



# Health of Boston

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**Prepared by the Boston Public Health Commission**



Building a Healthy Boston

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## Introduction

Welcome to the Health of Boston 2010! Since 1996, this report has been commissioned annually to provide information about the health of our city residents.

This year, the report places increased attention on social determinants that influence the health of Boston residents and communities. Social determinants of health, such as exposure to racism and discrimination, income, education, employment, and housing are contextual factors that have a profound impact on both an individual's health and the collective health experience of a population. Together with access to quality health services, social determinants ultimately define opportunities for individuals to lead healthy lives.

Social determinants of health help describe the context within which people live and how that context impacts health in significant and measurable ways. What resources, assets, and opportunities are available to an individual and to a community? What are the barriers and challenges to sustaining a healthy environment in a particular community? What is the impact of racism and discrimination on health? A detailed understanding of social determinants of health is necessary for answering these questions and provides a critical basis for understanding differences in health experiences and outcomes. For this reason, a thorough discussion about the health of a population must include not only a review of disease burden, but a description of the unequal distribution of that burden and the factors (i.e., social determinants of health) that impact health.

Data presented throughout this report routinely demonstrate that Boston's Black and Latino residents experience higher levels of chronic disease, mortality, and poorer health outcomes than White residents. These persistent health disparities are driven by the interaction of several factors including racism, living conditions, physical environment, socioeconomic status, food security, lifestyle, available health services, and existing health policies. Program and policy efforts that address these social determinants of health serve to further combat health inequities.

The primary purpose of this report is to provide descriptive information about the health status and factors that influence the health status of Boston residents. The report does not aim to identify causal relationships or make specific recommendations. Rather, Health of Boston 2010 seeks to provide a broad picture of the health experience of our city, identify individuals and communities at greatest risk for certain conditions, and stimulate discussion among individuals within our communities.

The entire Health of Boston 2010 report and additional data can be found on the Boston Public Health Commission's website at [www.bphc.org](http://www.bphc.org).





## EXECUTIVE SUMMARY

The *Health of Boston 2010* report provides a broad picture of the health of Boston residents. The report reviews select health conditions, risk behaviors, and social determinants of health and identifies individuals and communities at greatest risk for specific health conditions. This report does not attempt to identify causality or make recommendations. Instead, it provides information needed to stimulate dialogue among individuals and within communities.

The first section of this report, an overview of social determinants of health, provides a foundation for understanding the health disparities revealed in this report. The three sections that follow provide data on the demographics and socioeconomic characteristics of Boston as well as a description of Boston neighborhoods. The balance of the report focuses on health issues and conditions. Each of these sections begins with an introduction describing the featured health indicators, followed by a short explanation of emerging trends and/or changes in the data elements. The sections conclude with a summary, list of references, and notes that clarify the data analysis. The report concludes with a table that compares Healthy People 2010 (HP2010) targets to Boston data. This executive summary highlights significant findings from each of the 15 sections, and discusses the persistence of disparities in health outcomes among Black and Latino Boston residents.

### *Health Disparities*

Boston's Black and Latino residents experience higher levels of chronic disease, mortality, and poorer health outcomes compared to White residents. These health inequities are driven by the interaction of several factors including racism, poverty, and residential segregation. For Boston's Black residents, these health inequities begin early in life and persist throughout an individual's lifespan. For example, the Black infant mortality rate was four times the White infant mortality rate in 2008. For the last 15 years, the percentage of low birthweight and preterm births has been higher among Black infants than other racial/ethnic groups.

Data on health conditions for Boston residents demonstrate several alarming trends across numerous diseases. In 2008, the asthma hospitalization rate for Black and Latino children was more than three times the rate for Asian children and four times the rate for White children. Hospitalization rates for diabetes and heart disease were highest among Black residents when compared with other racial/ethnic groups from 1998 to 2008. Black residents have higher overall mortality rates as well as higher rates of diabetes, heart disease, and cancer mortality than Asian, Latino, or White residents. Black residents also suffer disproportionately from violence. From 1999 through 2008, the rate of homicide was highest among Black residents. The rate of non-fatal gunshot and stabbing wounds among Black males was more than 14 times the rate for White males.

Latino residents also experience poorer health outcomes than White residents in Boston. In 2008, the diabetes hospitalization rate for Black and Latino residents was approximately four times the rate for Asians and the rate for Whites. From 2001 through 2008, Black and Latino residents had higher rates of hospitalization for heart disease compared with Asian and White residents. In 2008, the rate of heart disease hospitalization among Latino residents age 65 and older was 77% higher than the rate among White residents of the same age group. A higher percentage of Latino women reported having asthma than White and Asian women. Latinos had the highest incidence of pertussis in 2008. Between April and December of 2009, Latinos experienced the highest incidence rate of the 2009 H1N1 virus compared with other racial/ethnic groups. The incidence rate of 2009 H1N1 infection among Latinos was about twice the Boston overall rate. Between 2007 and 2008, the age-adjusted all-cause mortality rate for Latinos increased 15%.

Efforts to eliminate these inequities must acknowledge and address the role of social determinants. Under Mayor Thomas M. Menino's leadership, individuals, community based organizations, health care providers, policymakers, and city agencies came together to create an

action plan for eliminating health inequities. The plan is being implemented by the Center for Health Equity and Social Justice at the Boston Public Health Commission.

### *Demographic Profile*

The city has become more racially and ethnically diverse over the past several decades. In 2008, approximately 27% of Boston residents were foreign-born, originating from a wide array of countries such as the Dominican Republic, China, and Haiti. This diverse population has brought with it fluency in a variety of languages including Spanish, French, Chinese, and Vietnamese. The percentage of Latino residents in Boston has continued to increase from 6% in 1980 to 16% in 2008. Of residents who identified as Latino, 31% noted their specific origin as Puerto Rico and 27% noted their specific origin as Dominican Republic. Understanding the city's diversity is essential to developing policies and strategies that address health inequity in Boston.

### *Socioeconomic Status*

Socioeconomic status (SES) is a measure of an individual's or family's economic and social position relative to others based on income, education, and occupation. Low socioeconomic status is associated with limited access to regular health care, adequate housing, quality education, nutritious food, recreational opportunities, and other resources associated with a healthy lifestyle. The socioeconomic status of Boston residents has varied dramatically by race/ethnicity, gender, and age. Key points from the socioeconomic status section to this report include the following:

- Nineteen percent of Boston residents had income below the poverty level in 2008.
- In 2008, 37% of female-headed households with children under age 5 had income below the poverty level.
- In 2008, 37% of Latino adults had less than a high school diploma.
- In 2008, the unemployment rate of Black males was 13%, almost three times the rate of White males (5%).
- Thirty-one percent of those who were homeless in 2009 were children.

### *Neighborhoods*

Where one lives contributes to shaping health behaviors and influencing one's health. Because each Boston neighborhood is unique in its characteristics, it is imperative to consider the various neighborhoods when evaluating the health of the residents of the Boston. Although Boston possesses a considerable amount of green space and a system of bike paths dispersed throughout the city, community assets, such as farmer's markets, community gardens, and food pantries, are less evenly distributed. Additionally, some neighborhoods are disproportionately burdened by poorer health and perceptions of poorer neighborhood safety. The availability of resources and community assets plays an important role in promoting conditions that support good health.

### *Access to Health Care*

Access to adequate health and dental care is essential to disease prevention and management. The data presented in this section were collected following the implementation of health care reform in Massachusetts, leading to the substantial reductions in the number of residents without health insurance coverage. Key points from this section include the following:

- In 2008, 97% of Boston adult residents had health insurance coverage.
- Eighty-three percent of residents reported having a primary care provider in 2008. Despite these gains, racial/ethnic and gender differences were noted. A lower percentage of Latino males reported having a primary care provider in comparison to White males. A higher percentage of Latino and White females in comparison to Latino and White males reported having a primary care provider.

- In 2008, 72% of Boston adult residents reported having dental insurance to cover routine dental care. The legislation for Massachusetts health care reform did not address dental insurance.

### *General Health*

Indicators of general health and well-being, including self-reported health, hospitalizations, life expectancy, and mortality, help to describe the impact of disease on society. General health data suggest progress or sustained improvement in the area of mortality from specific causes:

- Rates for the top four leading causes of death— Cancer, Heart Disease, Injuries, and Stroke— decreased from 2007 to 2008.
- The age-adjusted cancer mortality rate for Black residents decreased 7% from 2007 to 2008.
- From 2007 to 2008, the rate of injury mortality for Latinos decreased.

However, racial/ethnic disparities persisted as demonstrated in life expectancy and other cause specific mortality data.

- Estimated average life expectancy is highest for Boston’s Asian residents followed by Boston’s Latino and White residents. Black residents have a lower life expectancy than Boston residents overall.
- From 2007 to 2008, the age-adjusted cancer mortality rate for Asians increased 33%.
- Among Black residents, the age-adjusted heart disease mortality rate increased 13% from 2007 to 2008; the age-adjusted stroke mortality rate increased 20% during this time.

### *Health Behaviors*

Personal health behaviors have a significant influence on overall health outcomes. Dietary habits, physical activity, tobacco use, and alcohol consumption contribute to the development of chronic conditions, such as cardiovascular disease, cancer, and diabetes, and premature death. The adoption of positive health behaviors can help individuals achieve and maintain good health.

In 2009, Boston Public High school students reported the following:

- Sixteen percent reported not eating breakfast, 28% reported consuming one or more sodas per day, and only 18% reported consuming the recommended five daily servings of fruits and vegetables.
- Only 27% of the Boston public high school students reported engaging in regular physical activity. More than 50% of Boston public high school students reported receiving no physical education during the past week.
- Approximately 45% of students reported watching three or more hours of television per day and 33% reported playing video and computer games for more than three hours.

In 2008, Boston Adult Residents reported the following:

- Twenty-eight percent of Boston adults reported consuming the recommended number of fruit and vegetable servings and 56% reported engaging in regular physical activity. Differences in adult physical activity were noted by age, race/ethnicity, education, household income, and neighborhood of residence.
- A higher percentage of White female adults reported binge drinking within the past month in comparison to Black and Latino female adults. A higher percentage of adults who reported binge drinking also reported smoking cigarettes compared to adults who did not report binge drinking.



## *Chronic Diseases*

Asthma, high blood pressure, cardiovascular disease, and diabetes are common chronic diseases that affect the lives of many Boston residents. Chronic diseases can lead to significant disability, a reduction in the quality of life, and ultimately, death.

Chronic disease data reveal the need for improvement in the prevention and control of several diseases including asthma, diabetes, and obesity:

- In 2008, a higher percentage of residents with a household income of less than \$25,000 reported that they have asthma compared to residents in the other income groups.
- In 2008, the asthma hospitalization rate for Black children under age five was more than three times the rate of Asian children and four times the rate of White children. With the exception of 2002, Black children consistently had the highest asthma hospitalization rate between 1999 and 2008.
- Black residents consistently had the highest heart disease and diabetes hospitalization rates from 1999 through 2007, but Latino residents had the highest rates in 2008.
- In 2007 and 2009 combined, a higher percentage of Black and Latino female students were overweight in comparison to White female students.

## *Maternal and Child Health*

Birth and infant death data provide important measures of the well-being of infants and pregnant women and are often seen as a reflection of the health of a community. Several factors including maternal health, infant birthweight, socioeconomic conditions, racism, access to medical care, and neighborhood of residence affect infant health and infant survival.

Progress or sustained improvement is noted in this report in the areas of adolescent births, maternal smoking during pregnancy, access to adequate prenatal care, and blood lead levels lead among children:

- Boston's adolescent birth rate decreased 14% from 2007 to 2008.
- Self-reported maternal smoking during pregnancy declined by 67% between 1995 and 2008 for Boston overall.
- In 2008, 81% of Boston women who gave birth received adequate prenatal care.
- In 2009, among Boston children ages six and under, the percentage of those screened who were positive for an elevated blood lead level remained extremely low (1 %) compared to the levels experienced 10 to 15 years earlier (6% to 15%).

These data also suggest continued need for improvement in the prevention of low birthweight births, preterm births, and infant mortality:

- For each year from 1999 to 2008, Black women had the highest percentage of low birthweight (LBW) babies.
- Black women in Boston had the highest percentage of preterm births every year between 1999 and 2008.
- Boston infant mortality (IMR) has been consistently highest for Black infants. The IMR for Black infants in 2008 was 14.6 deaths per 1,000 live births, an increase of 29% and four times the rate for White infant deaths. Black infants accounted for 27% of Boston births in 2008, but they accounted for 54% of infant deaths.

## *Sexual Health*

Sexual health is a critical component of physical and emotional well-being. The most accessible data available to help understand and monitor the sexual health of a population are data on self-reported sexual activity and sexual behaviors, and sexually transmitted disease (STDs) rates.

Sexual Health data suggest progress or sustained improvement in the prevention and control of gonorrhea infection:

- The rate of new gonorrhea cases among Boston residents decreased 19% from 2007 to 2008 to the lowest level in ten years of reported data.

Sexual health data suggest additional need for improvement in the prevention and control of chlamydia and syphilis infection:

- The rate of new chlamydia cases among Boston residents in 2008 was 5% higher than in 2007 and 74% higher than in 1999.
- From 2007 to 2008, the syphilis rate increased 35%.

## *Infectious Diseases*

Infectious diseases remain a significant threat to public health in the United States. Food-borne illnesses including salmonella, the reemergence of vaccine preventable diseases such as pertussis, and the threat of newly emerging infectious diseases, such as severe acute respiratory syndrome (SARS) and the 2009 H1N1 virus, are among the many potential threats.

Infectious disease data suggest progress in the prevention of chronic hepatitis B, hepatitis C, pertussis, and salmonella infection:

- The reported chronic hepatitis B and hepatitis C rate decreased 11% and 17% from 2007 to 2008, respectively.
- The pertussis rate among Boston residents decreased 57% from 2007 to 2008.
- The reported salmonella infection rate among Boston residents decreased 12% from 2007 to 2008.

The data also suggest additional need for improvement in the prevention and control of tuberculosis:

- The incidence rate of reported tuberculosis increased 25% from 2007 to 2008.
- In 2008, Asian Boston residents had the highest incidence of reported tuberculosis, a rate nearly five times that of Boston overall.
- The highest incidence rates of reported tuberculosis among Boston neighborhoods in 2006-2008 were in Roxbury, South Dorchester, and the South End.

## *Mental Health*

Mental health embodies the psychological capacity to make healthy decisions that promote overall quality of life. People living with mental health illnesses and disorders can often experience disruptions in thinking, feeling, behavior, and emotions, which subsequently influence the ability to relate to others, impair functioning and limit major activities.

Mental health data suggest additional need for improvement in the area of mental health:

- In 2009, nearly 30% of Boston public high school students reported feeling sad or hopeless for two weeks straight or more during the past year.
- In 2009, Boston public high school students who identified as lesbian, gay, and bisexual (LGB) report substantially higher percentages of feeling sad or hopeless (43%), purposely

hurting themselves (39%), seriously considering (28%) and attempted suicide (24%) compared to high school students who identified as heterosexual.

- The percentage of Boston adult residents reporting feelings of being worried, tense or anxious and of being sad, blue or depressed in 2008 was lowest in the highest household income category (\$50,000 and above annually) and highest in households with incomes less than \$25,000 annually.
- In 2008, a higher percentage of White residents reported receiving treatment for sadness or depression compared to Black or Asian residents.

### *Substance Abuse*

Substance abuse involves the excessive use of alcohol or the use of drugs in a non-prescribed manner to achieve an altered physiological state. Misuse of alcohol or other drugs over time can lead to physical and/or psychological dependence on these substances and increased risk of mortality and morbidity.

Substance abuse data suggest progress and sustained improvement in drug abuse mortality:

- The substance abuse mortality (drug and alcohol) age adjusted rate decreased 17% from 2007 to 2008.
- The overall decline was attributable to a 30% decrease in drug abuse deaths (from 126 deaths in 2007 to 88 deaths in 2008).
- From 2007 to 2008, the Latino substance abuse mortality rate decreased 46%.
- From 2007 to 2008, the Black and White substance abuse mortality rates declined 3% and 18%, respectively.

### *Violence*

Violence is widely recognized as a major public health issue. The fatal and non-fatal outcomes resulting from violent victimization and perpetration have a negative impact on individual and community health.

Violence data suggest progress or sustained improvement in non-fatal assault-related gunshot injuries and hospital emergency department visits:

- The non-fatal assault-related gunshot injury rate did not increase in the years 2005-2008.
- The rate of hospital emergency department visits for unarmed fights decreased 27% from 2003 to 2008.

These data also suggest additional need for improvement in the areas of teen risk behaviors, non-fatal assault-related gunshot, and stabbing injuries, and homicides:

- In 2009, about one in ten public high school students reported being bullied electronically (cyber bullying) during the past year.
- When 2007 and 2009 are combined, the data show that almost one in four male public high school students reported carrying a weapon during the past month.
- In 2008, 48% of Boston public high school students reported having a close family member or friend killed.
- In 2008, 43% of high school students reported that they trust the police. Thirty percent reported that they would not report a crime.
- The rate for non-fatal assault-related gunshot and stabbing victims was highest for Black residents in each year from 2000-2008. The 2008 rate for Black males ages 20-24 was more than 32 times the rate for White males of the same age group.

- The homicide rate for Black residents exceeded that of other racial/ethnic groups for every year from 1999 to 2008. During this ten-year period, more than two-thirds of Boston resident homicide victims were Black.

### *Cancer*

Cancer is the leading cause of death in Boston, claiming more lives than heart disease, stroke, or injuries:

Cancer data suggest sustained improvement in the areas of cancer screening:

- In 2008, 80% of Black women age 40 and over, and 79% of Latino women age 40 and over reported having a mammogram during the past year.

These data also suggest the need to address racial/ethnic disparities in cancer mortality:

- In 2008, the age-adjusted cancer mortality rate was highest for Black residents and White residents, 257.0 and 178.4 deaths per 100,000 population, respectively.
- Lung cancer was the leading cause of cancer mortality each year from 2006 to 2008. Latino residents consistently had the lowest age-adjusted lung cancer rate while White residents consistently had the highest.

The entire Health of Boston 2010 report and additional data can be found on the Boston Public Health Commission's website at [www.bphc.org](http://www.bphc.org).



## NOTE TO READERS

### *What are the Healthy People 2010 Targets?*

*Healthy People 2010* is the name of the U.S. government's national health goals and objectives initiative. Every ten years beginning in the year 2000, specific disease prevention and health promotion objectives are developed based on baseline data. The two main goals of this program are: 1) to increase life expectancy and improve quality of health and, 2) to eliminate health disparities among different population groups. Approximately 467 health objectives are described within 28 categories that cover a wide range of health topics (1).

The Healthy People 2010 objectives were developed by scientists from within and outside the government, and ten health topics were selected as the primary benchmarks of the program (2). These ten leading health indicators include objectives related to physical activity, overweight and obesity, tobacco use, substance abuse, responsible sexual behavior, mental health, injury and violence, environmental quality, immunization, and access to health care.

Several Healthy People 2010 objectives are found throughout this report where a comparable data measure was reported for the city of Boston. For more information on Healthy People 2010, and the development of Healthy People 2020 objectives for the next decade, please visit [www.healthypeople.gov](http://www.healthypeople.gov).

### *How do we determine if one percentage (point estimate) is higher or lower than another?*

To determine whether two percentages or point estimates are different from one another, one cannot look only at the percentages themselves. One must determine whether the differences between two percentages are "statistically significant." Statistical significance is a mathematical term used to describe the likelihood that a particular number or rate reflects reality. This term comes into play when researchers measure a particular characteristic of a sample or subset of a group or population, and then apply or infer that result to describe the entire group or population.

In this report one of the data sources cited is a survey called the Boston Behavioral Risk Factor Surveillance Survey (BBRFSS). This is a telephone-based survey in which a number of Boston residents were asked to respond to a series of questions. The entire population of Boston was not called to participate in this survey, as this would not have been feasible or cost-effective. The survey data were collected among a random sample of adults within a random sample of Boston households. The resulting data were applied to represent the entire adult population for the city of Boston and are described as percentage or point estimate. These numeric values are further described by a numeric range called a confidence interval. The confidence interval describes the likelihood that the true percentage estimate falls within the range of values given, and thus describes the error around the percentage estimate. To compare two percentage estimates and determine whether one is higher or lower than the other, one must look not only at the individual percentages but the associated confidence intervals.

For example, in the Chronic Disease section of this report, there is a measure of self-reported asthma by Boston neighborhood from the BBRFSS (Figure 8.5). The percentage of Boston residents overall reporting asthma was 10%, while for North Dorchester the percentage was 17%. The confidence interval for Boston was 9.3%-11.6%; for North Dorchester, the confidence interval was 11.4%-23.0%. Although the percentage estimates are numerically different (Boston 10%, North Dorchester 17%), the overlapping confidence intervals indicate that these percentages are statistically similar.

Throughout this report, confidence intervals were calculated for all survey data including data from the Boston Behavioral Risk Factor Surveillance System (BBRFSS), Youth Behavioral Risk Surveillance (YRBS), and Boston Neighborhood Survey (BNS). To determine whether a

percentage was higher or lower than another percentage, the confidence intervals were calculated and compared. If the confidence intervals did not overlap, the two percentage estimates were reported as different (one was “higher” or “lower” than the other). If the confidence intervals overlapped, the percentage estimates were reported as similar to one another and no further comparison was made.

### *What do the terms “insufficient sample size” and “n<5” mean?*

In the section notes, the phrase *insufficient sample size* is used to describe data points that are not presented. This occurs when the stratification of survey data by population groups results in a sample that is too low to calculate reliable point estimates. In addition, to protect the confidentiality of respondents, data are not presented when a sample size is too low.

The notation,  $n < 5$ , is used when there are fewer than five occurrences of an event (for example, births, deaths, new cases of a disease) and thus a rate cannot be presented. In some instances, combining several years of data can increase sample size to a level that allows data to be reported.

### *Why do we sometimes combine several years of data?*

In certain instances, when there were fewer than five cases or an insufficient sample size in a given year, we combined data from two or more years in order to permit the calculation and presentation of a rate or point estimate. In this report, the title of a chart indicates whether two or more years of data have been combined.

### *How do we define neighborhood boundaries in this report?*

Neighborhoods can be defined in a number of ways. In this report, zip codes and census tracts are used to identify neighborhood boundaries since this information is often collected with Boston health data. Most graphs and maps presenting neighborhood data use neighborhood definitions based on zip codes, but graphs and maps presenting birth data, death data, American Community Survey data and Census 2000 data rely on neighborhood definitions based on census tracts.

### *Why are some of the data older than other data?*

The most recent data available are used in this report. Some data are older than other data. The availability of data varies by source. Several factors play a role in determining when data are available including the frequency of data collection, the post-collection cleaning and verification process, and resources available to manage and analyze the data.

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## Section 1: Social Determinants of Health

The Health of Boston 2010 report provides a comprehensive view of the health of Boston residents. As you review the sections that follow, you will often notice significant disparities between the health of Boston's residents of color and the health of White residents. White residents, on average, enjoy better health outcomes than Black and Latino residents.

Biology, personal behavior, and health care alone do not explain these racial and ethnic health inequities. Instead, we need to look at how social, economic, and environmental resources that influence health are distributed across communities. Resources that impact health include income and wealth; education and employment opportunities; food access; opportunities for physical activity; health and social services; and political power.

### *Health Disparities and Health Equity*

The National Institutes of Health defines health disparities as “the differences in the incidence, prevalence, mortality and burden of diseases and other adverse health conditions that exist among specific population groups in the United States” (1). These population groups can represent geographic areas, socioeconomic status levels, races, ethnicities, education levels and other social and geographic demographics.

Health inequities differ from health disparities in that they refer to differences in health outcomes that, in addition to being unnecessary and avoidable, are unfair and unjust. For example, in Boston, Black babies are three times more likely to die within the first year of life than White babies; this is an inequity because it is avoidable, unfair, and unjust.

### *Racism*

In the U.S., racism and the legacy of racism have played a significant role in creating and perpetuating health inequities. Social inequities, such as poverty, segregation, and lack of educational and employment opportunities, have origins in racist laws, policies, and practices that have historically denied people of color the right to earn income, own property, and accumulate wealth.

At the institutional level, racism affects access to goods, services, and opportunities, including healthcare. At the interpersonal level, prejudice and discrimination affect the way people of color are treated by others, intentionally and unintentionally. Racism can also manifest as internalized oppression and can cause stress, depression, and feelings of inadequacy.

All forms of racism contribute to poor health outcomes that are experienced disproportionately by people of color. Understanding the multiple pathways through which racism shapes socioeconomic status, health behaviors, neighborhood environment, and stress is essential in addressing inequities in health.

### *Social Determinants of Health*

The social determinants of health describe conditions in which people are born, grow, live, work, play, and age (2). Resource-rich neighborhoods provide ample opportunities for healthy choices and conditions that positively impact health. Resource-poor neighborhoods, on the other hand, often lack the opportunities and conditions needed for good health. This inequitable distribution of resources results in people of color living in

neighborhoods where there is less access to healthy conditions and opportunities such as fresh fruits and vegetables, open green space, quality housing, and employment. Social determinants of health can be divided into three core areas: economic conditions, environmental and neighborhood conditions, and social conditions.

**Economic conditions** include employment, income, education, and wealth. Socioeconomic status has long been recognized as the single strongest predictor of health (3). Socioeconomic position creates a social gradient in which health improves as socioeconomic status rises (4).

**Physical environment and neighborhood conditions** include food access, parks and open space, housing, air quality, liquor and tobacco advertisement, and transportation. These conditions work alone and in concert with each other to affect health. Individuals who live in areas with poor air quality experience higher rates of asthma. Lack of grocery stores that sell fresh produce and the lack of safe and affordable places to engage in physical activity contribute to poor diets, obesity, and diabetes (5).

**Social conditions** include neighborhood safety, social networks, social capital, and civic engagement. Social conditions like exposure to racism and lack of neighborhood safety lead to chronic stress. Stress is directly linked to chronic disease, particularly hypertension and heart disease (6). Research has shown that supportive social networks can serve as a buffer to stress and depression, which in turn, protects against physical and mental illness (7).

The social determinants of health affect individuals at each stage of life. Understanding the pathways and mechanisms through which social conditions affect health is fundamental to understanding the health of populations.

### *Upstream Approaches*

In developing strategies to address health inequities, it is important to distinguish between upstream and downstream approaches. Downstream approaches are concerned with the individual. These approaches focus on changing behavior, ensuring access to care, monitoring quality of care, and identifying health risk factors. While these approaches are important to individual health, they do not address the underlying causes of health inequities (8).

In contrast, upstream approaches build on the understanding that social, economic, and environmental inequity are root causes of health inequity, and that improving social, economic, and environmental conditions will improve health. To achieve health equity, new strategies must move beyond the traditional public health approaches to focus on social, economic, and political change (9). Upstream strategies address inequities in education, employment, income, housing, neighborhood safety, recreational opportunities, environmental hazards, and healthy food access, through policy, systems, and environmental change efforts.

These new approaches that address root causes of health inequities require a long-term commitment to comprehensive multi-level and multisectoral strategies to change the social determinants of health. Broad coalitions of public, private, nonprofit, and community stakeholders are required to change community structures. In order to do this work effectively, resident voices are essential; residents should define the assets and challenges of their communities, identify the possible solutions, and participate in the implementation of those solutions (10). It is this model of building partnerships with community residents, community-based organizations, and large institutions that is essential to promoting system and policy level change to promote health in all Boston communities.

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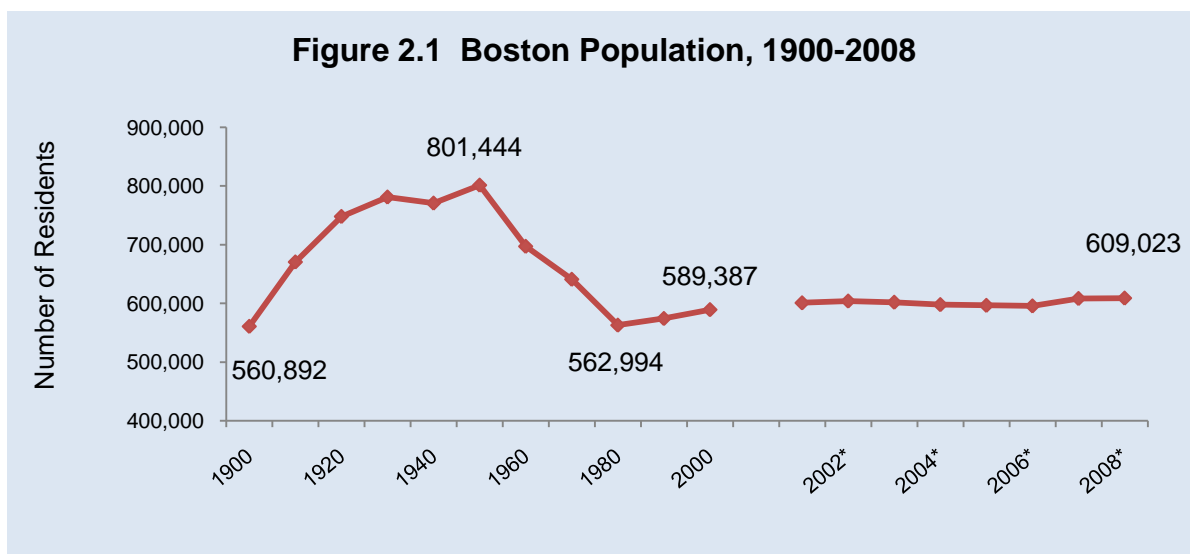
## Section 2: Demographic Profile

In order to understand the health experience of our city, we must first answer a fundamental question: “Who are the residents of Boston?” Although a population can be described in many different ways, the purpose of this question is to help us appreciate the basics such as “How many people live in Boston?”, “How old are they?” and “How many men and women live here?” By asking these questions, we seek to describe some baseline demographic factors such as age, race/ethnicity, and place of birth. Health status and risk of disease often times vary across demographic characteristics. For instance, there is an increased risk for coronary artery disease as an individual gets older. Also, mortality rates for breast cancer are higher among Black women, although incidence rates are higher among White women. This section describes the population size, and the distribution of the population by age, gender and race/ethnicity. Understanding the context of health in Boston begins with a description of the city’s residents.

### *Boston Population*

Boston is the largest city in Massachusetts and the 20th largest in the US. The US Census estimates that there were 609,023 people living in the City of Boston in 2008.

The city’s population has fluctuated over time. The city experienced a 43% increase in the first half of the last century, reaching the city’s highpoint, 801,444, in 1950. During the next three decades the population steadily decreased, reaching 562,994 in 1980. The population has experienced slow but steady increases since the 1980s.

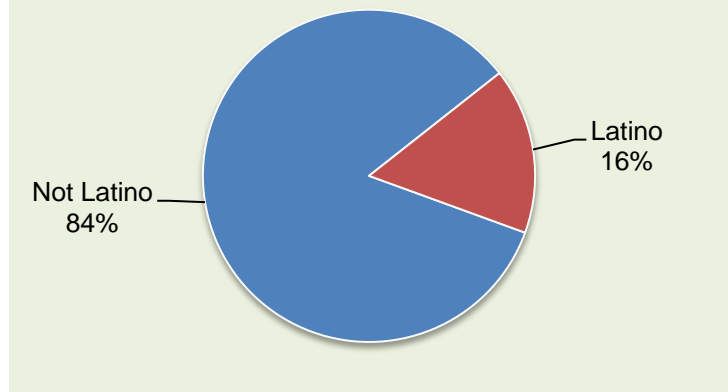


Data Sources: Decennial Censuses, U.S. Department of Commerce, Bureau of the Census, 1900-2000; \*Annual Population Estimates Program, Population Division, US Bureau of the Census 2002-2008.

The 1980 US census was the first to allow respondents the option of identifying themselves as Latino.

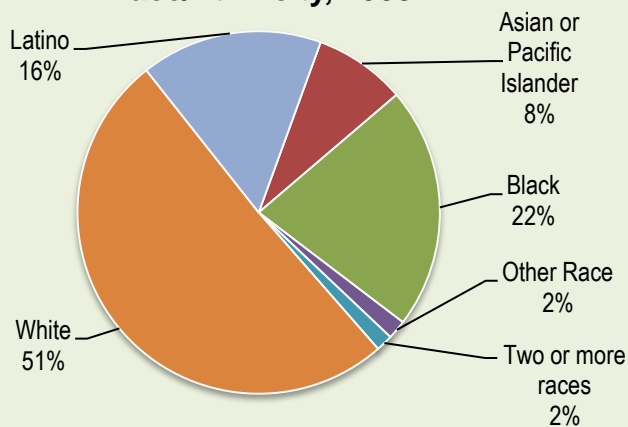
In 2008, 16% of Boston residents identified themselves as Latino. The largest percentage of those who identified as Latino noted their specific origin as Puerto Rico (31%) and the Dominican Republic (27%). El Salvador was the origin of 8% of Latinos; Columbians, Mexicans, and Hondurans each made up 6% of Latinos.

**Figure 2.2 Latino Population in Boston, 2008**



Data Source: US Department of Commerce, Bureau of the Census, American FactFinder, 2008

**Figure 2.3 Population by Race/Ethnicity, 2008**



Beginning with the 2000 US Census, respondents were able to indicate multiple racial categories. As shown in figure 2.3, in 2008, 2% of Boston residents identified themselves as belonging to more than one race. Of those who identified as belonging to one race, 51% identified as White, 22% identified as Black, 16% identified as Latino, and 8% identified as Asian or Pacific Islander.

Data Source: US Department of Commerce, Bureau of the Census, American FactFinder, 2008

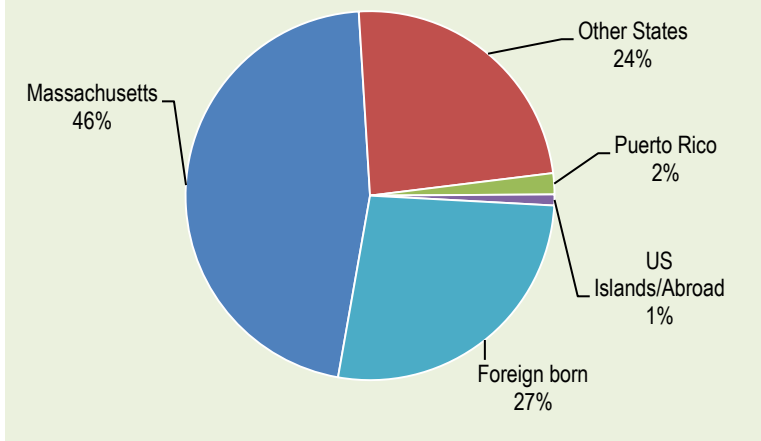
**Figure 2.4 Population by Race/Ethnicity and Year: Percentage Distributions, 1980 - 2008**

Year	Not Latino						Latino (of any Race)
	American Indian or Alaska Native	Asian or Pacific Islander	Black	Other Race	Two or more races	White	
	%	%	%	%	%	%	%
1980	0.2%	2.7%	21.7%	1.1%	--	67.9%	6.4%
1990	0.3%	5.2%	24.0%	1.0%	--	59.1%	10.4%
2000	0.3%	7.5%	23.8%	1.4%	3.1%	49.5%	14.4%
2004*	0.1%	8.9%	26.4%	1.7%	1.3%	47.3%	14.3%
2005*	0.3%	8.7%	23.5%	3.0%	1.2%	48.6%	14.7%
2006*	0.3%	8.0%	23.4%	1.8%	1.4%	50.2%	14.9%
2007*	0.2%	8.6%	21.2%	1.8%	1.5%	49.8%	16.9%
2008*	0.3%	8.2%	21.6%	1.4%	1.5%	50.8%	16.2%

Data Sources: Decennial Censuses, U.S. Department of Commerce, Bureau of the Census, 1900-2000; Annual Population Estimates Program, Population Division, US Bureau of the Census 2002-2008.

The population of Boston has become increasingly diverse. The Asian population tripled between 1980 and 2008. The Latino population, which was reported to be 6.4% in 1980, increased to 16.2% in 2008. In 1980, approximately two-thirds of the population were White compared with approximately half in 2008.

**Figure 2.5 Place of Birth for Boston Residents, 2008**

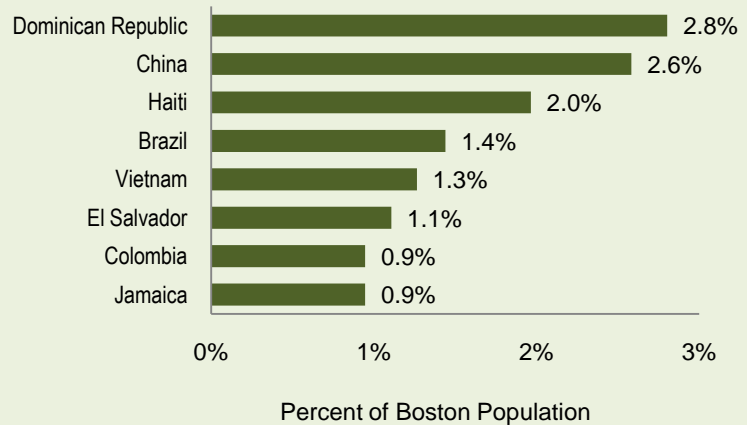


In 2008, less than half of Boston residents were born in Massachusetts. Foreign-born residents make up 27% of the total population in Boston.

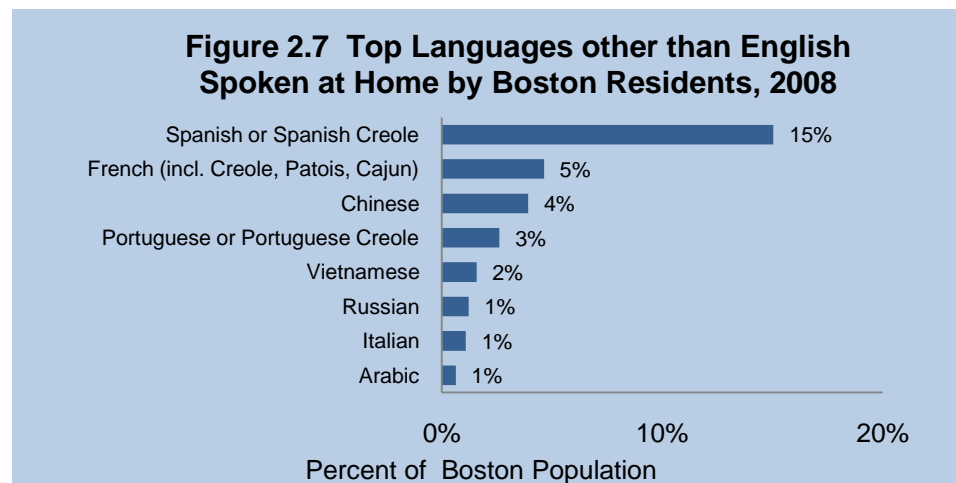
Data Source: US Department of Commerce, Bureau of the Census, American FactFinder, 2008

In 2008, of the 25 largest cities in the U.S., Boston was fifth in proportion of foreign-born residents (1). Of the residents who reported being born outside the United States, the largest percentage of foreign-born residents originated from the Dominican Republic and China. One-third of all immigrants came from just four countries (Dominican Republic, China, Haiti, and Brazil).

**Figure 2.6 Select Countries of Birth of Foreign Born Boston Residents, 2008**



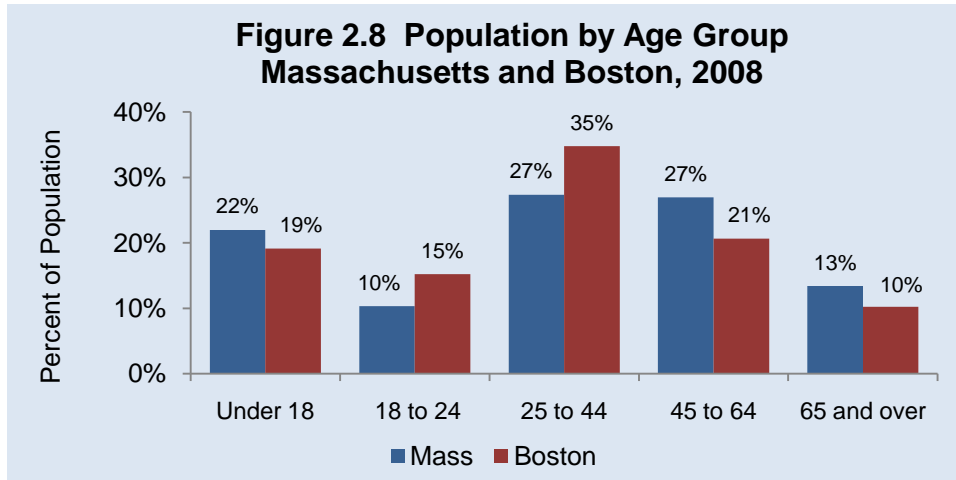
Data Source: US Department of Commerce, Bureau of the Census, American FactFinder, 2008



Data Source: US Department of Commerce, Bureau of the Census, American FactFinder, 2008

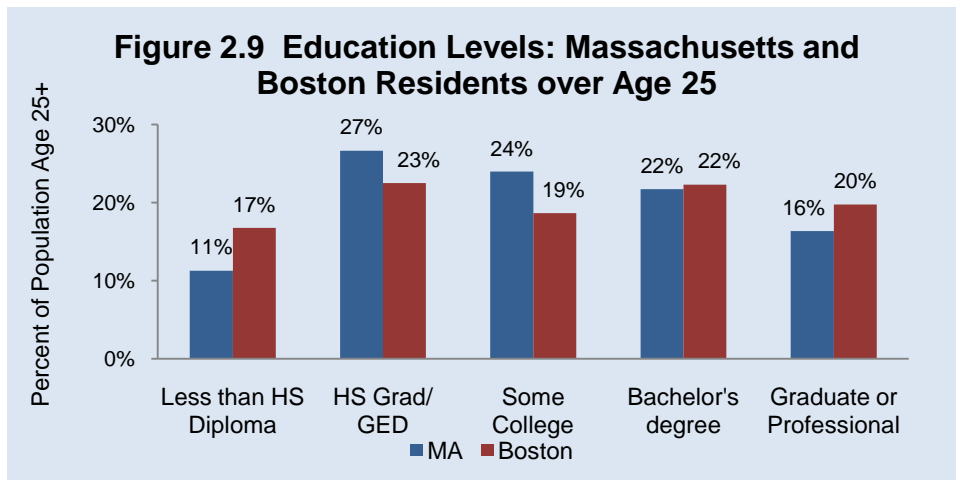
Thirty-six percent of Boston residents reported speaking a language other than English at home (data not shown). Spanish was spoken at home by 15% of Boston residents, 5% spoke French (including Creole, Patois, and Cajun) at home, and 4% spoke Chinese.





Data Source: US Department of Commerce, Bureau of the Census, American FactFinder, 2008

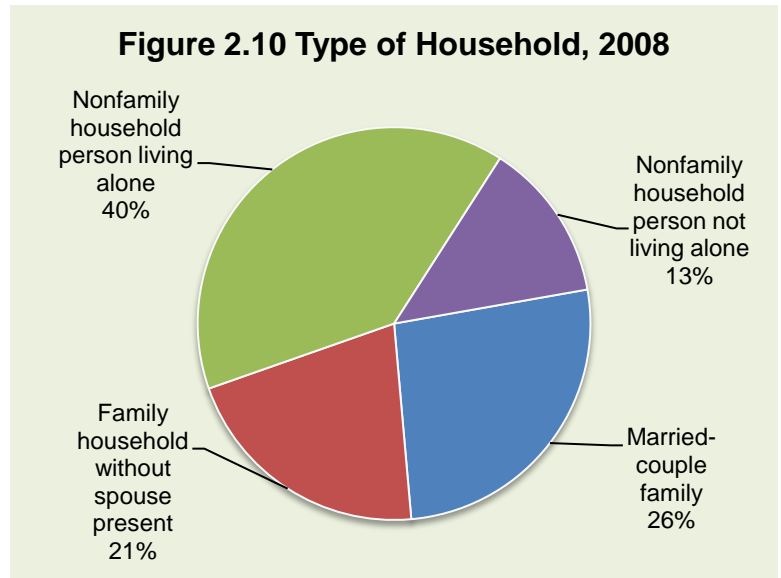
In 2008, half (50%) of the residents of Boston were between the ages of 18 and 44. In comparison, only 37% of the state’s population fell in this age group. In 2003, the Boston Redevelopment Authority estimated that among the nation’s 25 largest cities, Boston was second in the percentage of residents in the 20 to 34 age category (data not shown).



