzheimer's Disease	4,886 (3.06%)
10	Unintentional Injuries	25 (2.48%)	Nephritis	4,149 (2.6%)

Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 12/3/2010

In both Boston and Massachusetts lung, colorectal, breast, pancreatic and prostate cancer are the leading causes of cancer mortality.

As leading causes of death differ by age, it is important to look at this data broken down by age group. Figure 3.4 displays the leading causes of death in each age group for Brookline and Massachusetts from 2005-2007. The causes of death are fairly similar between Brookline and Massachusetts with the major difference being that while homicide is a leading cause of death in some age groups in Massachusetts, it is not in Brookline.

Figure 3.4

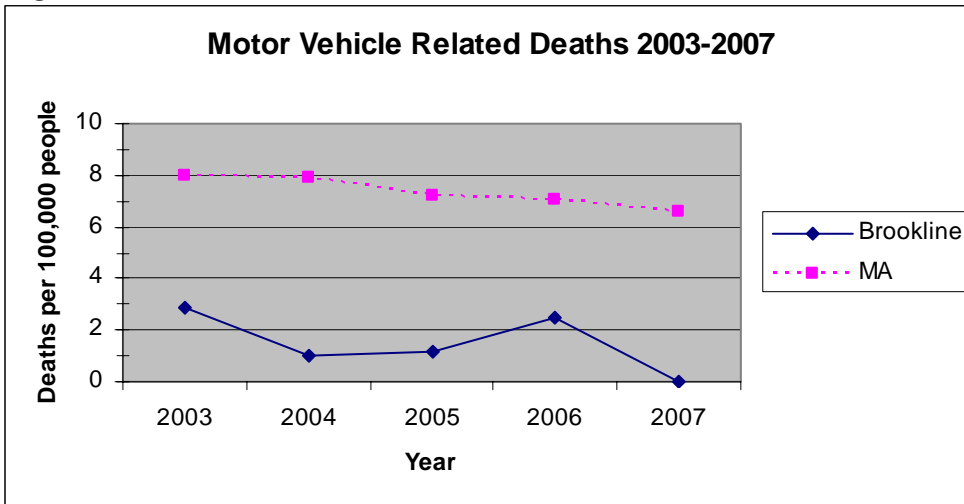
Leading Causes of Death By Age Group 2005-2007						
	Less than 1 Year Old	1-14 Years Old	15-24 Years Old	25-44 Years Old	45-64 Years Old	65+ Years Old
Brookline	Perinatal Conditions (<5)	Cancer (<5)	Unintentional Injuries (<5)	Cancer (5)	Cancer (45)	Heart Disease (219)
	Congenital Abnormalities (<5)	Septicemia (<5)	Major Cardiovascular Disease (<5)	Unintentional Injuries (<5)	Heart Disease (21)	Cancer (186)
	Heart Disease (<5)	Mental Disorders (<5)	Endocrine, Nutritional, Metabolic, Immune Disorders (<5)	Heart Disease (<5)	Unintentional Injuries (6)	Mental Disorder (75)
			Suicide (<5)	Chronic Liver Disease (<5)	Suicide (5)	Stroke (63)
					Chronic Liver Disease (<5)	Pneumonia and Influenza (57)
Total for Age Group	5	(<5)	6	19	103	873
Massachusetts	Perinatal Abnormalities (670)	Unintentional Injuries (84)	Unintentional Injuries (652)	Unintentional Injuries (1,712)	Cancer (9,592)	Heart Disease (33,195)
	Congenital Abnormalities (184)	Cancer (62)	Homicide (224)	Cancer (986)	Heart Disease (4,853)	Cancer (28,752)
	SIDS (78)	Congenital Abnormalities (28)	Suicide (147)	Heart Disease (735)	Unintentional Injuries (1,597)	Stroke (7,811)
	Unintentional Injuries (17)	Homicide (24)	Cancer (99)	Suicide (532)	Chronic Liver Disease (848)	Mental Disorder (6,998)
	Heart Disease (15)	Heart Disease (17)	Heart Disease (58)	Homicide (206)	Diabetes (744)	Chronic Lower Respiratory Disease (6,657)
Total for Age Group	1,140	365	1,465	6,149	25,575	125,062

Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 12/3/2010

Motor Vehicle Related Deaths

In 2007, there were no reported motor vehicle related deaths in Brookline. Figure 3.6 shows the rate of reported motor vehicle related deaths from 2003-2007.

Figure 3.5

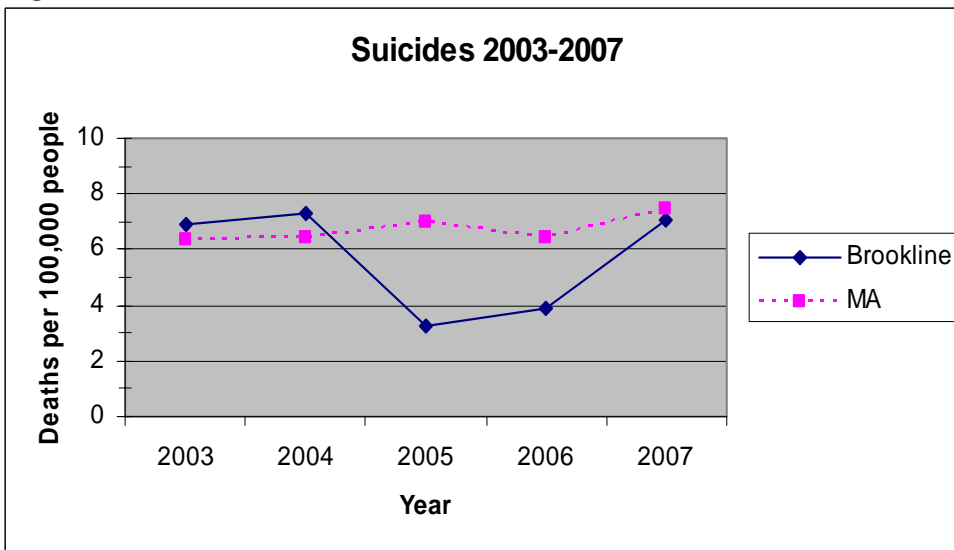


Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 11/5/2010

Suicides

Suicides are another leading cause of injury-related mortality. The rates of suicide in Brookline and Massachusetts are shown in Figure 3.6.

Figure 3.6



Source: Registry of Vital Records and Statistics, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 11/5/2010

Section 4: Chronic Disease

This section presents information about chronic disease in Brookline, including disease measures as well as behavioral risk factors. Specifically, this section covers:

- Cancer Incidence
- Cancer Screenings
- Heart Disease
- Diabetes and Obesity
- Alcohol Use
- Smoking
- Regular Physical Activity
- Fruit and Vegetable Consumption