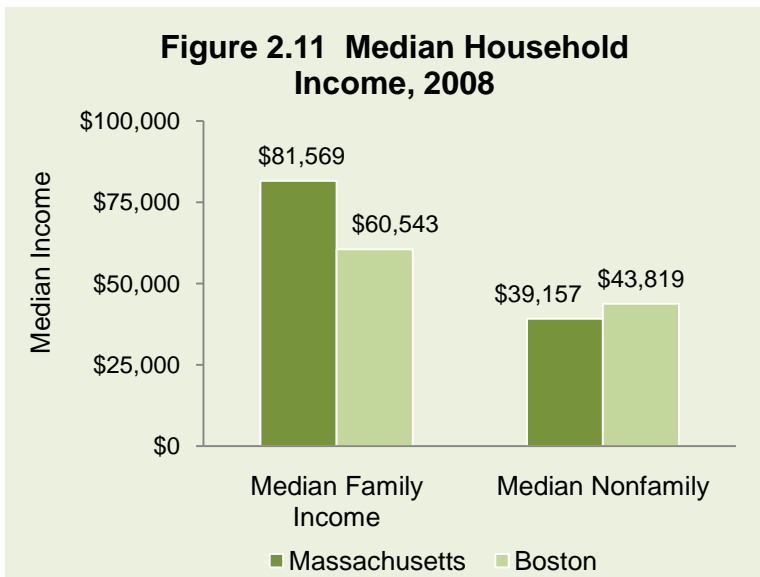
Data Source: US Department of Commerce, Bureau of the Census, American FactFinder, 2008

In 2008, 17% of Boston residents did not have a High School Diploma or GED. The percentage of Boston residents without a High School Diploma or GED was 49% higher than the percentage of Massachusetts residents without this credential. On the other end of the education spectrum, Boston had a higher percentage of adults with post-graduate training when compared to all Massachusetts residents.

In 2008, 40% of all households in Boston consisted of an individual living alone. Forty-seven percent of all households were considered family households. The census defines a family household as one in which there is at least one person living in the household who is related by marriage, blood, or adoption to the householder (head of household). Of all households, 26% were “married couple” families, that is, the householder was living with a spouse.



Data Source: US Department of Commerce, Bureau of the Census, American FactFinder, 2008

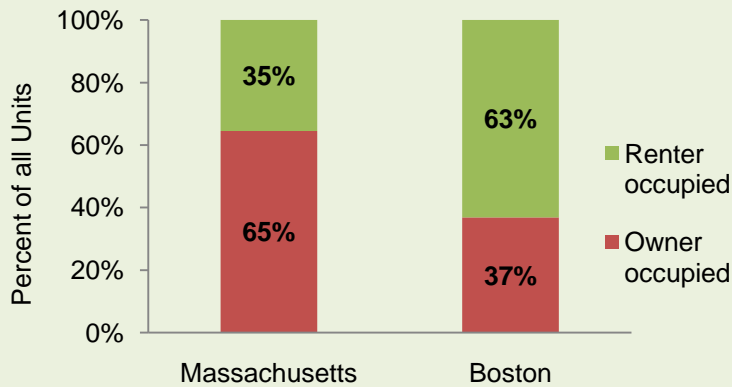


Data Source: US Department of Commerce, Bureau of the Census, American FactFinder, 2008

In 2008, the median family income in Boston was 26% lower than the median family income statewide.

The median income of non-family households (households in which the householder lived alone or with non-related individuals) was 12% higher in Boston than in the State.

**Figure 2.12 Type of Occupancy of Boston Housing Units, 2008**



The majority of housing units in Boston are rental units. In 2008, just over one-third of Boston households lived in owner-occupied units, compared with 65% of Massachusetts households.

Data Source: US Department of Commerce, Bureau of the Census, American FactFinder, 2008

## Summary: Demographic Profile

The most recent population estimates (2008) show that the City of Boston has a population of 609,023, making it the largest in Massachusetts and the 20<sup>th</sup> largest in the United States. The city's population has fluctuated over time since 1900 with a steep increase between 1900 and 1950, followed by a sharp decline over the subsequent thirty years. The population has steadily increased since the 1980s.

The city has become more racially and ethnically diverse over the last several decades. The 1950 census estimated that 95% of the population were White, 5% were Black, and less than 1% were Asian. In 2008, the census estimated that 49% of the population were people of color – 22% of the population were Black, 16% were Latino, and 8% were Asian.

Foreign-born residents make up 27% of the population and originate from a wide array of countries including the Dominican Republic, China, Haiti, and Brazil. This diverse population brings with it fluency in a variety of languages – one-third of Boston residents speak a language other than English at home.

Understanding the diversity within Boston is essential to combating the persistent and pervasive racial/ethnic health inequities described in this report. The following section describes the connection between race/ethnicity and some of the socioeconomic characteristics that are social determinants of health.



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## Notes and Data Analysis

**Figure 2.1**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 2.2**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 2.3**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 2.4**

NOTE: The 2000 Census offered the option of reporting more than one race for the first time, therefore, comparisons pre-2000 Census data are not strictly comparable with data collected before this time. Nonetheless, these data provide good estimates of the changes in the racial and ethnic composition of Boston.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 2.5**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 2.6**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 2.7**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 2.8**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 2.9**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 2.10**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 2.11**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 2.12**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office





### Section 3: Socioeconomic Status

Socioeconomic status is a measure of an individual's or family's economic and social position based on education, income, and occupation. It is such a strong predictor of health that an assessment of the health of Boston would be incomplete without consideration of the socioeconomic status of its residents.

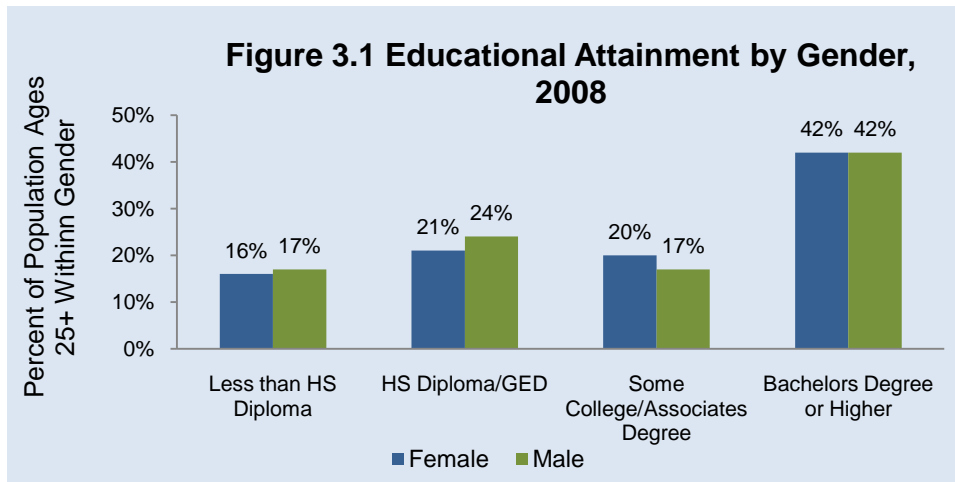
An individual's place on the socioeconomic ladder can play a role in the person's level of health and even how long that person may live (1). Socioeconomic status impacts health by creating barriers to regular health care, adequate housing, quality education, nutritious food, recreational opportunities, and other resources associated with a healthy lifestyle.

Socioeconomic status and race entwine to contribute to inequities in chronic disease, disability, mental health, birth outcomes, injuries, violence, and mortality. Racism limits economic and social opportunities and affects the living and working conditions of people of color (2). The daily stressors associated with lower socioeconomic status and racism can trigger physiological changes that over time can damage immune defenses and vital organs resulting in more rapid onset and progression of chronic illnesses (3).

Socioeconomic status affects health at every age; however, the effect of family income and education on children is especially powerful. Socioeconomic adversity in childhood is associated with worse health during childhood and later in adulthood (4). Poor housing and schools contribute to lower educational attainment among poor children. Lower education level is associated with reduced employment prospects and lower income levels in adulthood and ultimately with poorer health (5). Poor nutrition and inferior housing, associated with low income levels, contribute to infectious and chronic disease, injuries, and delayed development which create further barriers to children's success (6).

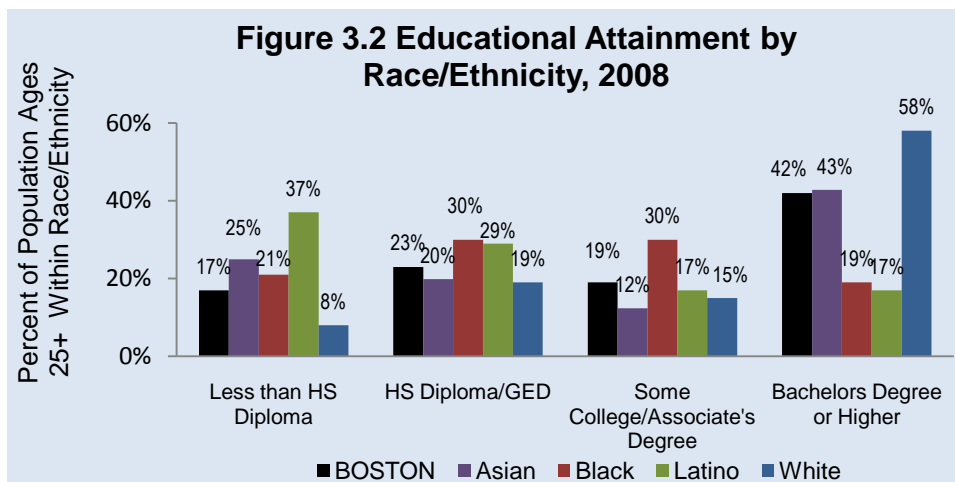
This section will present data on measures related to socioeconomic status. These include measures of income (median family and median household income, and poverty levels), impact of low income levels (foreclosures, homelessness, and food stamp caseloads), and measures associated with income status (educational level and employment levels).





DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

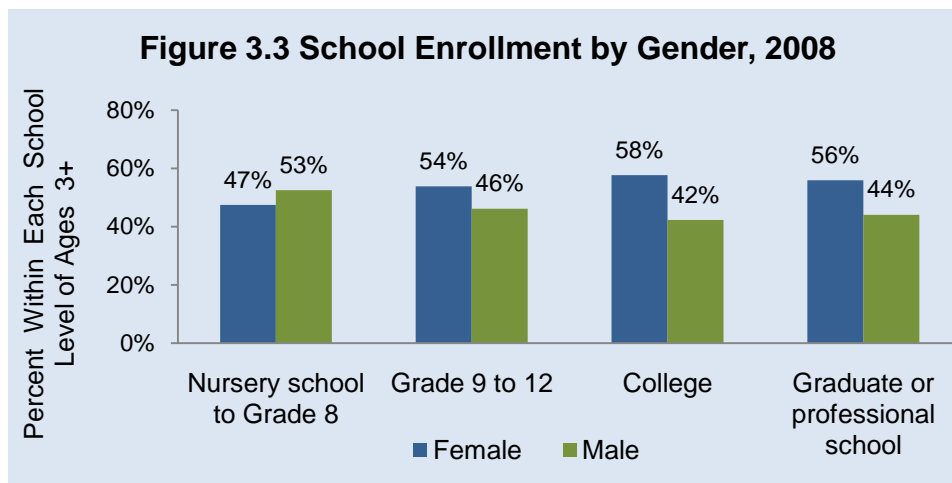
Many research studies have found that a higher level of educational attainment is a strong predictor of access to economic and health care resources. The variation in educational attainment may contribute to the differences in access and utilization of health care among different social groups. In 2008, at each education level, males and females had approximately the same level of achievement.



DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

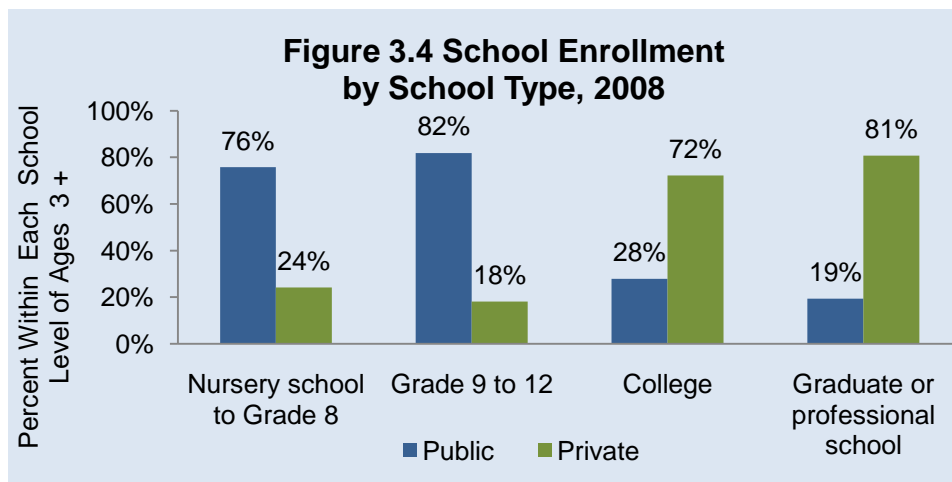
In 2008, there were racial/ethnic differences in the educational attainment of Boston residents. Seventeen percent of Boston residents had less than a high school diploma or GED. The percentage of Boston adults with less than a high school diploma or GED was highest for Latinos (37%) and lowest among Whites (8%).

In addition, the percentage of White adults who had attained a Bachelors Degree or higher was three times the percentage of Black and Latino adults with advanced educational degrees. More than two out of five (43%) Asian adults had a Bachelor’s degree or higher and one in four (25%) had less than a HS diploma.



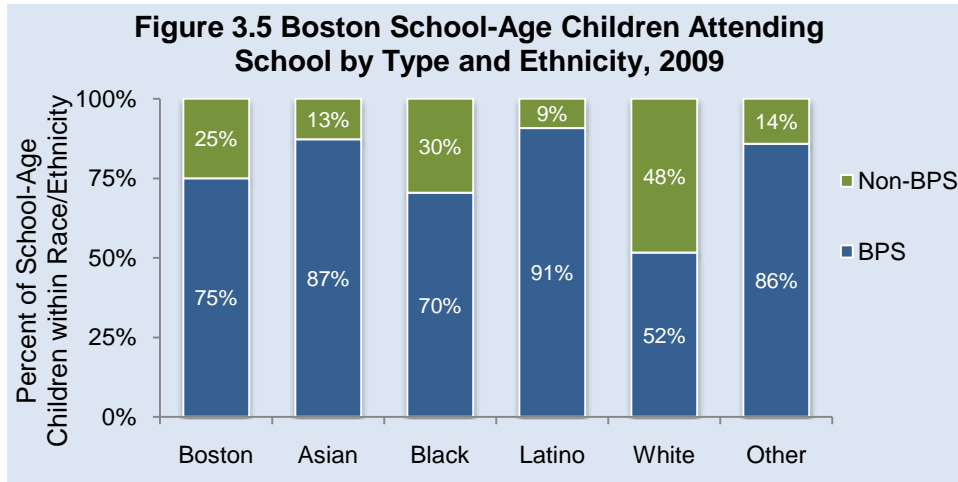
DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

In 2008 a higher percentage of Boston’s female residents were enrolled in high school, in college, and in graduate/professional school when compared with male residents.



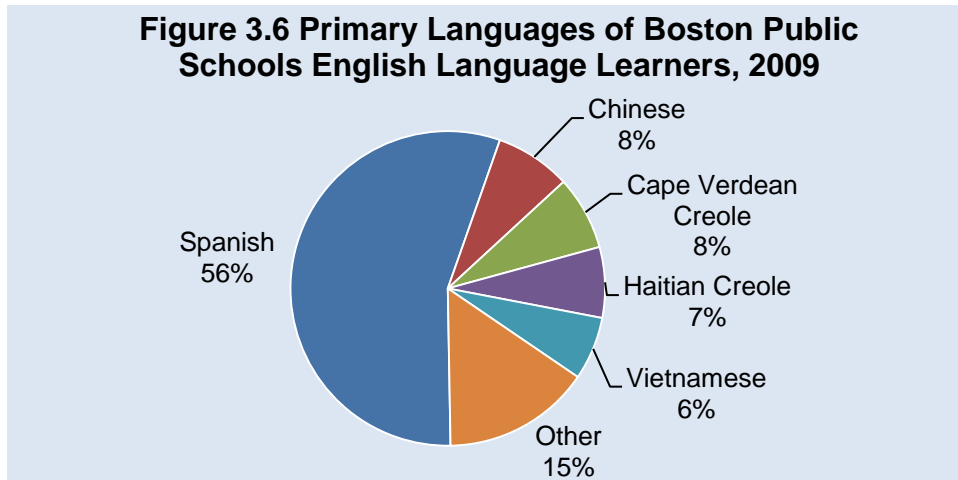
DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

The majority of Boston residents in nursery school to grade 8 and in Grades 9 to 12 attended Boston public schools. However, most Boston residents attending college or graduate/professional school attended private institutions.



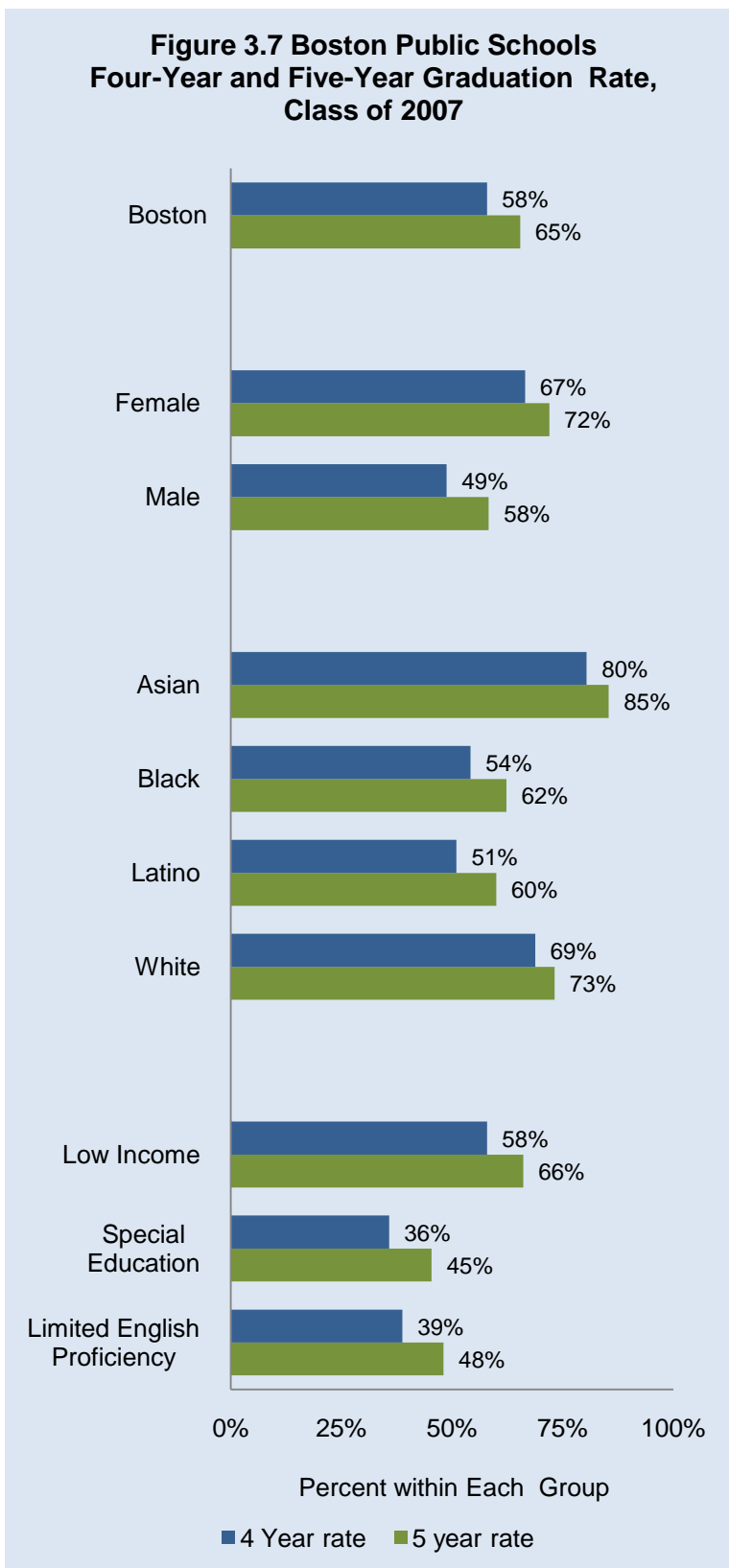
DATA SOURCE: Boston School Department, 2009

Most Latino and Asian youth attended the Boston public school system, 91% and 87%, respectively. By comparison only half (52%) of White youth in Boston attended public school.



DATA SOURCE: Boston School Department, 2009

In 2009, 19% of Boston public school students, representing 40 countries, attended English Language Learner (ELL) programs (data not shown). Among those students, Spanish was the first language spoken by over half attending this program. Other common languages included Chinese, Cape Verdean Creole, Haitian Creole, and Vietnamese.



DATA SOURCE: Massachusetts Department of Education, 2010

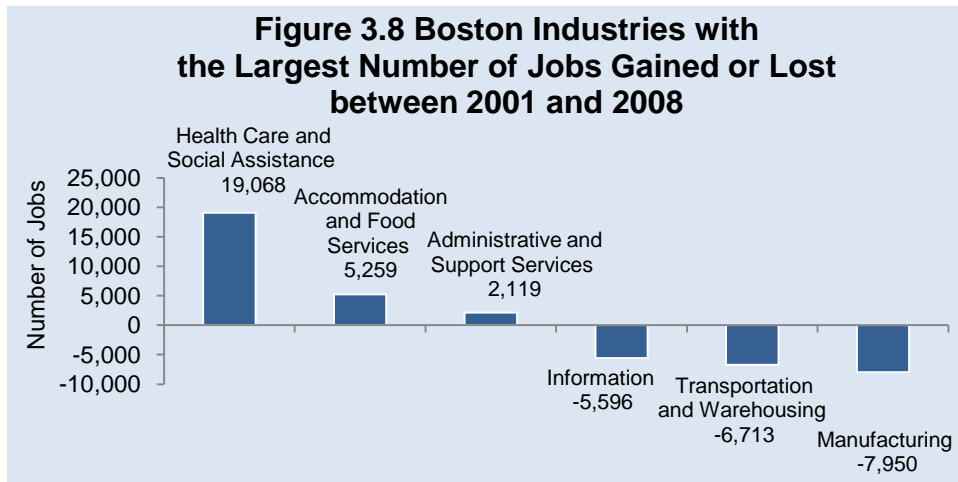
Figure 3.7 shows the four-year and five-year graduation rates for class of 2007 (defined as students who began high school in the fall of 2003). After four years, 58% of the class had graduated. With an additional year, the graduation rate increased by 7.5 percentage points to 65%.

Females had higher four and five-year graduation compared to males. Males seemed to benefit more from the extra year – the graduation rate for males increased by 9.5 percentage points compared to an increase of 5.5 percentage points for females.

Asians had the highest graduation rates for both four and five years. Although the graduation rates increased for all racial/ethnic groups with an extra year, Latinos and Blacks seemed to benefit most. The graduation rate for Latino students increased by 9.0 percentage points; the graduation rate for Black students increased by 8.1 percentage points.

Special education and limited English proficiency students benefitted from an extra year. With an extra year, the graduation rate for special education students increased by 9.6 percentage points and the graduation rate for limited English proficiency students increased by 9.3 percentage points (7).

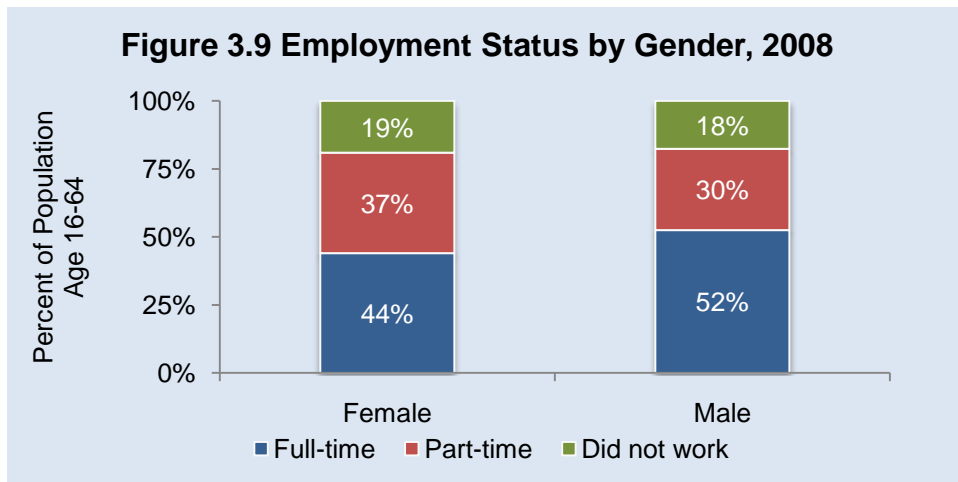




DATA SOURCE: Massachusetts Executive Office of Labor and Workforce Development's Employment and Wage (ES-202) data

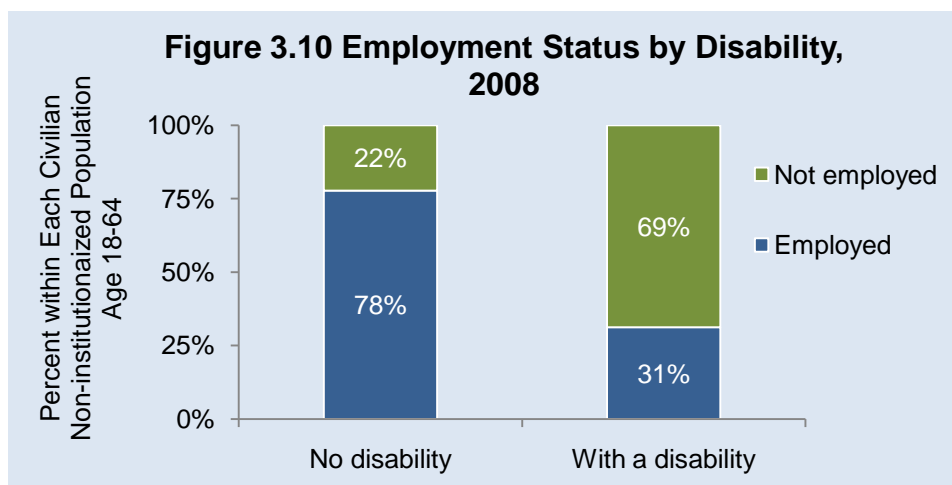
In Boston, between 2001 and 2008, the “Health Care and Social Assistance” sector gained 19,068 jobs – a 20.3% increase, while the “Accommodation and Food Services” and the “Administrative and Support Services” sectors gained 5,259 jobs (12.5% increase) and 2,119 jobs (6.1% increase), respectively.

Conversely, “Manufacturing” sector jobs declined by 45.9% while the “Transportation and Warehousing” and the “Information” sector jobs declined by 20.1% and 26.2%, respectively.



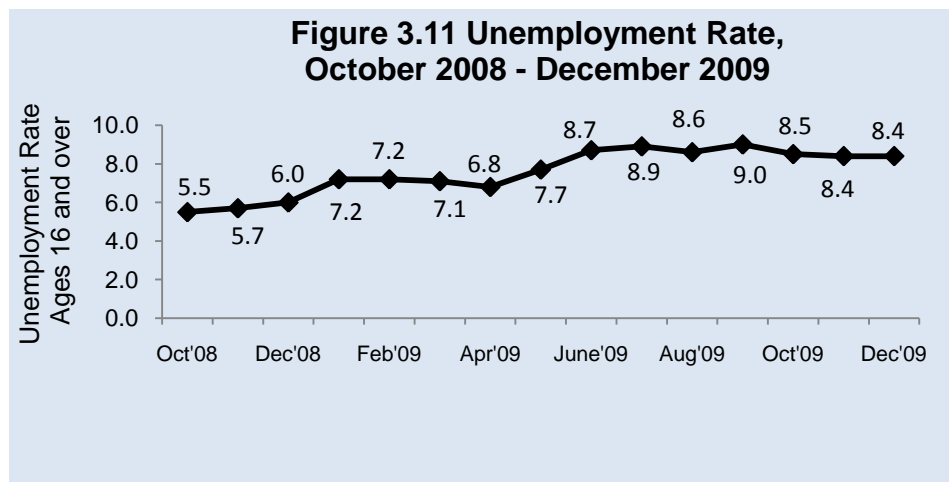
DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

In 2008, 52% of males ages 16 to 64 were employed full-time, while 44% of females ages 16 to 64 were employed full-time.



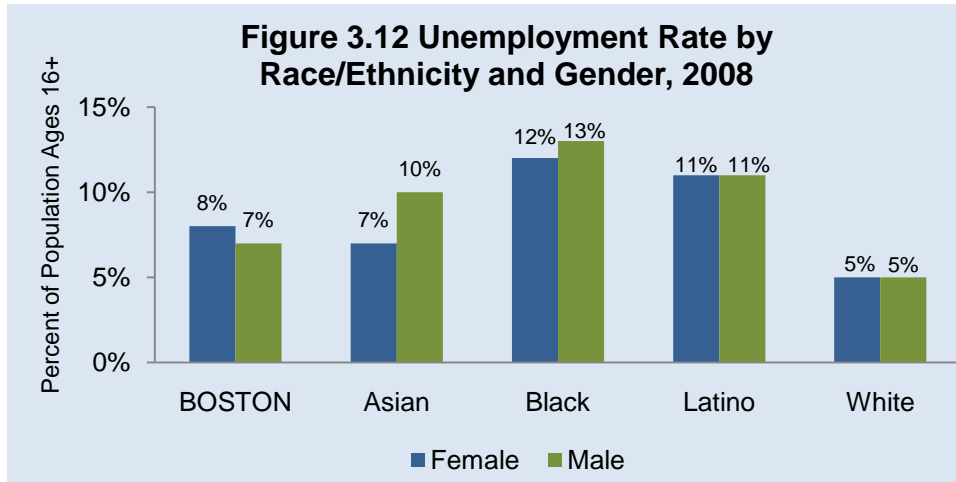
DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

In 2008, 78% of the non-disabled population ages 18 to 64 was employed compared to 31% of the disabled population.



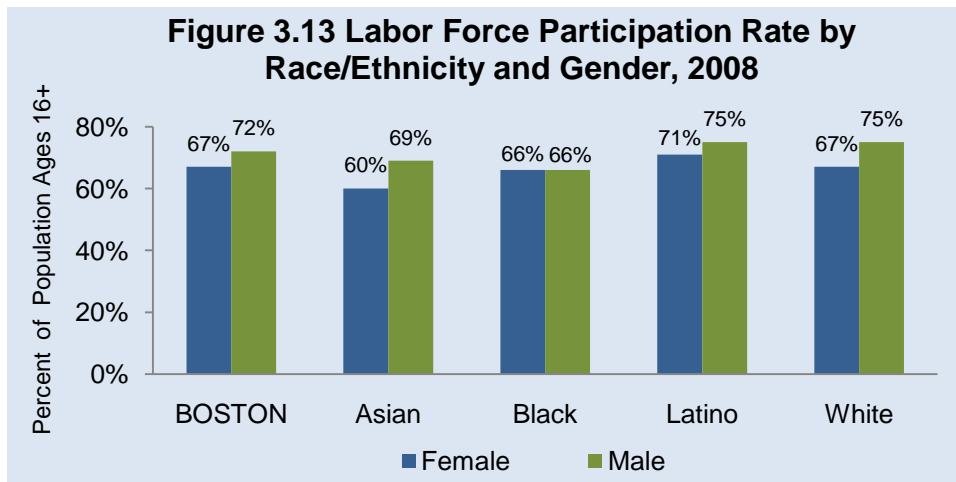
DATA SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, 2008 and 2009 Local Area Unemployment Statistics

The monthly unemployment rate in Boston increased by 64% between October 2008 and September 2009. After peaking at 9.0% in September 2009, the unemployment rate decreased to 8.4% in November 2009.



DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

Both White males and White females have lower unemployment rates compared to residents of color. The unemployment rate among Black males was almost three times the rate among White males. The rate among Asian and Latino males was almost two times the rate among White males. The unemployment rate among Black and Latino females was two times the rate among White females.



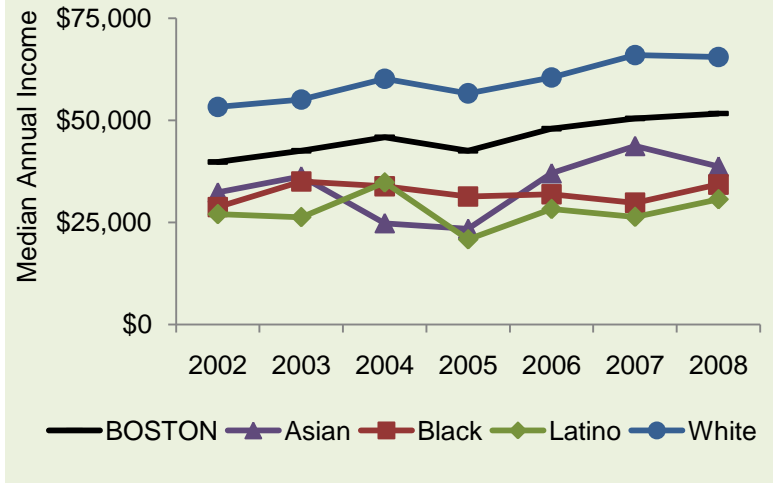
DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

The Labor Force Participation Rate (LFPR) was highest among White and Latino males. LFPR was lowest among Asian females and both Black females and males.

Between 2002 and 2008, the overall median annual household income of Boston residents increased by 30% to \$51,688. Racial/ethnic differences among median annual household incomes were observed. White residents had a substantially higher median annual household income in comparison to Asian, Black, and Latino residents.

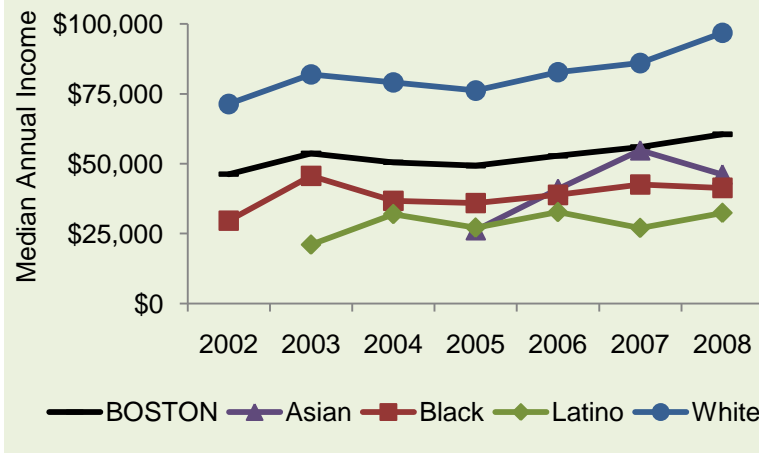
In 2008, the median annual household income for Asian residents was \$38,724; for Black residents \$34,304; for Latino residents \$30,665; and for White residents \$65,538.

**Figure 3.14 Median Annual Household Income by Race/Ethnicity, 2002-2008**



DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

**Figure 3.15 Median Annual Family Household Income by Race/Ethnicity, 2002-2008**

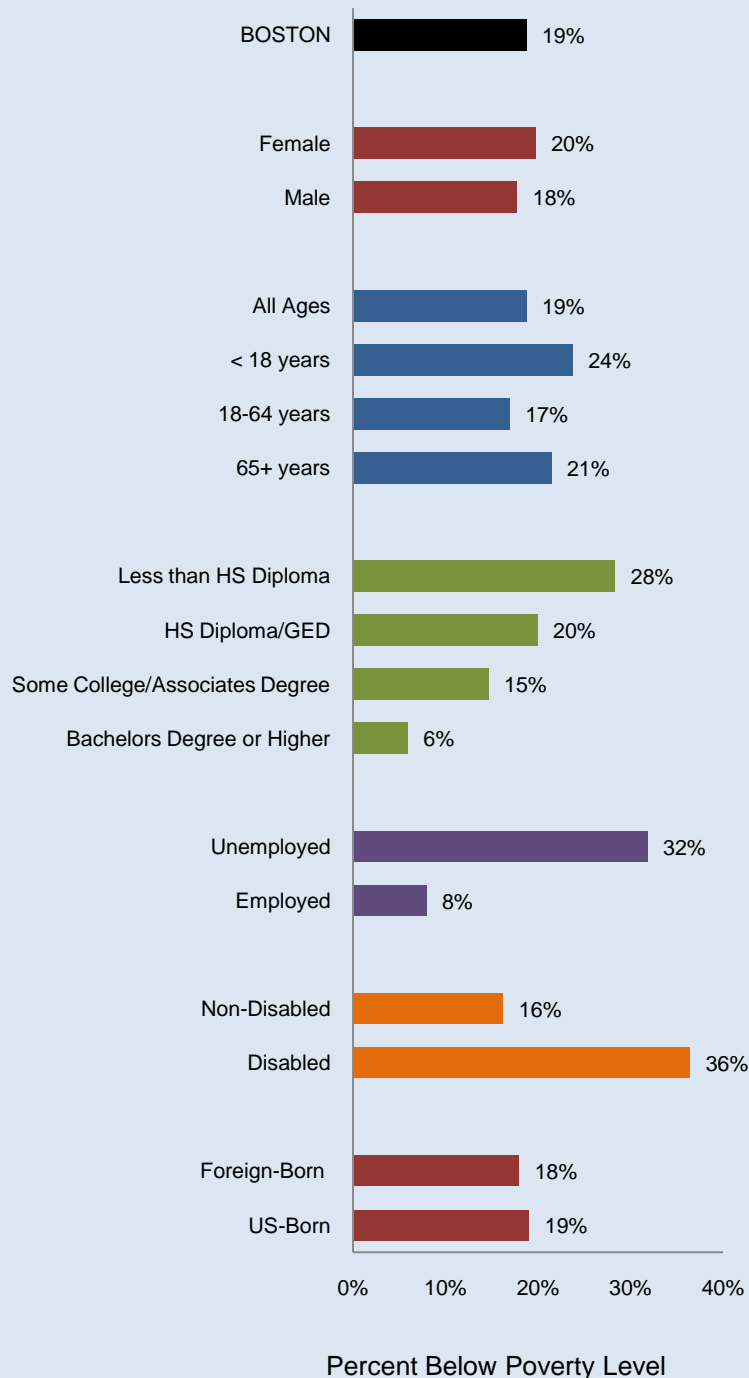


DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

A family household is defined as a household in which at least one other member of the household is related to the head of the house. The median annual family household income among Boston residents was \$60,543 in 2008, a 24% increase from 2002.

Substantial differences in annual median family household income were observed by race/ethnicity. In 2008, the median annual family household income for White residents was \$96,791, compared with \$46,130 for Asian, \$41,338 for Black, and \$32,396 for Latino families.

**Figure 3.16 Income Below Poverty Level in the Past 12 Months by Selected Indicators, 2008**



DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

In 2008, 19% of Boston residents lived below the poverty level. The U.S. Census Bureau uses a set of money income thresholds that vary by family size and composition to detect who is poor. If the total income for a family household or for an unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being “below the poverty level.” This level is adjusted yearly as changes occur in the national economy’s Consumer Price Index and costs of living.

An educational gradient was observed among Boston residents living below the poverty level. A higher percentage of residents over the age of 25 with less than a HS school diploma lived below the poverty level compared to residents with a bachelor degree or higher.

A higher percentage of unemployed residents lived below the poverty level in comparison to employed residents.

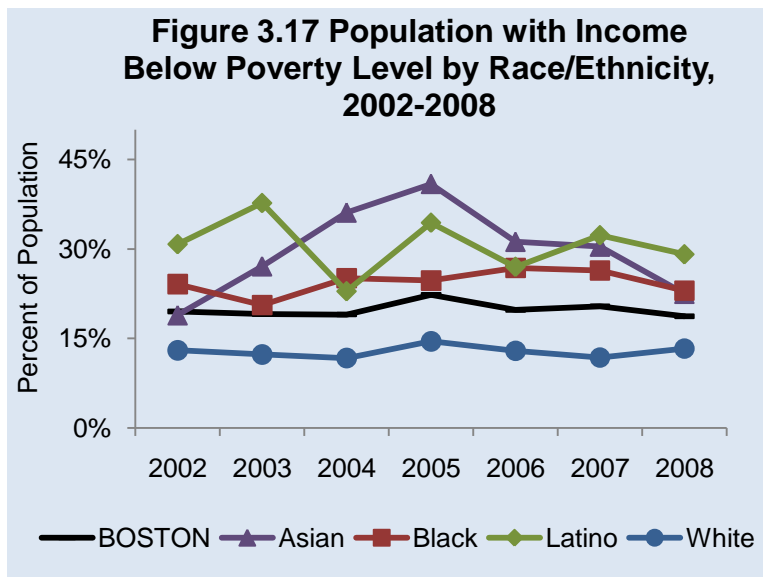
A higher percentage of disabled Boston residents reported living below the poverty level in comparison to non-disabled residents.

The percentage of residents living in poverty was highest among residents under age 18 and lowest among residents ages 18 to 64.

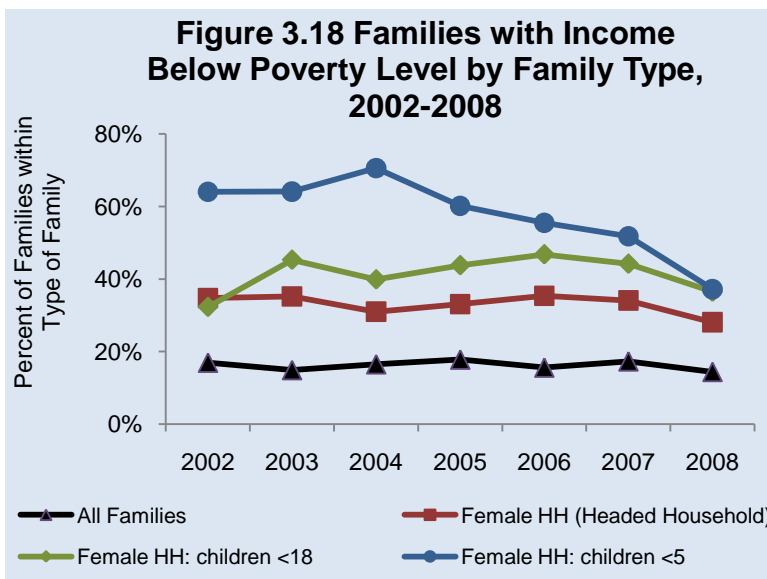
The percentages of residents living in poverty were fairly similar with respect to place of birth and gender.

In 2008, 19% of Boston residents had an income that fell below the poverty line. The percentage of individuals living below the poverty level has remained fairly constant since 2002 for Boston overall. However, there have been fluctuations in the percentage of the population living in poverty for Asian and Latino residents.

In 2008, the lowest percentages of Boston residents living in poverty were White. The highest percentage of residents living in poverty were Latino.



DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey



Since 2002, the percentage of all families with income below the poverty level has remained below 20%.

However, the percentage of female headed households with children under age five with income below the poverty level decreased from 70.6% in 2004 to 37.2% in 2008.

DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

**Figure 3.19 Food Stamp Cases in Boston Neighborhoods, January 2005 and January 2008**

Between January 2005 and January 2008, all neighborhoods experienced an increase in food stamp cases. Roxbury, North Dorchester, and South Dorchester had the largest increase in number of food stamp cases. These neighborhoods accounted for about half of the food stamp cases in the city. The Back Bay and West Roxbury neighborhoods experienced the largest percentage of increase in cases, but had the fewest number of cases.