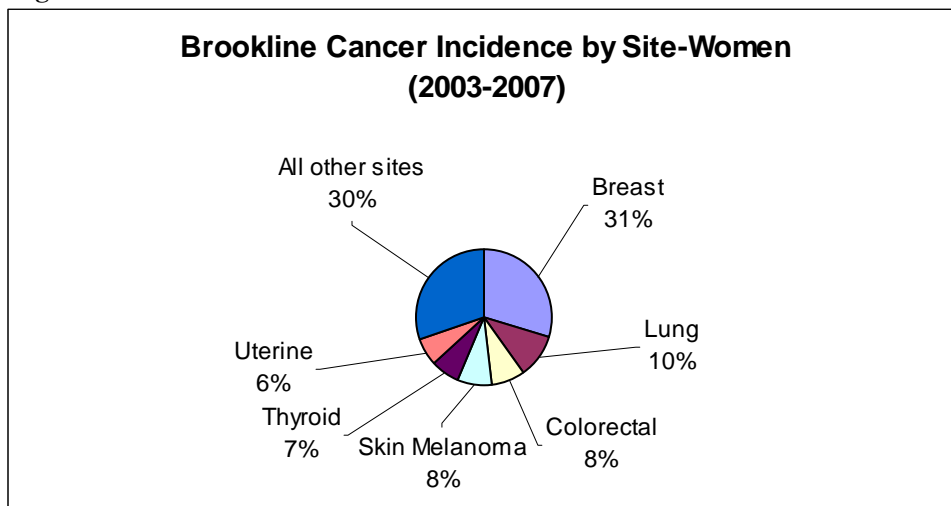
Cancer Incidence

Cancer refers to a group of diseases caused when cells divide abnormally and uncontrollably and can invade other organs and tissues. When describing cancer incidence, the indicator often used is the Standardized Incidence Ratio (SIR). The SIR is used to compare two rates—in this case Brookline and Massachusetts. An SIR of 100 indicates that the incidence in Brookline is equal to the state.

From 2003-2007, there were 1,541 cases of cancer diagnosed in Brookline, 717 (SIR: 99.6) in males and 824 (SIR: 106.0) in females. These numbers are not significantly different than the state rate.

Figure 4.1 shows cancer incidence by site for women from 2003-2007 in Brookline. Breast cancer was the most commonly diagnosed cancer among females in Brookline from 2003-2007, representing approximately 31% of all new cancer cases in females.

Figure 4.1

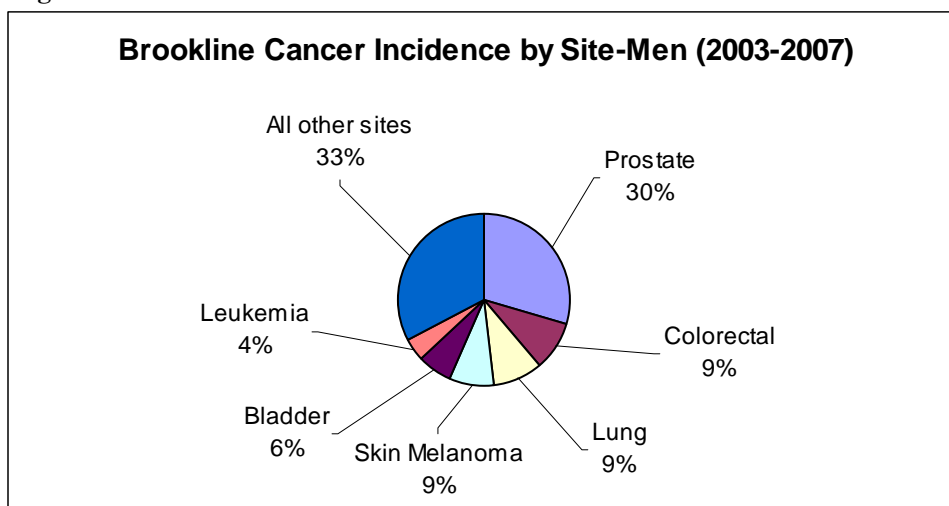


Source: Cancer Incidence in Massachusetts 2003-2007, City and Town Supplement. Massachusetts Cancer Registry, Massachusetts Department of Public Health 2010

In Brookline females, rates of melanoma of skin (skin cancer-SIR: 203.5) and thyroid cancer (SIR: 154.1) were significantly higher than the state rates from 2003-2007. Rates of breast (SIR: 112.7), colorectal (SIR: 84.3) and uterine (SIR: 110.5) cancers were not significantly different than Massachusetts and lung cancer rates (SIR: 80) in females were significantly lower than the state rates.

Figure 4.2 displays cancer incidence by site for men from 2003-2007 in Brookline. Prostate cancer was the most commonly diagnosed cancer in Brookline males from 2003-2007, representing approximately 30% of all new cancer diagnoses in men.

Figure 4.2



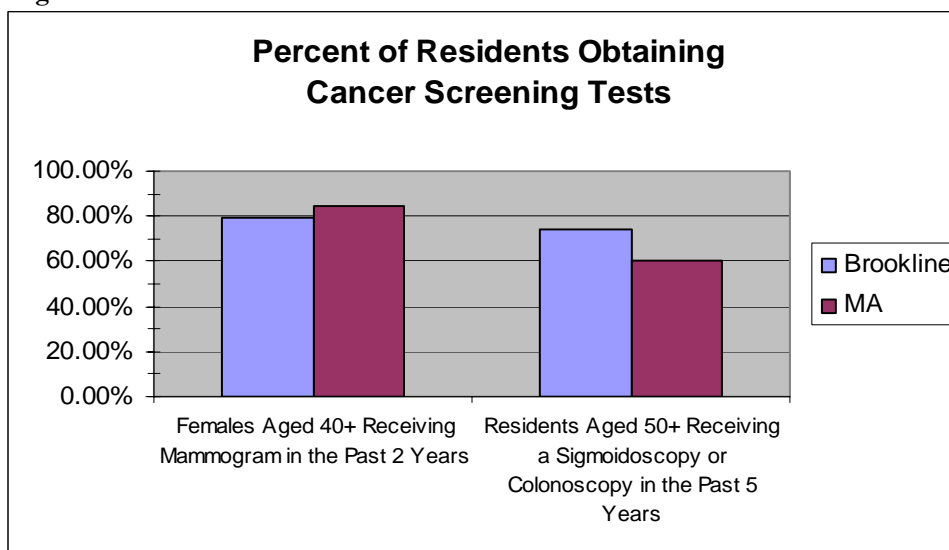
Source: Massachusetts Cancer Registry, Bureau of Health Statistics Research and Evaluation, Massachusetts Department of Public Health, MassCHIP v3.0 r234, 7/29/10

Rates of melanoma of skin (skin cancer-SIR: 177.5), leukemia (SIR: 164.1), and thyroid (SIR: 282.8) cancers in Brookline males were significantly higher than the state rates from 2003-2007. Prostate (SIR: 106.7), colorectal (SIR: 90.9) and bladder (SIR: 84.8) cancer rates were not significantly different than Massachusetts, and lung cancer rates (SIR: 67.6) in males were significantly lower than the state rates.

Cancer Screenings

There are tests recommended to screen for certain cancers. Figure 4.3 displays the percentage of residents who obtain common screening tests for breast and colorectal cancers.

Figure 4.3



Source: Brookline Data: MDPH BRSS 2005-2009, MA Data: MDPH BRSS 2005-2008

Screening for breast cancer is often done through mammography and is typically recommended for women over 40. From 2005-2009, 74.1% of Brookline women over age 40 reported having had a mammogram within the past two years. Among Massachusetts women from 2005-2008, 84.6% of women reported having a mammogram.

Sigmoidoscopy and colonoscopy are tests that can be used to screen for colorectal cancer and are recommended for individuals over age 50. From 2005-2009, 74.1% of Brookline residents over age 50 reported having a sigmoidoscopy or colonoscopy within the past five years. Among Massachusetts residents over age 50 from 2005-2008, 60.7% reported having a sigmoidoscopy or colonoscopy.

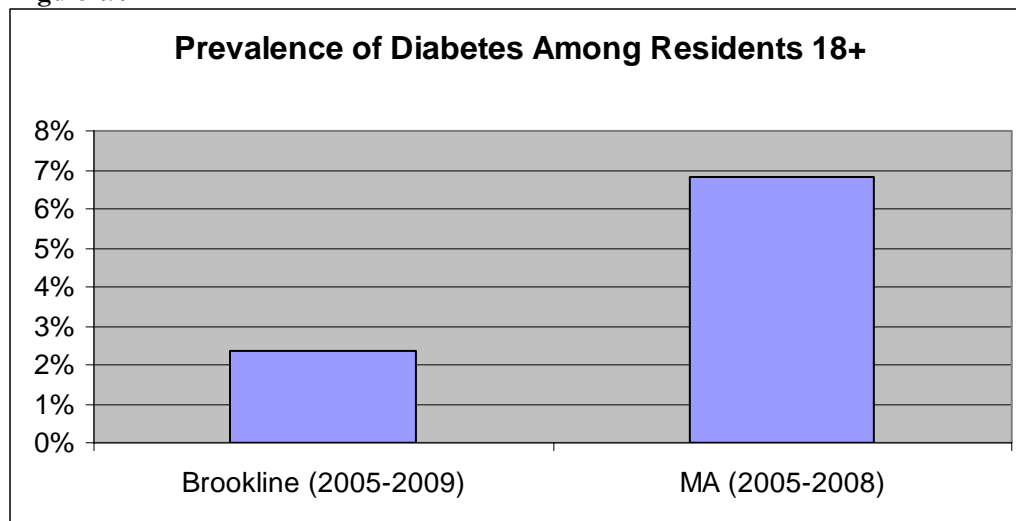
Heart Disease

From 2005-2009 in Brookline, 4.2% of Brookline residents over age 35 reported having angina (chest pain) or coronary heart disease. This is similar to the prevalence in Massachusetts (5.3% from 2005-2008).

Diabetes and Obesity

As shown in Figure 4.4, the prevalence of diabetes in Brookline from 2005-2009 among residents over age 18 was 2.4%, compared to 6.8% for Massachusetts' residents over age 18 from 2005-2008.

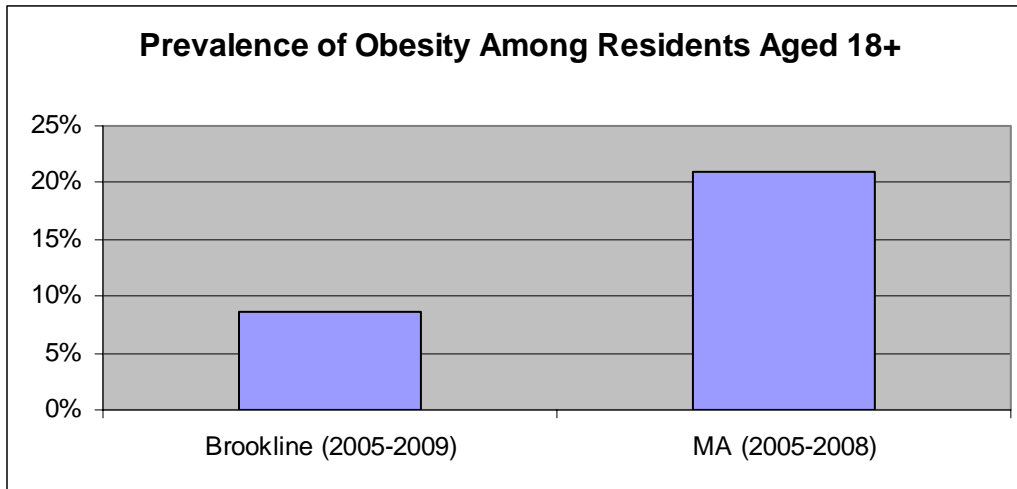
Figure 4.4



Source: Brookline Data: MDPH BRFSS 2005-2009, MA Data: MDPH BRFSS 2005-2008

Obesity is often discussed in conjunction with diabetes, as those who are obese are likely to suffer from diabetes. A person is considered obese if he or she has a Body Mass Index (BMI) of 30 or higher. BMI is calculated using an individual's weight and height. Figure 4.6 shows obesity prevalence in Brookline and Massachusetts for residents over age 18. Similar to diabetes, Brookline has a lower prevalence of obesity than Massachusetts (8.6% in Brookline, 21% in Massachusetts).

Figure 4.5



Source: Brookline Data: MDPH BRFS 2005-2009, MA Data: MDPH BRFS 2005-2008

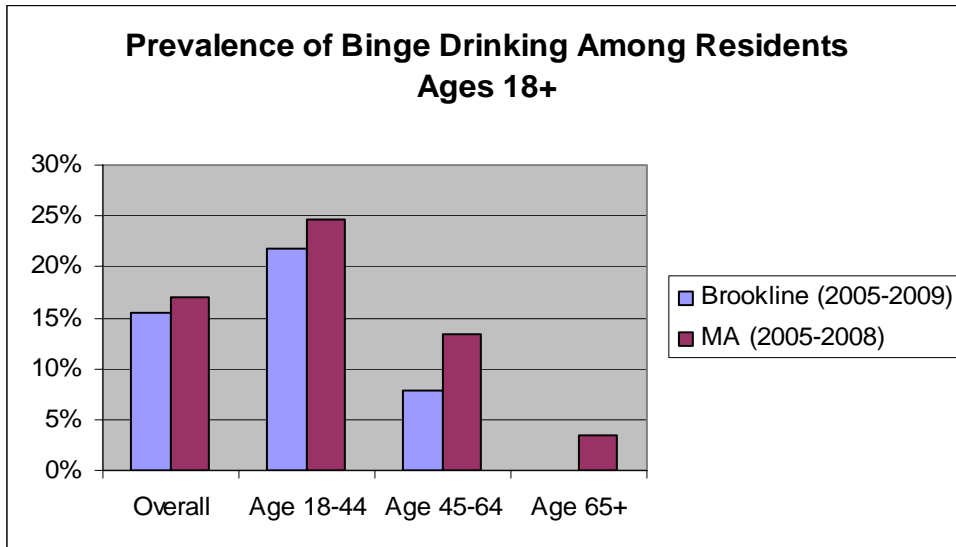
Brookline has been recognized for having the lowest obesity rate in the Metropolitan Boston region. A report by the Metropolitan Area Planning Council in 2010 reported the prevalence of adult obesity in Brookline was 10.6%, the lowest in the 101-member community region.

As childhood obesity has become a large problem in the U.S., it is important to look at how this issue affects Brookline. Data collected by the Brookline School Health Services in 2007-2008 indicate that 20.4% of Brookline 1, 4, 7, and 10th grade students had a BMI over the 85th percentile (considered overweight) and 8.4% had a BMI over the 95th percentile (considered obese). Data from Massachusetts students in the same grades in 2006-2007 showed that 35% were considered overweight and 15.5% were considered obese.

Alcohol Use

As previously mentioned, there are certain behaviors which can be risk factors for chronic diseases. Alcohol use is one of these risk factors. As alcohol affects many organ systems in the body, unhealthy use can lead to or complicate chronic diseases such as cancers, heart disease and diabetes. Binge drinking is one example of unhealthy use of alcohol. Binge drinking is defined as the consumption of five or more drinks for men, or four or more drinks for women on any one occasion. Figure 4.7 shows the prevalence of binge drinking in Brookline and Massachusetts broken down by age group. The prevalence of binge drinking is similar in Brookline and Massachusetts. For Brookline residents over age 65, there was insufficient data to determine a percentage.