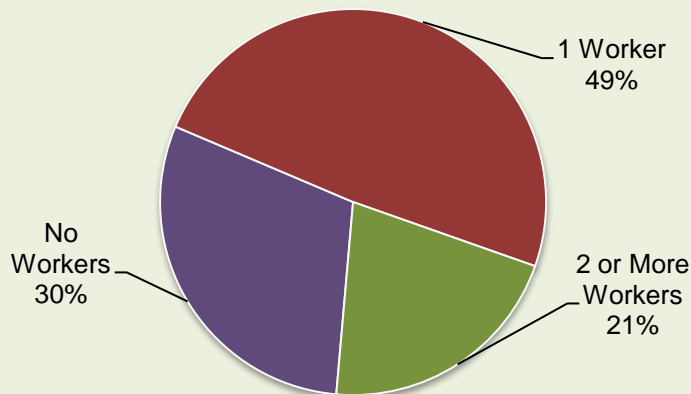
	January 2005	January 2008	% Change
<b>Boston</b>	53,921	71,308	32.2%
Allston/Brighton	2,674	3,563	33.2%
Back Bay*	901	1,695	88.1%
Charlestown	1,408	1,782	26.6%
East Boston	2,898	4,240	46.3%
Fenway	1,613	2,446	51.6%
Hyde Park	2,044	2,847	39.3%
Jamaica Plain	2,577	3,365	30.6%
Mattapan	3,096	4,014	29.7%
North Dorchester	11,225	13,652	21.6%
Roslindale	2,120	2,942	38.8%
Roxbury	6,450	9,246	43.3%
South Boston	2,522	3,465	37.4%
South Dorchester	10,714	12,668	18.2%
South End†	3,329	4,764	43.1%
West Roxbury	350	619	76.9%

\*Includes Beacon Hill, West End, and North End

†Includes Chinatown

DATA SOURCE: Commonwealth of Massachusetts, Department of Transitional Assistance, Supplemental Nutrition Assistance Program (SNAP)

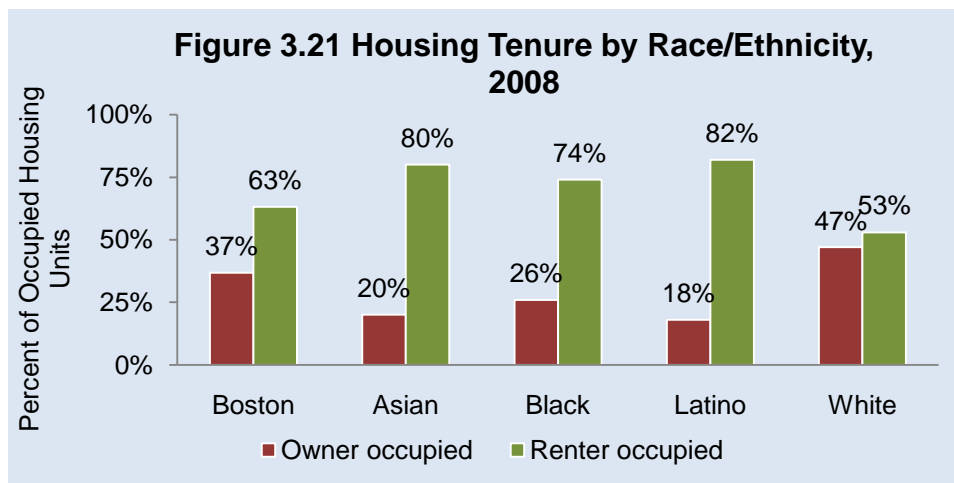
**Figure 3.20 Households Receiving Food Stamps by Employment Status During Past Year, 2008**



In 2008, 70% of all households receiving food stamps in the past year had at least one employed worker.

DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

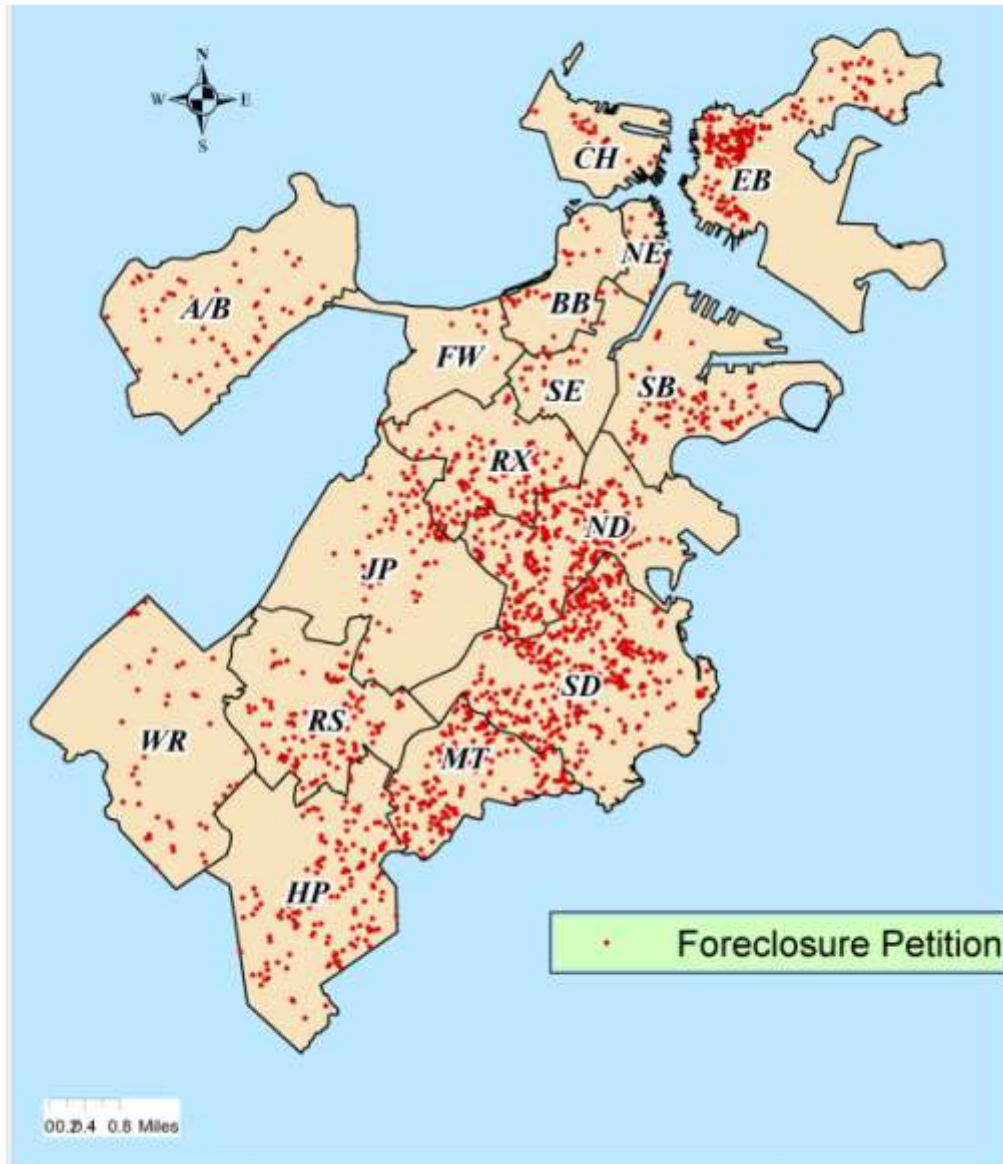




DATA SOURCE: U.S. Census Bureau, 2008 American Community Survey

Housing tenure refers to the rental or ownership status of a housing unit. In 2008, 37% of Boston housing units were owner occupied. However, housing tenure varied by race/ethnicity. Owner occupancy was highest for White residents. About half (53%) of housing units which were occupied by a White householder were owned by the householder rather than rented. The lowest percentage of owner occupied units was found among Latino residents.

Figure 3.22 Foreclosure Petitions by Neighborhood, 2008



DATA SOURCE: City of Boston, Department of Neighborhood Development

A foreclosure petition is the first step in the foreclosure process of a home. In 2008, the number of foreclosure petitions in Boston was 1,897. The highest numbers of foreclosure petitions were in the neighborhoods of South Dorchester, North Dorchester, and East Boston.

**Figure 3.23 Foreclosure Petitions, 2007 and 2008**

	2007	2008	%
<b>Boston</b>	<b>2,430</b>	<b>1,897</b>	<b>-21.9%</b>
Allston/Brighton	67	60	-10.4%
Back Bay*	34	32	-5.9%
Charlestown	32	26	-18.8%
East Boston	169	185	9.5%
Fenway	11	9	-18.2%
Hyde Park	182	156	-14.3%
Jamaica Plain	95	70	-26.3%
Mattapan	241	183	-24.1%
North Dorchester	410	276	-32.7%
North End	2	2	0.0%
Roslindale	132	109	-17.4%
Roxbury	192	155	-19.3%
South Boston	94	97	3.2%
South Dorchester	664	462	-30.4%
South End†	32	22	-31.3%
West Roxbury	75	53	-29.3%

A foreclosure petition is a first step in a foreclosure process. In 2007, the total number of foreclosure petitions in Boston was 2,430. The number decreased in 2008 to 1,897. In 2008, the number of foreclosure petitions increased in East Boston and South Boston and remained the same in North End. The number of petitions decreased in the other neighborhoods. The decrease is generally attributed to the State’s 90-day “Right to-Cure” law implemented in Massachusetts on May 1, 2008 (8). This law gives a homeowner an extended statutory right to “cure” a default on a mortgage loan.

\*Includes Beacon Hill and West End

†Includes Chinatown

DATA SOURCE: City of Boston, Department of Neighborhood Development



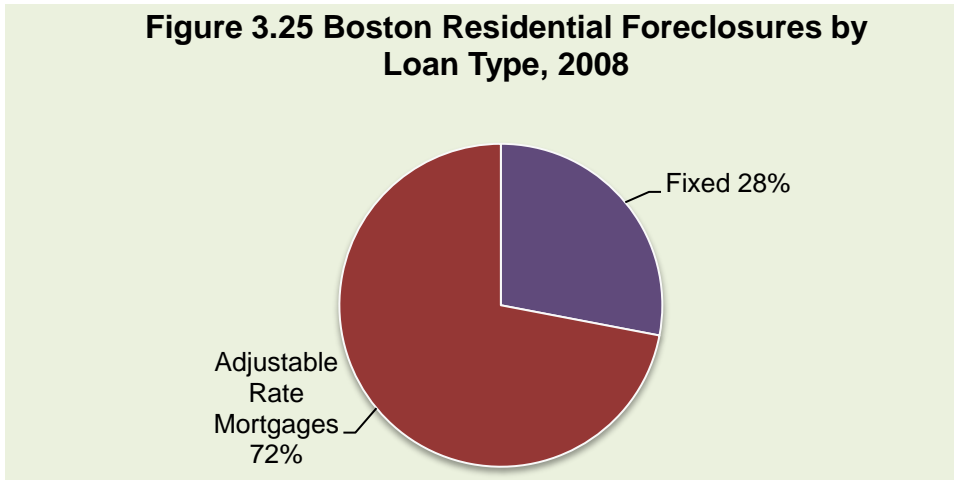
\*Includes Beacon Hill and West End

†Includes Chinatown

DATA SOURCE: City of Boston, Department of Neighborhood Development

In 2008 2.8% of residential properties resulted in a foreclosure petition, a decrease from 3.5% in 2007. Although the total percentage decreased, Roxbury still had the highest percentage of residential properties with a foreclosure petition, in both 2007 and 2008 (8).

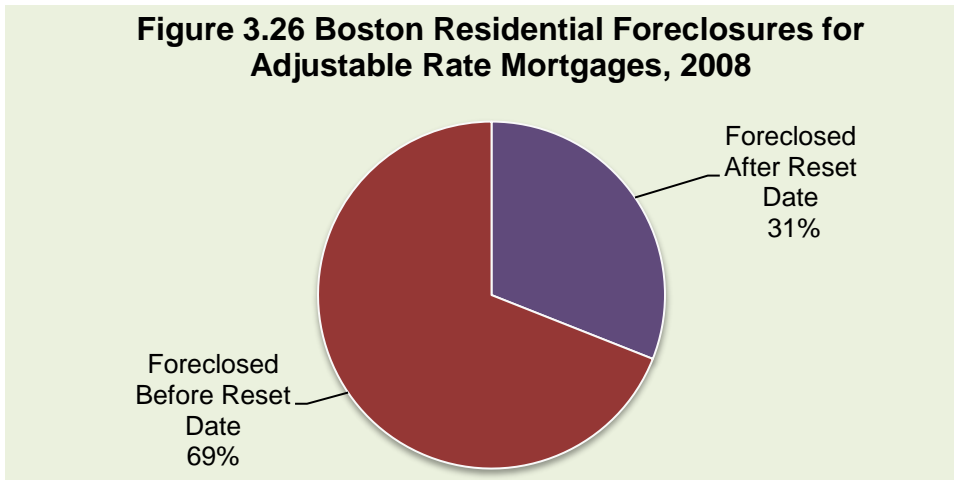
**Figure 3.25 Boston Residential Foreclosures by Loan Type, 2008**



DATA SOURCE: City of Boston Department of Neighborhood Development, Policy Development and Research Division

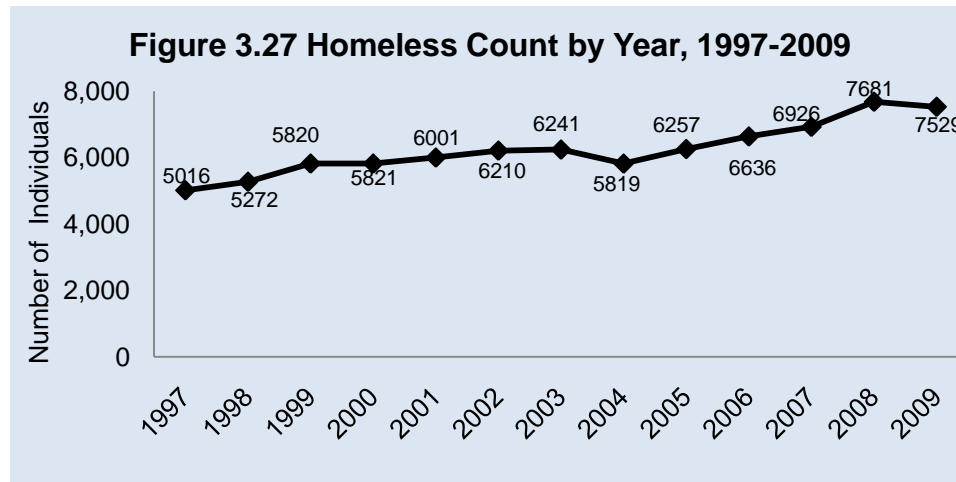
Foreclosure deeds represent the last step in the foreclosure process. In 2008, 72% of foreclosure deeds in Boston were adjustable rate mortgages while 28% were fixed rate mortgages.

**Figure 3.26 Boston Residential Foreclosures for Adjustable Rate Mortgages, 2008**



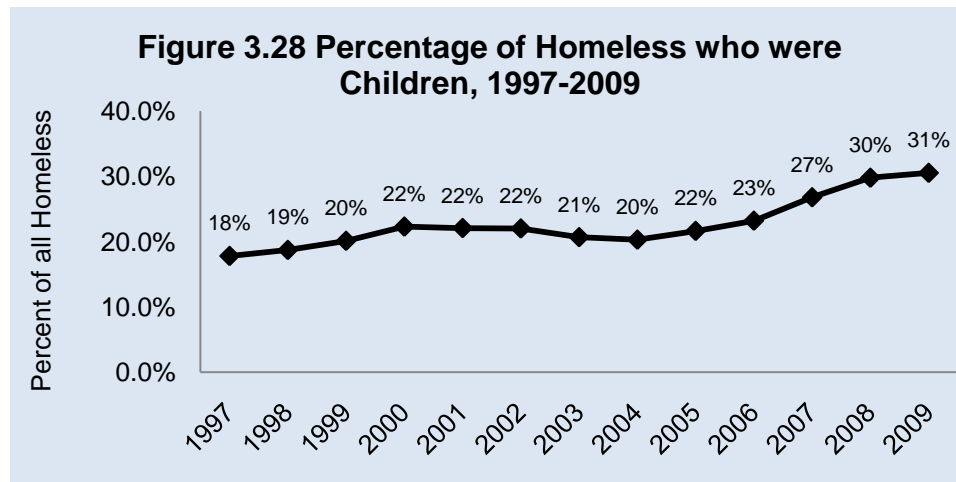
DATA SOURCE: City of Boston Department of Neighborhood Development, Policy Development and Research Division

In 2008, 69% of homes in Boston with an adjustable rate mortgage foreclosed before the reset date of the adjustable rate mortgage compared to only 31% which foreclosed after the reset date. This supports the notion that the reset dates of adjustable rate mortgages were not the reason for the majority of the foreclosures in Boston. Even with the lower interest rates, many homeowners could not afford their mortgage payments (8).



DATA SOURCE: City of Boston, Emergency Shelter Commission, Homeless Counts, 1997-2009

Between 1997 and 2008, the number of homeless individuals increased by 53% and then decreased 2% from 2008 to 2009.



DATA SOURCE: City of Boston, Emergency Shelter Commission, Homeless Counts, 1997-2009

In 2009, 31% of Boston’s homeless were children. There has been a steady increase of the percentage of homeless who were children since 2004, when 20% of homeless were children.

## Summary: Socioeconomic Status

Education and employment, two primary routes out of poverty, are unequally distributed among racial/ethnic groups. In 2008, while over 42% of Boston adult residents ages 25 and older held a Bachelor's degree or higher, 58% of White adult residents had attained this level of education compared to 19% of Black and 17% of Latino adults. Over one-third (37%) of Latino adults had less than a high school diploma or GED, while only 8% of White adults had less than a high school diploma. Though 43% of Asian adults had an educational level of Bachelors Degree or higher, 25% had less than a high school diploma. Black, Latino, and Asian males were unemployed at substantially higher rates than White males. In 2008, the unemployment rate among Black males (13%) was almost three times the rate among White males (5%). The rate among Asian (10%) and Latino (11%) males was at least two times the rate among White males.

Since 2002, the percentage of all families with income below the poverty level has remained fairly constant. However, the burden of poverty has been disproportionately felt by children, especially children living in female-headed households. In 2008, almost one-fourth of children (< 18 years) lived in households whose income fell below the poverty level. Over one-third (37.2%) of female-headed households with preschool children under age 5 were living below the poverty line. The percentage of homeless who were children increased dramatically between 2004 and 2009. In 2009, 31% of Boston's homeless were children.

Three Boston neighborhoods—Roxbury, North Dorchester and South Dorchester—disproportionately share the burden of food insecurity. While 30% of the population lives in Roxbury, North Dorchester and South Dorchester, these three neighborhoods account for 50% of Boston families receiving food stamps. The number of families in Boston receiving food stamps increased by

32% between January 2005 and January 2008.

Foreclosures have become a national issue and were felt in every neighborhood. More than half of all foreclosure petitions in 2007 and 2008 were filed in Mattapan, North Dorchester and South Dorchester. In 2008, 69% of adjustable rate foreclosure homes in Boston foreclosed before the reset date of the adjustable rate mortgage compared to only 31% which foreclosed after the reset date. This supports the notion that the reset dates of adjustable rate mortgages were not the reason for the majority of the foreclosures in Boston.

This section identified differences in socioeconomic status associated with race/ethnicity and gender. Disparities in health are associated with lower socioeconomic status. Socioeconomic status creates a gradient in which higher economic status is correlated with better health.







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## Notes and Data Analysis

**Figure 3.1**

NOTE: Data are estimates based on the American Community Survey

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.2**

NOTE: Data are estimates based on the American Community Survey

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.3**

NOTE: Data are estimates based on the American Community Survey

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.4**

NOTE: Data are estimates based on the American Community Survey

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.5**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.6**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.7**

**Note:** A student is considered low-income if they meet any one of the following criteria: (1) The student is eligible for free or reduced price lunch, (2) The student receives Transitional Aid to Families benefits or (3) The student is eligible for food stamps.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.8**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.9**

NOTE: Data are estimates based on the American Community Survey

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.10**

NOTE: Data are estimates based on the American Community Survey

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.11**

NOTE: The labor force and unemployment data are based on the same concepts and definitions as those used for the official national estimates obtained from the Current Population Survey (CPS), a sample survey of households that is conducted for the Bureau of Labor Statistics (BLS) by the U.S. Census Bureau. The LAUS program measures employment and unemployment on a place-of-residence basis. The universe for each consists of individuals who are not in the military and are not in an institution. Employed persons are those who did any work at all for pay or profit in the reference week (the week including the 12th of the month) or worked 15 hours or more without pay in a family business or farm, plus those not working who had a job from which they were temporarily absent, whether or not paid, for such reasons as labor-management dispute, illness, or vacation. Unemployed persons are those who were not employed during the reference week (based on the definition above), had actively looked for a job sometime in the 4-week period ending with the reference week, and were currently available for work; persons on layoff expecting recall need not be looking for work to be counted as unemployed. The civilian labor force is the sum of employed and unemployed persons. The unemployment rate is calculated as the number of unemployed/civilian labor force multiplied by 100.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.12**

NOTE: Data are estimates based on the American Community Survey. The federal Bureau of Labor Statistics conducts monthly household surveys to gather national, state and local employment data. The survey uses the following definitions in calculating employment-related rates. Individuals who are not in the military and not in an institution are part of this survey. Individuals with jobs are considered *employed*. Jobs can be part-time and temporary and includes unpaid work done on behalf of a family enterprise. Individuals are considered *unemployed* if they did not have a job, but are available for work and are looking for a job. The *civilian labor force* consists of individuals who are either employed or unemployed. Individuals who are not employed and not looking for work are *not in the civilian labor force*. An *unemployment rate* is calculated as the number of unemployed individuals/civilian labor force multiplied by 100.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.13**

NOTE: Data are estimates based on the American Community Survey. The federal Bureau of Labor Statistics conducts monthly household surveys to gather national, state and local employment data. The survey uses the following definitions in calculating employment-related rates. Individuals who are not in the military and not in an institution are part of this survey. Individuals with jobs are considered *employed*. Jobs can be part-time and temporary and includes unpaid work done on behalf of a family enterprise. Individuals are considered *unemployed* if they did not have a job, but are available for work and are looking for a job. The *civilian labor force* consists of individuals who are either employed or unemployed. Individuals who are not employed and not looking for work are *not in the civilian labor force*. The survey defines labor force participation rate (*LFPR*) as a proportion of the civilian population who are either employed or unemployed. The LFPR is calculated as the number of employed and unemployed/civilian population multiplied by 100.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.14**

NOTE: Data are estimates based on the American Community Survey. A *family household* (usually referred to as a “family”) consists of a householder (formerly referred to as head of house) and individuals living in the household who are related to the householder by birth, marriage, or adoption. People in a household who are related to the householder are regarded as members the family. Non-related individuals who live in the household are not considered as part of the family. In comparison, a household includes all related and unrelated individuals who occupy a housing unit. Individuals who live alone are considered a household of one. *Annual family income* is the total annual pre-tax money income from all family members over the age 15. It includes wages and salary, as well as income received from sources such as unemployment insurance, child support, and dividends from investments. *Annual household income* is defined the same as annual family income, except that it includes the annual income of all individuals over 15 residing in the housing unit. *Median annual family income* and *median annual household income* refers to the amount which divides the group in half; that is, half of the households will fall above the median and half will fall below the median.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.15**

NOTE: Data are estimates based on the American Community Survey. A *family household* (usually referred to as a “family”) consists of a householder (formerly referred to as head of house) and individuals living in the household who are related to the householder by birth, marriage, or adoption. People in a household who are related to the householder are regarded as members the family. Non-related individuals who live in the household are not considered as part of the family. In comparison, a household includes all related and unrelated individuals who occupy a housing unit. Individuals who live alone are considered a household of one. *Annual family income* is the total annual pre-tax money income from all family members over the age 15. It includes wages and salary, as well as income received from sources such as unemployment insurance, child support, and dividends from investments. *Annual household income* is defined the same as annual family income, except that it includes the annual income of all individuals over 15 residing in the housing unit. *Median annual family income* and *median annual household income* refers to the amount which divides the group in half; that is, half of the households will fall above the median and half will fall below the median.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.16**

NOTE: Poverty statistics in ACS products adhere to the standards specified by the Office of Management and Budget in Statistical Policy Directive 14. Poverty status is calculated for each family household. All individuals not living in family households are considered a family of one. Poverty threshold, which is updated annually by the U.S. Census Bureau, is defined as the minimum level of income needed to achieve the adequate standard of living. In 2008, the federal poverty base threshold for a family of four was \$22,025; the base threshold for an individual was \$10,991. Small adjustments are made to these thresholds based on the age composition of the family. The figures shown in the chart have been adjusted to account for different family sizes and compositions. If a family's total income is less than the dollar value of the appropriate threshold, then that family and every individual in it are considered to be in poverty. Similarly, if an unrelated individual's total income is less than the appropriate threshold, then that individual is considered to be in poverty (9).

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.17**

NOTES: Data are estimates based on the American Community Survey. Poverty statistics in ACS products adhere to the standards specified by the Office of Management and Budget in Statistical Policy Directive 14. Poverty status is calculated for each family household. All individuals not living in family households are considered a family of one. Poverty threshold, which is updated annually by the U.S. Census Bureau, is defined as the minimum level of income needed to achieve the adequate standard of living. In 2008, the federal poverty threshold for a family of four was \$22,025; the base threshold for an individual was \$10,991. Small adjustments are made to these thresholds based on the age composition of the family. The figures shown in the chart have been adjusted to account for different family sizes and compositions. If a family's total income is less than the dollar value of the appropriate threshold, then that family and every individual in it are considered to be in poverty. Similarly, if an unrelated individual's total income is less than the appropriate threshold, then that individual is considered to be in poverty (9).

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.18**

NOTES: Data are estimates based on the American Community Survey. Poverty statistics in ACS products adhere to the standards specified by the Office of Management and Budget in Statistical Policy Directive 14. Poverty status is calculated for each family household. All individuals not living in family households are considered a family of one. Poverty threshold, which is updated annually by the U.S. Census Bureau, is defined as the minimum level of income needed to achieve the adequate standard of living. In 2008, the federal poverty base threshold for a family of four was \$22,025; the base threshold for an individual was \$10,991. Small adjustments are made to these thresholds based on the age composition of the family. The figures shown in the chart have been adjusted to account for different family sizes and compositions. If a family's total income is less than the dollar value of the appropriate threshold, then that family and every individual in it are considered to be in poverty. Similarly, if an unrelated individual's total income is less than the appropriate threshold, then that individual is considered to be in poverty (9). Female head of household: In 1980, the U.S. Census replaced the term "head of household" with "householder." The census uses the term "householder" to refer to the individual in whose name the housing unit is owned or rented (if a unit is co-owned or rented, either individual may be called the "householder." If no such person resides in the unit, any adult may be considered the "householder." Families in which a female is responsible for the care of children census is inferred through the census category, "female householder, no husband present, with children."

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.19**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.20**

NOTE: Data are estimates based on the American Community Survey

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.21**

NOTE: Data are estimates based on the American Community Survey

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.22**

ABBREVIATIONS KEY: A/B=Allston/Brighton, BB=Back Bay (includes Beacon Hill, Downtown, and the West End), CH=Charlestown, EB=East Boston, FW=Fenway, HP=Hyde Park, JP=Jamaica Plain, MT=Mattapan, ND=North Dorchester, NE=North End, RS=Roslindale, RX=Roxbury, SB=South Boston, SD=South Dorchester, SE=South End (includes Chinatown), and WR=West Roxbury

NOTE: Residential properties include single family dwellings, residential condominium units, two family dwellings, and three family dwellings. Professionally managed properties, such as rental buildings, are not considered residential properties.

DATA ANALYSIS: Department of Neighborhood Development and the Boston Public Health Commission Research and Evaluation Office

MAP CREATED BY: Boston Public Health Commission Research and Evaluation Office and Information Technology Systems, Geographical Information Systems Program

**Figure 3.23**

NOTE: Residential properties include single family dwellings, residential condominium units, two family dwellings, and three family dwellings. Professionally managed properties, such as rental buildings, are not considered residential properties. A foreclosure petition is the first step in the foreclosure process.

DATA ANALYSIS: Department of Neighborhood Development and the Boston Public Health Commission Research and Evaluation Office

**Figure 3.24**

NOTE: Residential properties include single family dwellings, residential condominium units, two family dwellings, and three family dwellings. Professionally managed properties, such as rental buildings, are not considered residential properties. A foreclosure petition is the first step in the foreclosure process.

DATA ANALYSIS: Department of Neighborhood Development and the Boston Public Health Commission Research and Evaluation Office

**Figure 3.25**

NOTE: Residential properties include single family dwellings, residential condominium units, two family dwellings, and three family dwellings. Professionally managed properties, such as rental buildings, are not considered residential properties. A foreclosure deed is the final step in the foreclosure process.

DATA ANALYSIS: Department of Neighborhood Development and the Boston Public Health Commission Research and Evaluation Office

**Figure 3.26**

NOTE: Residential properties include single family dwellings, residential condominium units, two family dwellings, and three family dwellings. Professionally managed properties, such as rental buildings, are not considered residential properties. A foreclosure deed is the final step in the foreclosure process.

DATA ANALYSIS: Department of Neighborhood Development and the Boston Public Health Commission Research and Evaluation Office

**Figure 3.27**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 3.28**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office



## Section 4: Introduction to Boston Neighborhoods

Boston has been referred to as a “city of neighborhoods” where each neighborhood has its own “personality” and distinct appeal. Each demonstrates Boston’s changing face from that of a historical capital to a magnet for residents from around the world and around the country (1).

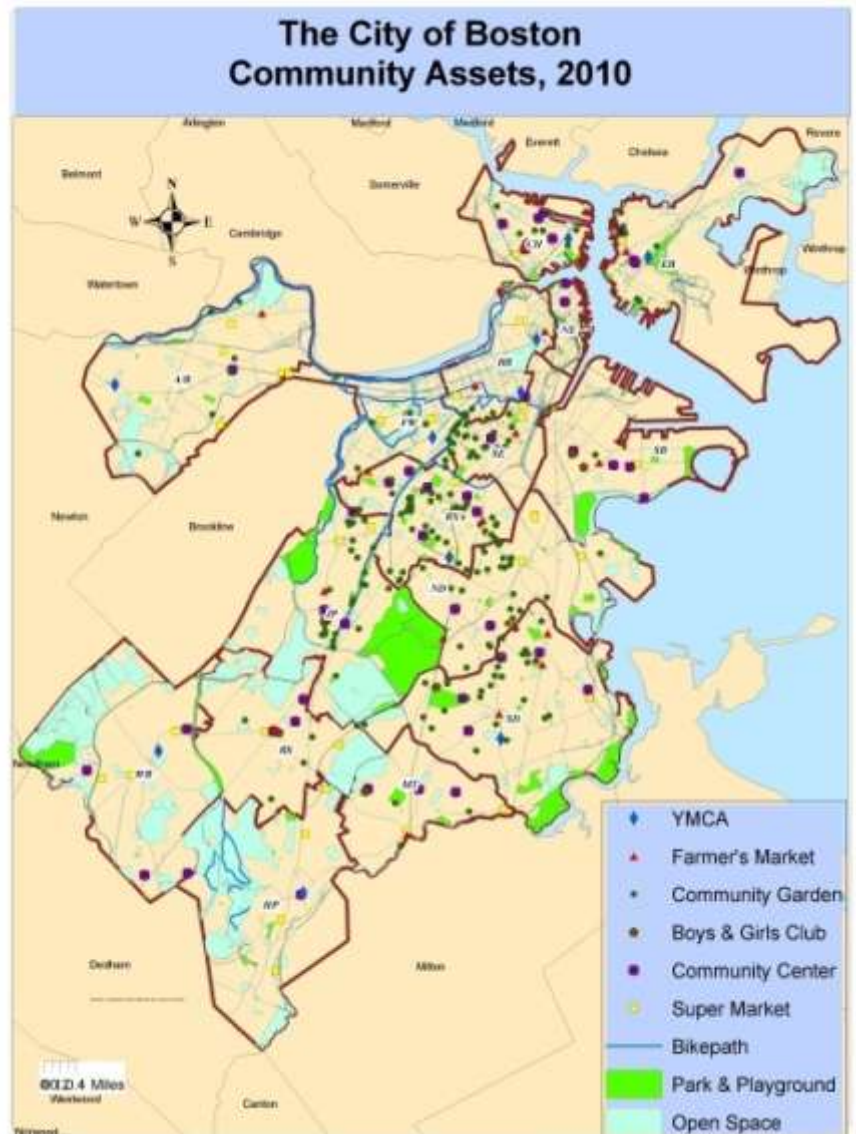
Where one lives contributes to shaping health behaviors and influencing one’s health. As each neighborhood is unique in its characteristics, it is imperative to study the various neighborhoods when evaluating the health of the residents of the City of Boston.

For the purposes of this report, the neighborhoods of Boston have been grouped into 16 neighborhoods. This section describes these neighborhoods, providing a brief history, description of population characteristics, and a map of selected community assets.

Community assets refer to the physical and social resources that improve the quality of community life and provide a healthier environment for residents (2).

Assets may include physical structures and organizations such as parks, open spaces, churches, schools, libraries, health centers, police departments, grocery stores, community centers, and social clubs.

Maps presented in this section illustrate the array of community assets accessible to Boston residents. For example, Boston possesses a considerable amount of green space and a system of bike paths that are dispersed throughout the city. Other assets, such as farmer’s markets, community gardens, and food pantries, are less evenly distributed. Because neighborhoods vary widely in the availability of resources, describing some of the available resources is a necessary step in understanding a community’s health.



DATA SOURCES: City of Boston; YMCA New England; Massachusetts Department of Agricultural Resources; MassGIS, Massachusetts Department of Conservation and Recreation, 2004; MassGIS, Central Transportation Planning Staff; and Boston Water and Sewer Commission.

## Allston/Brighton

Allston/Brighton was first a part of Watertown and then a section of Cambridge. In 1807, the neighborhood ceded from Cambridge and took the name Brighton. The Allston section was created in 1868 when a new post office branch was named for Washington Allston, a local painter. Through most of the 19<sup>th</sup> century, Allston/Brighton was an industrial area which served as the cattle and slaughtering center of New England. Lack of adequate healthy disposal practices and resulting odors limited residential development.

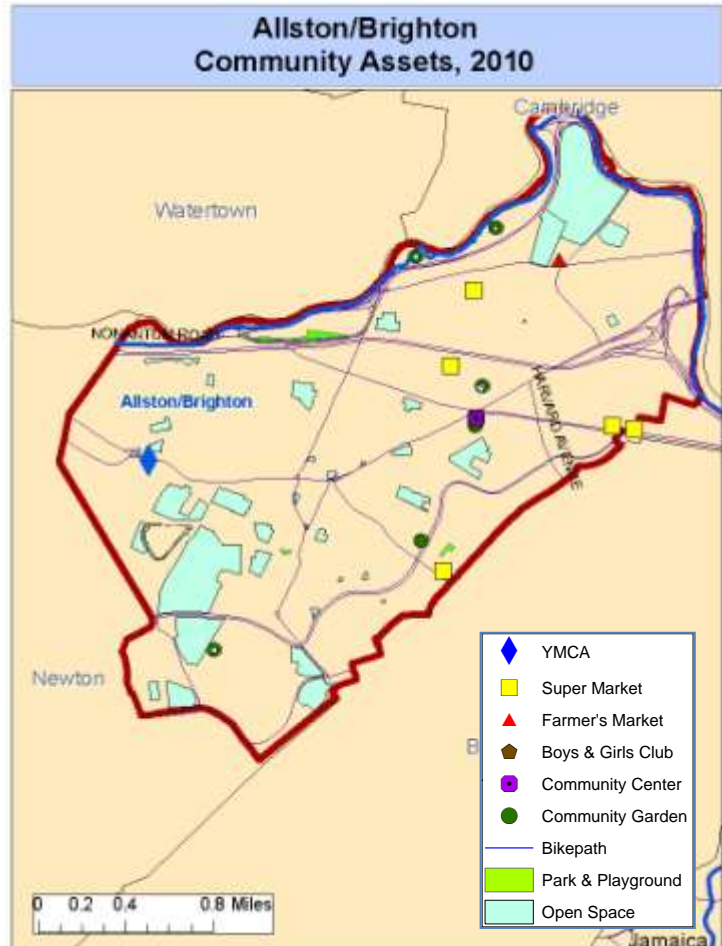
In 1869, the Massachusetts Board of Health, concerned by the town's extremely high mortality rate demanded stricter regulations and urged officials to develop a single, shared slaughter facility with modern sanitation systems. The land, which was freed up when the smaller slaughterhouses closed, was quickly developed for housing. In 1873, Allston/Brighton was annexed to Boston.

Allston/Brighton is one of Boston's largest neighborhoods, with a population of 69,648 in the year 2000. It has a large college student presence drawn by its proximity to several major universities including Boston College, Boston University, and Harvard University. According to the 2000 census, almost one-third (30%) of the neighborhood's population was age 18 to 24 (compared to 15% for that same age group for Boston overall) and 3,720 persons lived in group quarters, primarily college dormitories.

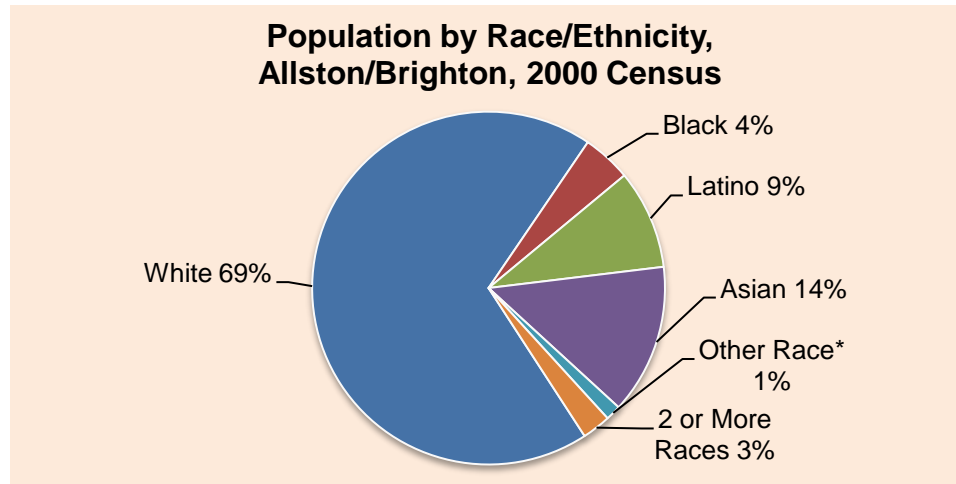
Between 1990 and 2000, the number of Asian residents increased by 2,240 while the number of Black and White residents decreased by 1,540 and 3,560, respectively. In 2000, 69% of the population was White, 14% was Asian/Pacific Islander, 9% was Latino, and 5% was Black.

Just over one-third (36%) of Allston/Brighton residents, 36% speak a language other than English at home. Other than English, the primary languages spoken at home are Spanish (by 9% of the population), Chinese (8%), Russian (5%), and Portuguese/Portuguese Creole (3%).

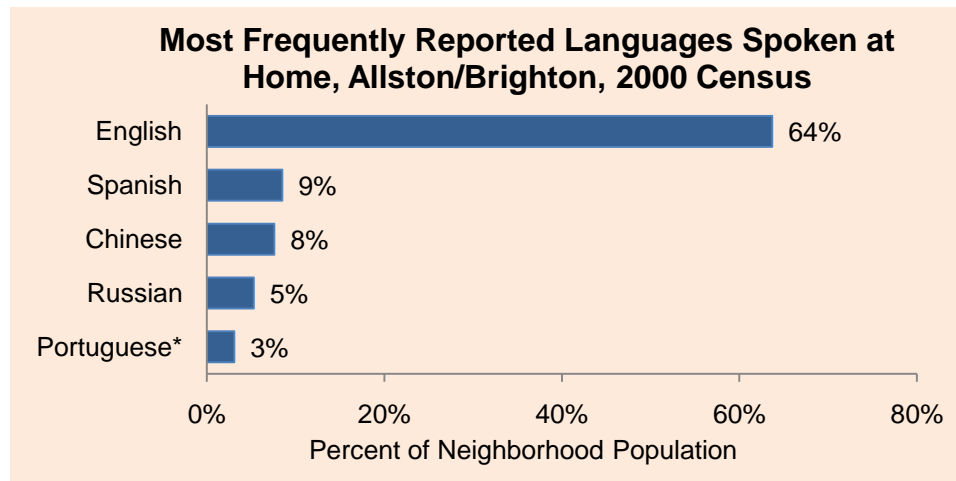
About two-thirds (68%) Allston/Brighton residents were born in the United States (68%), including 1% who were born in Puerto Rico. Other countries in which residents were born include China (6%), Brazil (3%), Russia (2%), Ireland (2%), Ukraine (2%), and El Salvador (1%).



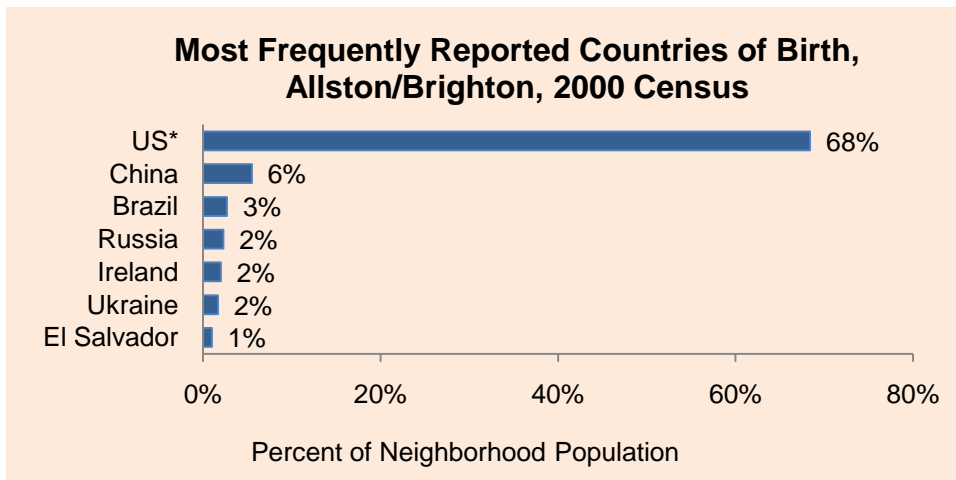
City of Boston; YMCA New England; Massachusetts Department of Agricultural Resources; MassGIS, Massachusetts Department of Conservation and Recreation, 2004; MassGIS, Central Transportation Planning Staff; and Boston Water and Sewer Commission.



\*Includes Native Hawaiians/Other Pacific Islanders, Alaska Native/American Indians, and Other Races  
 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder



\*Includes Portuguese Creole  
 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder



\*Includes 1% of neighborhood population born in Puerto Rico  
 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder



## The Back Bay/Beacon Hill/ The West End

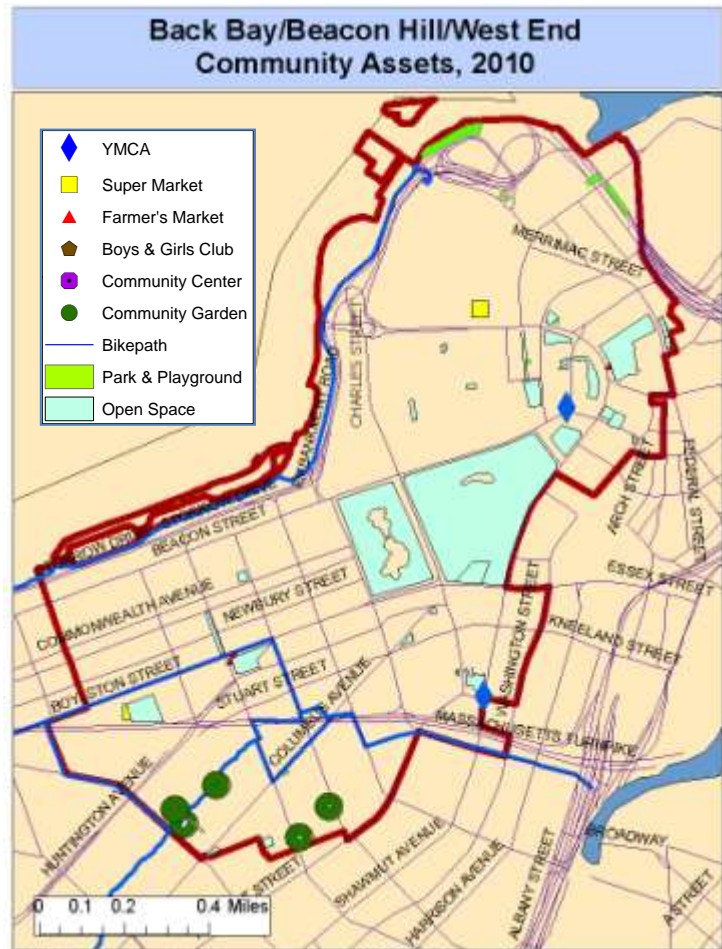
The Back Bay/Beacon Hill/The West End area, known as Shawmut by Native Americans, was a narrow peninsula distinguished by a three-peaked hill called Trimount. In 1803, to accommodate a growing need for land, Trimount was reduced in height and its land used as fill to expand the North End and other areas of Boston. The Massachusetts Bay Company, a group of Puritan businessmen, arrived in 1830 and renamed the area Boston. In the last half of the 1800s, the tidewater flats of the Charles River were filled in to create the Back Bay. The neighborhood's famous brownstones sit on pilings sunk into former marshland.