Figure 4.6



Source: Brookline Data: MDPH BRFSS 2005-2009, MA Data: MDPH BRFSS 2005-2008

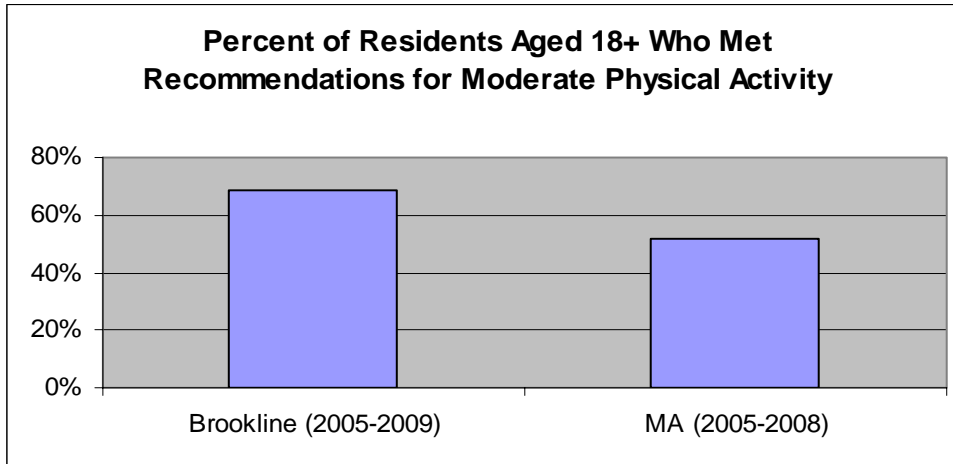
Smoking

Another risk behavior is smoking, which like alcohol is associated with a number of chronic diseases. In fact, the U.S. Surgeon General has repeatedly said that tobacco use is the leading preventable cause of disease and death in the United States. Among Brookline adults, 7.5% report being a current smoker. This is lower than the percentage of Massachusetts adults (17.10%).

Physical Activity

Currently, it is recommended that individuals get regular physical activity, defined as 30 minutes or more of moderate activity most days a week. This physical activity can help to prevent some chronic diseases. Figure 4.8 displays the percent of residents in Brookline and Massachusetts over age 18 who meet this recommendation. As shown in the graph, Brookline has a higher percentage of residents meeting this recommendation (68.8%) compared to Massachusetts (52%).

Figure 4.7



Source: Brookline Data: MDPH BRFSS 2005-2009, MA Data: MDPH BRFSS 2005-2008

Fruit and Vegetable Consumption

Dietary patterns are also related to many chronic diseases. Specifically, the United States Department of Agriculture recommends that people eat five or more servings of fruit and vegetables daily. Only 29.3% of Brookline residents over age 18 report meeting this recommendation, which is similar to the percentage of Massachusetts residents (28.1%).

Section 5-Communicable Diseases

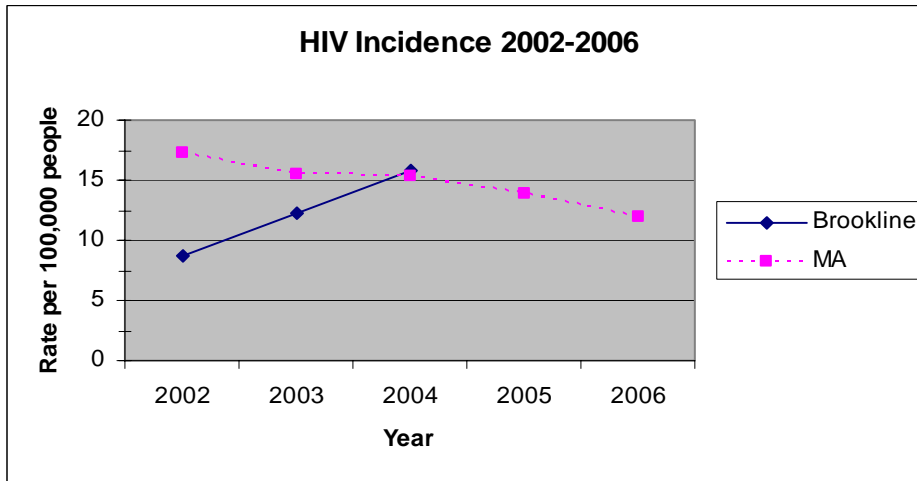
This section reports data regarding communicable or infectious diseases. In addition to reporting general information about communicable diseases in Brookline, this report provides details regarding:

- HIV/AIDS
- Sexually Transmitted Infections (STIs)
- Tuberculosis
- Incidence of Other Reportable Diseases

HIV/AIDS

Human immunodeficiency virus (HIV) is a virus spread primarily through unprotected sex and shared contaminated injection equipment. The incidence of HIV in Brookline and Massachusetts from 2002-2006 is displayed in Figure 5.1. Less than five new cases were reported in Brookline in 2005 and 2006, so these data points do not appear on the chart. This drop in new HIV cases is probably attributed to increased prevention efforts.

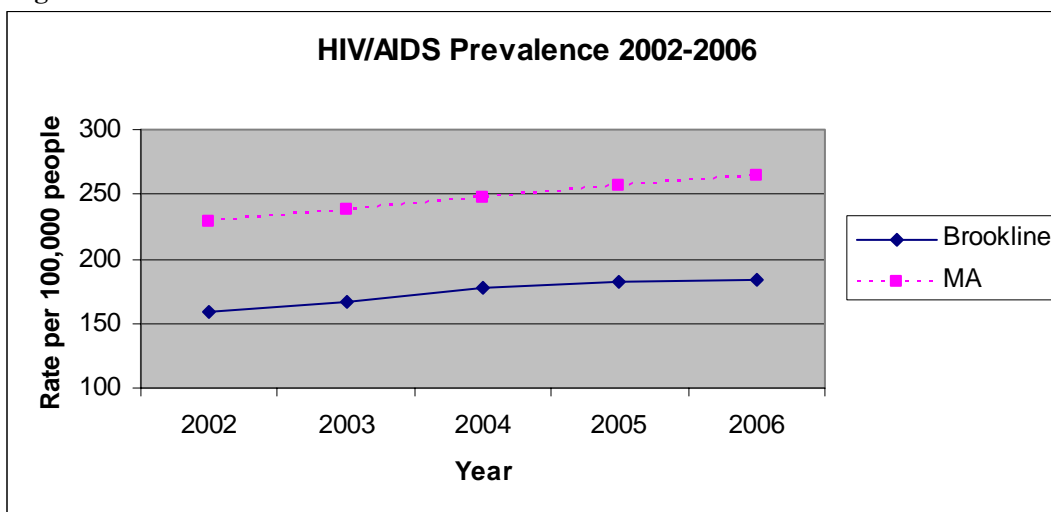
Figure 5.1



Source: Bureau of Communicable Disease Control Registries, Massachusetts Department of Public Health MassCHIP v3.0 r234, 11/19/2010

The prevalence of HIV/AIDS is displayed in Figure 5.2. In both Brookline and Massachusetts, the prevalence has increased slightly from 2002-2006. This increased number of individuals living with HIV/AIDS is linked to antiretroviral drugs and other therapies which have successfully extended the lifespan of those living with HIV infection.

Figure 5.2



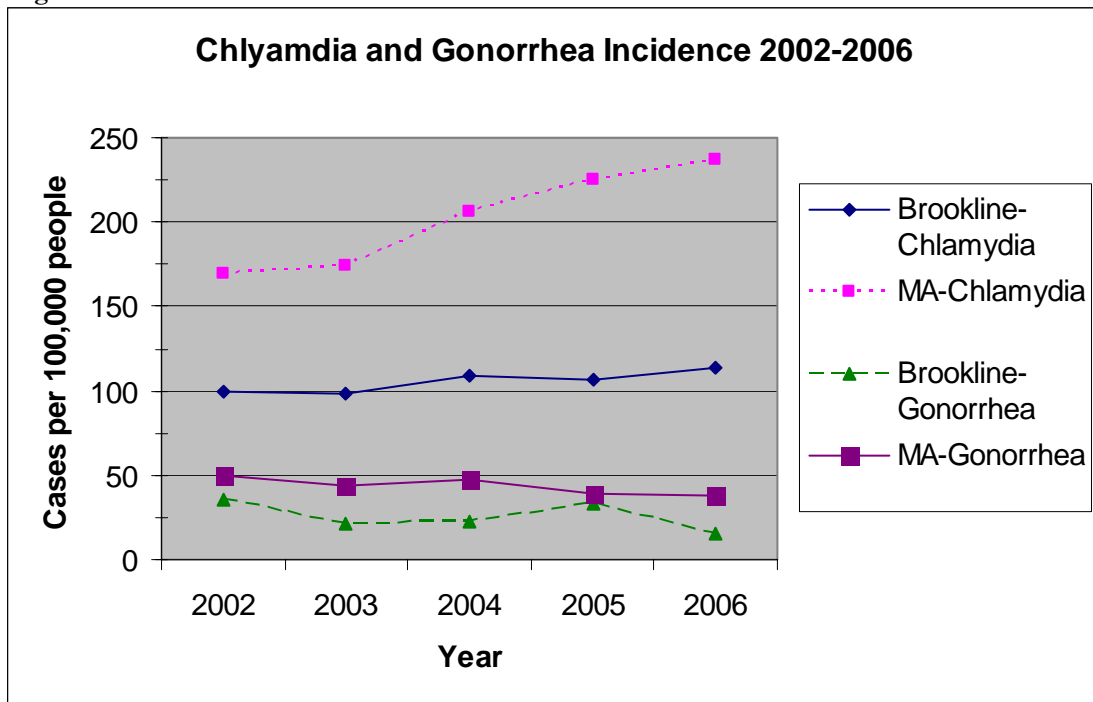
Source: Bureau of Communicable Disease Control Registries, Massachusetts Department of Public Health MassCHIP v3.0 r234, 11/19/2010

Sexually Transmitted Infections (STIs)

Sexually transmitted infections (STIs) are behavior-linked diseases resulting from unprotected sexual activities. Chlamydia, gonorrhea and syphilis are sexually transmitted bacterial infections that require treating those infected as well their sexual partners. If left untreated, these diseases can lead to pelvic inflammatory disease and infertility.

Figure 5.3 displays chlamydia and gonorrhea incidence rates in both Brookline and Massachusetts from 2002-2006. Syphilis is not included in this analysis as the number of cases in Brookline during this time period is too small to be significant.

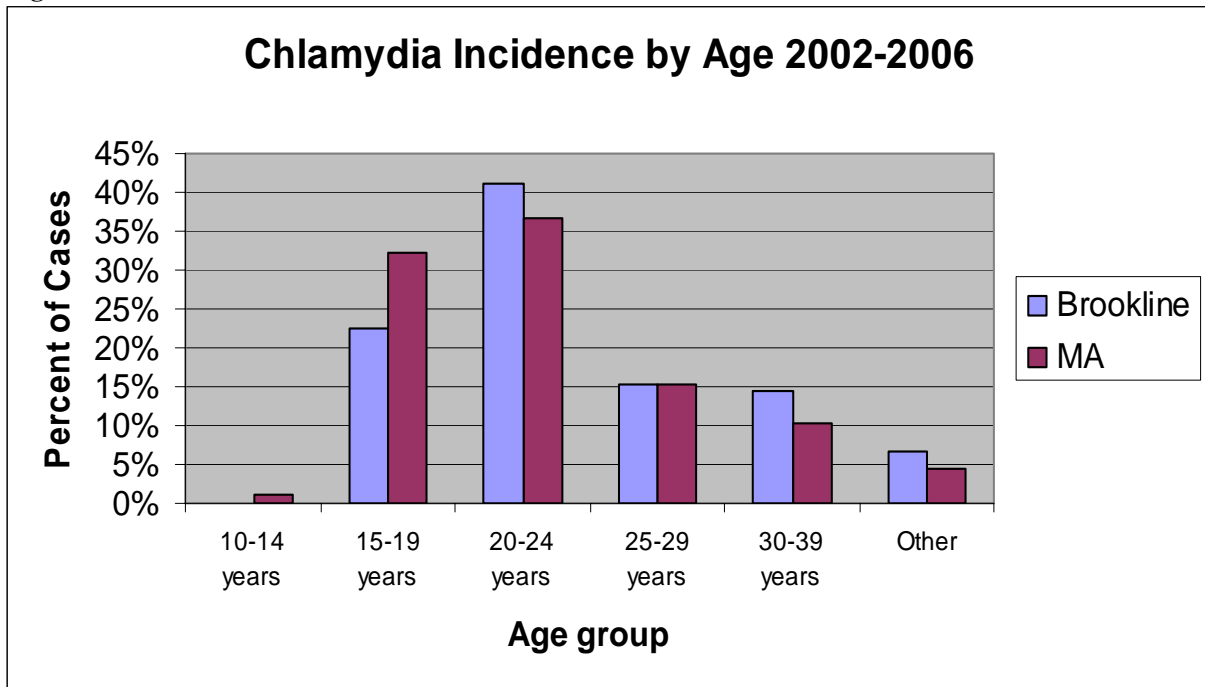
Figure 5.3



Source: Bureau of Communicable Disease Control Registries, Massachusetts Department of Public Health MassCHIP v3.0 r234, 12/10/2010

In both Brookline and Massachusetts, nearly 75% of chlamydia infections are reported in females. Chlamydia infections also tend to be reported more in teenagers and young adults, as shown in Figure 5.4. The highest rates of reported chlamydia infection in both Brookline and Massachusetts are found in individuals between 15 and 24 years old.

Figure 5.4



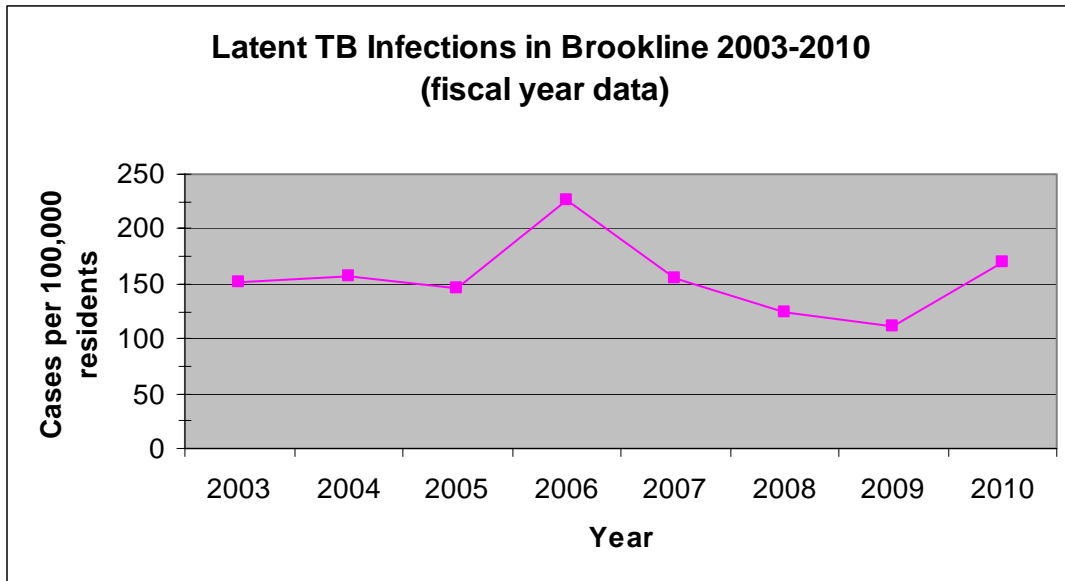
Source: Bureau of Communicable Disease Control Registries, Massachusetts Department of Public Health MassCHIP v3.0 r235, 1/7/2011