In the nineteenth century, the north slope of Beacon Hill was the center of the African American community in Boston. The African Meeting House, built in 1808, is the nation's oldest African-American Church and oldest African Meeting House still standing. Denied access to Boston public schools, Black parents established a school which met in a private home and then at the African Meeting House. In 1834, William Lloyd Garrison established the "Antislavery Society" at the meetinghouse.

In 1959, the West End was a working class neighborhood with approximately 2,700 families and a population of 7,500. In the name of urban renewal, and despite opposition by West End residents, the neighborhood was leveled to make way for the construction of five luxury high-rise apartment buildings. The destruction, chronicled by Herbert Gans in "The Urban Villager," brought about recognition of the need for community input into development projects and the need for community activism.

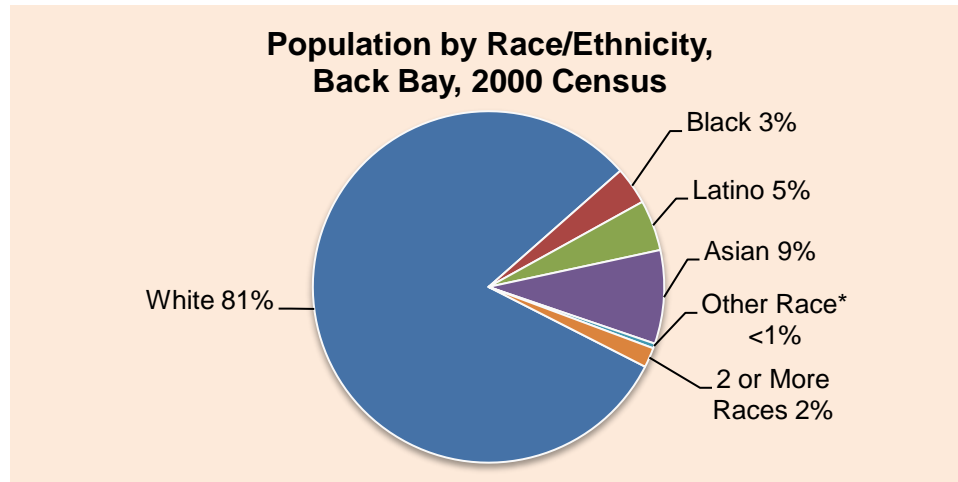
The total population in the Back Bay/Beacon Hill/West End neighborhoods in 2000 was 36,235, an increase of 2% from 1990. Relatively minor changes occurred in the racial/ethnic composition of the neighborhood between 1990 and 2000. The percentages of both White and Black residents decreased slightly from 86% to 81% for Whites, and from 4% to 3% for Blacks. At the same time, the percentage of Asian residents increased from 6% to 9% and the percentage of Latino residents increased from 4% to 5%.

English is spoken at home by 79% of the residents. Other than English, the primary languages spoken at home are Spanish, by 4% of the population, Chinese by 3% of the population, and French by 2% of the population. Most residents (83%) were born in the United States (including 0.4% who were born in Puerto Rico); 15% were born in another country, the largest numbers of these being from China (1%), Korea (1%), Japan (1%), and the United Kingdom (1%).

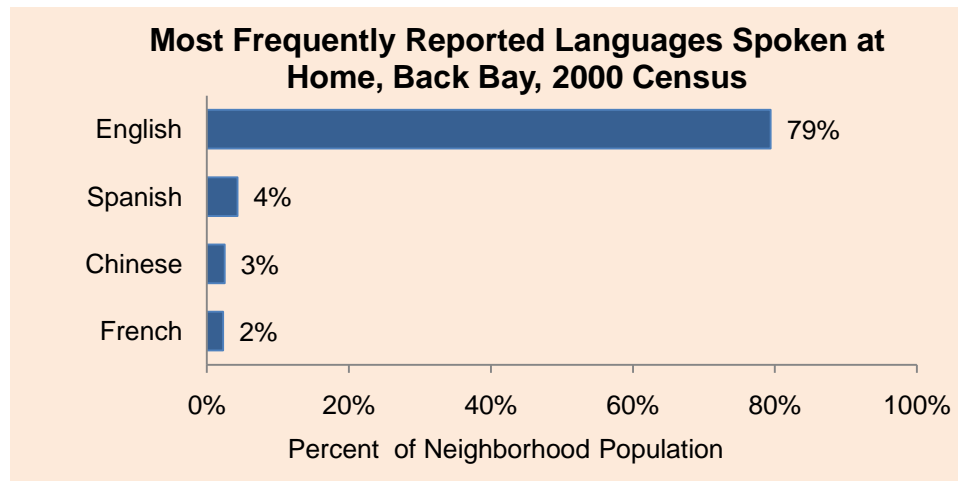


City of Boston; YMCA New England; Massachusetts Department of Agricultural Resources; MassGIS, Massachusetts Department of Conservation and Recreation, 2004; MassGIS, Central Transportation Planning Staff; and Boston Water and Sewer Commission.

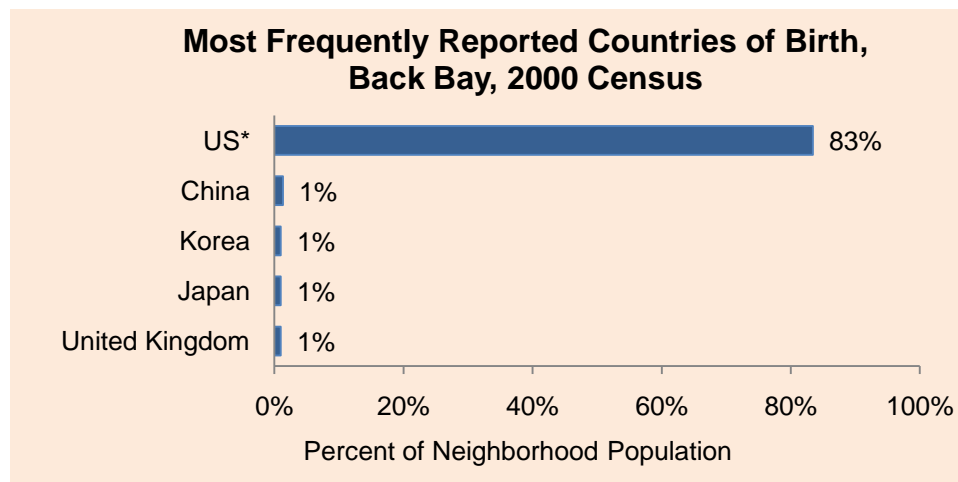




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 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder



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\*Includes 1% of neighborhood population born in Puerto Rico.  
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## Charlestown

Charlestown was settled in 1629 (one year before Boston) and became a city in 1847. In 1874, the City of Charlestown was annexed to Boston. Two of the most visited sites on Boston's Freedom Trail are in Charlestown – the Bunker Hill Monument and the U.S.S. Constitution. The Bunker Hill Monument commemorates one of the bloodiest and most destructive battles of the 1775 Revolutionary War. In this battle, Charlestown was burned to the ground. Although the battle was won by the British, the destruction served to rally the Colonists to support the Revolutionary War.

The U.S. Navy's oldest commissioned ship, the U.S.S. Constitution, is docked in the Charlestown Navy Yard. Charlestown's history and economic development were strongly influenced by the presence of the Navy Yard, which operated between 1801 and 1973. During World War II, 47,000 workers were employed at the Navy Yard.

The Ursuline Convent Riots took place in 1834 in a climate of anti-Catholicism. A group of men stirred up by inflammatory newspaper reports and sermons by local ministers, broke into the Ursuline Convent, destroyed icons and books, and finally, burned the convent to the ground.

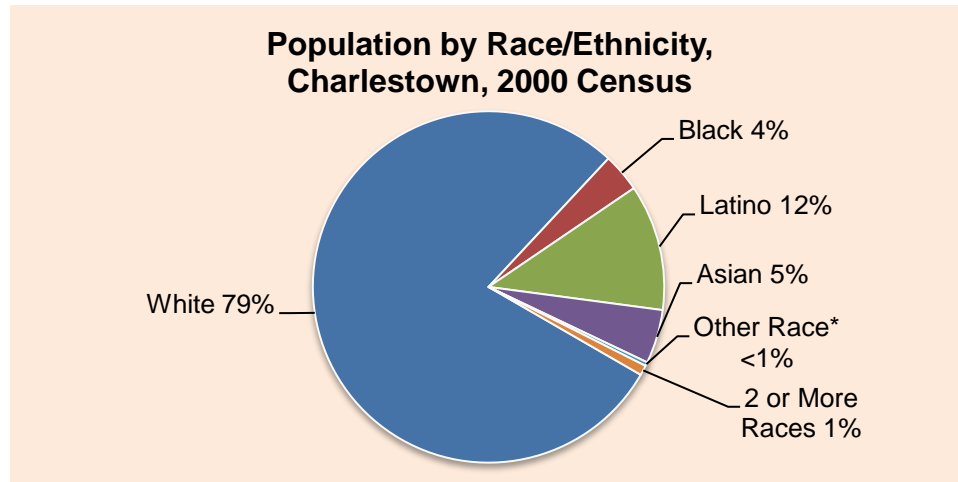
Charlestown's total population in 2000 was 15,195, an increase of 3% from 1990. Though Charlestown remains a predominately White neighborhood, the increases in its Latino, Asian, and Black populations are significant. The percentage of White residents declined from 95% to 79% between 1990 and 2000, a decrease of 1,981 residents. Corresponding increases occurred in the Latino, Asian, and Black populations. These three groups combined were 5% of the population in 1990; in 2000, they were 21% of the Charlestown population.

Most residents (82%) speak English at home; other primary languages are Spanish and Chinese, spoken by 10% and 3% of residents, respectively.

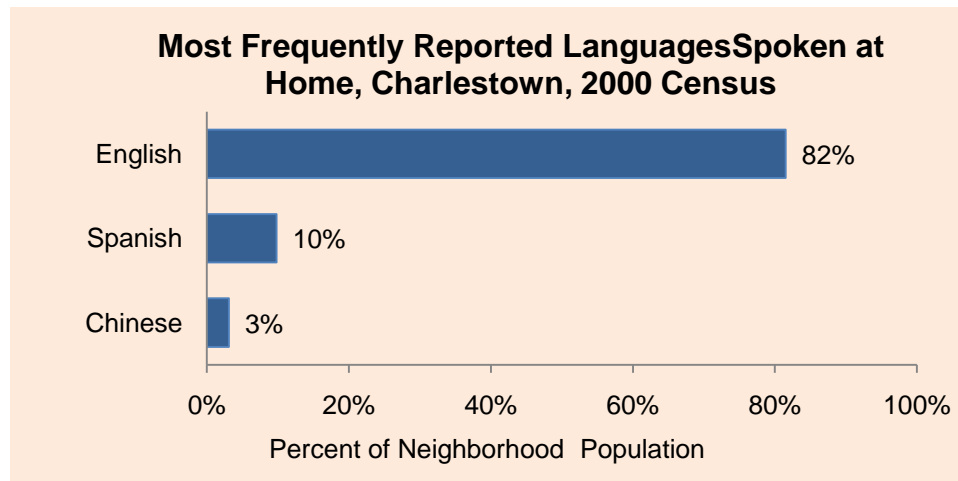
Most residents (85%) were born in the United States (including 1% who were born in Puerto Rico); 14% were born in another country, the largest numbers of these being from the Dominican Republic (4%) and China (2%).



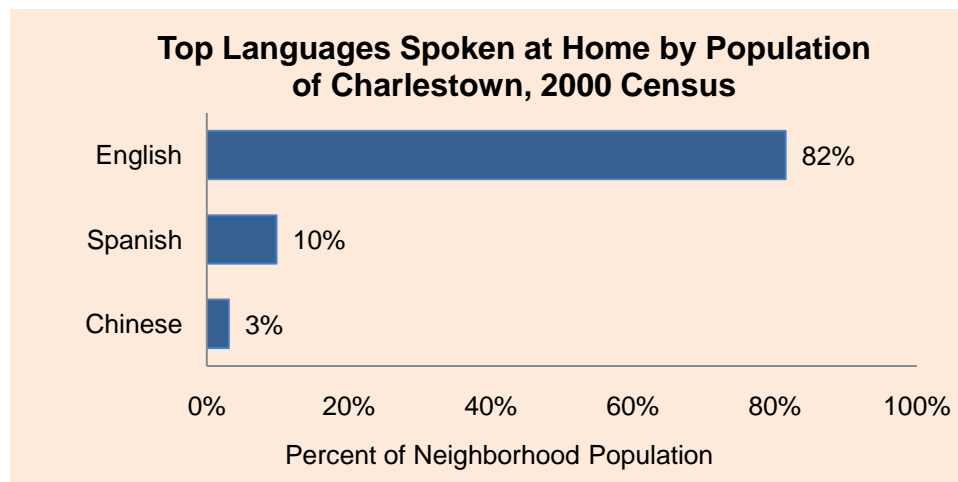
City of Boston; YMCA New England; Massachusetts Department of Agricultural Resources; MassGIS, Massachusetts Department of Conservation and Recreation, 2004; MassGIS, Central Transportation Planning Staff; and Boston Water and Sewer Commission.



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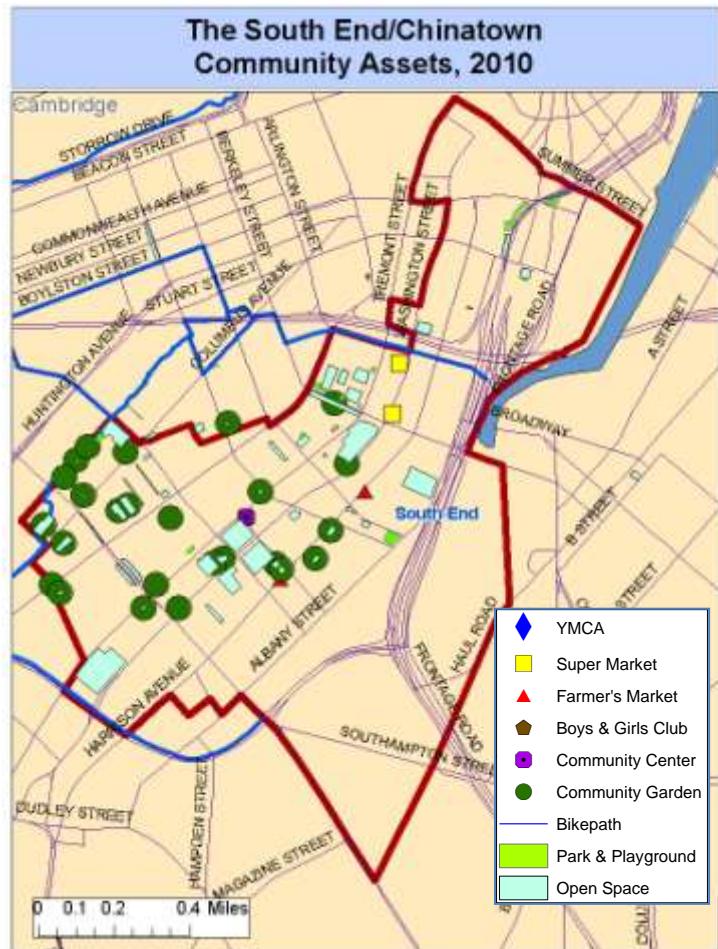
## Chinatown

Chinatown is combined with the South End when reporting data in this report; however, the two are distinct neighborhoods with unique histories. *(Note: The map and data here are duplicates of those presented for the South End.)*

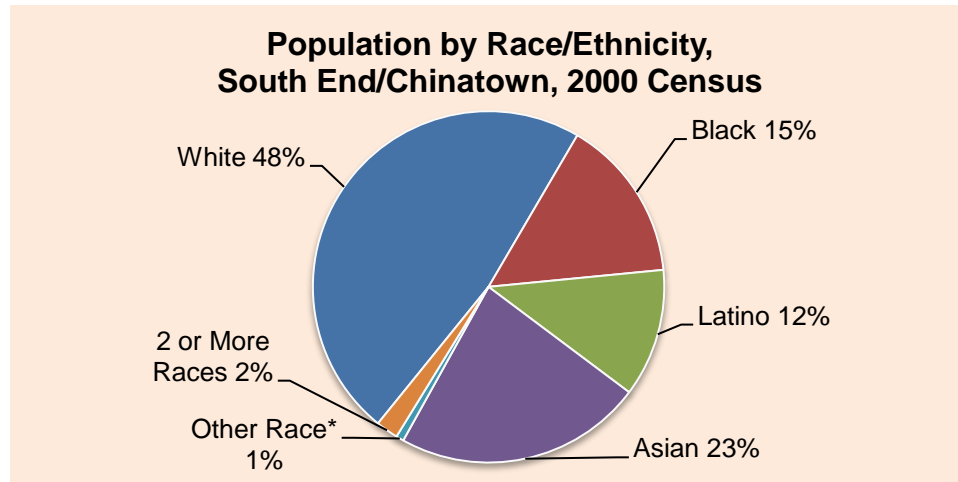
Chinatown, located between Boston’s downtown crossing and the South End, serves as the cultural and social center for the Asian community in New England. In the late nineteenth century, with the completion of the trans-continental railroad, Chinese men began moving to Boston to work in the New England’s growing manufacturing industry. Chinatown’s beginnings can be traced to these early workers who set up tents and lived on Ping On Alley. The population was comprised primarily of single males until after World War II when easing of restrictive immigration laws enabled women and children to move to the United States.

The population in South End/Chinatown in 2000 was 33,502, an 8.3% increase compared with 1990. The South End is one of the few Boston neighborhoods in which the number of White residents increased. In 2000, the White population grew by 2,570 (a 19% increase) while the Black population decreased by 1,429, or 22%. Little change occurred in the numbers of Latinos and Asians. The percentage of Latinos stayed the same (about 12% in both 1990 and 2000). The number of Asian residents increased by 139, although their percentage share in the neighborhood decreased from 24% to 23%.

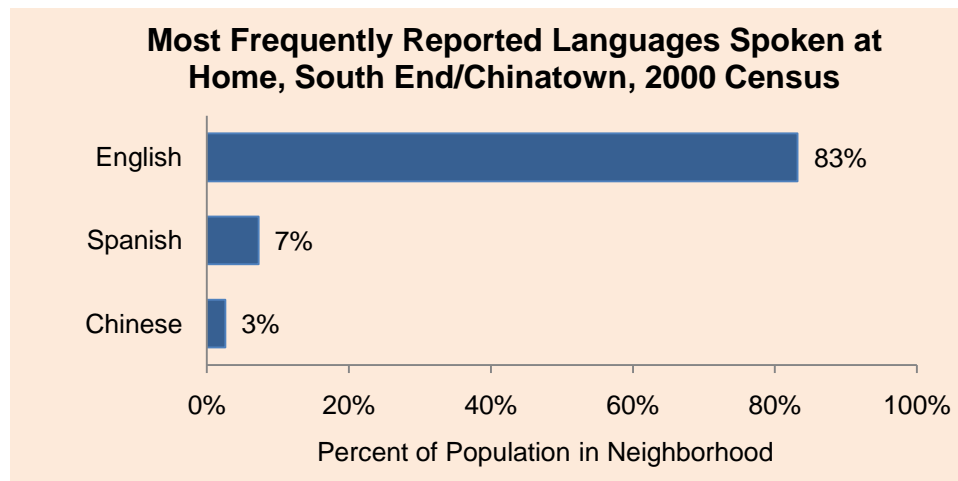
English is spoken at home by 63% of residents; 18% speak Chinese at home and 11% speak Spanish. About two-thirds (69%) of South End residents were born in the United States, including 4% who were born in Puerto Rico. Other countries in which residents were born include China (14%), Vietnam (1%), and the Dominican Republic (1%).



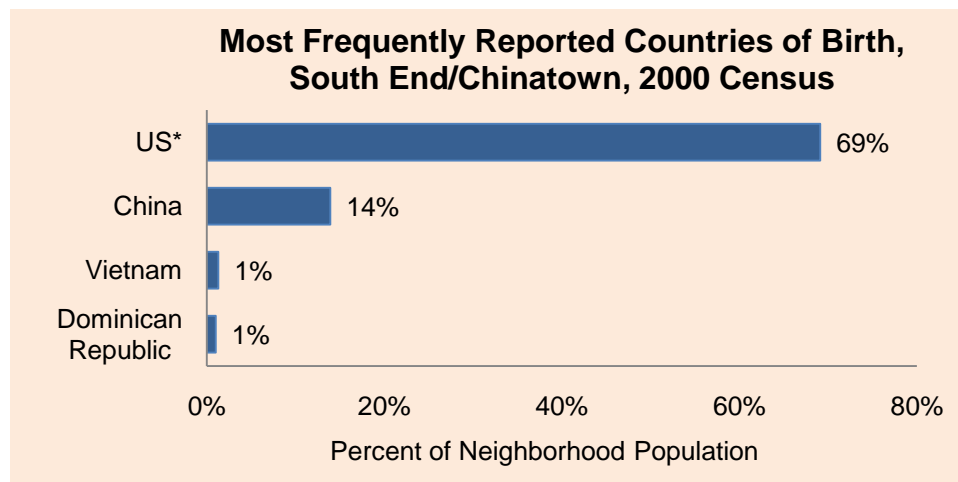
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## East Boston

East Boston was created when five Boston Harbor Islands were expanded and connected. The project began in 1830 and took 150 years to complete. The two larger islands, Noodles and Hog Islands, now form the residential section of the neighborhood. Logan Airport, which takes up over half of the neighborhood's 2.5 miles, sits on Apple, Bird, and Governor's Islands.

Throughout its history, East Boston has served as home to various groups of immigrants. The Irish were the first group to settle in East Boston, followed by Russian Jews and Italians in the late 1800s. At the turn of the 20th century, East Boston was home to the largest Jewish community in New England. The neighborhood was predominately Italian for most of the 20th century and is now home to many immigrants from South and Central America, Asia, and the Caribbean.

Of all Boston neighborhoods, East Boston has the highest percentage of recent immigrants; the 2000 census reported that 15% of East Boston residents lived outside the United States in 1995. Between 1990 and 2000, the number of Latino residents increased by over 10,000, a 160% increase.

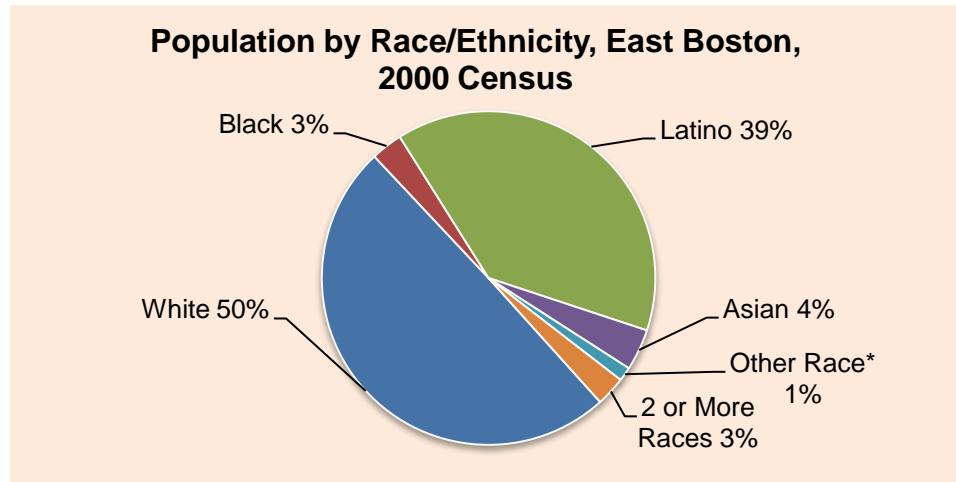
In 2000, Latinos comprised 39% of the neighborhood, compared with 18% in 1990. East Boston is now home to the largest Latino community in Boston.

Over half (55%) of East Boston residents speak a language other than English at home. Spanish is the primary language spoken by 37% of residents, while 6% speak Italian, 5% speak Portuguese/Portuguese Creole, and 2% speak Vietnamese.

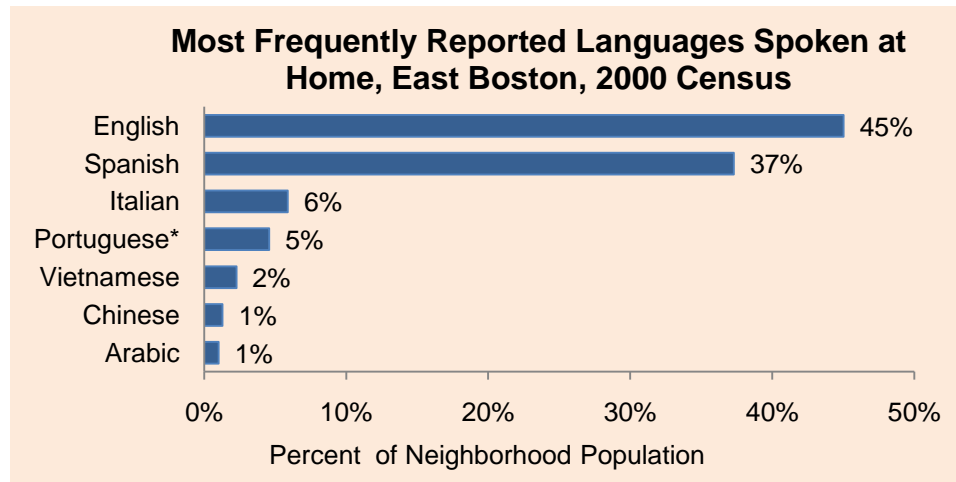
Just over half (56%) of East Boston residents were born in the United States, including 2% who were born in Puerto Rico. East Boston residents have emigrated from many countries, including El Salvador (12%), Colombia (8%), Brazil (4%), Italy (3%), Vietnam (2%), Mexico (2%), Guatemala (2%), Peru (2%), and the Dominican Republic (1%).



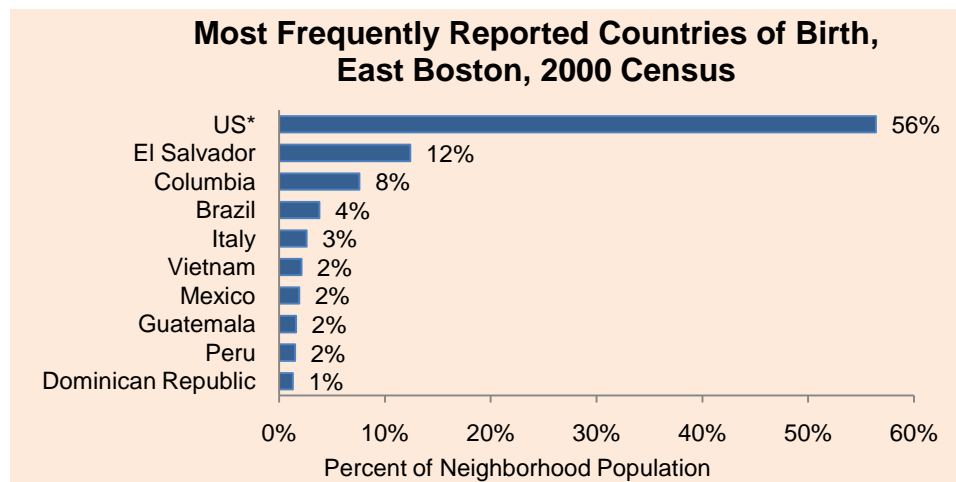
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\*Includes Portuguese Creole  
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## Fenway/Kenmore

The Fenway/Kenmore neighborhood was annexed to Boston in 1870 and was expanded in the same landfill project that created the Back Bay. The number of cultural institutions located in the Fenway/Kenmore area (including Boston Symphony Hall, the Museum of Fine Arts, and the Isabella Stewart Gardner Museum) prompted the city to dub the neighborhood's Huntington Avenue the "Avenue of the Arts."

The Longwood area includes many of the nation's leading medical institutions including Harvard Medical School, Brigham and Women's Hospital, the Beth Israel/Deaconess Medical Center, Children's Hospital, Dana Farber Cancer Institute, and Joslin Diabetes Center. The home of the Boston Red Sox, Fenway Park, is also located in the neighborhood.

Between 1990 and 2000, the Fenway/Kenmore experienced a population increase of 9.1%. A total of 29,823 individuals lived in the neighborhood in 2000, compared with 27,333 in 1990. The largest increase was seen in the Asian population, which rose by 65%. In 1990, Asians made up 8% of the population, compared with 12% in 2000.

Increases were also noted in the Latino and White populations, which increased by 16% and 5%, respectively. Although the actual number of White residents increased, their percentage share in the neighborhood decreased from 70% to 67%. The number of Black residents decreased by 25% during the 1990s; their percentage share in the neighborhood also decreased from 12% to 8%.

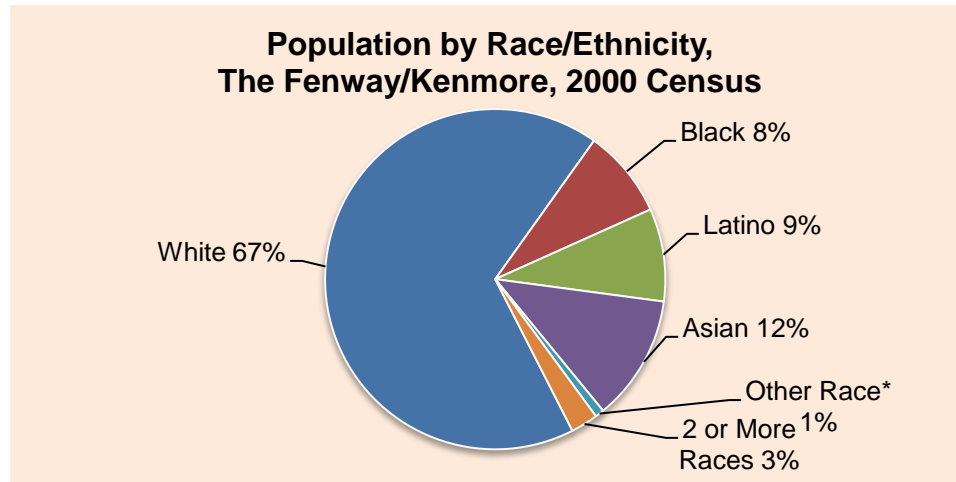
English is the language spoken at home by 72% of residents followed by Spanish (8%), Chinese (3%), and Russian (2%).

About three-fourths (77%) of Fenway/Kenmore residents were born in the United States, including 0.4% who were born in Puerto Rico. Other countries in which residents were born include Japan (2%), Korea (1%), China (1%), India (1%), and Russia (1%).

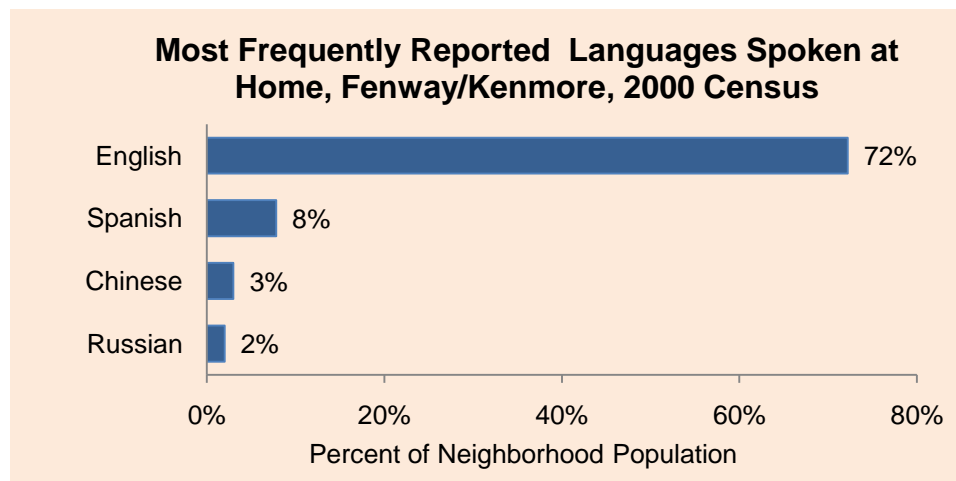


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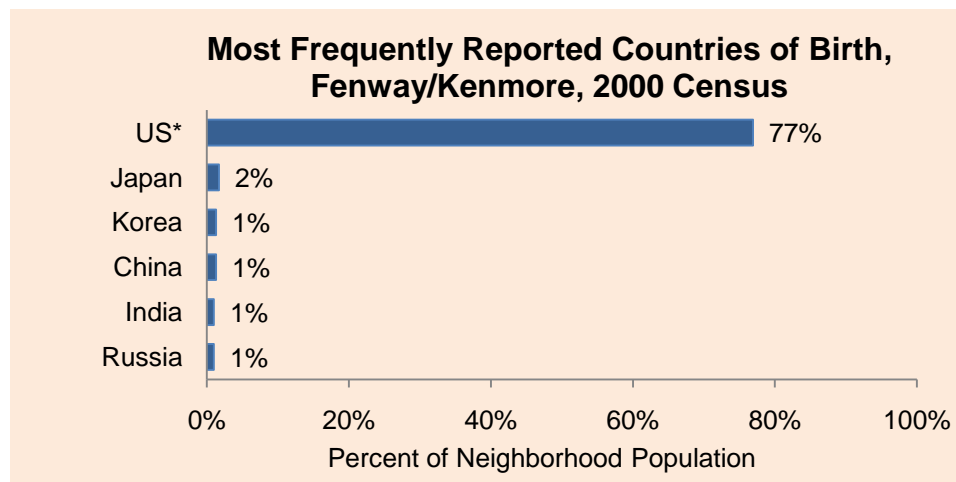




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## Hyde Park

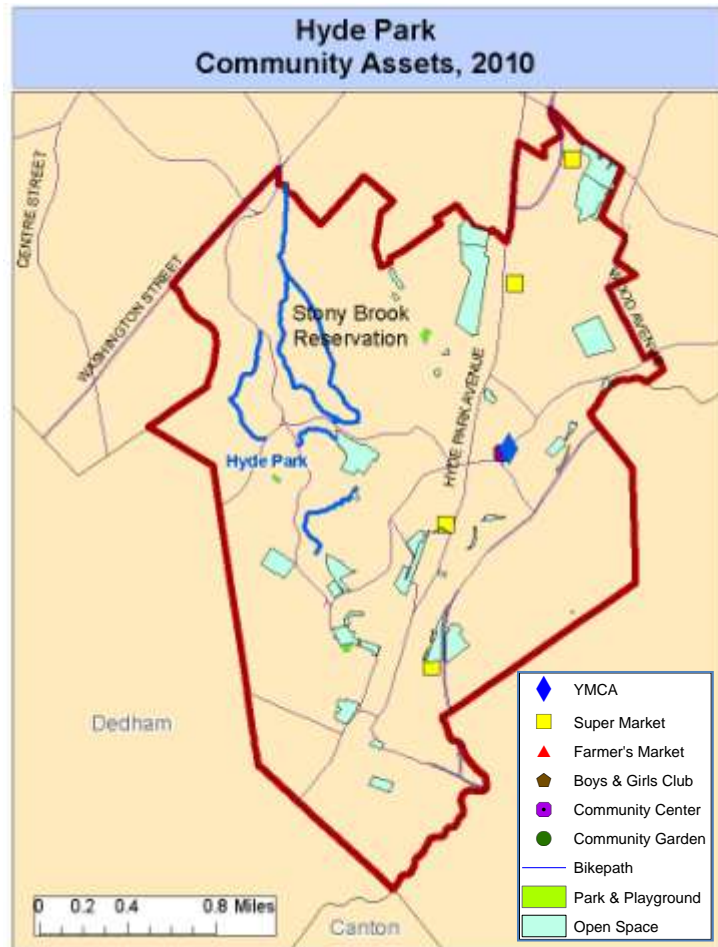
Hyde Park was known as “Tist” by the area’s Wampanoag Indians. It was incorporated as a town in 1868 and in 1912, became the last neighborhood to be annexed to Boston.

The neighborhood has a large amount of open space, including the George Wright Golf Course and the 450-acre Stony Brook Reservation. In the 1800s, several prominent civil right activists, abolitionists and suffragists, including Sarah and Angelina Grimke and William Trotter Monroe, called this neighborhood home. The 54th Regiment, the renowned Black Civil War regiment trained at Camp Meigs in the Readville section of Hyde Park and the city’s mayor, Thomas Menino, is a longtime resident of Readville as well. Camp Meigs became the site of the Readville Trotting Park, which raced horses and then cars from 1895 through 1937.

Although the total number of residents remained almost the same, Hyde Park experienced a significant shift in racial/ethnic composition during the 1990s. The total population in 2000 was 34,420, just 1,776 fewer than in 1990. The number of White residents decreased by 8,699, while the number of both Black and Latino residents increased by 6,195 and 2,949, respectively. Between 1990 and 2000, the percentage of White residents in Hyde Park decreased from 71% to 42%, while the percentage of Black residents rose from 22% to 39% and the percentage of Latino residents increased from 5% to 13%.

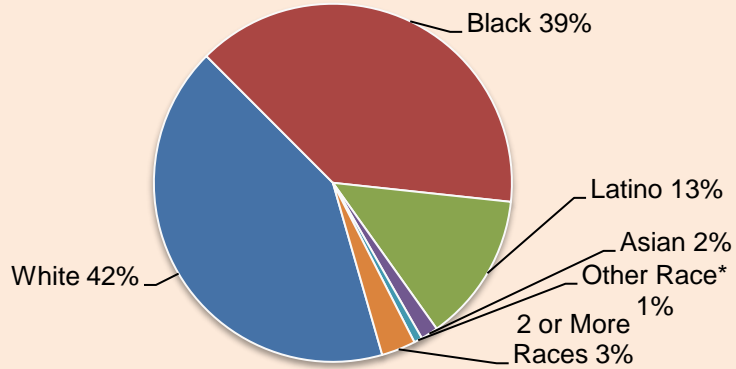
About two-thirds (65%) of residents speak English is the language spoken; 13% speak Spanish, 13% speak French Creole, and 2% speak French.

About three-fourths (74%) were born in the United States, including 3% who were born in Puerto Rico. Other countries in which Hyde Park residents were born include Haiti (10%), Jamaica (2%), the Dominican Republic (2%), Nigeria (1%), and Trinidad/Tobago (1%).



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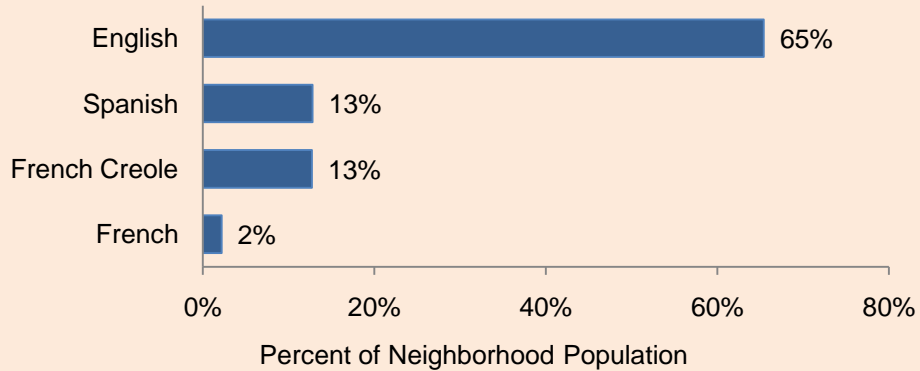
**Population by Race/Ethnicity, Hyde Park, 2000 Census**



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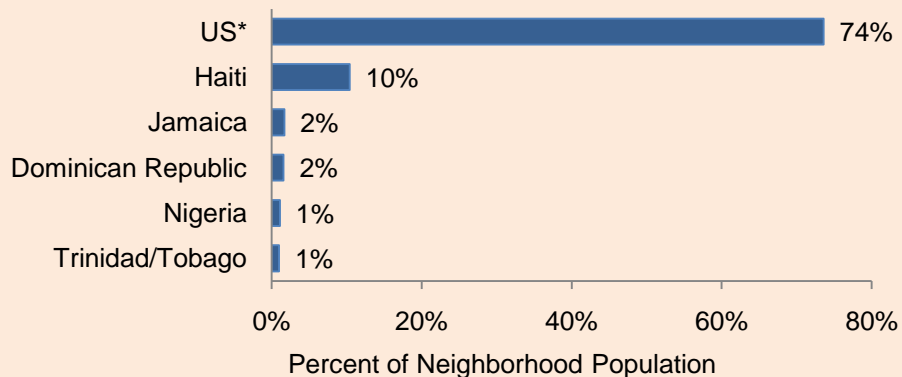
Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder

**Most Frequently Reported Languages Spoken at Home, Hyde Park, 2000 Census**



Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder

**Most Frequently Reported Countries of Birth, Hyde Park, 2000 Census**



\*Includes 3% of neighborhood population born in Puerto Rico

Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder

## Jamaica Plain

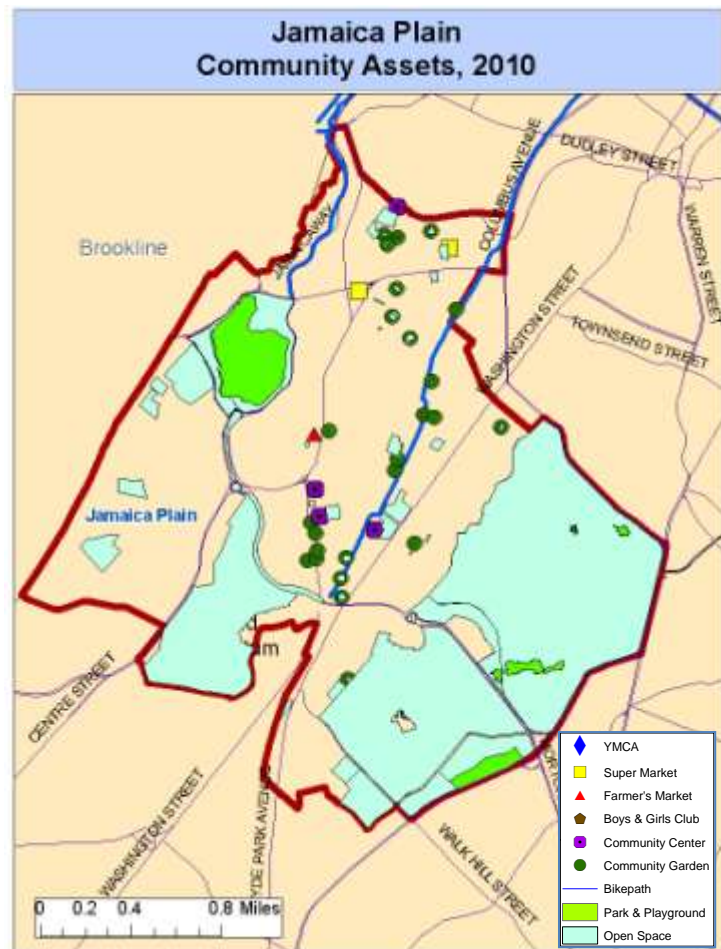
Jamaica Plain, originally part of the Town of Roxbury, was annexed to Boston in 1874. In the mid-19th century, 24 breweries were built along the Stony Brook that ran along the Jamaica Plain/Roxbury line. Drawn to the work at these breweries, German immigrants settled around Hyde Square. The availability of work in area factories also brought Irish immigrants to the neighborhood.

Jamaica Plain has much planned green space. In 1848, the beautiful Forest Hills Cemetery opened, with graves and monuments integrated into the natural landscape. Jamaica Pond and the Arnold Arboretum were incorporated into Boston's Emerald Necklace, Frederick Law Olmstead's renowned linked series of parklands. Today, the neighborhood is a diverse one, with large Latino and gay and lesbian communities.