Tuberculosis

Tuberculosis (TB) is a disease that most often affects the lungs. Most people infected with TB control the infection in their immune system and remain in an asymptomatic state known as latent TB. Some individuals, however, develop active TB. These individuals are symptomatic and can spread the disease to others. The Centers for Disease Control note that individuals at high risk of developing active TB fall into two categories: 1) People who have been recently infected with TB bacteria; and 2) People who have medical conditions that weaken the immune system.

As the analysis for Brookline data was done using fiscal year data, there is no comparison with Massachusetts. Figure 5.5 displays latent TB infections in Brookline from 2003-2010.

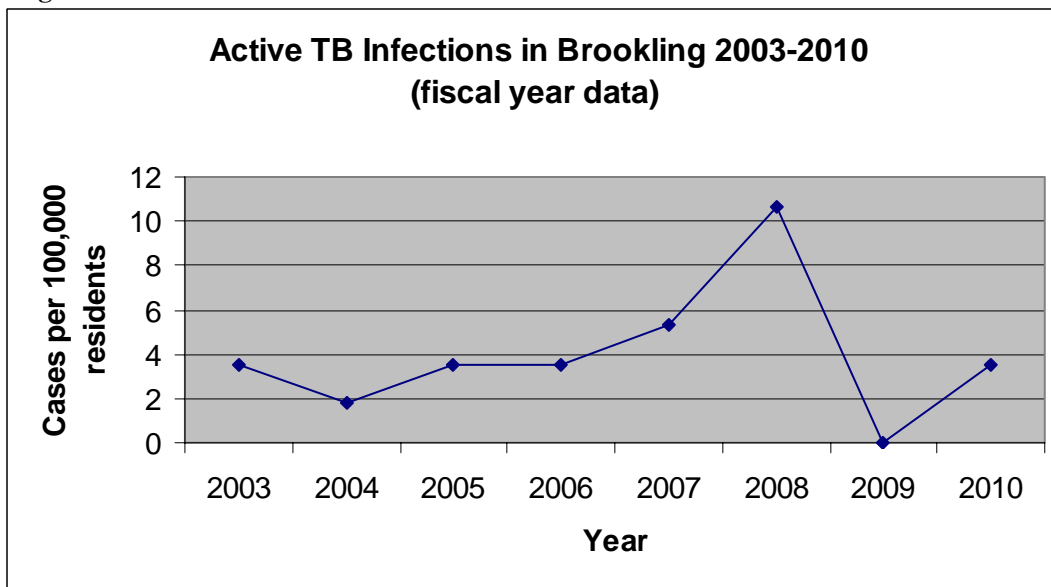
Figure 5.5



Source: Public Health Nurse, Brookline Department of Public Health

Active TB infections in Brookline from 2003-2010 are displayed in Figure 5.6.

Figure 5.6



Source: Public Health Nurse, Brookline Department of Public Health

Communicable Disease in Brookline

The Massachusetts Department of Public Health has developed, with guidance from the Centers for Disease Control and Prevention (CDC), a list of communicable diseases that must be reported to the state when identified by a local health department. This is done to ensure that there can be accurate surveillance, tracking, and control of these diseases. Figure 5.7 shows those diseases that were identified in Brookline in 2008 and 2009. This list excludes tuberculosis, STIs and HIV, which are reported separately.

Figure 5.7

CDC Reportable Diseases in Brookline 2008-2009	
2008 Disease (Number of Cases)	2009 Disease (Number of Cases)
Lyme Disease (30)	Influenza (68)
Hepatitis C (22)	Lyme Disease (23)
Hepatitis B (17)	Hepatitis C (17)
Influenza (16)	Varicella (Chicken Pox) (16)
Campylobacter (15)	Hepatitis B (14)
Varicella (Chicken Pox) (12)	Campylobacter (12)
Giardiasis (10)	Giardiasis (11)
Salmonella (10)	Salmonella (7)
Strep pneumo (7)	Cryptosporidiosis (2)
Pertussis (Whooping Cough) (4)	Cyclospora (2)
Heamophilus (3)	Dengue (2)
Shiga toxin (3)	Hepatitis A (2)
Shigellosis (3)	Shiga toxin (2)
Viral Meningitis (3)	Strep pneumo (2)
Enterovirus (2)	Enterovirus (1)
Group B Strep (2)	Group B Strep (1)
Hepatitis D (1)	Heamophilus (1)
Legionellosis (1)	Human Granolcytic (1)
Meningitis (1)	Mumps (1)
	Shigella (1)
	Vibrio (1)
	Viral Meningitis (1)

Source: Public Health Nurse, Brookline Department of Public Health

Section 6-Environmental Health

This section examines the relationship between environmental factors and disease. This includes information on:

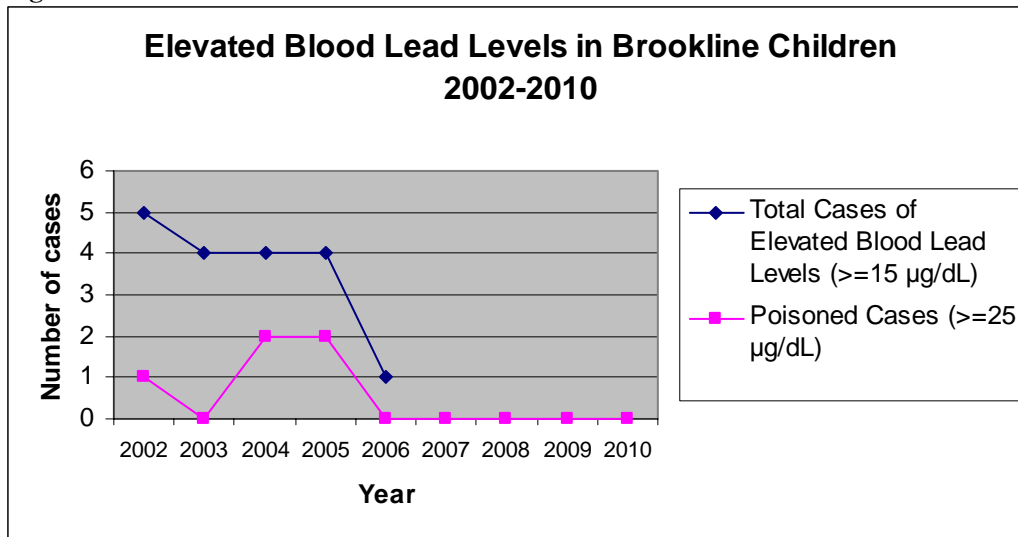
- Lead Poisoning
- Asthma Hospitalization
- Lyme Disease
- Rabies
- Foodborne Illness

Lead Poisoning

The most significant source of elevated blood lead levels in children is lead-based paints. Although these paints were banned for use in houses in 1976, many older homes still contain lead paint. Massachusetts is one of only five states that requires all children to have their blood tested for lead.