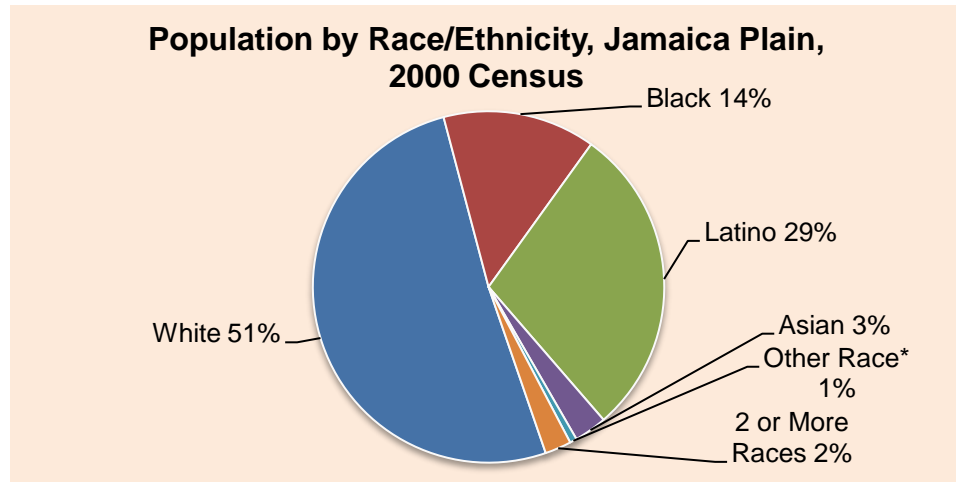
The population in Jamaica Plain decreased in size between 1990 and 2000. The total population in 2000 was 29,482, a decrease of 2,550, or 8%, from 1990. All populations decreased during this time. The White population decreased by 10%; the Black and Latino population decreased by 10% and 9% respectively. The decrease among the Asian population was 5%. The racial/ethnic composition of the neighborhood showed little change between 1990 and 2000. In 2000, the White population made up 51% of the population compared with 52% in 1990. Similarly, the Latino and Black population made up 29% and 14% of the population, respectively, compared with 29% and 15% in 1990. The Asian population made up 3% of the population in 1990 and 2000.

The primary languages spoken at home by Jamaica Plain residents are English (spoken by 63% of residents) and Spanish (spoken by 28% of residents).

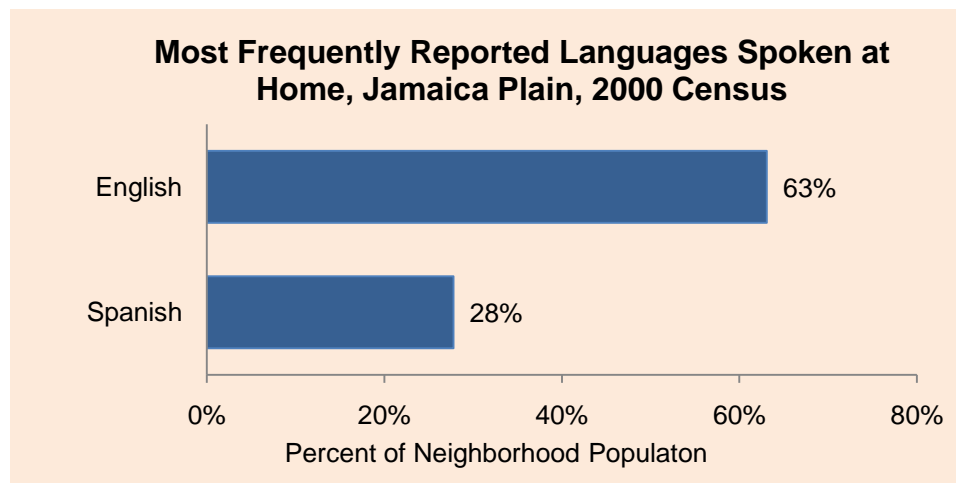
About three-fourths (74%) of Jamaica Plain residents were born in the United States, including 5% who were born in Puerto Rico. Other countries in which residents were born include the Dominican Republic (7%) and China (1%).



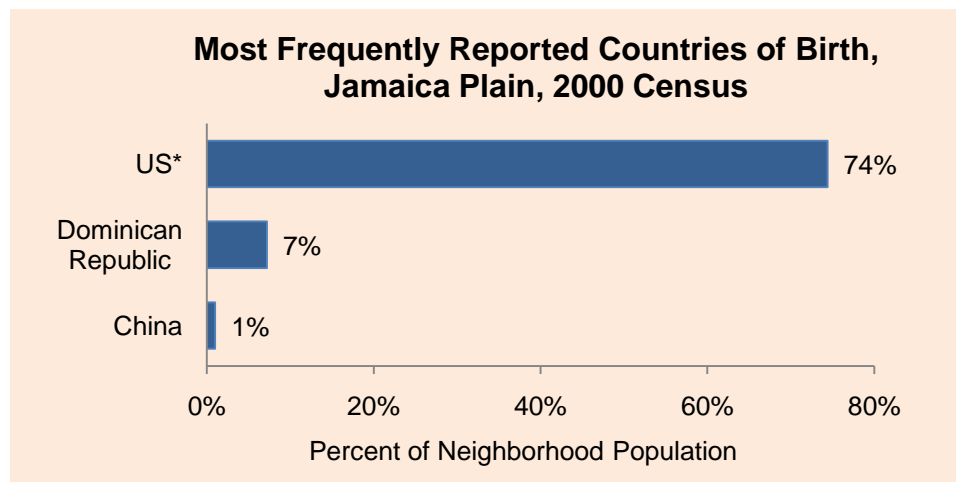
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\*Includes 5% of neighborhood population born in Puerto Rico  
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## Mattapan

Mattapan, originally a section of Dorchester, was annexed to Boston in 1870. Mattapan is the original Mattahunt tribe's name for the area.

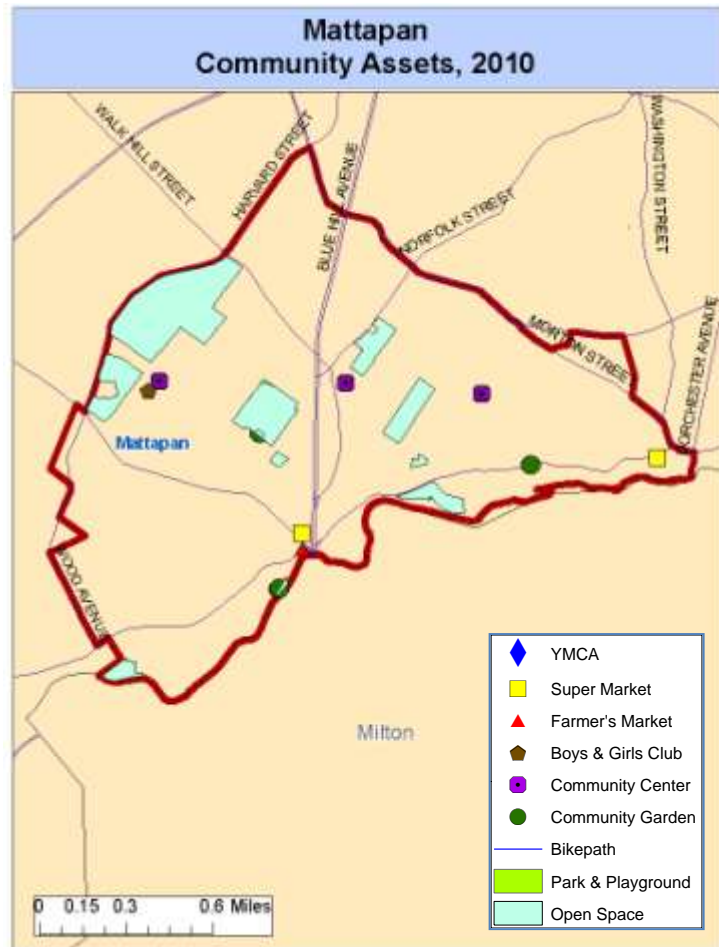
At the turn of the 20th century, the neighborhood became home to Irish and Jewish immigrant groups. From the 1920s through the 1950s, Blue Hill Avenue was the center of Boston's Jewish community. In the 1960s, a controversial program of redlining by the banking consortium, Boston Banks Urban Renewal Group, caused Mattapan to change from a predominately Jewish to a predominately Black neighborhood. To encourage home ownership, "low interest, no-money-down mortgages" were offered to Black home buyers, in the "redlined" area along Blue Hill Avenue while scare tactics were used to create panic selling among Jewish homeowners.

Over the last two decades, Mattapan has become home to many Haitian immigrants. The neighborhood now has the largest Haitian community in Massachusetts.

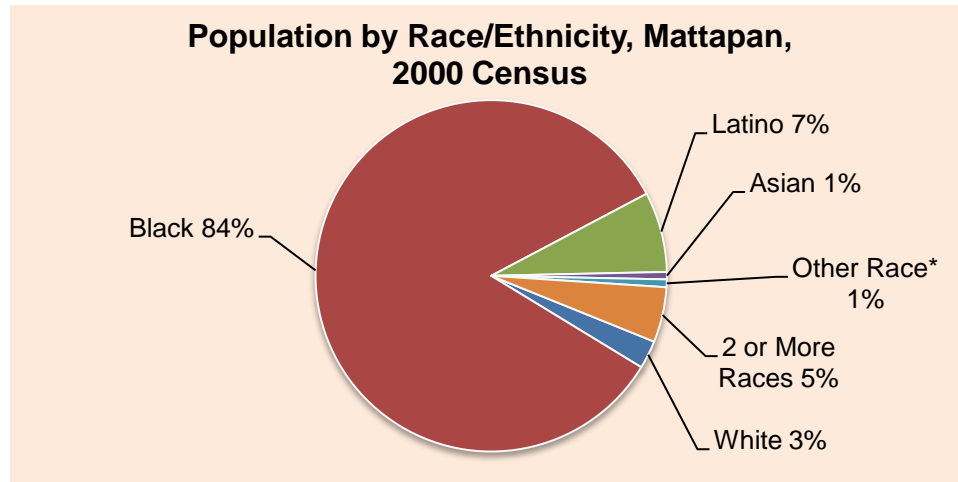
Mattapan's population in 2000 was 19,724 residents, an increase of just 1% from 1990. During this time, the Latino population increased while the Black and the White populations decreased. The number of Latino residents increased by 640, or 81%, the number of White residents decreased by 566, or 55%, and the number of Black residents decreased by 1,114, or 6%. As a result, the percentage of Black residents dropped from 89% to 84% as the Latino resident population rose from 4% to 7%.

English is the language spoken at home by 69% of Mattapan residents; 18% speak French Creole, 7% speak Spanish, and 4% speak French.

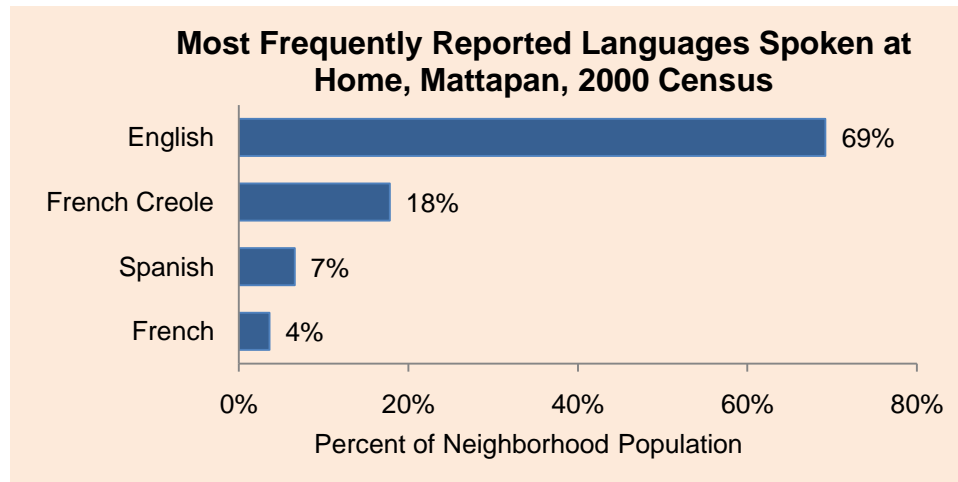
About two-thirds (65%) of Mattapan residents were born in the United States, including 1% who were born in Puerto Rico. Other countries in which Mattapan residents were born include Haiti (15%), Jamaica (7%), the Dominican Republic (2%), Barbados (2%), (2%), Trinidad (2%), and Sierra Leone (1%).



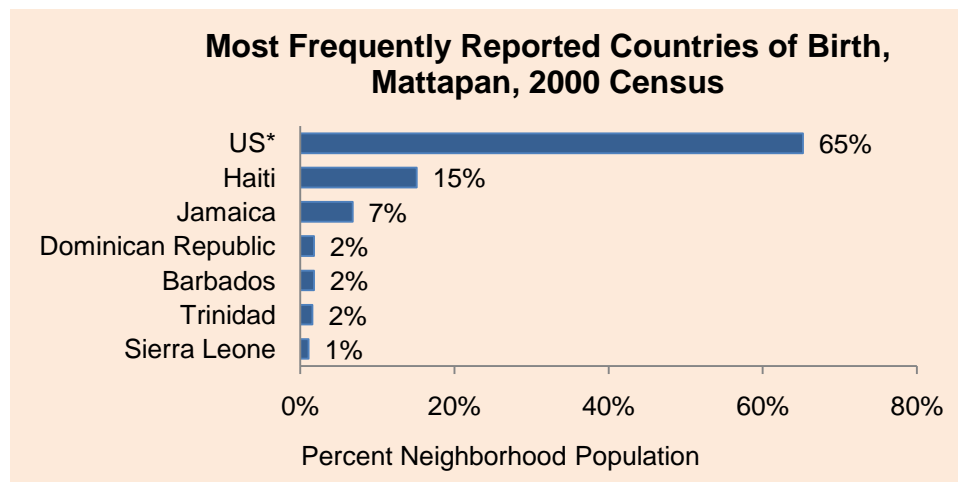
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## North Dorchester

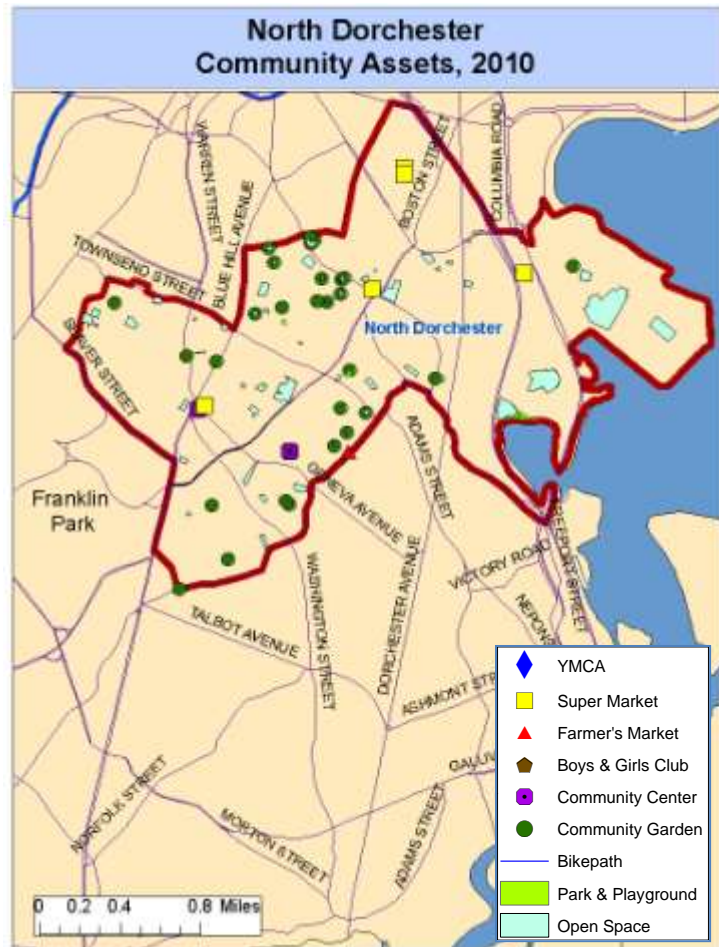
Dorchester was known as Mattapan by the Wampanoag Indians; the Puritans named the area Dorchester after the English town from which they immigrated. Dorchester was annexed by Boston in 1870.

North Dorchester includes Edward Everett Square and Uphams Corner, where the Puritans' first settlement was established. Boston's oldest home, the James Blake House (built in 1648) and one of the country's oldest cemeteries, the Old Burial Ground (established in 1634) are located in this area. The John F. Kennedy Library, the University of Massachusetts/Boston, and the Massachusetts Archives and Historical Museum are located in North Dorchester's Harbor Point (formerly known as Columbia Point). Malibu Beach is also located in North Dorchester.

The total population in North Dorchester in 2000 was 83,212, an 8% increase when compared with 1990. A total of 36,026 Black residents lived in North Dorchester in 2000, nearly the same as in 1990.

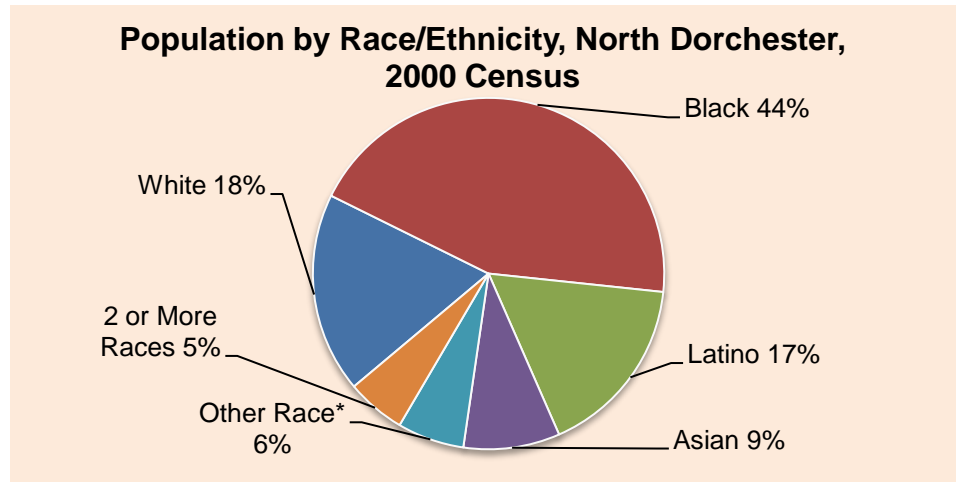
However, because the total neighborhood population increased, the Black population's percentage share decreased from 47% in 1990 to 44% in 2000. The White population declined by 7,997, or 34%, between 1990 and 2000. In 1990, White residents made up 30% of the population compared with 18% in 2000. In 1990, the 3,011 Asian residents made up 4% of the total population; in 2000, the 4,549 Asian residents made up 9% of the population. The Latino population grew by 3,032 (a 28% increase); in 2000, Latinos represented 17% of North Dorchester.

English is the language spoken at home by 57% of North Dorchester residents, followed by Spanish (16%), Portuguese/Portuguese Creole (7%), Vietnamese (7%), and French Creole, which includes Haitian Creole (6%). About three-fourths (73%) of North Dorchester residents were born in the United States, including 1% who were born in Puerto Rico. Other countries in which residents were born include Vietnam (6%), Haiti (3%), Jamaica (2%), the Dominican Republic (3%), and Trinidad/Tobago (2%).

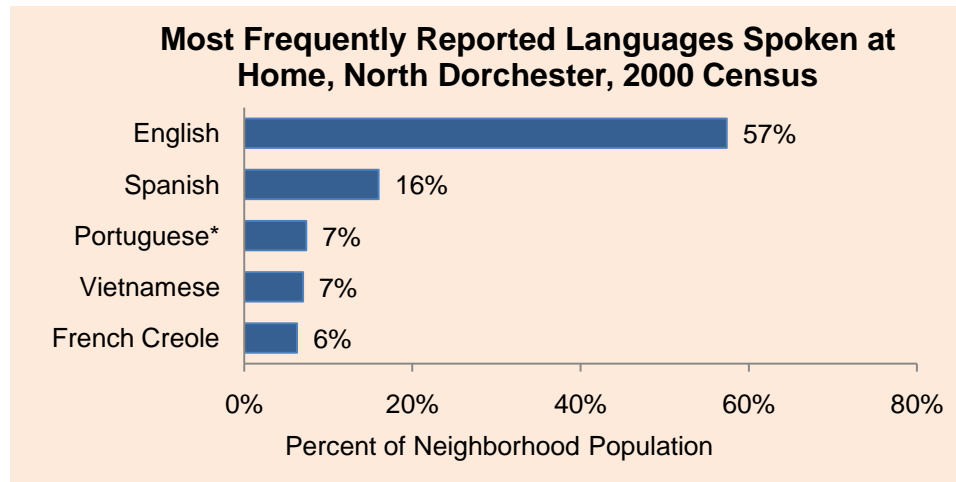


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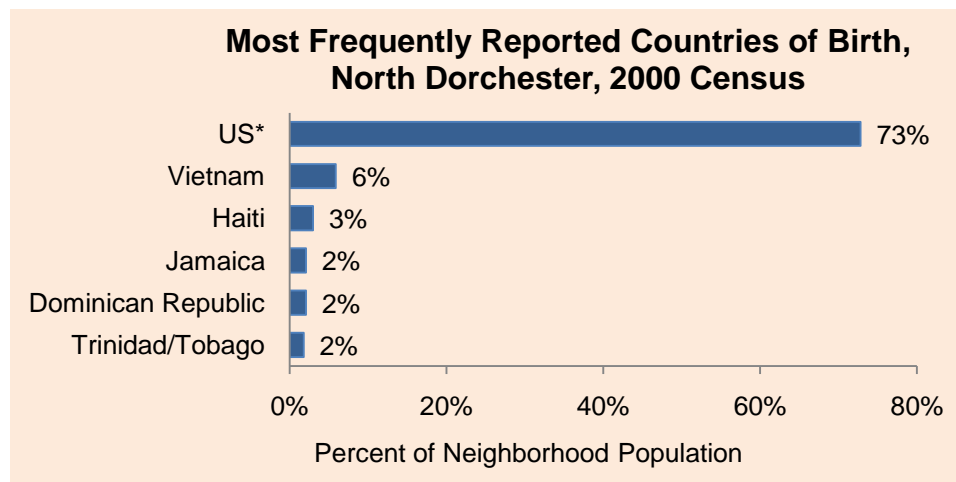




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 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder



\*Includes Portuguese Creole  
 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder



\*Includes 1% of neighborhood population born in Puerto Rico  
 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder

## The North End

The North End is known as Boston's first neighborhood. By the 1750s, it had a thriving commercial base, a busy seaport, and large estates for its wealthy merchants. Puritan Pastors, Increase and Cotton Mather ministered at North Church, which was then located in the North End. Paul Revere, known for his 1775 ride to warn of the approach of British soldiers, was born in the North End and also named Boston's first health officer in 1799.

After the Revolutionary War, the shipping industry propelled growth in wharves, business establishments, and warehouses. Among the new structures was Quincy Marketplace and in 1830, Mill Pond was filled in to accommodate the North End's growth.

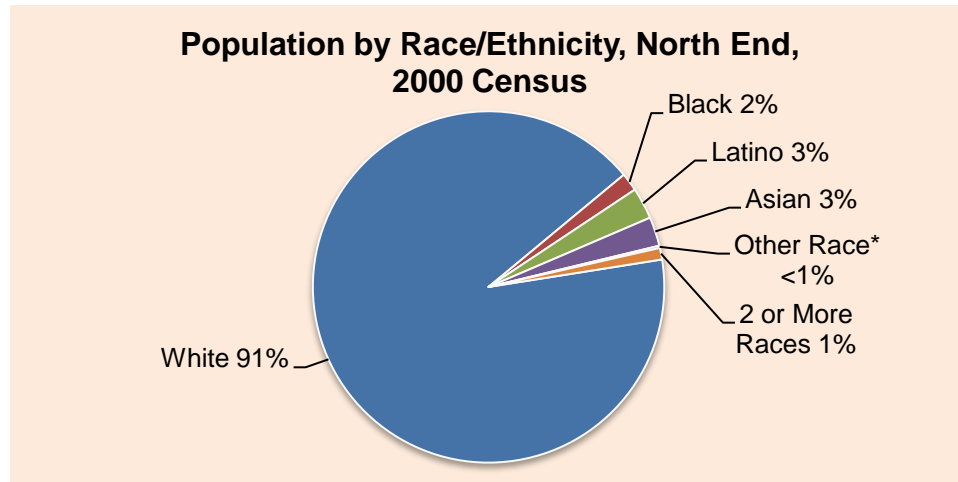
The number of Irish immigrants settling in the North End increased dramatically in the 1840s as the Famine Irish arrived. Most were desperately poor and served as servants and laborers on Boston's landfill projects. Around 1870, the Irish began moving to South Boston, and Eastern European Jews began to settle in the North End. At the turn of the century, there were five synagogues and two Jewish Schools in the neighborhood. By the 1920s, many Jews had moved to other Boston neighborhoods, and Italian immigrants became the largest immigrant group in the North End. The 1930 census reported that 44,000 residents of Italian descent lived in the North End. Though the population has decreased, the Italian influence continues in the neighborhood's wealth of Italian restaurants, stores, and social clubs.

There was little change in either the total population or the racial/ethnic composition of the North End during the 1990s. In 2000, the total population was 12,114, almost identical to 1990, when it was 12,152. The North End continued to be predominately White; in 1990, 95% of the residents were White compared with 91% in 2000. During this time, the percentage of Black residents rose from 1% to 2%, and the percentage of Asian residents increased from 1% to 3%.

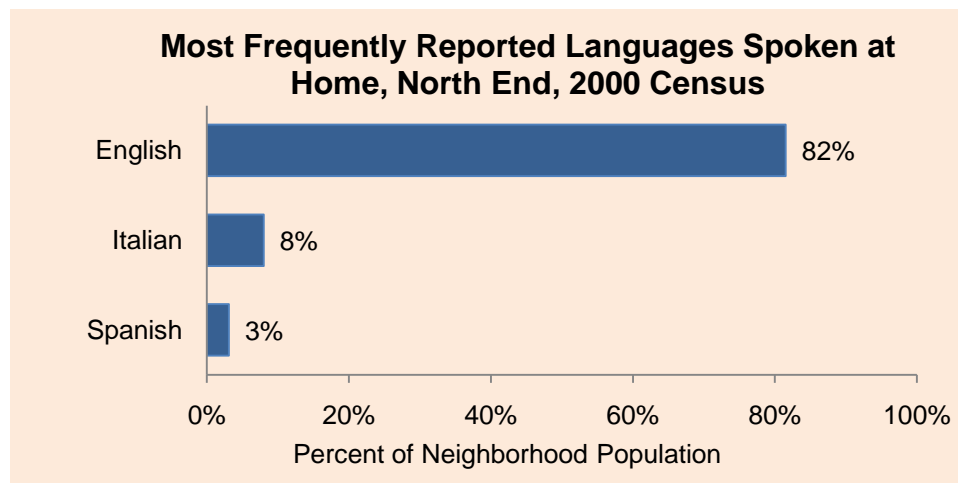
Most North End residents (82%) speak English as their primary language, followed by Italian (8%), and Spanish (3%). Most residents (87%) were born in the United States, including 0.4% who were born in Puerto Rico; 3% of North End residents were born in Italy.



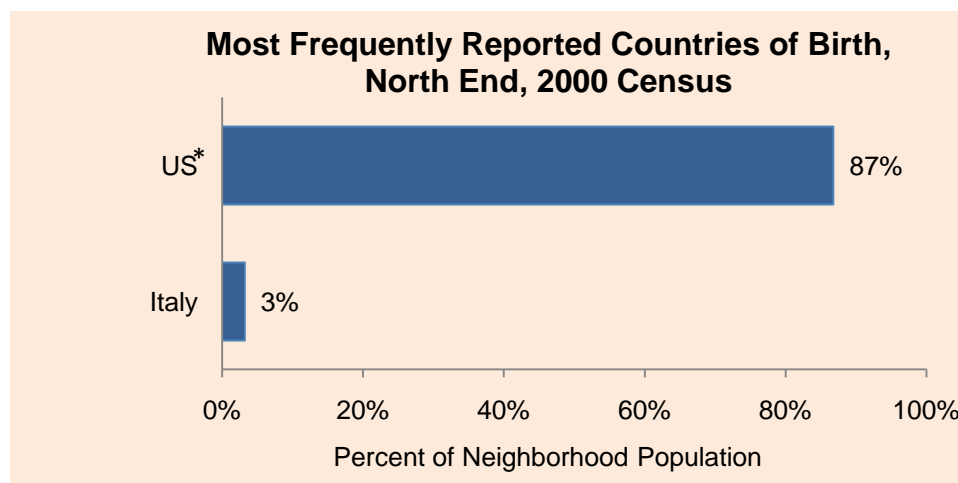
City of Boston; YMCA New England; Massachusetts Department of Agricultural Resources; MassGIS, Massachusetts Department of Conservation and Recreation, 2004; MassGIS, Central Transportation Planning Staff; and Boston Water and Sewer Commission.



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\*Includes 0.4% of neighborhood population born in Puerto Rico  
 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder

## Roslindale

Roslindale was originally part of the City of Roxbury and was called South Street Crossing. The establishment of a post office branch in 1870 precipitated the name change when the Postal Service rejected the name South Street Crossing. Officials decided to name the area after Roslyn, a town in Scotland; “dale” was added as the area was surrounded by hills. The neighborhood was annexed to the City of Boston with West Roxbury in 1873.

For most of the 20th century, Roslindale Square was a thriving business district. The 1970s brought competition from suburban malls, which forced businesses to close, stores to remain vacant, and the Square to be devoid of shoppers. An active local revitalization effort that began in the 1980s earned Roslindale Square a “Main Street” award from the National Trust for Historic Preservation. It is known nationally as a model of neighborhood economic revitalization.

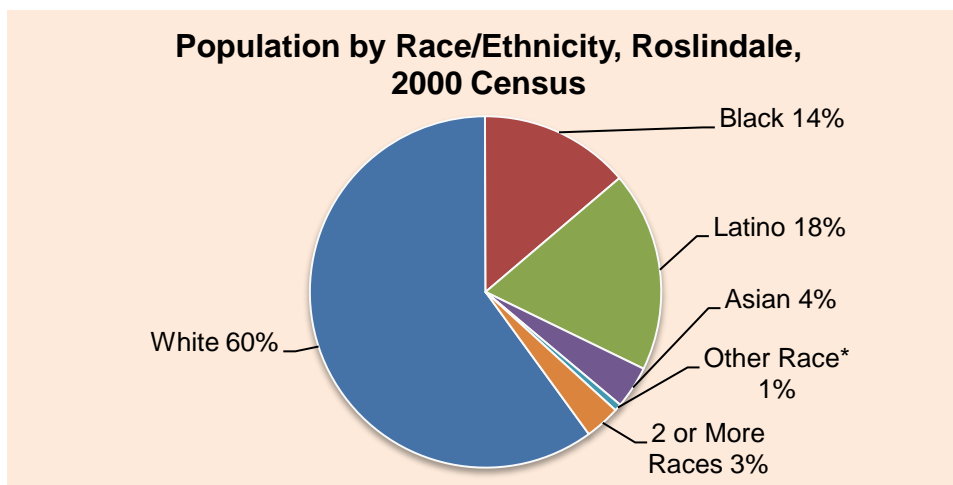
The total population in Roslindale in 2000 was 35,047, an increase of 6% from 1990. A significant shift in the racial composition occurred during the decade. The White population decreased by 21%, while the Black and Latino populations each increased. In 2000, Black residents comprised 14% of the neighborhood compared with 7% in 1990, and Latinos comprised 18% compared with 11% in 1990. The Asian population also increased from 3% of the population to 4%.

English is the language spoken at home by 64% of Roslindale residents; 17% speak Spanish, 5% speak French Creole, and 3% speak Greek.

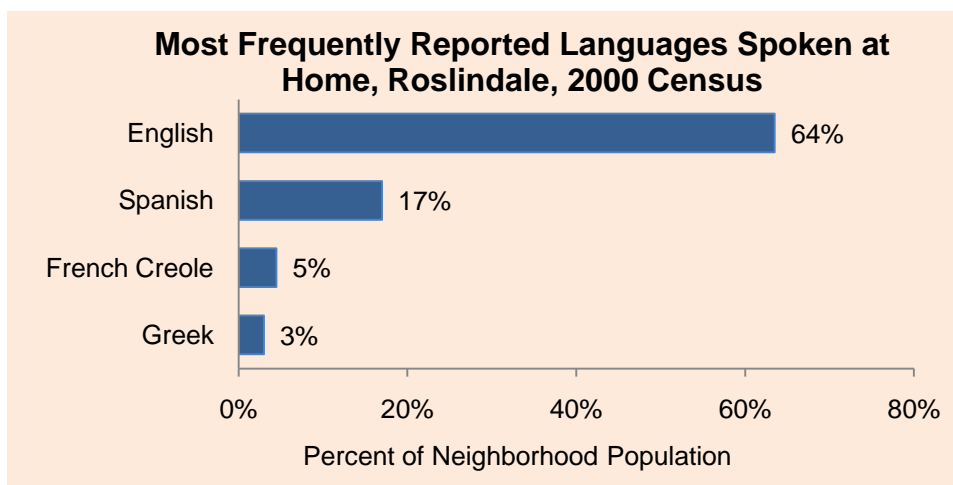
About three-fourths (73%) of Roslindale residents were born in the United States, including 3% who were born in Puerto Rico. Other countries in which residents were born include Haiti (4%), the Dominican Republic (3%), Greece (2%), and China (2%).



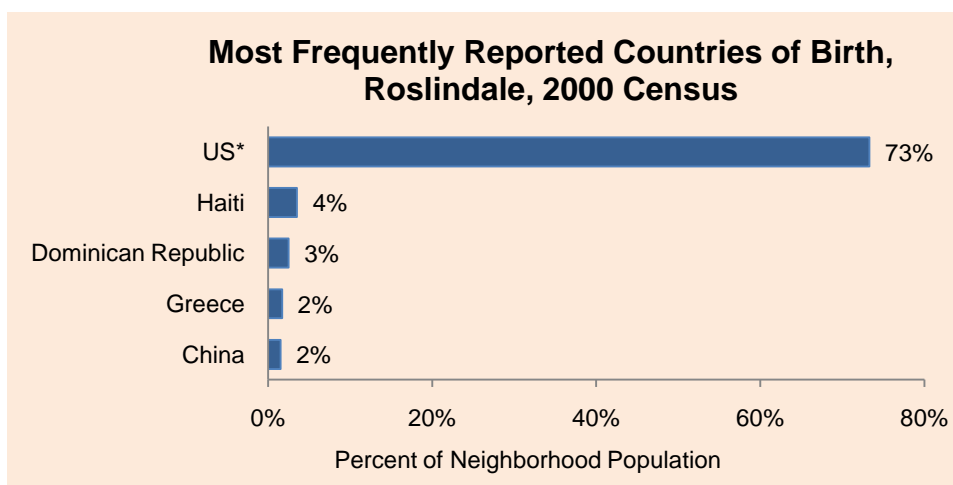
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\*Includes 3% of neighborhood population born in Puerto Rico  
 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder



## Roxbury

When founded in 1630, Roxbury was a large independent community that included what are now Mission Hill, West Roxbury, Roslindale, and Jamaica Plain. The many outcroppings of a locally found stone called puddingstone led the colonists to call it “Rocksberry” which was later shortened “Roxbury.” The community was incorporated as a city in 1846 and was annexed to Boston in 1868.

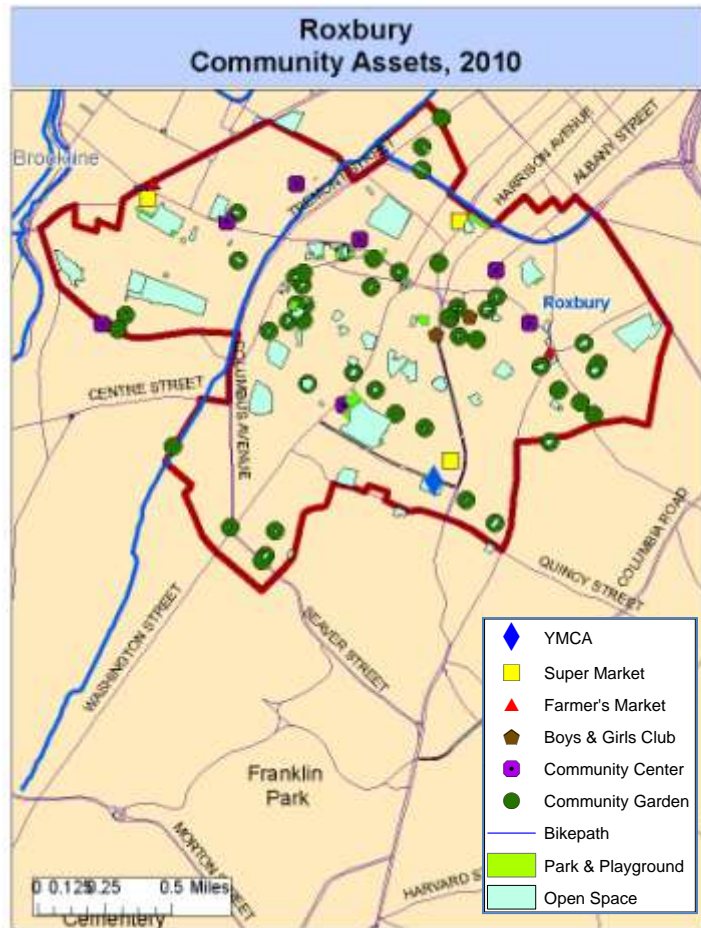
The neighborhood contains numerous historic buildings and landmarks, including the Dillaway-Thomas House, which was built in 1750 as a parsonage and the Shirley Eustis House, which was built in 1747 as the Royal Governor’s house.

In 1862, Dr. Marie Zakrewska established the New England Hospital for Women and Children as a teaching hospital where female doctors and nurses could study and practice medicine. The nation’s first professionally trained nurse, Linda Richards, graduated from the nursing school in 1873; two years later, the nation’s first African-American professionally trained nurse, Mary Eliza Mahoney, graduated from the school. In 1969, the hospital became the Dimock Community Health Center.

In the 1880s, the 527-acre Franklin Park was designed by Frederick Law Olmsted as the “largest and final jewel” in Boston’s Emerald Necklace. English, Irish, and German immigrants were the first Europeans to settle in Roxbury. In the early 1900s, a large Jewish community lived in the Grove Hall area along Blue Hill Avenue. The movement of Blacks from Beacon Hill to the South End and then to Roxbury and the large migration of Blacks from the South to Northern cities after World War II established Roxbury as the center of the Black community in Boston.

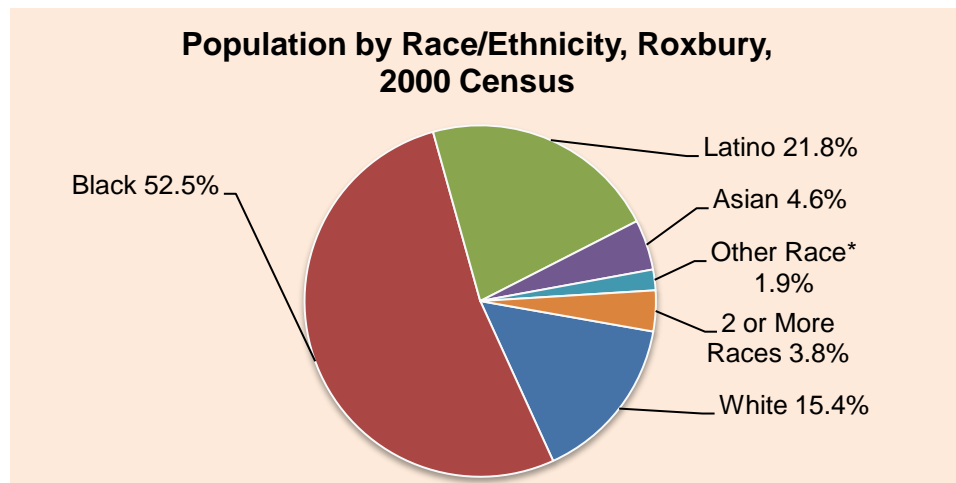
The total population in Roxbury in 2000 was 50,349, a 7% decrease from 1990. During this time, the Black population decreased while the Latino and Asian populations grew in size. The Black population decreased by 7,608 or 23%. The Latino population grew by 1,012 (a 10% increase); the Asian population increased by 743 or 45%. According to the 2000 census, Roxbury is home to the second largest Latino population in the city. The Latino population, which made up 19% of the neighborhood in 1990, increased to 22% in 2000. During this time, the Black population decreased from 63% of the population to 52%.

English is the language spoken at home by 65% of residents; 20% speak Spanish, 3% speak French Creole (which includes Haitian Creole), and 3% speak Chinese. About three-fourths (71%) of Roxbury residents were born in the United States, including 6% who were born in Puerto Rico. Other countries in which residents were born include the Dominican Republic (4%), China (2%), and Jamaica (1%).

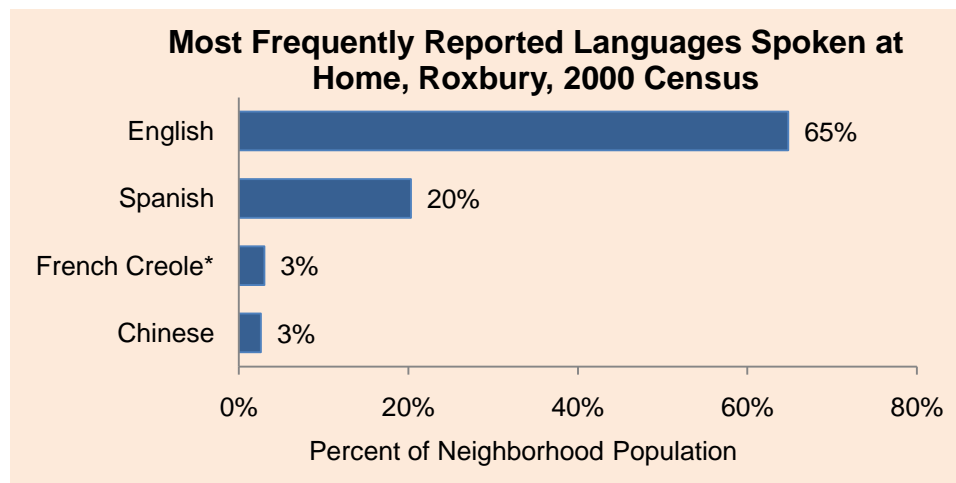


City of Boston; YMCA New England; Massachusetts Department of Agricultural Resources; MassGIS, Massachusetts Department of Conservation and Recreation, 2004; MassGIS, Central Transportation Planning Staff; and Boston Water and Sewer Commission.

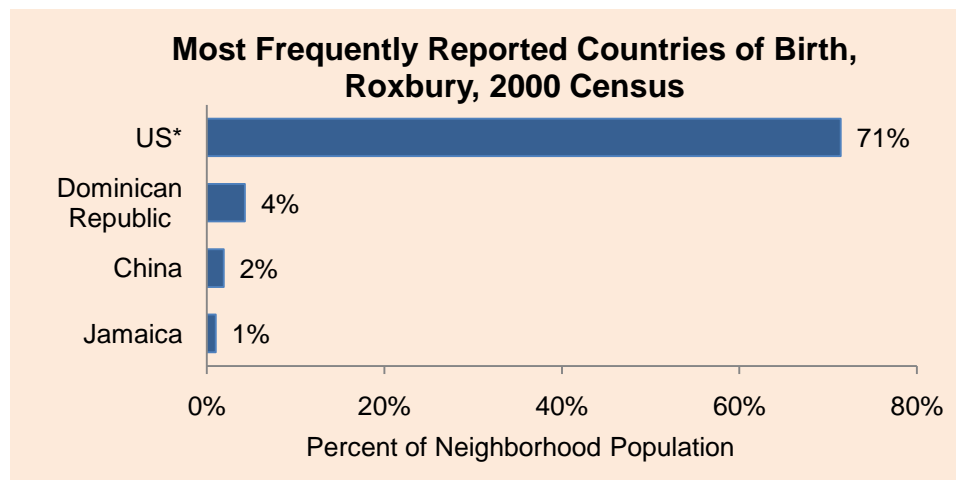




\*Includes Native Hawaiians/Other Pacific Islanders, Alaska Native/American Indians, and Other Races  
 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder



\*Includes Haitian Creole  
 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder



\*Includes 6% of neighborhood population born in Puerto Rico  
 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder

## South Boston

South Boston was known as “Mattapanock” by Native Americans and then as “Dorchester Neck” by the colonists. Annexed in 1804, it was one of Boston’s first neighborhoods. On March 17, 1776 at Dorchester Heights in South Boston, George Washington and his troops drove the British out of Boston. Evacuation Day, a legal holiday in the City of Boston, commemorates this event.