Figure 6.1 shows the number of Brookline children who had elevated blood lead levels (above 15 $\mu\text{g}/\text{dL}$), as well as the number of children with lead poisoning (above 25 $\mu\text{g}/\text{dL}$) from 2002-2006. As this figure shows, the number of children in Brookline with elevated blood lead levels is quite low and appears to be decreasing. Data for the total cases of elevated blood lead levels was unavailable for 2007-2010.

Figure 6.1



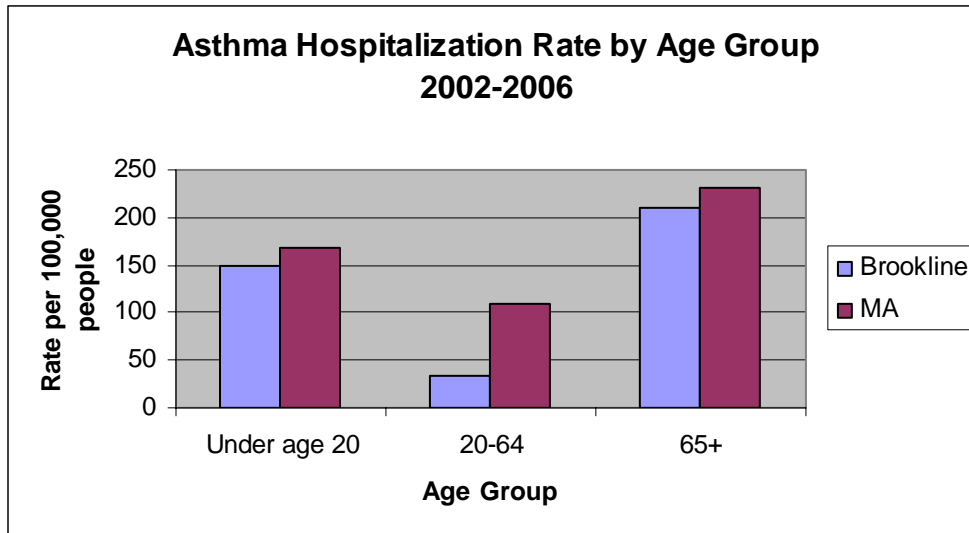
Sources: Childhood Lead Poisoning Prevention Program, Massachusetts Department of Public Health MassCHIP v3.0 r235, 1/21/2011 and Public Health Nurse, Brookline Department of Public Health

Asthma Hospitalizations

Asthma is a chronic disease in which a person's airways become constricted, leading to wheezing, coughing, tightness of the chest, and trouble breathing. If the asthma symptoms become severe, it can result in hospitalization.

Figure 6.2 examines the asthma hospitalization rate in Brookline and Massachusetts from 2002-2006 by age group. There is a similar pattern in both Brookline and the state. The highest rates of hospitalizations due to asthma occur in individuals above age 65, followed by those under age 20. The lowest rates of asthma hospitalization in both communities are found in individuals between 20 and 64.

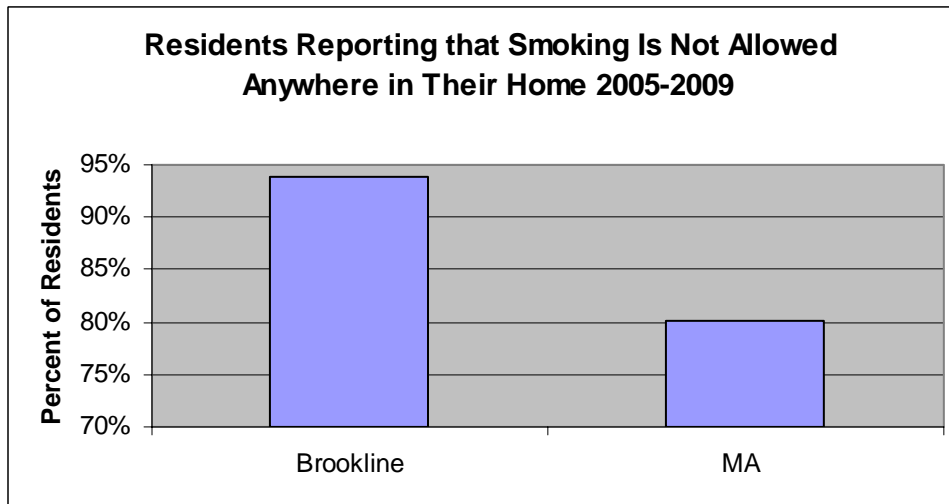
Figure 6.2



Source: Uniform Hospital Discharge Dataset System, Massachusetts Division of Health Care Finance and Policy
MassCHIP v3.0 r235, 1/28/2011

Asthma attacks can be triggered by allergens such as mold, or by indoor or outdoor air pollutants. One source of indoor air pollutants is cigarette smoking. As shown in Figure 6.3, the percentage of Brookline adult residents who report that smoking is not allowed anywhere in their home is greater than 90% compared to 80% of Massachusetts adult residents.

Figure 6.3

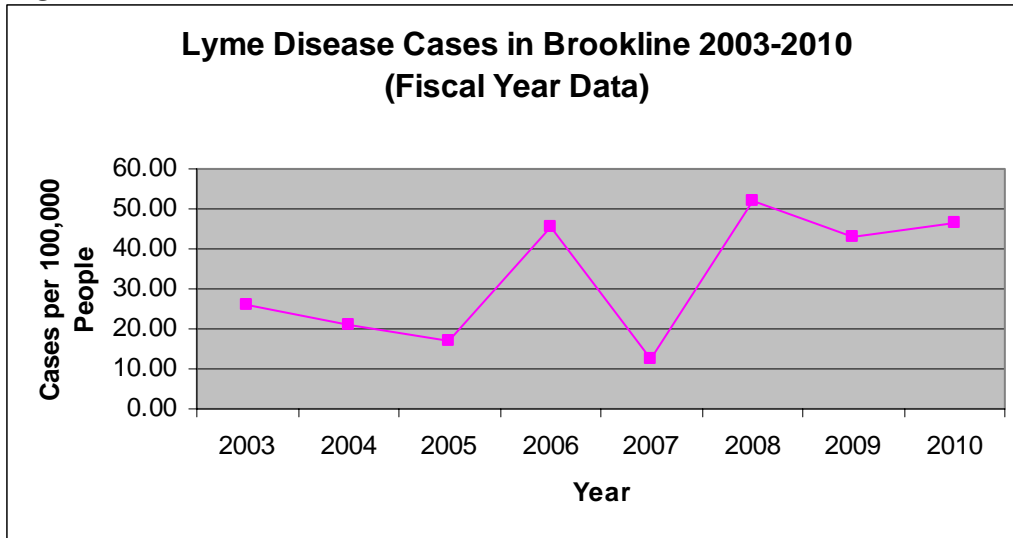


Source: BRFSS 2005-2009

Lyme Disease

Lyme disease is an illness transmitted by deer ticks. Many communities have seen an increase in confirmed cases of Lyme disease. This is likely due to population density and changes in our environment that put more individuals in situations where they can be bitten by ticks. Figure 6.4 displays Lyme disease information for Brookline from 2003-2010.