During the mid-1800s, the neighborhood was a major industrial center with foundries, machine shops, shipyards, and refineries. The neighborhood’s industrial growth led to an influx of Irish and other immigrants in the middle and late 1800s. The neighborhood continues to serve as the center of Boston’s Irish community, hosting annual events such as the St. Patrick Day’s Parade.

Through the 20th century, the neighborhood’s connection to Boston’s maritime economy, shipyard, and railroad jobs provided work for South Boston residents. In addition to shipyards and other waterfront industries, the neighborhood has miles of beaches and waterfront parks. In 1905, a Frederick Law Olmstead-designed motorway that runs the length of the beaches was completed – originally called the Strandway, it is now William J. Day Boulevard.

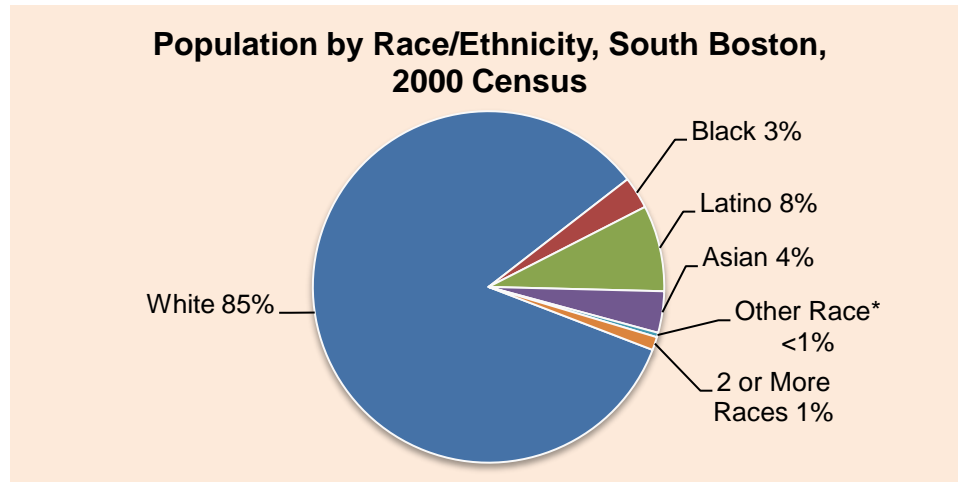
In the 1970s, the neighborhood received national attention for its violent opposition to school desegregation. It received national attention again in the 1990s when gay and lesbian groups were banned from marching in the Saint Patrick Day parade. In 1997, the United States Supreme Court supported this ban when it ruled that the Allied War Veterans, the parade organizers, had a right to determine who could participate.

The total population in South Boston in 2000 was 29,938, an increase of only 2% from 1990. Although still a predominantly White neighborhood, the percentage of White residents in the neighborhood decreased from 96% in 1990 to 85% in 2000. A notable increase occurred within the Latino population, from 2% of the population in 1990 to 8% in 2000. During this time, smaller increases occurred in the size of South Boston’s Asian and Black populations. The Asian population increased from 2% to 4%, and Black population increased from 1% to 3%.

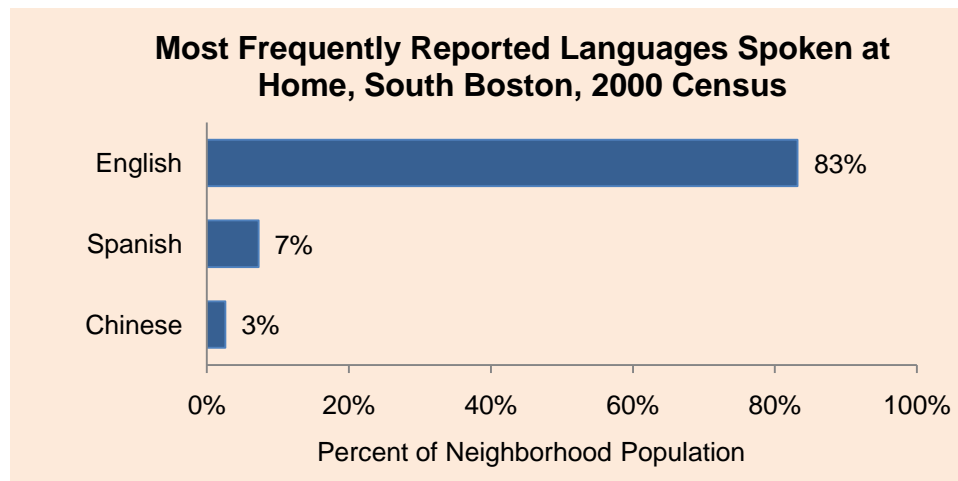
English is the language spoken at home by 83% of residents; 7% speak Spanish and 3% speak Chinese. About two-thirds (69%) of South Boston residents were born in the United States, including 4% who were born in Puerto Rico. Other countries in which South Boston residents were born include the Dominican Republic (3%), China (2%), and Ireland (2%).



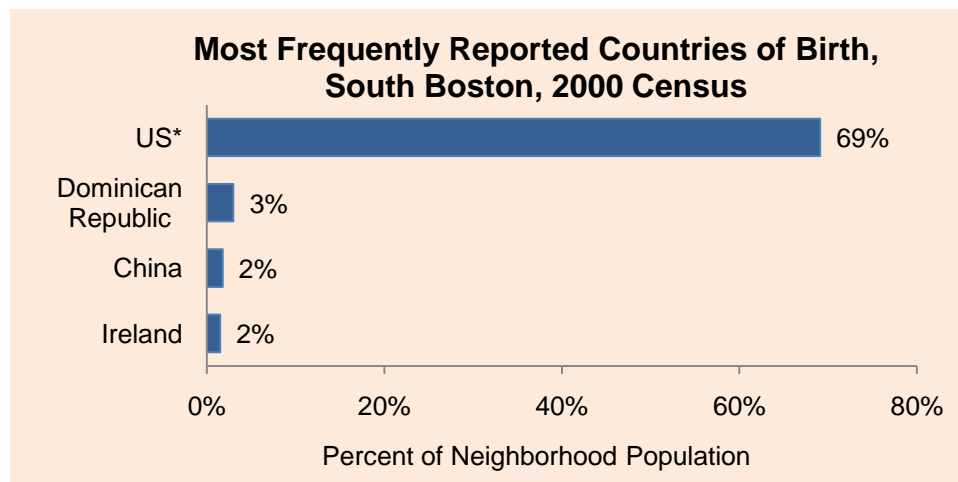
City of Boston; YMCA New England; Massachusetts Department of Agricultural Resources; MassGIS, Massachusetts Department of Conservation and Recreation, 2004; MassGIS, Central Transportation Planning Staff; and Boston Water and Sewer Commission.



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## South Dorchester

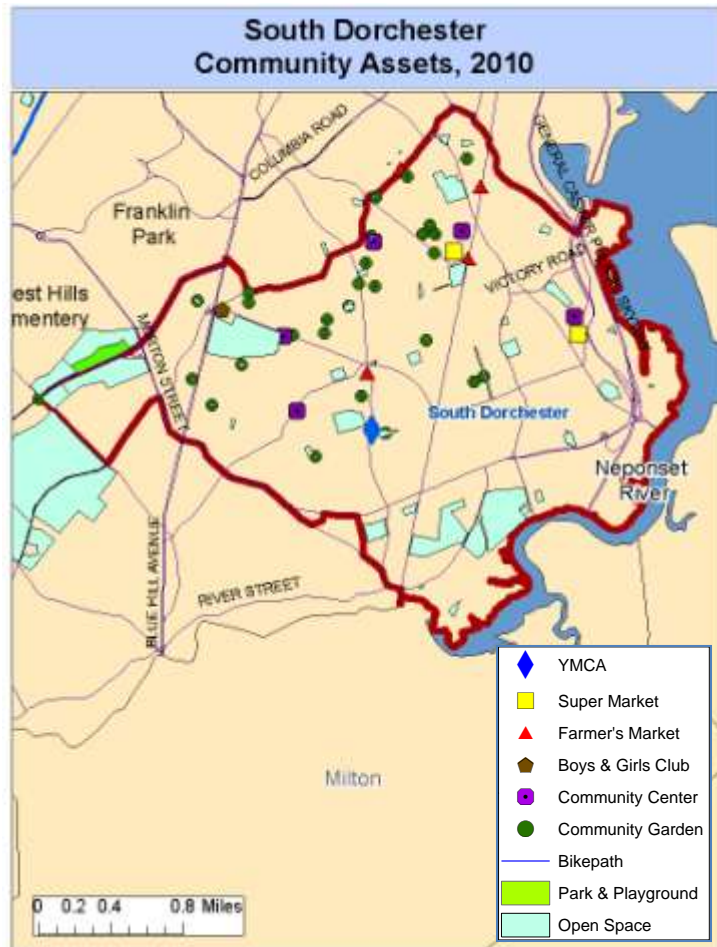
Dorchester was named after the town of Dorchester in England, from which Puritans emigrated. The Wampanoag Indians had called the area Mattapan. Dorchester was annexed to Boston in 1870.

Many historic sites are located in South Dorchester. The Walter Baker Chocolate Mill was established in Lower Mills in 1765. Over the last 20 years, the mill has been converted to apartments and condominiums. The Pierce House, built in 1683, is Boston's second oldest home. William J. Devine Golf Course at Franklin Park, laid out in 1892, is the country's oldest public golf course.

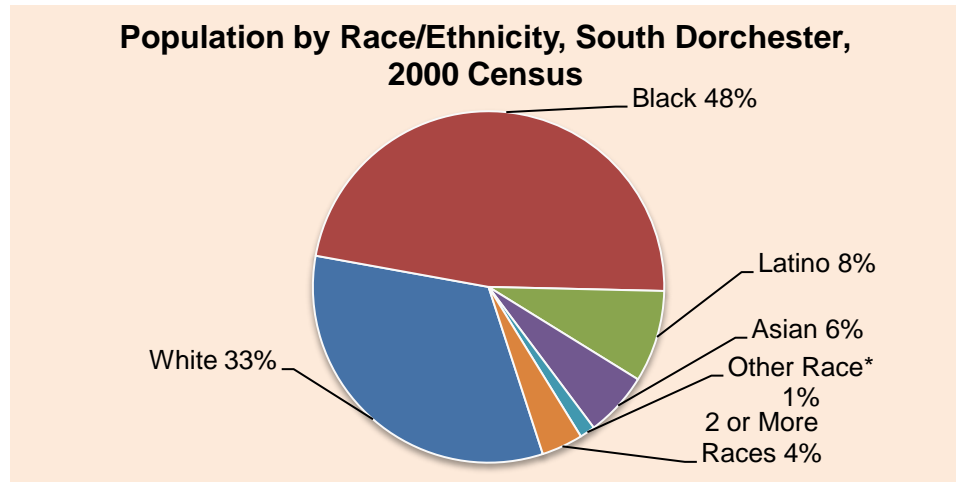
The total population in South Dorchester in 2000 was 45,291, a 4% increase when compared with 1990. The White population decreased by 6,794, or 32%, between 1990 and 2000. In 1990, White residents made up 49% of the population compared with 33% in 2000. During this time, the Black population increased by 3,777, or 17%. In 2000, Black residents made up 48% of South Dorchester, compared with 42% in 1990. The Asian population more than tripled, increasing from 828 in 1990 to 2,616 in 2000. In 2000, Asians constituted 6% of the neighborhood, compared with 2% in 1990. South Dorchester's Latino population also grew during this time. In 2000, the 3,770 Latino residents made up 8% of the neighborhood, an increase from 6% in 1990.

English is the primary language spoken by 74% of the population; 9% speak Spanish, 7% speak French Creole, and 4% speak Vietnamese.

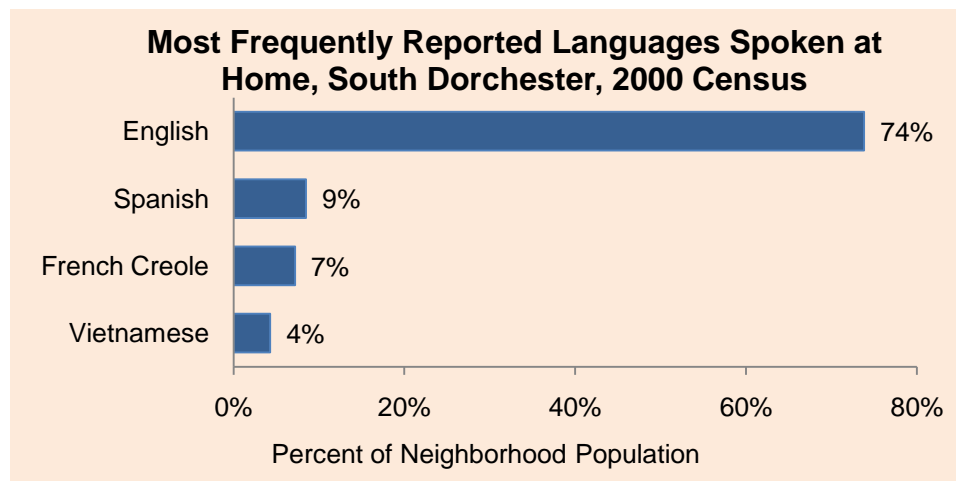
About three-fourths (73%) of South Dorchester residents were born in the United States, including 1% who were born in Puerto Rico. Other countries in which residents were born include Vietnam (4%), Jamaica (3%), Haiti (3%), Ireland (2%), Trinidad/Tobago (1%), the Dominican Republic (1%), and Barbados (1%).



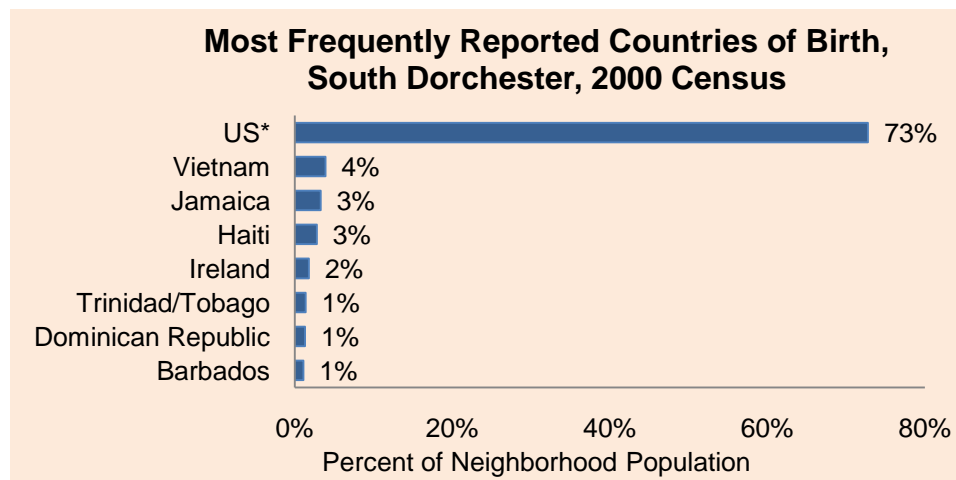
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## The South End

The South End and Chinatown are combined when reporting data in this report; however, the two are distinct neighborhoods with unique histories. *(Note: The map and data here are duplicates of those presented for Chinatown.)*

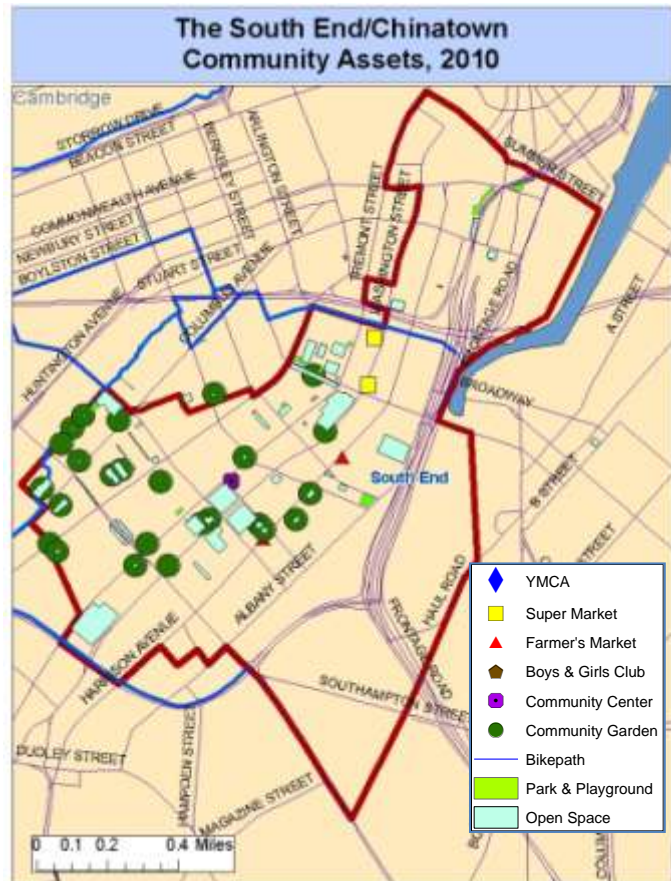
The South End was originally called “Boston Neck” as it was a narrow strip of land connecting Boston to the mainland. In the 1830s, the land was in-filled and Victorian townhouses were built for Boston’s wealthy merchant class.

In the 1870s, the South End became a lodging and boarding house district as wealthy residents left the neighborhood for the newly built Back Bay. Boston City Hospital, the country’s first municipal hospital, was established in 1864 in the South End. Churches and synagogues were built to accommodate growing congregations. Inexpensive housing and proximity to social, health, and religious services combined to bring a variety of cultures, religions, and beliefs to the South End.

By 1900, large Jewish, Syrian, Greek, Italian, Portuguese, Chinese, West Indian, African-American, Native American, and Puerto Rican communities were established. In the 1960’s, housing again shaped neighborhood demographics as the Boston Redevelopment Authority designated the South End as an “Urban Renewal” area. Through organization and protest, the residents of the South End were responsible for the development of two mixed income housing developments – “Tent City” and “Villa Victoria.” In 1968, a group of protesters set up tents and occupied a site that was to become a parking garage. After a 20-year struggle, “Tent City,” a 269-unit mixed income-housing complex was built. At the same time, the Puerto Rican community activists convinced the city to appoint a Latino non-profit agency as the site developer for the tract of land that became Villa Victoria, a 435 unit tenant-run multicultural community.

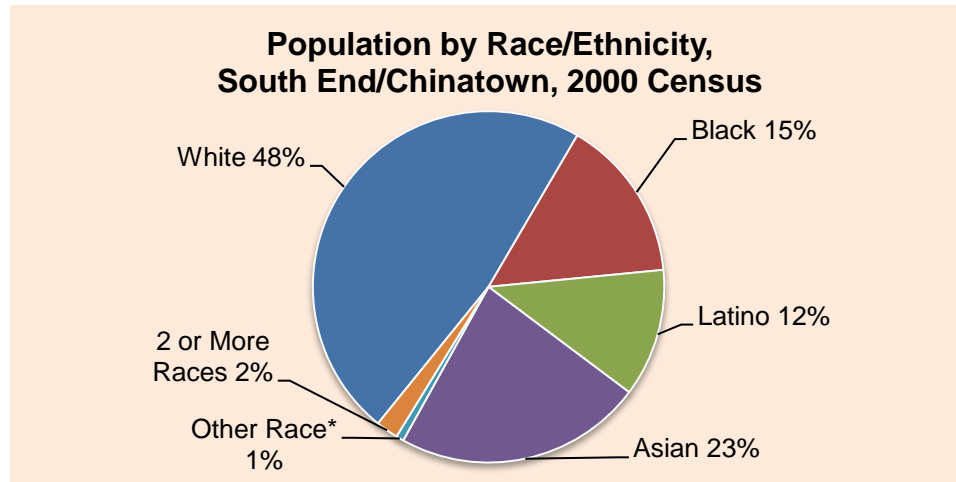
The neighborhood is home to a large gay and lesbian community and a mix of families and young professionals. As the largest Victorian neighborhood in the United States, the South End is a Landmark District and listed in the National Registry of Historical Places. The population in South End/Chinatown in 2000 was 33,502, an 8.3% increase compared with 1990.

The South End is one of the few Boston neighborhoods in which the number of White residents increased. In 2000, the White population grew by 2,570 (a 19% increase) while the Black population decreased by 1,429, or 22%. The percentage of Latinos stayed the same (12% in 1990 and 2000); and the number of Asian residents increased by 139, although their percentage share in the neighborhood decreased from 24% to 23%. Also in 2000, English was spoken at home by 63% of residents; 18% spoke Chinese at home and 11% spoke Spanish. About two-thirds (69%) of South End residents were born in the United States, including 4% who were born in Puerto Rico.

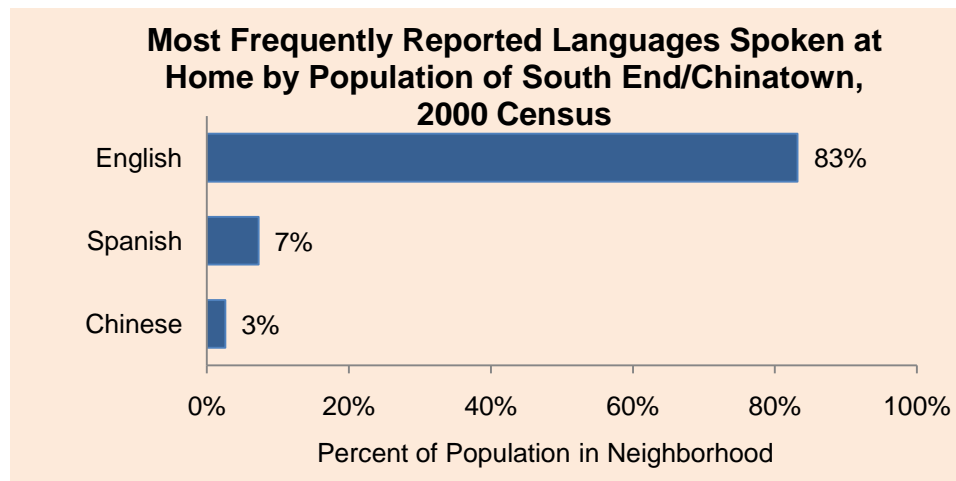


City of Boston; YMCA New England; Massachusetts Department of Agricultural Resources; MassGIS, Massachusetts Department of Conservation and Recreation, 2004; MassGIS, Central Transportation Planning Staff; and Boston Water and Sewer Commission.

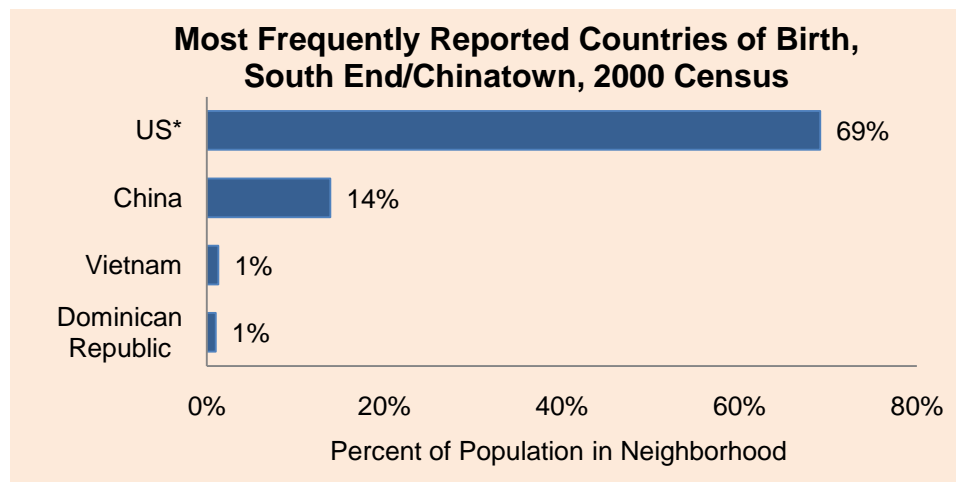




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## West Roxbury

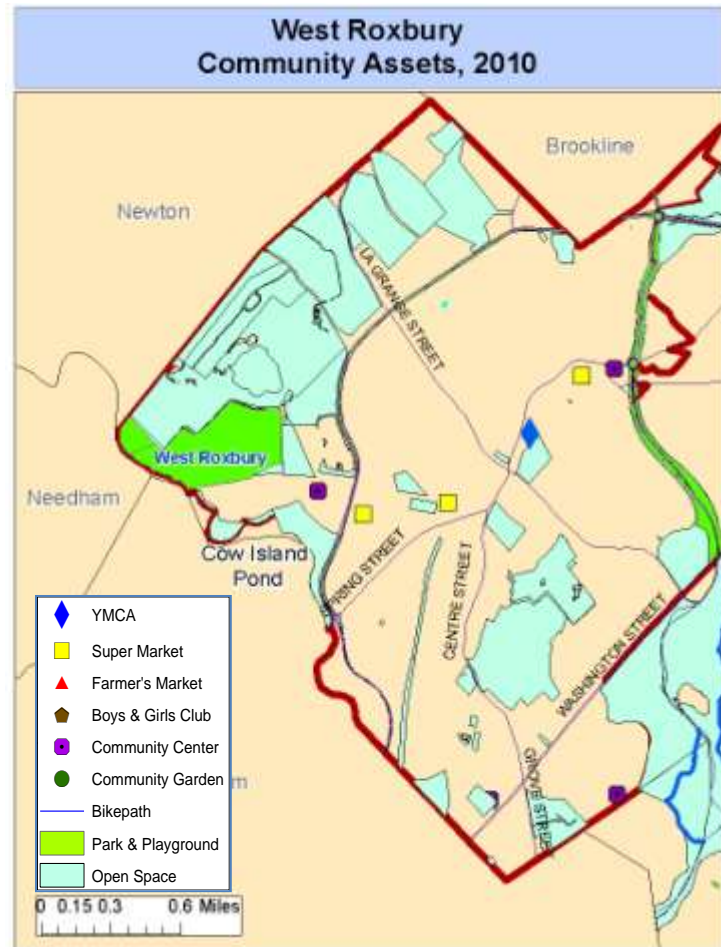
Before 1630, West Roxbury was home to the Wampanoag Indian Tribe. When first inhabited by the Puritans, West Roxbury was part of the town of Roxbury and included the neighborhoods of Roslindale and Jamaica Plain. In 1851, West Roxbury broke away from Roxbury and formed its own government. The neighborhood was annexed by Boston in 1874.

In 1841, Brook Farm was established by Transcendentalists in West Roxbury as an experimental cooperative farm. Its members and regular visitors included many 19<sup>th</sup> century progressive writers and philosophers including Nathaniel Hawthorne, Ralph Waldo Emerson, Margaret Fuller, and Horace Greeley.

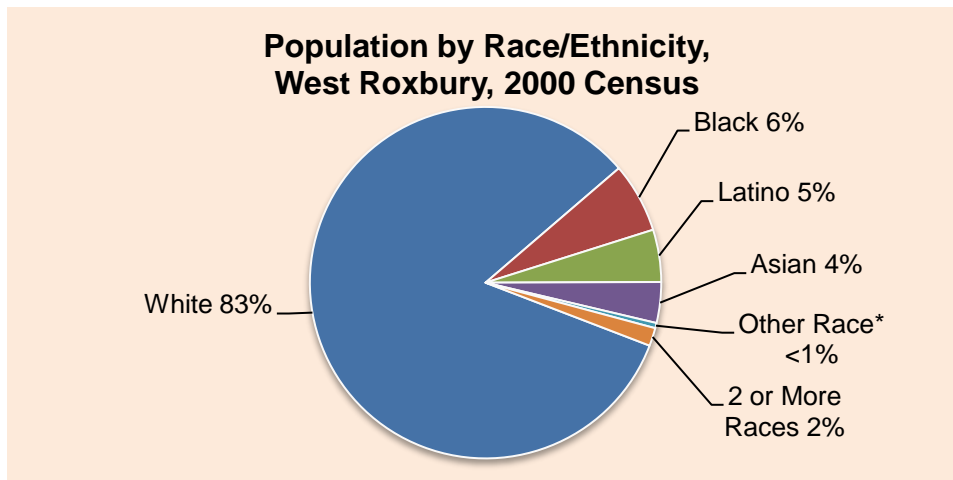
The total population in West Roxbury in 2000 was 26,108, a 4% decrease when compared with 1990. Although the White population in West Roxbury decreased by 4,251 (16%), the neighborhood remained a predominately White one. In 2000, moderate increases were seen in the number and proportion of Asian, Black, and Latino populations. The Asian population made up 4% of West Roxbury residents in 2000, compared with 1% in 1990. During this time, the Latino population grew from 2% to 5% of the total, and the Black population increased from 1% to 6% of the total.

West Roxbury has a large population of elders; in 2000, 20% of the population was 65 and over. The 2000 median household income of \$53,607 is the highest of all Boston neighborhoods.

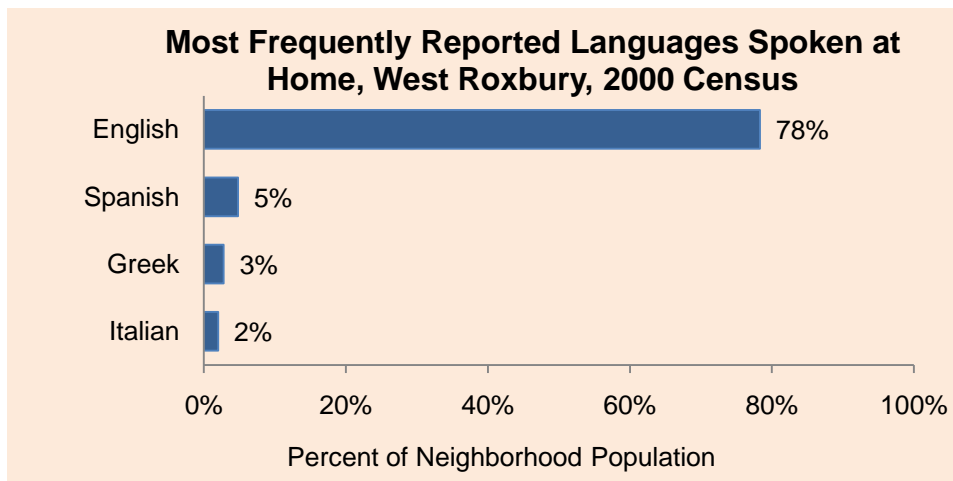
English is the language spoken at home by 78% of residents; 5% speak Spanish, 3% speak Greek, and 2% speak Italian. Most West Roxbury residents (82%) were born in the United States (including 0.4% who were born in Puerto Rico). Other countries in which residents were born include Ireland (2%), Haiti (1%), Lebanon (1%), Italy (1%), and China (1%).



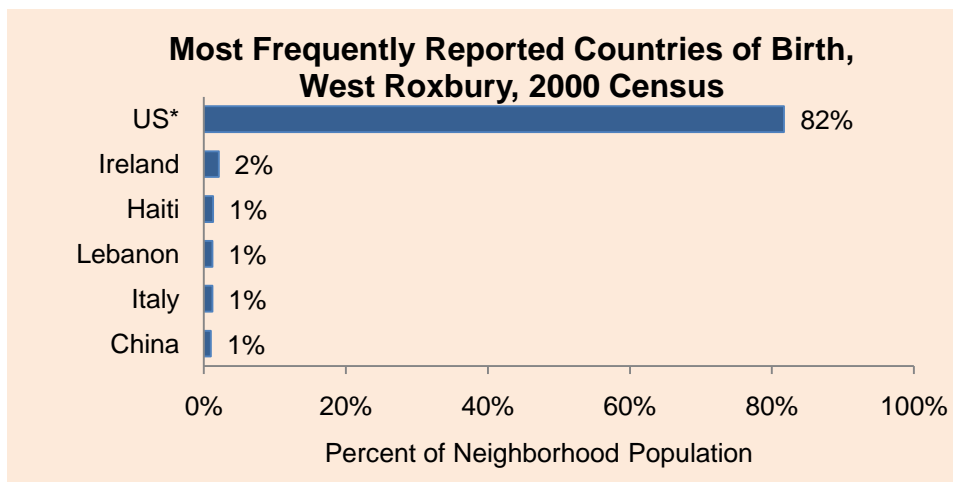
City of Boston; YMCA New England; Massachusetts Department of Agricultural Resources; MassGIS, Massachusetts Department of Conservation and Recreation, 2004; MassGIS, Central Transportation Planning Staff; and Boston Water and Sewer Commission.



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\*Includes 0.4% of neighborhood's population born in Puerto Rico  
 Data Source: Census 2000, US Department of Commerce, Bureau of the Census, American FactFinder

## References

1. City of Boston [Online], <http://cityofboston.gov/neighborhoods> [Accessed on February 26, 2010]
2. Cassidy, L and Jakes, S. Evaluating the National Outcomes: Community. Citizen Development. A Brief Review of the Literature. Evaluating National Outcomes. [Online] [Cited: December 17, 2008] [http://ag.arizona.edu/fcs/cyfernet/nowg/cd\\_litrev.html](http://ag.arizona.edu/fcs/cyfernet/nowg/cd_litrev.html)

## Notes and Data Analysis

ABBREVIATIONS KEY FOR CITY OF BOSTON MAP: A/B=Allston/Brighton (includes Beacon Hill, Downtown, and the West End), BB=Back Bay, CH=Charlestown, EB=East Boston, FW=Fenway, HP=Hyde Park, JP=Jamaica Plain, MT=Mattapan, ND=North Dorchester, NE= North End, RS=Roslindale, RX=Roxbury, SB=South Boston, SD=South Dorchester, SE=South End (includes Chinatown), and WR=West Roxbury

MAPS CREATED BY: Boston Public Health Commission Research and Evaluation Office and Information Technology Systems, Geographical Information Systems Program

DISCLAIMER FOR MAPS: BPHC makes no claims, no representations and no warranties, express or implied, concerning the validity (express or implied), the reliability, or the accuracy of the GIS data furnished by BPHC, including the implied validity of any uses of such data.

DATA ANALYSIS PRESENTED IN CHARTS: Boston Public Health Commission Research and Evaluation Office





## Section 5: Access to Health Care

The Institute of Medicine defines access to health care as “the timely use of personal health services to achieve the best possible health outcomes” (1). In the United States, having health insurance coverage is a fundamental component to accessing health care. Studies have demonstrated a strong association between health insurance coverage and access to primary and preventive care, the treatment of health conditions, the management of chronic diseases, and, in some cases, premature death (2).

In April 2006, Massachusetts became the first state to enact near-universal health insurance coverage and comprehensive health care reform. The legislation expanded Medicaid, subsidized private health insurance coverage, developed insurance market reforms, and instituted employer and individual mandates (3). More specifically, individuals were required to have health insurance coverage or face stiff tax penalties. Direct benefits of this legislation included substantially reduced numbers of people without health insurance coverage and cost.

Although the recent expansion of health insurance coverage in Massachusetts has improved overall access to health care among Boston residents, having adequate access may still depend on other factors including the availability of services in a community, (i.e. reasonable geographic proximity and availability of appointments), language barriers, out-of-pocket health care costs, and having an established regular source of care (i.e. primary care physician).

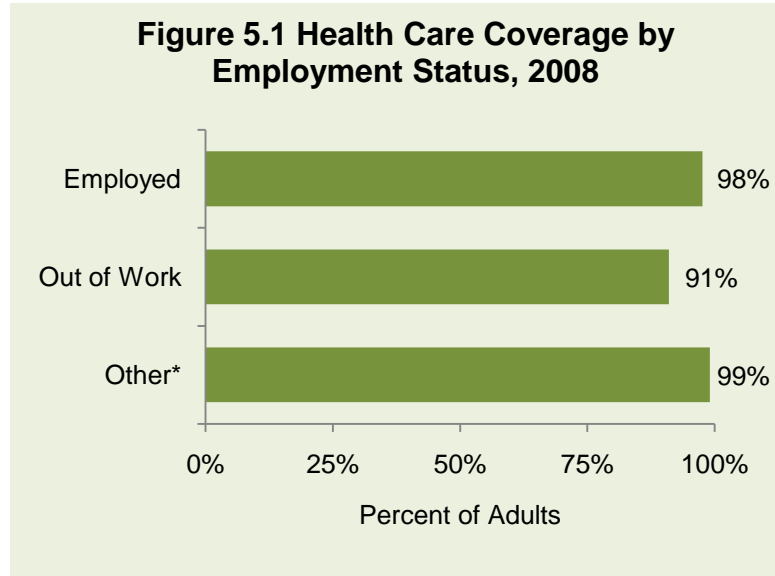
Dental and oral health problems cause pain, difficulty speaking, and may increase the risk of developing chronic diseases (4). Dental insurance coverage and regular visits to the dentist offer an opportunity for the early diagnosis, prevention, and treatment of oral diseases. There are fewer people with dental insurance coverage than with health insurance coverage; there are even lower

levels of dental care utilization compared with health care utilization. The Surgeon General’s report on oral health in the United States lists lack of understanding and awareness of the importance of oral health as an important barrier to accessing and utilizing dental care (5).

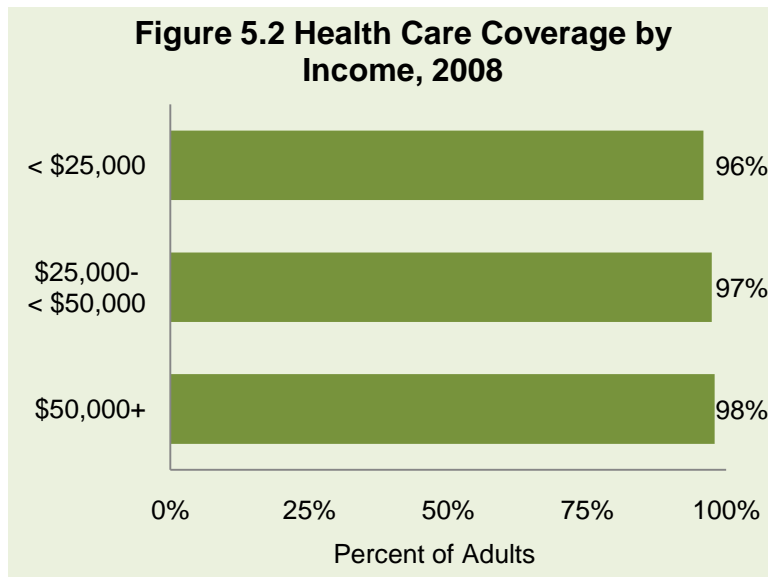
This section describes health and dental insurance coverage and utilization patterns among Boston residents and neighborhoods.



In 2008, 97% of Boston residents had health care coverage (data not shown). Compared to out of work adults, a higher percentage of adults with “other” employment status had health care insurance coverage.



\*Other: Students, homemakers, retirees, and individuals who are unable to work  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

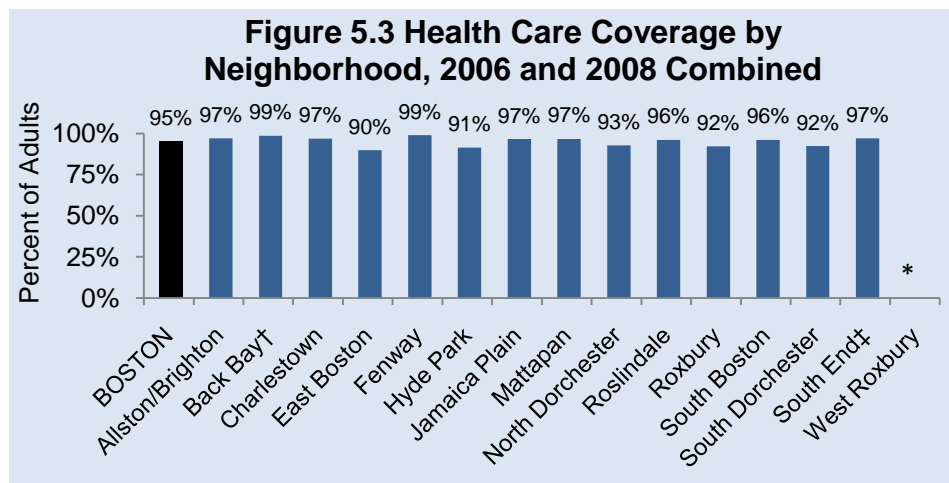


DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

A number of studies have shown that health care coverage varies by income, where those with lower income are most likely to be uninsured (6).

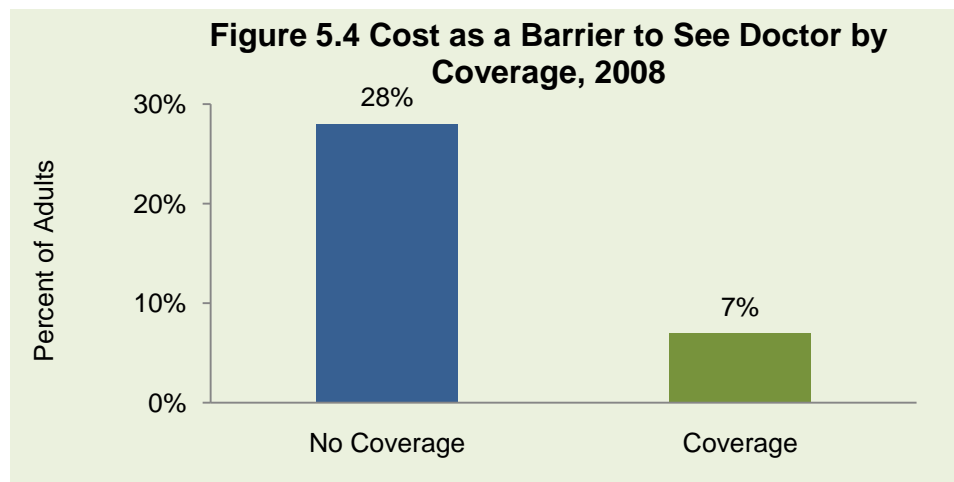
In Boston, under Massachusetts *Health Care Reform*, disparities in health care coverage by household income were not observed. More than 95% of adults in each income group had health insurance coverage.

Although there were no significant differences in having health insurance coverage by household income, the quality (or extent) of coverage can vary. Other factors including physician visit co-pays, insurance deductibles, and prescription medication costs, can pose as additional barriers to accessing health care.



\* Insufficient sample size  
 † Includes Beacon Hill, Downtown, North End, and West End  
 ‡ Includes Chinatown  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

A higher percentage of Boston adults living in Back Bay and the Fenway reported having health care coverage than Boston adult residents overall. Across all other neighborhoods, the percentage of adults with coverage was statistically similar to Boston overall.

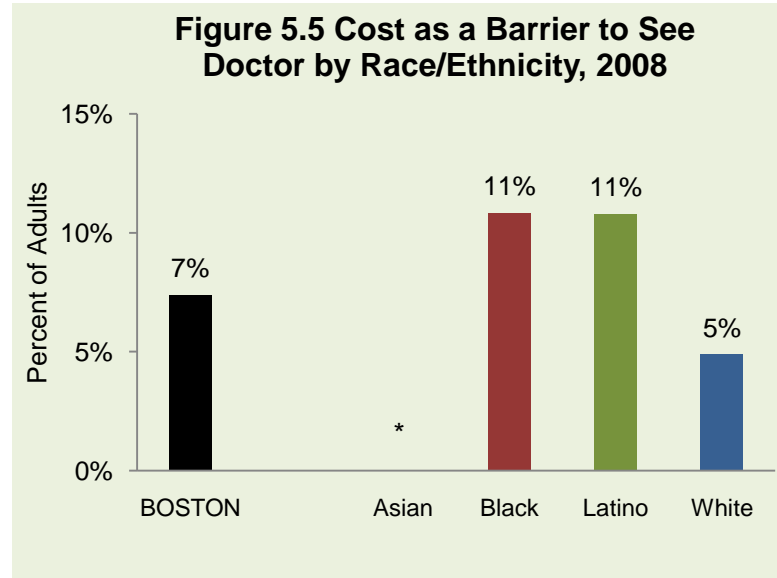


DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

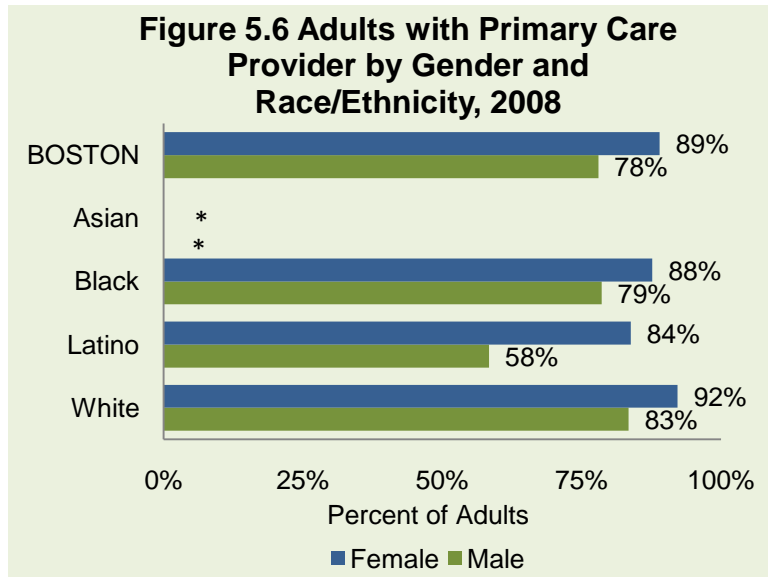
In 2008, in comparison to those with health care coverage a higher percentage of Boston adults with no health care coverage reported not seeing a doctor when needed within the past year due to cost concerns.

Cost remains a barrier to seeking care because of out-of-pocket costs including co-pays, premiums, deductibles, and prescription medications (7).

In 2008, across racial/ethnic groups, a statistically similar percentage of adults reported cost as a barrier to seeing a doctor during the past 12 months.



\*Insufficient sample size for Asians  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



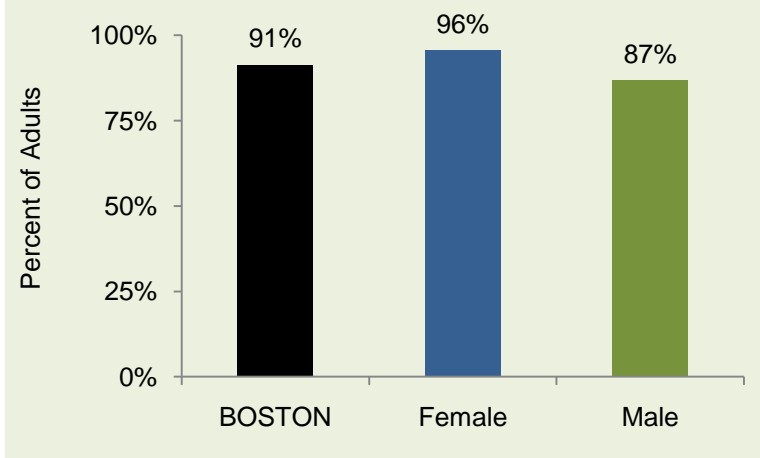
\* Insufficient sample size for Asian females and males  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Having a primary care provider is important for good health outcomes and continuity of care (6). In 2008, 83% of Boston adults reported having a primary care provider (data not shown).

A statistically similar percentage of Black, Latino, and White females reported having a primary care provider. A lower percentage of Latino males than White males reported having a primary care provider.

Within racial/ethnic groups, a lower percentage of Latino males compared to Latino females and White males compared to White females reported having a primary care provider.

**Figure 5.7 Visited Doctor Within Past Two Years for Routine Checkup by Gender, 2008**



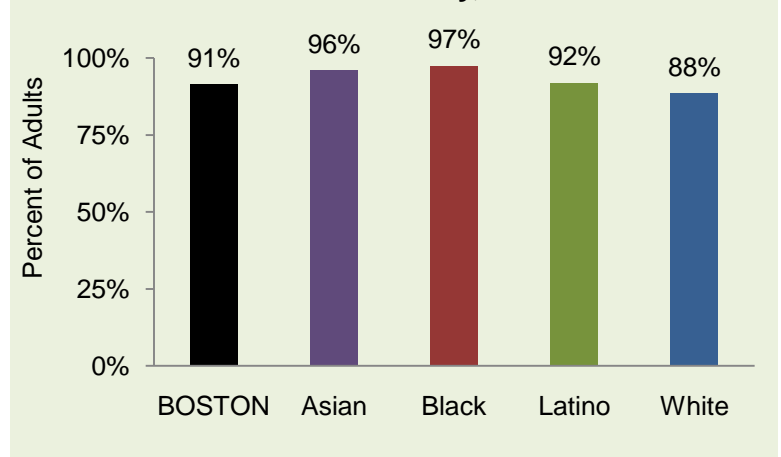
In 2008, 91% of Boston residents indicated visiting a doctor within the past two years for a routine check-up.

A higher percentage of Boston females compared to males reported seeing a doctor in the past two years for a routine checkup.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

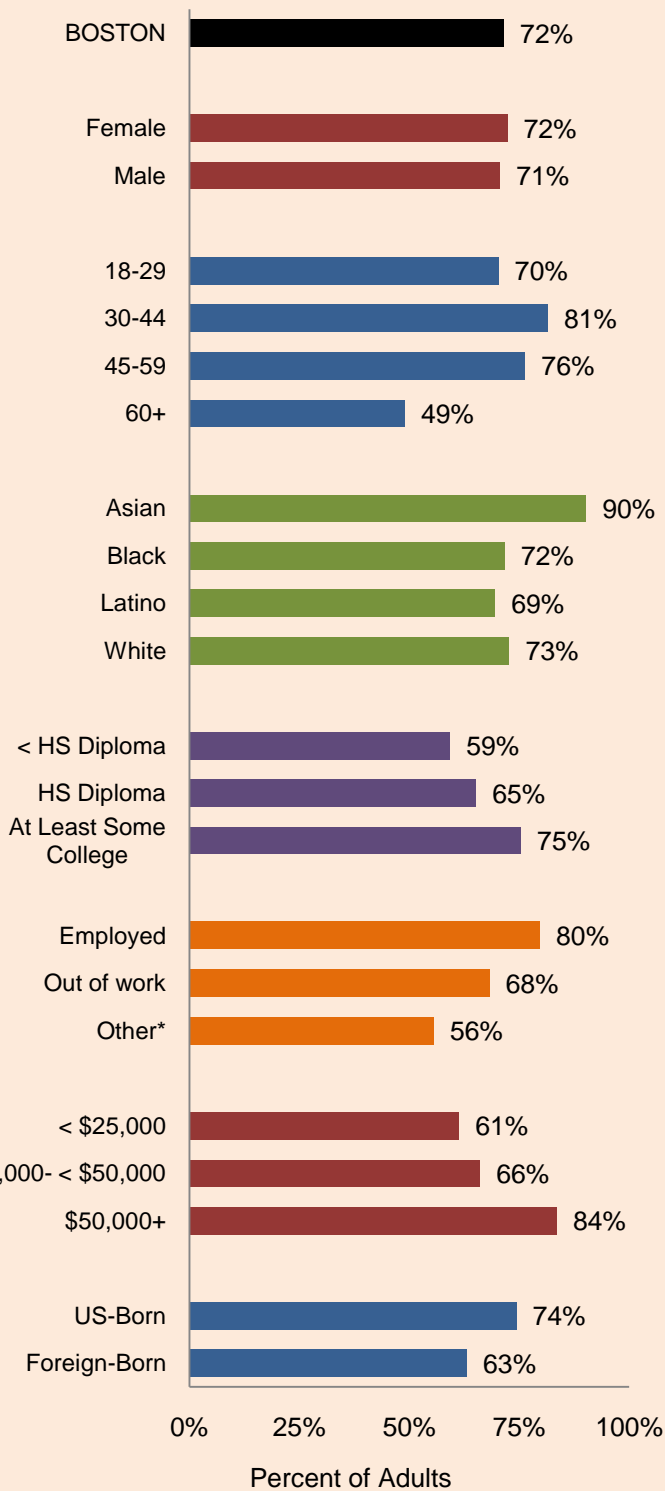
A higher percentage of Asian and Black adults compared to White adults visited the doctor within the past two years for a routine checkup.

**Figure 5.8 Visited Doctor Within Past Two Years for Routine Checkup by Race/Ethnicity, 2008**



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

**Figure 5.9 Residents with Insurance to Cover Routine Dental Care by Selected Indicators, 2008**



Dental insurance coverage is not universal in Massachusetts. Of the residents who had general health insurance, 27% did not have dental insurance (data not shown).

In 2008, 72% of Boston residents reported having dental insurance to cover routine dental visits.

Compared to the other age groups, a lower percentage of older (60+ years) Boston residents reported having dental insurance.

A higher percentage of Asian adult Boston residents reported having dental insurance compared to Black, Latino, and White residents.

Differences in dental insurance coverage for routine dental care were observed by educational status. A higher percentage of Boston residents with at least some college had dental insurance coverage compared to residents with a high school diploma or less education.

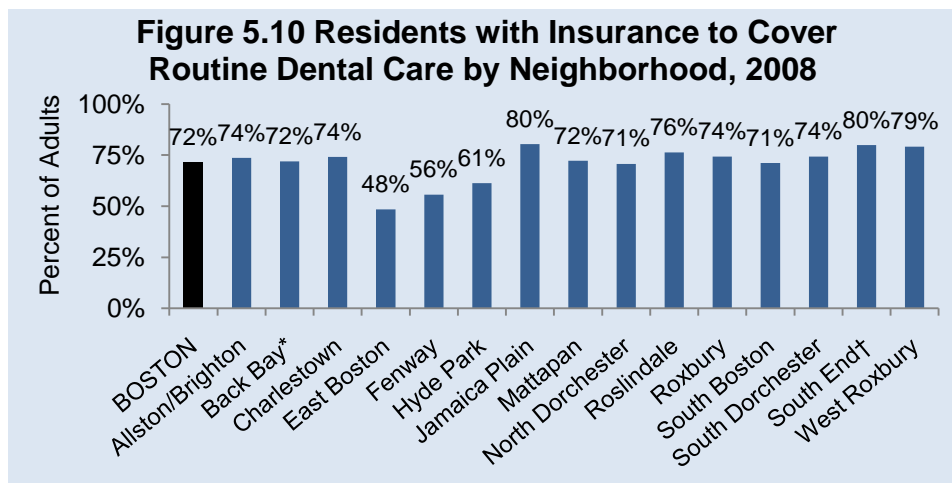
A higher percentage of residents who were employed reported having dental insurance compared to residents characterized as other (i.e. students, homemakers, retirees, and individuals who were unable to work). The percentage of adult residents who reported having dental insurance was statistically similar for employed and out of work residents.

A higher percentage of residents with reported household income earnings of \$50,000 or more had dental insurance coverage in comparison to those with less income.

A higher percentage of US-born compared to foreign born residents reported having dental insurance.

\*Other: Students, homemakers, retirees, and individuals who are unable to work  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



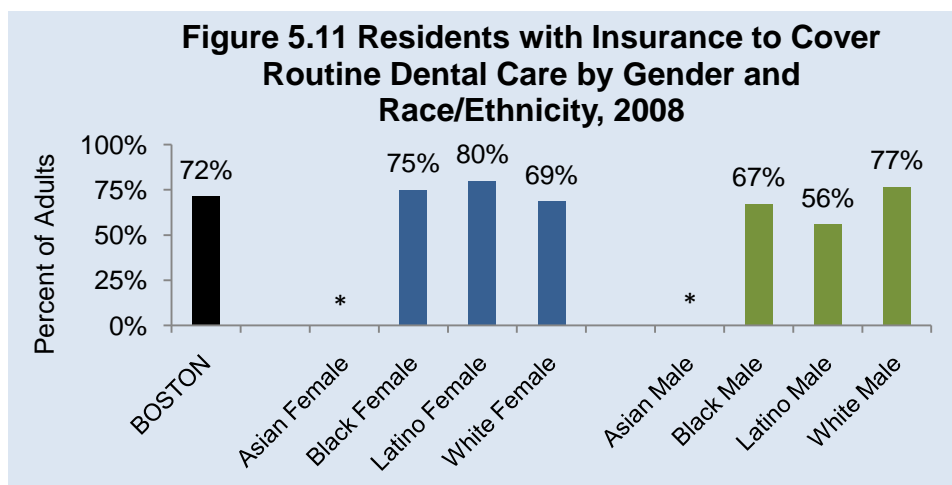


\* Includes Beacon Hill, Downtown, North End, and West End

† Includes Chinatown

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

A lower percentage of East Boston residents reported having dental insurance to cover routine dental care compared to Boston residents overall. The percentages of dental insurance coverage for all other neighborhoods was statistically similar to Boston overall.

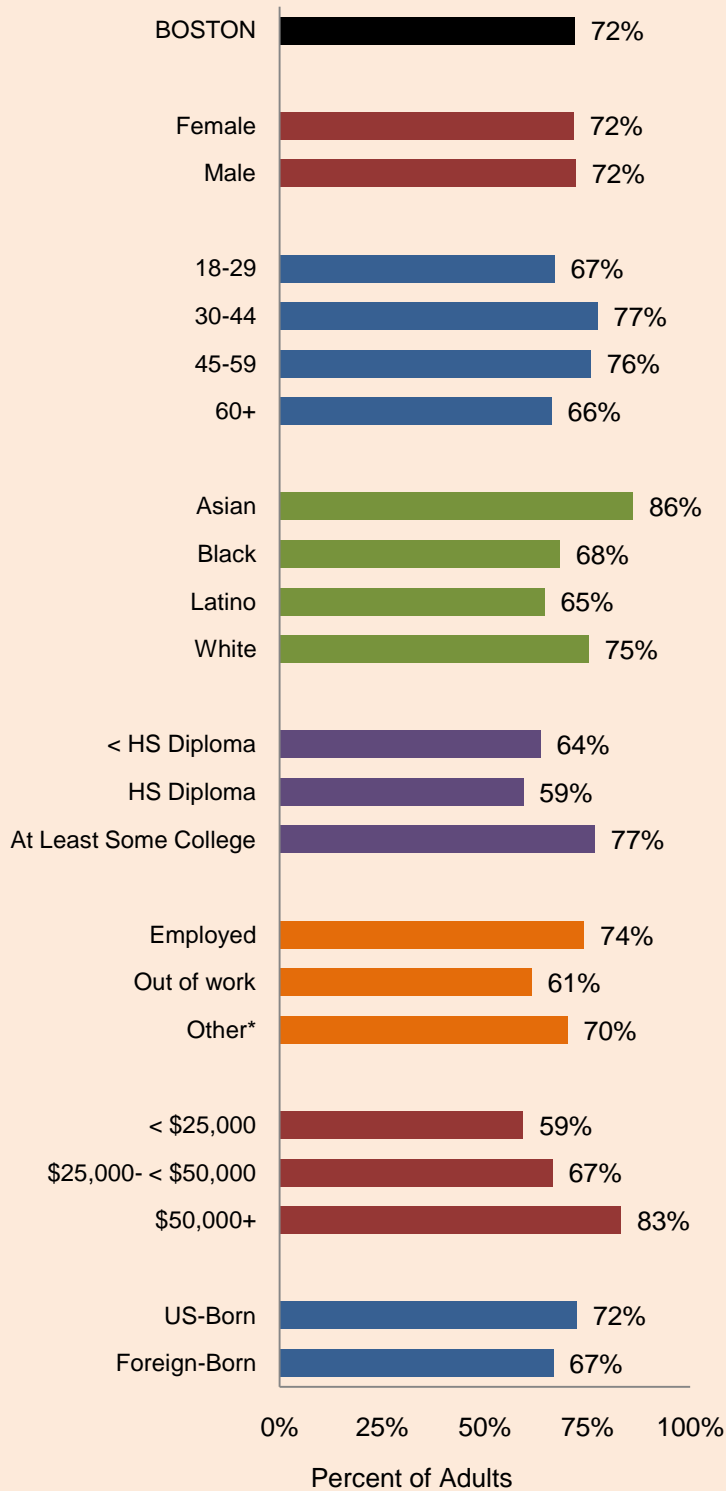


\*Insufficient sample size for Asian females and males

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

A higher percentage of Latino females compared to White females reported having dental insurance. A lower percentage of Latino males reported having dental insurance compared to White males.

**Figure 5.12 Residents who Reported Visiting Dentist Within the Past Year by Selected Indicators, 2008**



In 2008, 72% of Boston residents reported that they visited a dentist in the past year.

A lower percentage of older (60+ years) Boston residents reported visiting a dentist compared to residents ages 30-44 and 45-59.

A higher percentage of Asian residents reported visiting a dentist compared to Black and Latino residents.

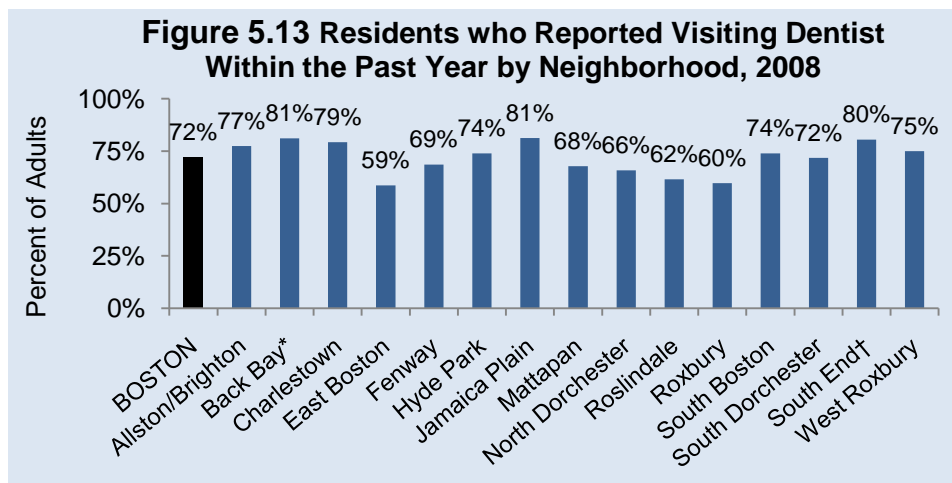
A lower percentage of high school graduates reported visiting a dentist compared to residents with at least some college education.

The percentage of adults visiting the dentist within the past year was statistically similar across employment status groups.

A higher percentage of residents with household income of \$50,000 or more reported visiting a dentist compared to residents in the other income groups.

A statistically similar percentage of US-born and foreign-born adults reported visiting the dentist within the past year.

\*Other: Students, homemakers, retirees, and individuals who are unable to work  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



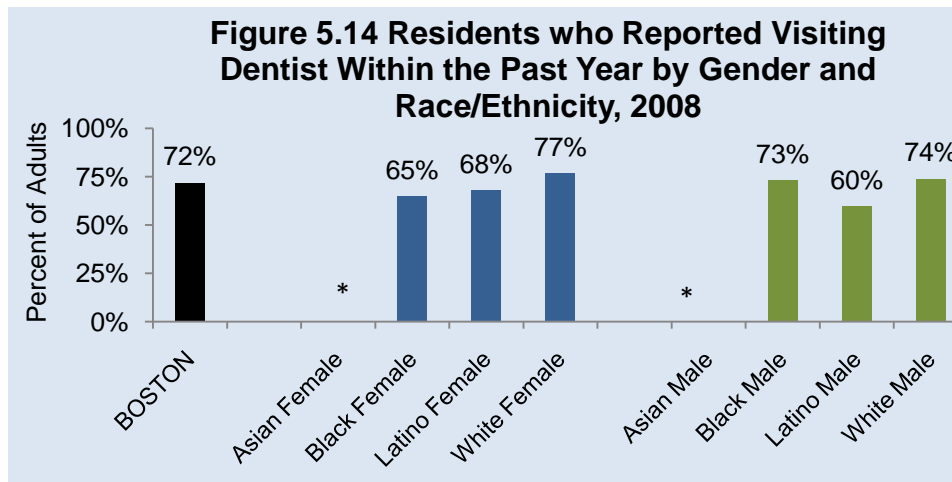
\* Includes Beacon Hill, Downtown, North End, and West End

† Includes Chinatown

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2008, there were no significant differences among residents who reported visiting a dentist across Boston neighborhoods compared to Boston overall.

The top three reported reasons for not visiting a dentist were: “low priority” (43%), cost or no insurance (27%) and fear (12%) (data not shown).



\*Insufficient sample size for Asian females and males

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

A lower percentage of Black females reported visiting a dentist in the past year compared to White females. Across racial/ethnic groups, a similar percentage of males reported visiting the dentist in the past year.

## Summary: Access to Health Care

Access to adequate health and dental care is essential to disease prevention and management. The data presented in this section represent a period following the implementation of health care reform in Massachusetts, leading to the substantial reduction of specific barriers to accessing health care. Selected Healthy People (HP) 2010 targets for access to quality health services include: 100% of individuals with health insurance coverage; and 85% of individuals with a usual primary care provider (8). Boston adult residents come very close to achieving these goals, where 97% of residents have health insurance coverage and 83% of residents report having a primary care provider.

There were no significant differences in health care coverage by household income. In addition, there were no significant differences in the percentage of adults who reported cost as a barrier to seeing a doctor by race/ethnicity. However, racial/ethnic and gender disparities persist. A lower percentage of Latino males reported having a primary care provider in comparison to White males, and a higher percentage of Latino and White females in comparison to Latino and White males reported having a primary care provider.

Massachusetts Health Care Reform legislation did not increase access to dental insurance. In 2008, only 72% of Boston adult residents reported having dental insurance to cover routine dental care. Of the residents who had dental insurance, 79% had visited a dentist in the past year, which exceeds the HP 2010 target of 65% for the utilization of dental care (8).

Disparities in dental insurance coverage and utilization of dental care were observed by age, race/ethnicity, socioeconomic status and

neighborhood of residence. A higher percentage of Asian residents indicated they had dental insurance coverage in comparison to other racial/ethnic groups. Additionally, a higher percentage of residents who had at least some college education reported having dental insurance than residents with less education, and a higher percentage of residents whose annual household income was \$50,000 or more reported having dental insurance in comparison to residents with lower incomes. These disparities were similar for Boston residents who reported having visited a dentist in the past year.

The landscape of access to care in Massachusetts suggests that significant gains have been made in achieving universal health insurance coverage for most of its residents. Although insurance coverage is a critical component for enhancing access to care, it does not alone eliminate barriers and disparities. Other factors including the availability and accessibility of services, and language barriers may additionally create and contribute to health disparities.



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## Notes and Data Analysis

### Figure 5.1

NOTE: Survey question reads, “Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 5.2

NOTE: Survey question reads, “Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 5.3

NOTE: Survey question reads, “Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 5.4

NOTES: Data reflects survey questions, “Was there a time in the past 12 months when you needed to see a doctor but could not because of the cost?” and “Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 5.5

NOTE: Survey question reads, “Was there a time in the past 12 months when you needed to see a doctor but could not because of the cost?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 5.6

NOTE: Survey question reads, “Do you have one person you think of as your personal doctor or health care provider?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 5.7

NOTE: Survey question reads, “About how long has it been since you last visited a doctor for a routine check-up? A routine check-up is a general physical exam, not an exam for a specific injury, illness, or condition.”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 5.8

NOTE: Survey question reads, “About how long has it been since you last visited a doctor for a routine check-up? A routine check-up is a general physical exam, not an exam for a specific injury, illness, or condition.”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 5.9

NOTE: Survey question reads, “Do you have any kind of insurance coverage that pays for some or all of your routine dental care, including dental insurance, prepaid plans such as HMO’s, or government plans such as Medicaid?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 5.10

NOTE: Survey question reads, “Do you have any kind of insurance coverage that pays for some or all of your routine dental care, including dental insurance, prepaid plans such as HMO’s, or government plans such as Medicaid?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 5.11

NOTE: Survey question reads, “Do you have any kind of insurance coverage that pays for some or all of your routine dental care, including dental insurance, prepaid plans such as HMO’s, or government plans such as Medicaid?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 5.12

NOTE: Survey question reads, “How long has it been since you last visited a dentist or a dental clinic for any reason?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office



**Figure 5.13**

NOTES: Data reflects survey questions, “How long has it been since you last visited a dentist or a dental clinic for any reason?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 5.14**

NOTE: Survey question reads, “How long has it been since you last visited a dentist or a dental clinic for any reason?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office



## Section 6: General Health

Increasing the quality of life and the life expectancy of individuals of all ages are primary goals of the Healthy People 2010 initiative (1). Health-related quality of life reflects a general sense of overall health status. Self-reported health is a global indicator of one's quality of life and can reflect an integrated perception of health including biological, psychological, and social dimensions and is an independent predictor of mortality (2). Studies have found that individuals who report poor health have mortality risks two to seven times those of respondents with self-reported excellent health, even when other measures (clinical and medical history) are taken into account (3).

Reported poor or impaired physical and mental health in the past 15 days is another measure of health-related quality of life. Poor physical or mental health may impact an individual's ability to perform usual activities such as self-care, work, or recreation. Self-reported health and number of healthy days may vary considerably by gender, age, educational attainment, race/ethnicity, and employment status.

Life expectancy refers to the average number of years people born in a given year are expected to live based on a set of age-specific death rates (1). Life expectancy data are generated from death data and provide an additional measure of the general welfare of a population (i.e., populations with shorter life expectancy may not be as healthy as those with longer life expectancy). The most recent data report that the average life expectancy for an American is 77.7 years (4). However, there is substantial variation by gender, race/ethnicity, and education. The life expectancy of American females is 80.2 years compared to 75.1 years for males. Blacks have the lowest life expectancy of 73.2 years compared with 78.2 years for Whites (4).

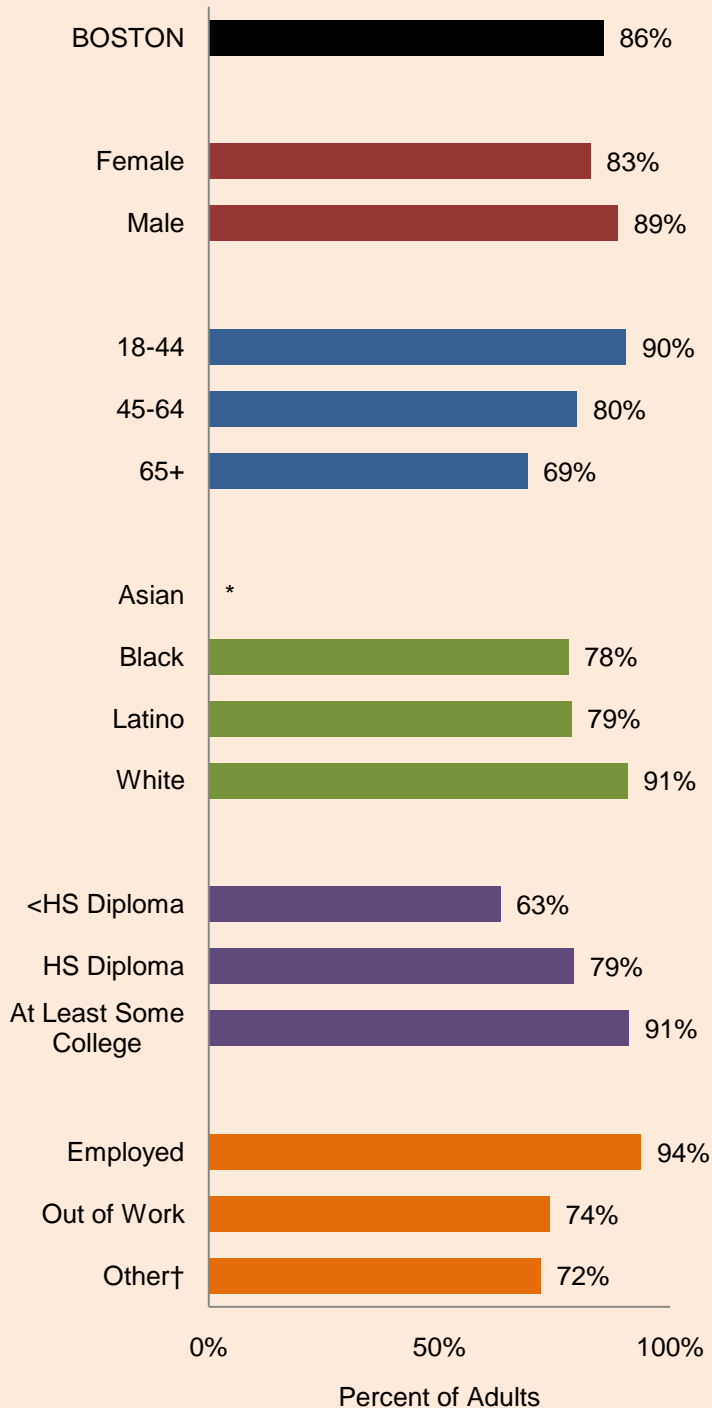
Hospitalizations for conditions also provide a snapshot of the health status of a community. Preventable conditions such as complications from diabetes may reflect limited access to primary care and/or limited access to health prevention services.

Mortality rates also help in understanding the overall health of a population. The mortality, or death rate, is a common measure of the number of deaths in a given population and allows populations of different sizes to be standardized and compared. The leading causes of death in the US are malignant neoplasms, diseases of the heart, cerebrovascular disease, chronic lower respiratory diseases, and accidents (unintentional injuries (4). Mortality trends vary by age, gender, race/ethnicity, and neighborhood of residence.

The following section presents indicators of general health and well-being among Boston residents including self-reported health, hospitalizations, life expectancy, and mortality. In addition, this section includes information about the relationship between perceptions of race-based treatment and health status.



**Figure 6.1 Good or Excellent Self-Rated Health by Selected Indicators, 2008**



Self-rated health is associated with morbidity and mortality. (3)

In Boston, 86% of adults reported having good or excellent health.

A higher percentage of males than females reported having good or excellent health.

A higher percentage of Boston residents ages 18-44 reported good or excellent health in comparison to older residents.

A higher percentage of White adults reported good or excellent health compared to Black and Latino adults.

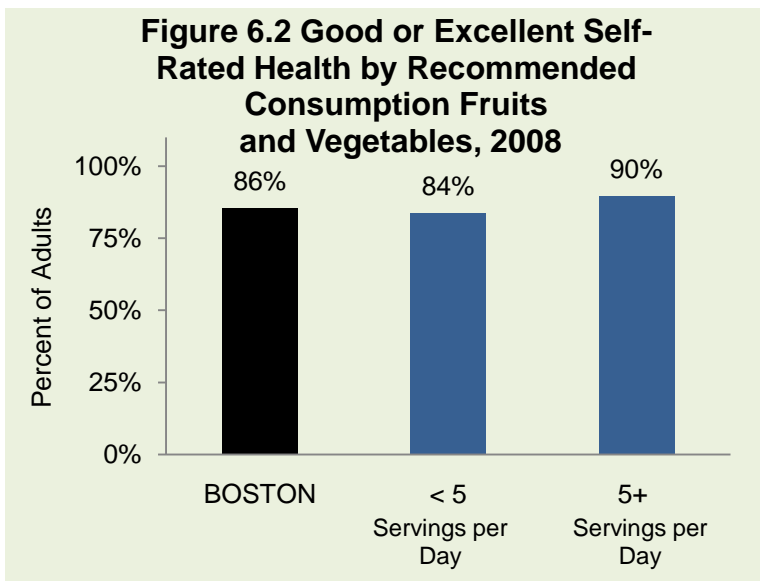
Individuals with lower socioeconomic status are less likely to report good or excellent health (5). A higher percentage of adults with at least some college reported good or excellent health in comparison to adults with less education.

On the same note, a higher percentage of employed adults reported good or excellent health compared to non-employed adults (i.e., individuals who indicated being 'out of work' and individuals with 'other' employment status).

\*Insufficient sample size for Asians

†Includes homemakers, students, retirees or people who are unable to work

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



A diet rich in vegetables and fruits is known to be associated with reduced risk for chronic diseases (6). The American Cancer Society recommends eating at least five servings of fruit and vegetables each day.

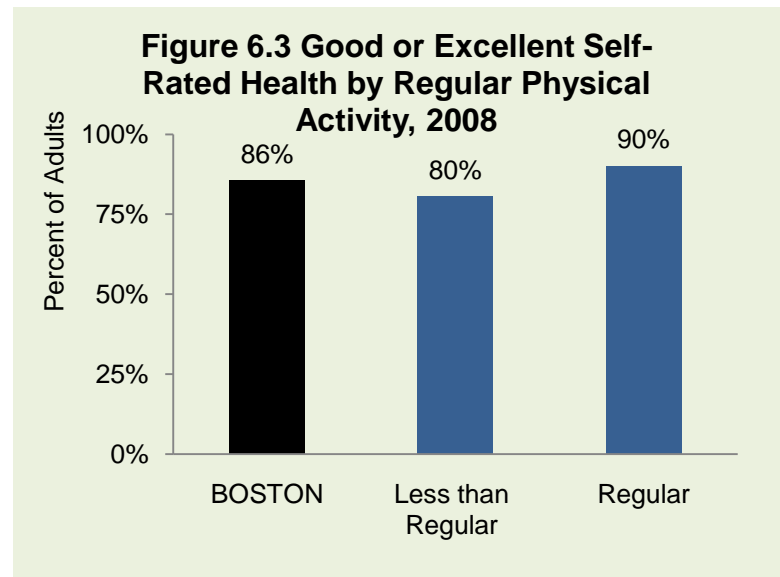
A higher percentage of adults who reported consuming five or more servings of fruits and vegetables per day reported having good or excellent health compared to adults who reported consuming fewer than five servings per day.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Regular physical activity is associated with reduced risk for chronic diseases (6).

For adults, regular physical activity is defined as vigorous activity for 20 minutes per day on 3+ days a week or moderate activity for 30 minutes per day on 5+ days a week.

A higher percentage of adults who reported engaging in regular physical activity reported having good or excellent health compared to adults reporting less than regular physical activity.

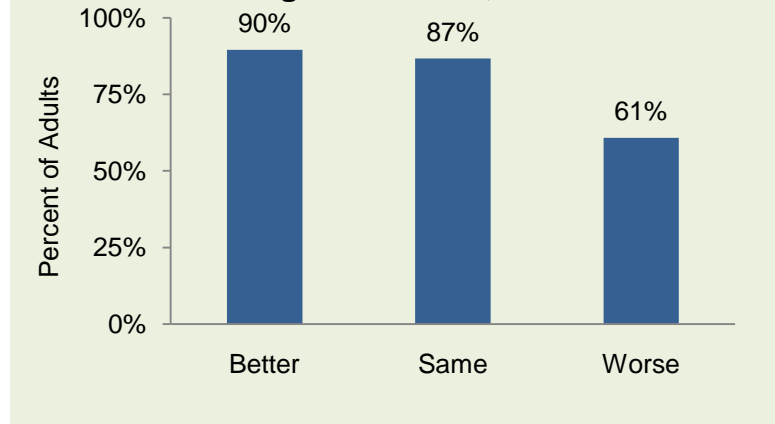


DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Perception of race-based treatment may contribute to the patterns of generally worse health outcomes disproportionately experienced by individuals of specific racial/ethnic groups (7).

Adults were asked if their experiences when seeking health care were the same, better, or worse than the experiences of people of other races. A lower percentage of adults who felt their experiences were worse also reported having good or excellent health.

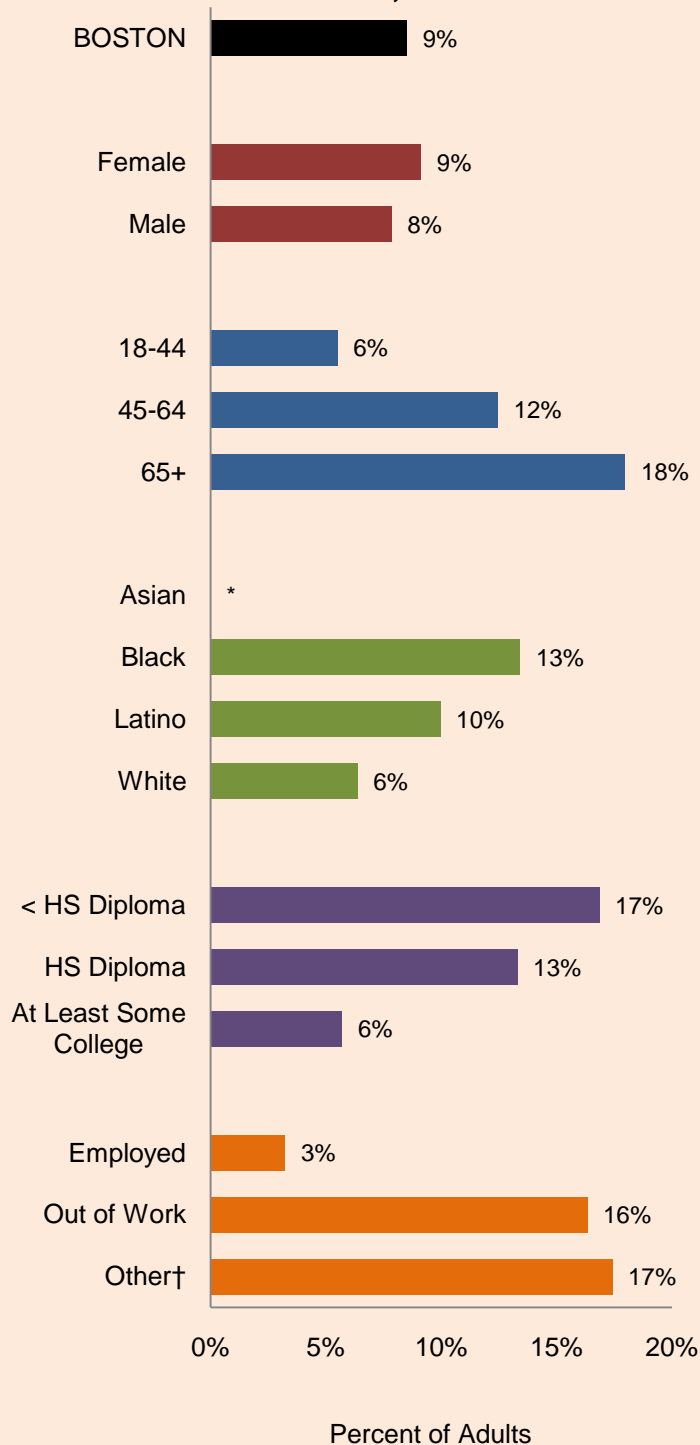
**Figure 6.4 Good or Excellent Self-Rated Health by Perception of Treatment Based on Race When Seeking Health Care, 2008**



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



**Figure 6.5 Poor Physical Health for 15+ Days of Past Month by Selected Indicators, 2008**



Days of poor physical health helps assess symptoms such as pain and injury that may interfere with an individual’s ability to enjoy a healthy quality of life.

In 2008, 9% of adults reported poor physical health (which includes illness and injury) for 15 days or more during the past month.

A statistically similar percentage of males and females reported poor physical health for at least 15 days during the past month.

Compared to younger age groups, older age groups (45+ years) had higher percentages of adults reporting poor physical health for at least 15 days during the past month.

A statistically similar percentage of adults reported poor physical health for at least 15 days during the past month by racial and ethnic group.

A higher percentage of adults with less than a high school diploma and adults with a high school diploma reported poor physical health for at least 15 days compared with adults with at least some college education.

Compared to employed adults, a higher percentage of non-employed adults (i.e., those reporting ‘out of work’ and ‘other’) reported poor physical health.

\*Insufficient sample size for Asians

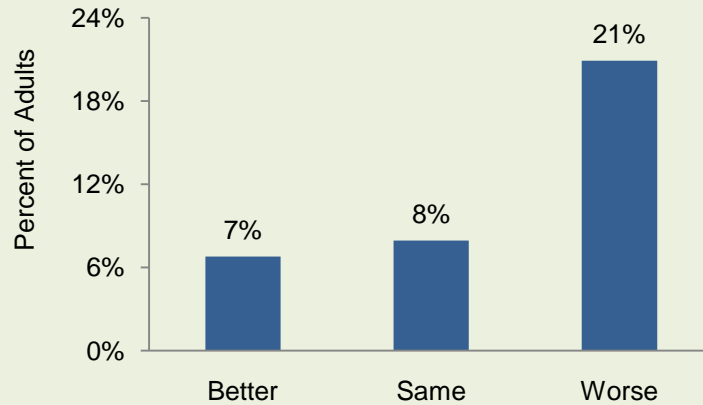
†Includes homemakers, students, retirees or people who are unable to work

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Poor perception of treatment based on race in the healthcare setting may deter utilization and foster patient mistrust (8).

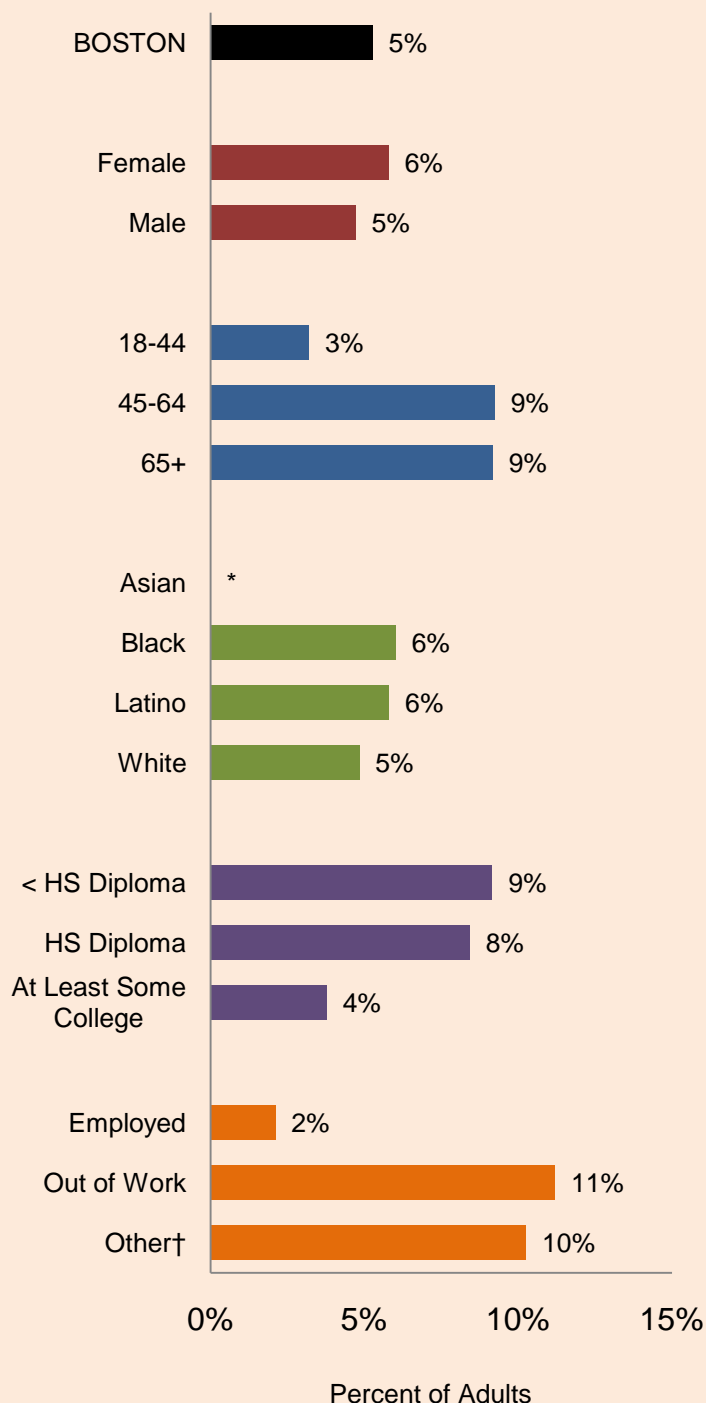
Adults were asked if their experiences when seeking health care were the same, better, or worse than for people of other races. A higher percentage of adults who felt their experiences were worse also reported poor physical health for at least 15 days during the past month.

**Figure 6.6 Poor Physical Health 15+ Days of Past Month by Perception of Treatment Based on Race While Seeking Health Care, 2008**



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

**Figure 6.7 Activities Limited 15+ Days During Past Month Due to Poor Physical and Mental Health by Selected Indicators, 2008**



\*insufficient sample size for Asians

†Includes homemakers, students, retirees or people who are unable to work  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Poor physical and mental health may impact an individual’s ability to perform usual activities, including self-care, work, or recreation.

One in twenty Boston adults reported that poor physical or mental health kept them from doing usual activities for 15 or more days during the past month.

A statistically similar percentage of males and females reported that poor physical or mental health kept them from doing usual activities for 15 or more days during the past month.