Figure 6.4



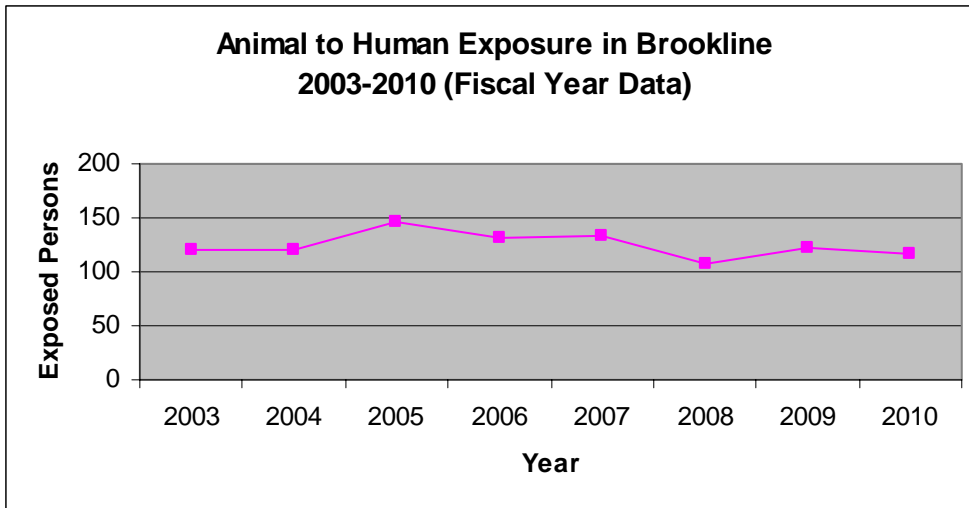
Source: Public Health Nurse, Brookline Department of Public Health

Rabies

Rabies is a viral disease that is most often spread through the bite of an infected animal. Rabies is a serious disease that affects the central nervous system, ultimately causing death. For this reason, individuals who are exposed to animals that could be infected are often advised to obtain post-exposure prophylaxis (commonly known as the rabies vaccine), as this will prevent illness.

The number of animal to human exposures in Brookline is shown in Figure 6.5. It is important to note that animal to human exposure refers to a stray animal that is encountered and reported, and does not necessarily indicate that the animal was rabid.

Figure 6.5



Source: Public Health Nurse, Brookline Department of Public Health

When these stray animals are encountered, there is an attempt made to test the animal to see if they are infected with rabies. Figure 6.6 shows the results of animal rabies testing in Brookline from 2003-2009, including how many individuals were advised to receive post-exposure prophylaxis.

Figure 6.6

Animal Rabies Test Results in Brookline 2003-2009					
Year	Total Animals Tested	Number Testing Positive	Number Testing Negative	Test Results Unavailable or Unsatisfactory	Post-Exposure Prophylaxis Recommended
2003	90	1	70	19	35
2004	104	1	80	23	17
2005	102	6	70	26	Unknown
2006	95	2	77	16	26
2007	100	3	74	23	22
2008	91	0	48	27	21
2009	99	1	N/A	N/A	19

Source: Public Health Nurse, Brookline Department of Public Health

Any mammal can be infected with rabies. Figure 6.6 shows the different types of animals tested for rabies in Brookline between 2003 and 2009. As shown in this table, bats represent the largest number of animals tested. This is likely due to the fact that bats are common in Brookline and are often considered to be one of the largest wild reservoirs for rabies.

Figure 6.6

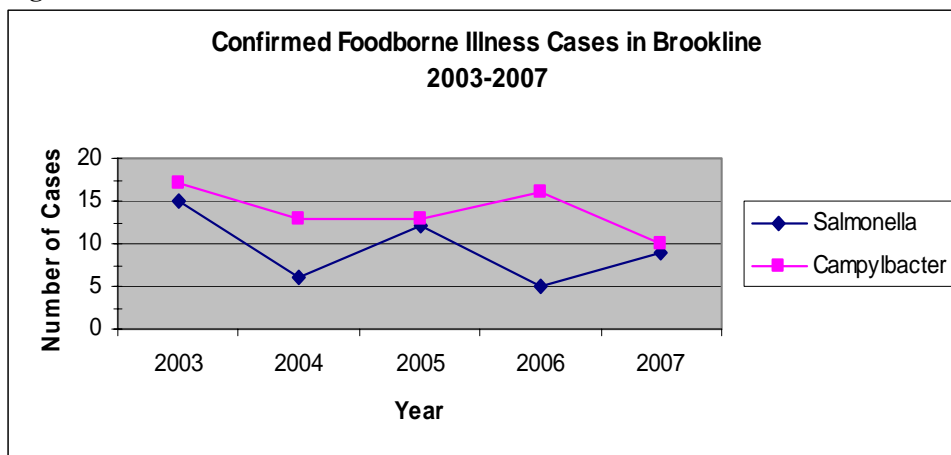
Animals Tested for Rabies in Brookline 2003-2009	
Animal	Number Tested
Bat	515
Cat	50
Dog	84
Raccoon	10
Squirrel	9
Lab Mouse	4
Rat	3
Skunk	2
Mouse	1
Opossum	1
Rabbit	1
Unknown	1

Source: Public Health Nurse, Brookline Department of Public Health

Foodborne Illness

Foodborne illness continues to be a threat, despite improvements in sanitation and food safety. Two major bacterial causes of foodborne illness in Brookline are salmonella and campylobacter. As shown in Figure 6.7, confirmed cases of both of these foodborne illnesses have fluctuated somewhat between 2003-2007 but the number of cases has remained low.

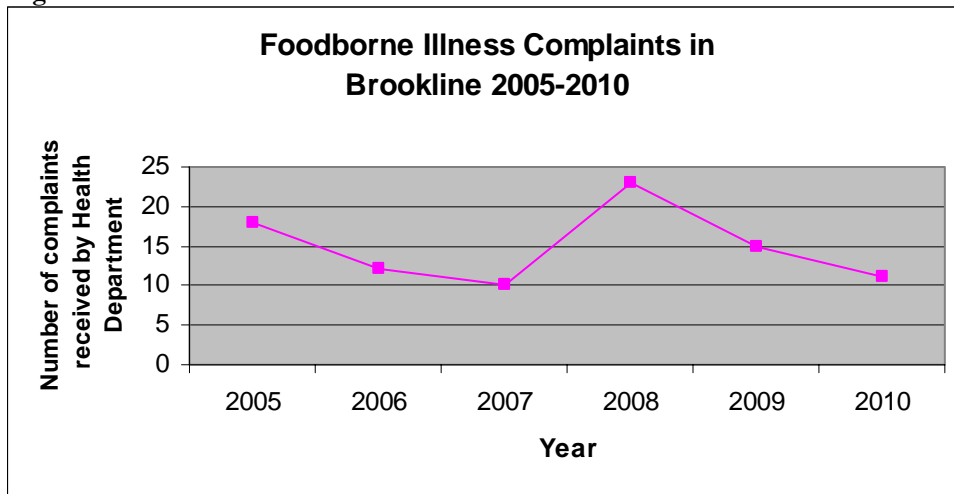
Figure 6.7



Source: Bureau of Communicable Disease Control Registries, Massachusetts Department of Public Health
MassCHIP v3.0 r235, 1/21/2011

While Figure 6.4 displayed confirmed cases of these foodborne illnesses, this likely represents only a small percentage of the true amount of foodborne illness in Brookline. This is due to the fact that many people do not seek medical attention or receive laboratory testing. Another way to measure foodborne illness is to look at complaints received by the health department. These complaints of foodborne illness are generally suspected to be linked to food consumed at a restaurant or prepared food purchased from a store. Figure 6.8 shows the number of foodborne illness complaints received by the Brookline Health Department from 2005-2010.

Figure 6.8



Source: Environmental Health Division, Brookline Department of Public Health