A lower percentage of adult ages 18 to 44 compared to the older age groups reported poor physical or mental health kept them from doing usual activities for 15 or more days during the past month.

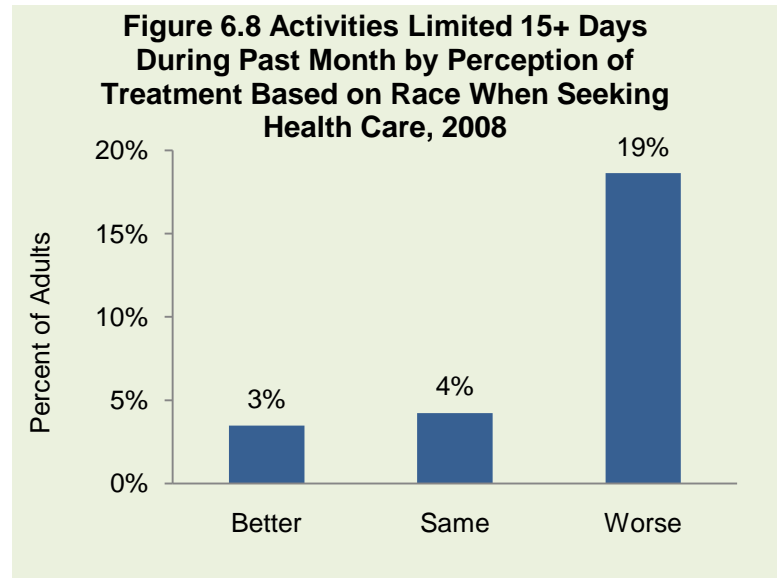
A statistically similar percentage of adults reported poor physical or mental health kept them from doing usual activities for 15 or more days during the past month by race/ethnicity.

A lower percentage of adults with at least some college education compared to adults with less education reported poor physical or mental health kept them from doing usual activities for 15 or more days during the past month.

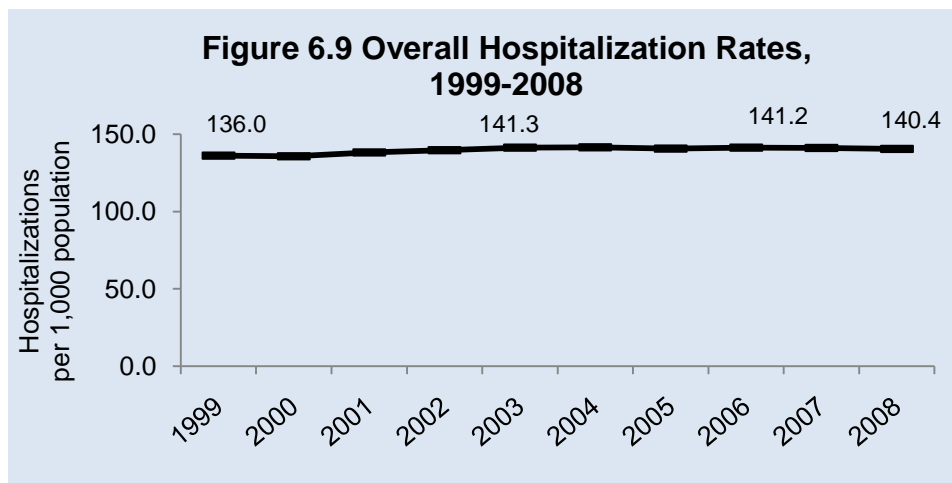
A lower percentage of employed adults compared to non-employed adults (i.e., those reporting ‘out of work’ and ‘other’) reported poor physical or mental health kept them from doing usual activities for 15 or more days during the past month.

Adults were asked if their experiences when seeking health care were the same, better, or worse than for people of other races.

A higher percentage of adults who felt their experiences were worse also reported that poor physical or mental health kept them from doing usual activities for 15 or more days during the past month.

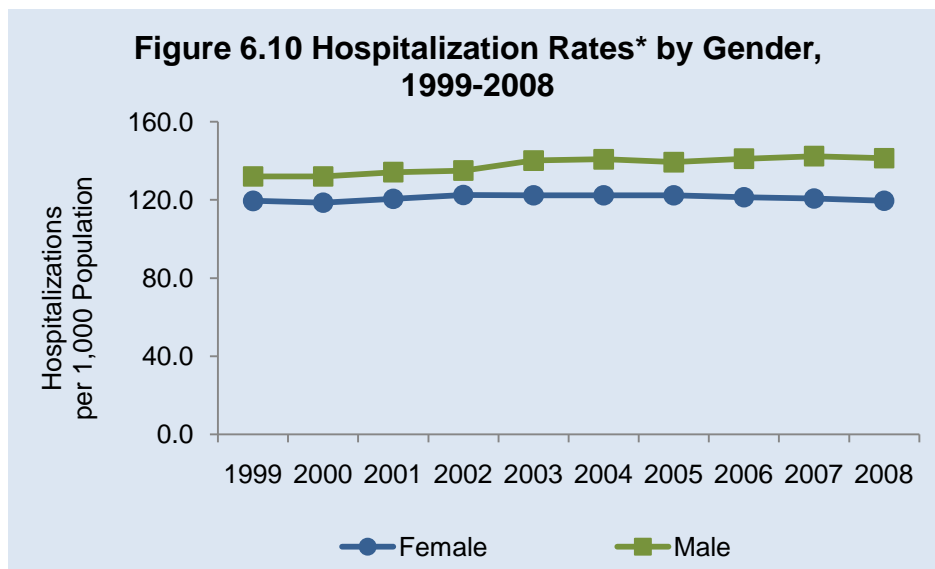


DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



DATA SOURCE: Acute Care Hospital Case Mix Files, Massachusetts Division of Health Care, Finance and Policy

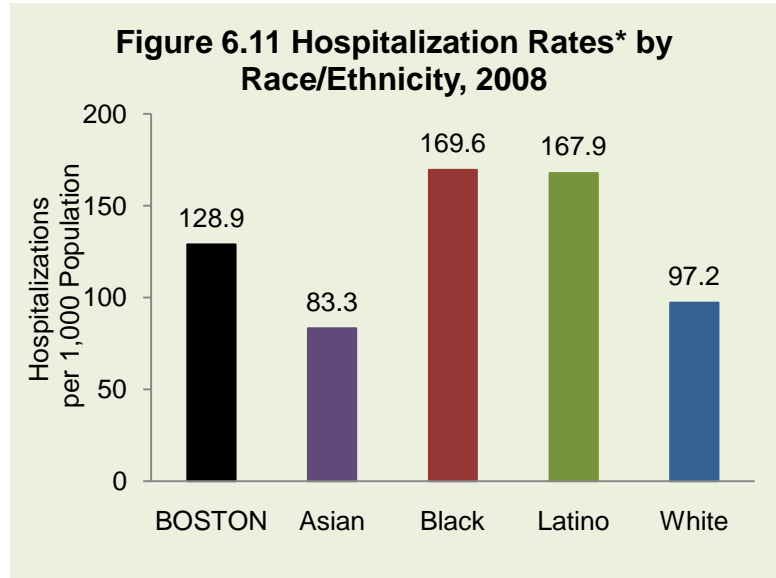
The overall hospitalization rate, which includes all causes of hospitalization, was stable between 1999 and 2008.



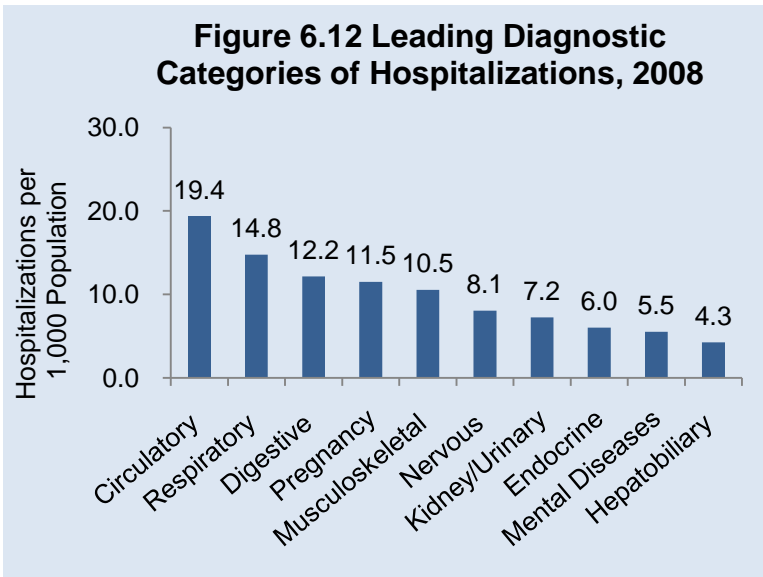
\*Hospitalizations due to pregnancy are not included in rate calculations  
 DATA SOURCE: Acute Care Hospital Case Mix Files, Massachusetts Division of Health Care, Finance and Policy

The age-adjusted non-pregnancy hospitalization rate for males and females was fairly stable from 1999 to 2008. In each of these years, the hospitalization rate was higher for males than for females. The 2008 rate for males was 18% higher than the rate for females.

In 2008, the non-pregnancy hospitalization rate for Blacks and Latinos was more than 100% higher than the rate for Asians. The non-pregnancy hospitalization rate for Blacks and Latinos was 73% and 74% higher, respectively, than the rate for Whites.



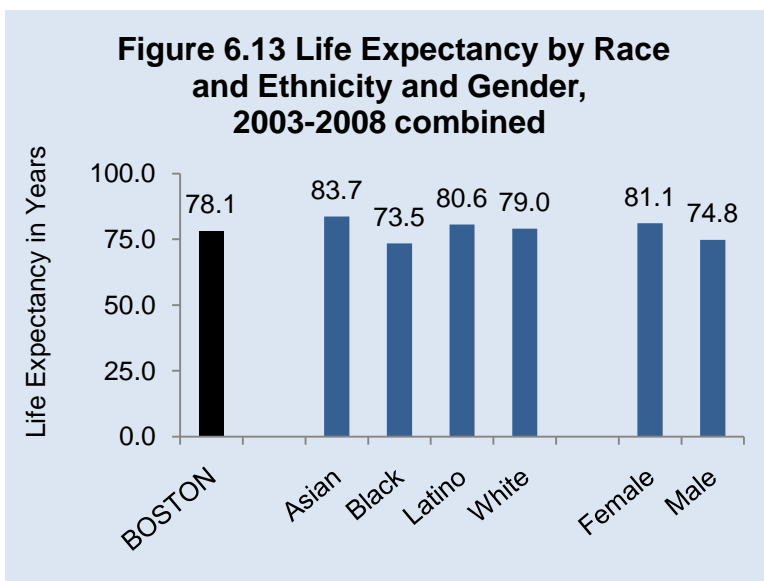
\*Hospitalizations due to pregnancy are not included in rate calculations  
 DATA SOURCE: Acute Care Hospital Case Mix Files, Massachusetts Division of Health Care, Finance and Policy



Hospitalizations due to circulatory system causes led among the leading diagnostic categories in 2008.

DATA SOURCE: Acute Care Hospital Case Mix Files, Massachusetts Division of Health Care, Finance and Policy



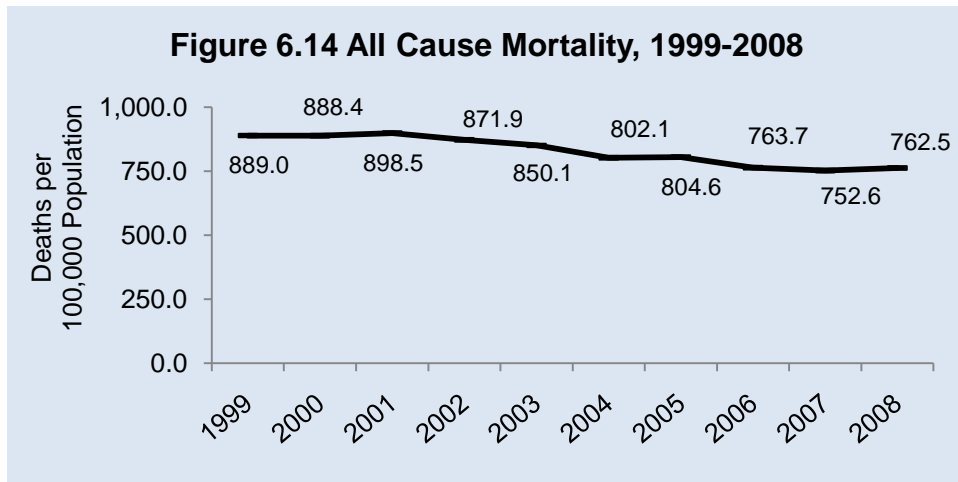


DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

For combined years 2003-2008, the average life expectancy for Boston residents was 78.1 years.

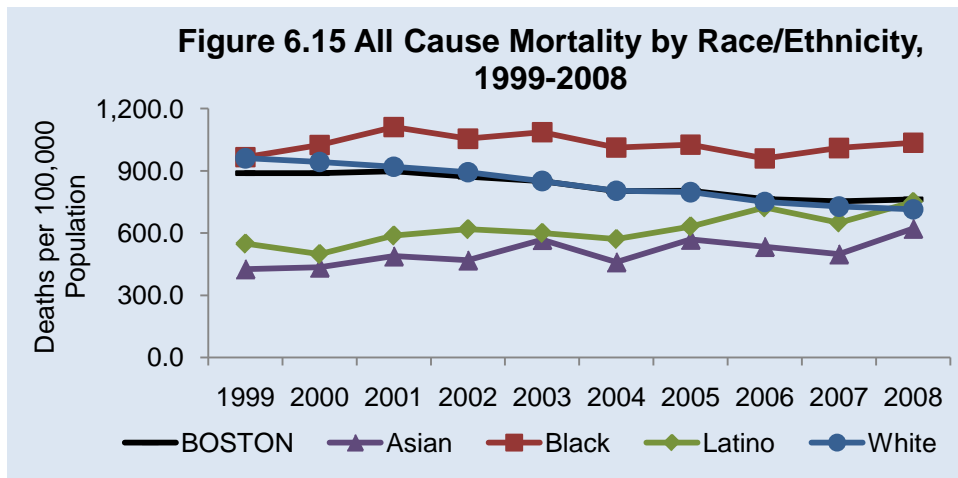
Asians had the highest average life expectancy among racial/ethnic groups. The estimated average life expectancy was similar among White and Latino residents. The life expectancy for Black residents was more than five years below that for Latino and White residents.

The average life expectancy for females was more than six years higher than for males.



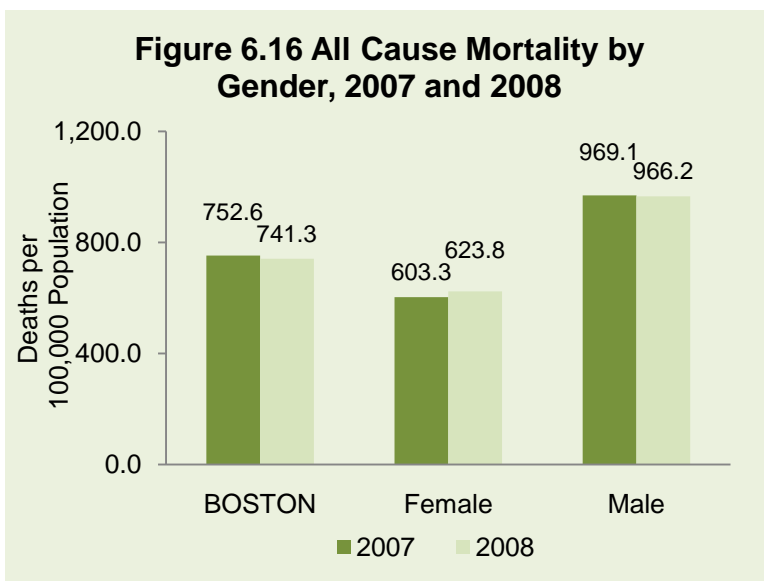
DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

The age-adjusted all-cause mortality rate in Boston has been decreasing for most of the decade. In 2008, the all-cause mortality rate for Boston residents was 762.5 deaths per 100,000 population. The rate was stable from 2007, but decreased 14% from 2000.



DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

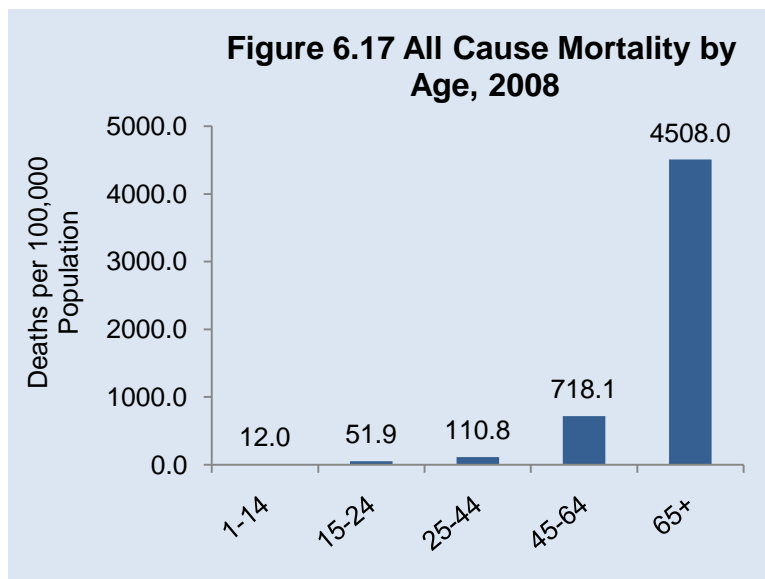
The age-adjusted all-cause mortality rate for Black residents was consistently higher than for other racial/ethnic groups between 2000 and 2008. In 2008, the all-cause mortality rate for Blacks was 40% higher than the rate for Asians, 28% higher than the rate for Latinos and 31% higher than the rate for Whites.



In 2008, the age-adjusted all-cause mortality rate for males was 55% higher than rate for females.

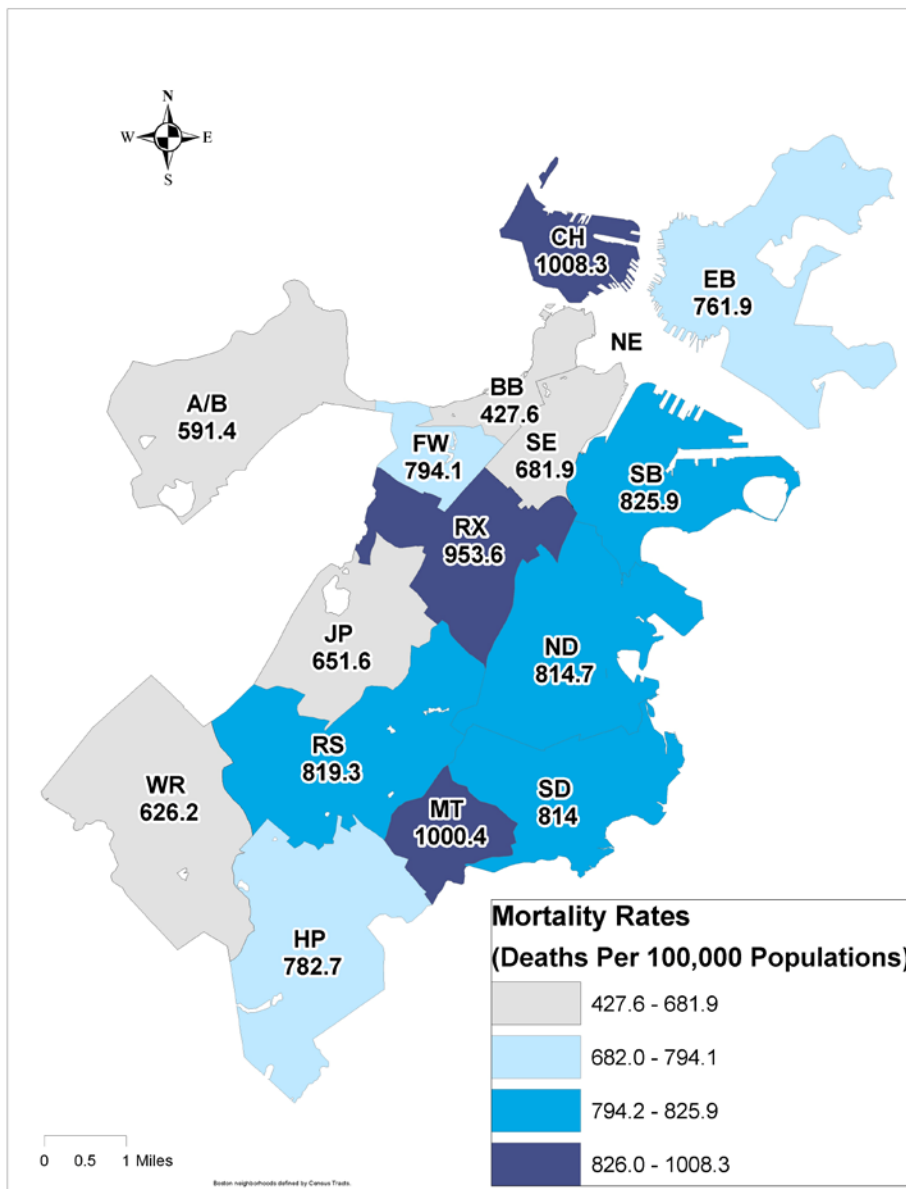
DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

Boston residents ages 65 and older had the highest age-specific all-cause mortality rate.



DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

**Figure 6.18: All-Cause Mortality Rates by Neighborhoods, 2008**



DATA SOURCE: Boston resident deaths and live births, Massachusetts Department of Public Health

In 2008, Charlestown, Mattapan and Roxbury had the highest all-cause age-adjusted mortality rates among Boston neighborhoods.

**Figure 6.19 Top Five Leading Causes of Mortality,  
2006-2008**

Leading Causes	Count	Rate
<b>2006</b>		
Cancer	944	192.7
Heart Disease	813	161.0
Injuries	316	55.3
Stroke	209	41.4
Chronic Obstructive Pulmonary Disease	139	28.3
<b>All Causes</b>	<b>3,864</b>	<b>763.7</b>
<b>2007</b>		
Cancer	930	189.5
Heart Disease	802	159.5
Injuries	304	53.6
Stroke	175	34.3
Chronic Obstructive Pulmonary Disease	138	27.9
<b>All Causes</b>	<b>3,812</b>	<b>716.9</b>
<b>2008</b>		
Cancer	927	189.1
Heart Disease	801	158.3
Injuries	274	46.8
Stroke	174	33.9
Chronic Obstructive Pulmonary Disease	152	30.5
<b>All Causes</b>	<b>3,878</b>	<b>762.5</b>

DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

The leading causes of death among Boston residents are established by ranking age-adjusted mortality rates.

Cancer remained Boston's leading cause of death in 2008, followed by heart disease, injuries, stroke, and chronic obstructive pulmonary disease. From 2006 to 2008, the rates of death from all of these causes decreased, except chronic obstructive pulmonary disease.

**Figure 6.20 Leading Causes of Mortality\* by Age, 2006-2008 Combined**

Leading Causes	Count	Rate
<b>1-14</b>		
Injuries	15	5.5
Heart Disease	5	1.8
<b>Ages 15-24</b>		
Injuries	152	44.6
Cancer	9	2.6
<b>Ages 25-44</b>		
Injuries	284	44.8
Cancer	98	15.5
Heart Disease	86	13.6
HIV/AIDS	32	5.1
Chronic Liver Disease	14	2.2
Stroke	14	2.2
<b>Ages 45-64</b>		
Cancer	748	238.4
Heart Disease	418	133.2
Injuries	274	87.3
Chronic Liver Disease	77	24.5
Diabetes	74	23.6
<b>Ages 65+</b>		
Cancer	1,943	1,055.9
Heart Disease	1,902	1,033.7
Stroke	476	258.7
COPD	376	204.3
Nephritis/Nephrosis	285	154.9

\*Age-specific death rates per 100,000 population.

DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

The top leading causes of death varied by age.

In 2006 to 2008 combined, injuries caused the most deaths among Boston residents ages one to forty-four. Among those injuries were substance abuse deaths, homicides, suicides, deaths caused by motor vehicle accidents and other types of accidents (data for substance abuse deaths, homicides, and suicides are presented in other sections).

Cancer and heart disease were the top two leading causes of death among adults ages 45 and older.



**Figure 6.21 Leading Causes of Mortality by Gender, 2007 and 2008**

BOSTON MALES			BOSTON FEMALES		
2007	Count	Rate		Count	Rate
Cancer	472	248.3	Cancer	458	154.5
Heart Disease	406	218.9	Heart Disease	396	120.7
Injuries	224	83.8	Stroke	121	35.9
Chronic Obstructive Pulmonary Disease	66	37.1	Injuries	80	26.3
Nephritis/Nephrosis	65	34.6	Chronic Obstructive Pulmonary Disease	72	22.9
Pneumonia/Influenza	51	30.5	Diabetes	56	18.0
Stroke	54	30.3	Pneumonia/Influenza	57	16.0
Diabetes	52	27.2	Alzheimer's Disease	57	15.5
Septicemia	31	17.8	Nephritis/Nephrosis	49	15.2
Chronic Liver Disease	32	14.7	Septicemia	47	13.8
<b>All Causes</b>	<b>1,878</b>	<b>969.1</b>	<b>All Causes</b>	<b>1,934</b>	<b>603.3</b>

In 2008 as in 2007, cancer and heart disease were the first and second leading causes of death for males and females.

In 2008, for all leading causes except Alzheimer's disease, the male age-adjusted mortality rates were higher than the female rates.

BOSTON MALES			BOSTON FEMALES		
2008	Count	Rate		Count	Rate
Cancer	467	243.3	Cancer	460	154.7
Heart Disease	381	206.0	Heart Disease	420	126.4
Injuries	196	71.4	Stroke	104	29.9
Chronic Obstructive Pulmonary Disease	69	39.5	Chronic Obstructive Pulmonary Disease	83	26.1
Stroke	70	39.5	Injuries	78	25.3
Nephritis/Nephrosis	54	31.5	Nephritis/Nephrosis	74	23.2
Pneumonia/Influenza	46	27.1	Alzheimer's Disease	81	21.2
Diabetes	44	22.7	Diabetes	49	16.1
Septicemia	27	17.2	Septicemia	46	14.5
Alzheimer's Disease	32	17.1	Pneumonia/Influenza	50	14.2
Chronic Liver Disease	28	12.3	Chronic Liver Disease	15	5.7
<b>All Causes</b>	<b>1,867</b>	<b>966.2</b>	<b>All Causes</b>	<b>2,011</b>	<b>624.3</b>

DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

**Figure 6.22 Top Five Leading Causes of Mortality among Asian Residents, 2006-2008**

Leading Causes	Count	Rate
<b>2006</b>		
Cancer	41	135.9
Heart Disease	28	99.0
Stroke	15	51.5
Chronic Obstructive Pulmonary Disease	11	39.1
Alzheimer's Disease	7	26.0
<b>All Causes</b>	<b>156</b>	<b>534.3</b>
<b>2007</b>		
Cancer	43	146.6
Heart Disease	26	86.6
Stroke	10	35.0
Chronic Obstructive Pulmonary Disease	7	25.4
Alzheimer's Disease	6	22.3
<b>All Causes</b>	<b>144</b>	<b>498.5</b>
<b>2008</b>		
Cancer	60	194.6
Heart Disease	23	79.6
Stroke	12	43.0
Injuries	12	40.2
Pneumonia/Influenza	7	24.4
<b>All Causes</b>	<b>183</b>	<b>622.0</b>

Boston's Asian residents generally have lower mortality rates in comparison to other racial/ethnic groups in Boston. However, from 2007 to 2008, the age-adjusted overall mortality rate for Asians increased 25%. This increase was largely attributable to a 40% increase in the number of deaths caused by cancer.

DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

**Figure 6.23 Top Five Leading Causes of Mortality among Black Residents, 2006-2008**

Leading Causes	Count	Rate
<b>2006</b>		
Cancer	246	250.2
Heart Disease	160	176.7
Injuries	107	80.1
Stroke	49	56.0
Diabetes	38	39.4
<b>All Causes</b>	<b>938</b>	<b>959.7</b>
<b>2007</b>		
Cancer	259	276.3
Heart Disease	186	198.0
Injuries	99	72.8
Stroke	40	45.5
Diabetes	38	41.1
<b>All Causes</b>	<b>980</b>	<b>1,010.3</b>
<b>2008</b>		
Cancer	248	257.0
Heart Disease	209	224.6
Injuries	97	72.4
Stroke	48	54.8
Nephritis/Nephrosis	37	40.1
<b>All Causes</b>	<b>1003</b>	<b>1035.2</b>

DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

Cancer and heart disease were the leading causes of death among Black Boston residents each year from 2006 to 2008.

For Black residents, the age-adjusted all-cause mortality rate was stable from 2007 to 2008.

The cancer mortality rate decreased 7% for Blacks between 2007 and 2008. The injuries mortality rate decreased 10% from 2006 to 2008.

The heart disease mortality rate increased 27% between 2006 and 2008. Deaths from stroke increased 20% between 2007 and 2008.

**Figure 6.24 Top Five Leading Causes of Mortality among Latino Residents, 2006-2008**

Leading Causes	Count	Rate
<b>2006</b>		
Cancer	47	168.6
Heart Disease	43	176.3
Injuries	36	43.7
Stroke	9	36.6
Diabetes	8	30.8
<b>All Causes</b>	<b>233</b>	<b>723.3</b>
<b>2007</b>		
Cancer	42	137.9
Heart Disease	32	116.2
Injuries	38	53.6
Stroke	9	32.6
Alzheimer's Disease	6	32.3
<b>All Causes</b>	<b>214</b>	<b>650.5</b>
<b>2008</b>		
Cancer	43	147.5
Heart Disease	36	141.7
Stroke	9	50.1
Nephrites/Nephrosis	11	47.1
Injuries	31	44.0
<b>All Causes</b>	<b>229</b>	<b>749.4</b>

DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

Cancer and heart disease were the top two leading causes of death among Boston's Latino residents between 2006 and 2008.

The age-adjusted all-cause mortality rate for Latinos increased 15% from 2007 to 2008. Rates for cancer, heart disease, and stroke increased from 2007 to 2008. The mortality rate for injuries decreased from 2007 to 2008.

**Figure 6.25 Top Five Leading Causes of Mortality among White Residents, 2006-2008**

Leading Causes	Count	Rate
<b>2006</b>		
Cancer	607	191.8
Heart Disease	577	163.7
Injuries	160	53.3
Stroke	135	37.8
Chronic Obstructive Pulmonary Disease	106	32.2
<b>All Causes</b>	<b>2513</b>	<b>750.0</b>
<b>2007</b>		
Cancer	582	183.4
Heart Disease	551	160.9
Injuries	164	53.9
Chronic Obstructive Pulmonary Disease	109	32.0
Stroke	115	31.0
<b>All Causes</b>	<b>2451</b>	<b>727.9</b>
<b>2008</b>		
Cancer	570	178.4
Heart Disease	532	153.1
Injuries	131	41.7
Chronic Obstructive Pulmonary Disease	126	36.7
Stroke	102	28.2
<b>All Causes</b>	<b>2429</b>	<b>714.2</b>

Cancer, heart disease, and injuries were the top three leading causes of death among Boston's White residents between 2006 and 2008.

The age-adjusted all-cause mortality rate for White residents decreased from 2007 to 2008. The mortality rates for cancer, heart disease, injuries, and stroke decreased from 2007 to 2008.

DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

## Summary: General Health

The health-related quality of life indicators varied by age and socioeconomic status. A higher percentage of younger Boston adults reported good or excellent health compared with older Boston residents. The percentage of younger Boston adults who reported limitations due to poor physical and mental health for at least 15 days during the past month was lower in comparison with older Boston residents. Boston residents of lower socioeconomic status (as measured by indicators of income and education) were less likely to report good or excellent health in comparison to adults with higher socioeconomic status.

Rates for the top four leading causes of death decreased from 2007 to 2008 for Boston overall. Cancer decreased by 0.2%, heart disease by 1%, injuries by 13%, and stroke by 1%. Injury (including substance abuse, homicide, suicide, motor vehicle accidents, and other accidents) was the leading cause of death for Boston residents under age 45. Cancer was the leading cause of death for residents ages 45 and over.

The ten leading causes of death were the same for males and females; however, for each cause except Alzheimer's disease, rates were substantially higher for males.

Racial/ethnic disparities in reporting good or excellent health, hospitalizations, life expectancy, and mortality were observed. A higher percentage of White Boston residents reported good or excellent health in comparison to Black and Latino Boston residents. Black and Latino residents experienced higher hospitalization rates (185.5 and 185.3 per 100,000 population, respectively) compared with White residents (103.8 per 100,000 population). On average, White Boston residents were expected to live 5.5 years longer compared with Black residents. This difference is similar to the difference found in national data; according to 2006 national data, the difference in life

expectancy between Blacks and Whites was 5.0 years (4).

Each year from 2006 to 2008, Black residents experienced a higher rate of all-cause mortality and higher rates of the top four leading causes of death: cancer, heart disease, injuries, and stroke. From 2007 to 2008, the all-cause mortality rate for Asians and Latinos increased 25% and 15%, respectively, and decreased 2% for White residents.

Measures of general health for the city of Boston present a positive picture with decreasing overall rates of cancer, heart disease, injuries and stroke mortality. Though these rates are decreasing overall, racial/ethnic disparities persist.





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## Notes and Data Analysis

### Figure 6.1

NOTE: Survey question reads, “Would you say that in general your health is Excellent, very good, good, fair or poor?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.2

NOTE: Survey question reads, “Would you say that in general your health is Excellent, very good, good, fair or poor?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.3

NOTE: Survey question reads, “Would you say that in general your health is Excellent, very good, good, fair or poor?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.4

NOTE: Survey question reads, “Would you say that in general your health is Excellent, very good, good, fair or poor?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.5

NOTE: Survey question reads, “Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.6

NOTE: Survey question reads, “Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.7

NOTE: Survey question reads, “During the past 30 days, for how many days did poor physical and mental health keep you from doing your usual activities such as self-care, work, or recreation?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.8

NOTE: Survey question reads, “During the past 30 days, for how many days did poor physical and mental health keep you from doing your usual activities such as self-care, work, or recreation?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.9

NOTE: Data are presented as age-adjusted rates. The rates shown are hospitalizations per 1,000 population.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.10

NOTE: Data are presented as age-adjusted rates. The rates shown are hospitalizations per 1,000 population.

The data do not include persons whose gender was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.11

NOTE: Data are presented as age-adjusted rates. The rates shown are hospitalizations per 1,000 population. The data do not include persons whose race/ethnicity was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.12

NOTE: Data are presented as age-adjusted rates. The rates shown are hospitalizations per 1,000 population. These data are presented as age-adjusted rates and they represent hospitalizations per 1,000 population

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.13

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 6.14

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 6.15**

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population. These data do not include persons whose race/ethnicity was not reported, except in the Boston overall rate  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 6.16**

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population. These data do not include persons whose gender was not reported, except in the Boston overall rate  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 6.17**

NOTE: Data are presented as age-specific rates. The rates shown are deaths per 100,000 population. These data do not include persons whose age was not reported, except in the Boston overall rate  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 6.18**

NOTE: ABBREVIATIONS KEY: A/B=Allston/Brighton, BB=Back Bay (includes Beacon Hill, Downtown, and the West End), CH=Charlestown, EB=East Boston, FW=Fenway, HP=Hyde Park, JP=Jamaica Plain, MT=Mattapan, ND=North Dorchester, NE=North End, RS=Roslindale, RX=Roxbury, SB=South Boston, SD=South Dorchester, SE=South End (includes Chinatown), and WR=West Roxbury.

Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population. These data do not include homeless persons or individuals whose neighborhood of residence was not reported  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office  
MAP CREATED BY: Boston Public Health Commission Research and Evaluation Office

**Figure 6.19**

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 6.20**

NOTE: Substance Abuse as a leading cause has been excluded. Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 6.21**

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 6.22**

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 6.23**

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 6.24**

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office.



## Section 7: Health Behaviors

Personal health behaviors have a substantial influence on overall health outcomes. Dietary habits, physical activity, tobacco use, and alcohol consumption are major contributors to the development of chronic conditions, such as cardiovascular disease, cancer, diabetes, and premature death (1). About 70% of the causes of death in the US are due to chronic diseases (2).

The adoption of positive health behaviors can be one of the most cost-effective tools for individuals to achieve and maintain good health (1, 3). However, health behaviors exist in the context of social and physical environments that strongly influence individual behavior and choices (4).

Living in resource-deficient social and physical environments can negatively impact health behaviors. For example, lack of access to and the high costs of healthy foods may influence dietary patterns. Levels of physical activity may increase if there are safe parks and exercise facilities in one's neighborhood (5).

Poor dietary and physical activity habits developed during adolescence tend to continue into adulthood. For adolescents, daily breakfast consumption is associated with increased school attendance and quality of students' school work; and not consuming breakfast can interfere with learning (6). In addition to the nutritional benefits of fruit and vegetable consumption, including produce in a person's diet has been shown to decrease an individual's calorie or fat intake. Increasing fruit and vegetable consumption while decreasing calorie and fat consumption helps reduce a person's risk of developing chronic diseases (7).

In 2009, young people in the US ages 8 to 18 spent an average of approximately 4 ½ hours a day watching TV and just over 2 ½ hours on the computer or playing video (8). Sedentary behaviors such as TV watching and playing electronic video or computer games are

associated with obesity in both children and adults and are also associated with developing type two diabetes (9,10,11)

Health risk behaviors such as cigarette smoking and binge drinking adopted in adolescence tend to continue into adulthood. Each year cigarette smoking is attributed to one in five deaths in the US. In addition to substantially increasing the risk of developing chronic diseases, smoking also has adverse effects on infertility, preterm and still births. Everyday hundreds of young people smoke their first cigarette (12). Nationally, smoking rates vary across racial/ethnic and income groups. The highest percentage of cigarette smoking in the US occurs among American Indians/Alaska Natives.

Binge drinking is associated with health-related problems such as intentional and unintentional injuries, chronic diseases, sexually transmitted diseases, and liver diseases. In addition, underage drinking is associated with a variety of other behaviors including school and social problems and physical and sexual assault (13)

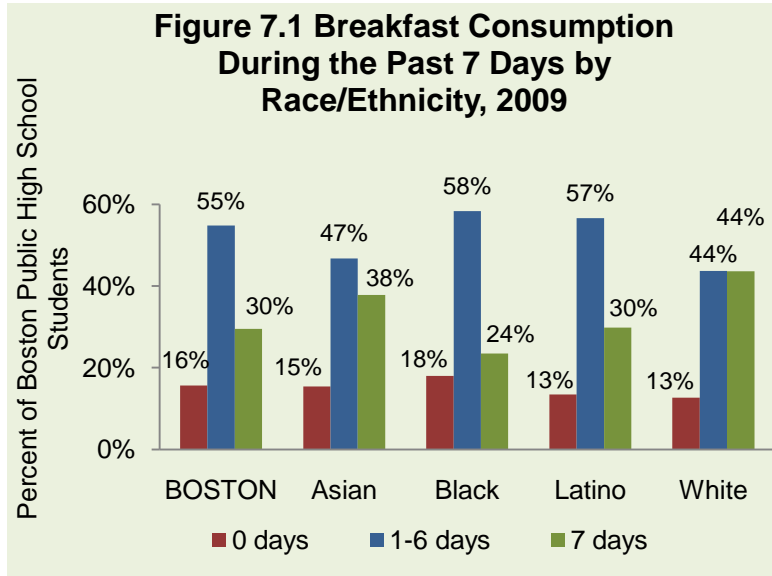
This section provides a detailed description of the health behaviors of public high school students and adult residents of Boston. Self-reported data on youth and adult dietary habits, physical activity-related behaviors, smoking, and alcohol consumption are provided.



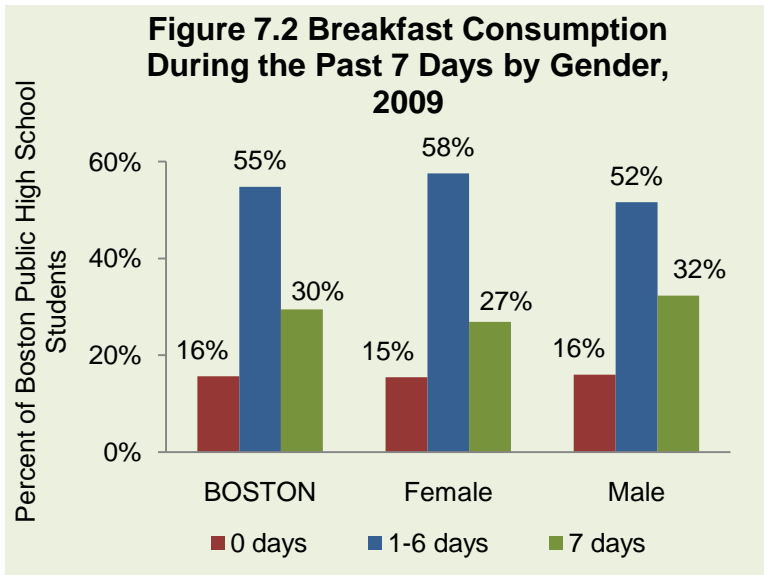
Regular breakfast consumption has been linked to overall nutritional quality, higher levels of physical activity, and improved academic performance (6).

In 2009, 16% of Boston public high school students reported that they did not eat any breakfast in the past seven days.

A lower percentage of Black students reported eating breakfast every day during the past seven days compared to White students.



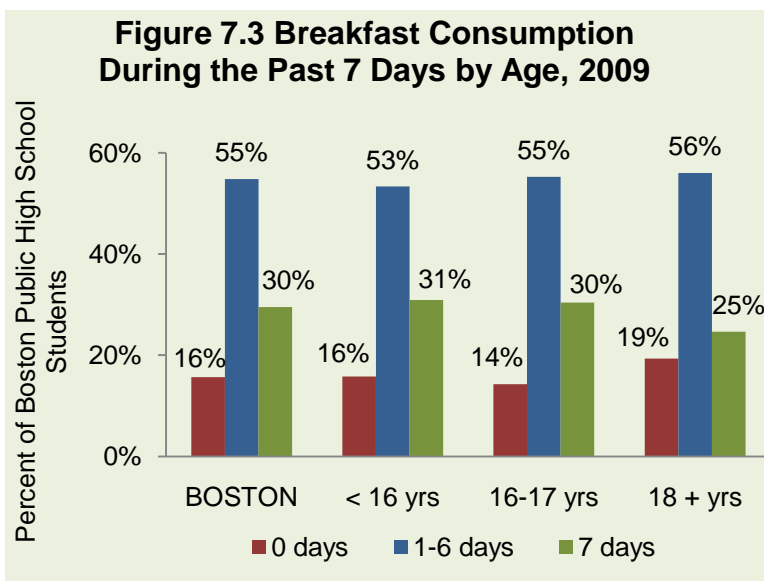
DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)



There were no significant differences observed in patterns of breakfast consumption among female and male Boston public high school students.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

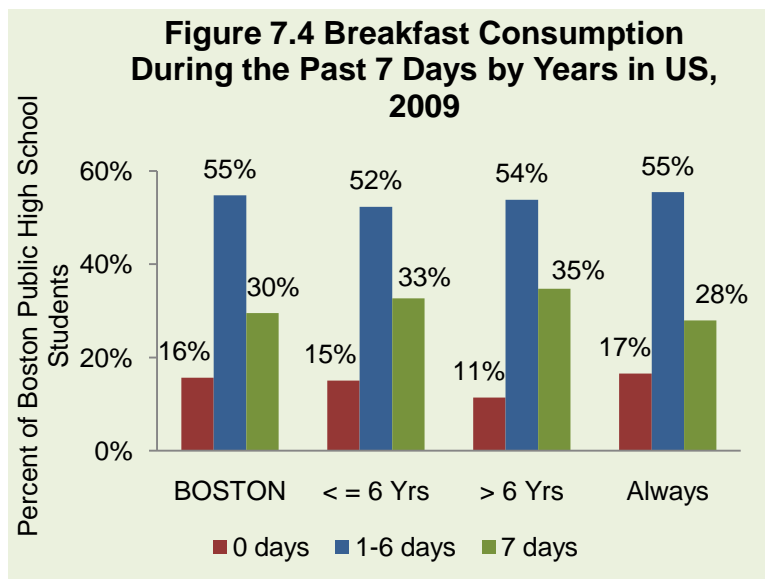




Among Boston public high school students, patterns of breakfast consumption were statistically similar across age groups.

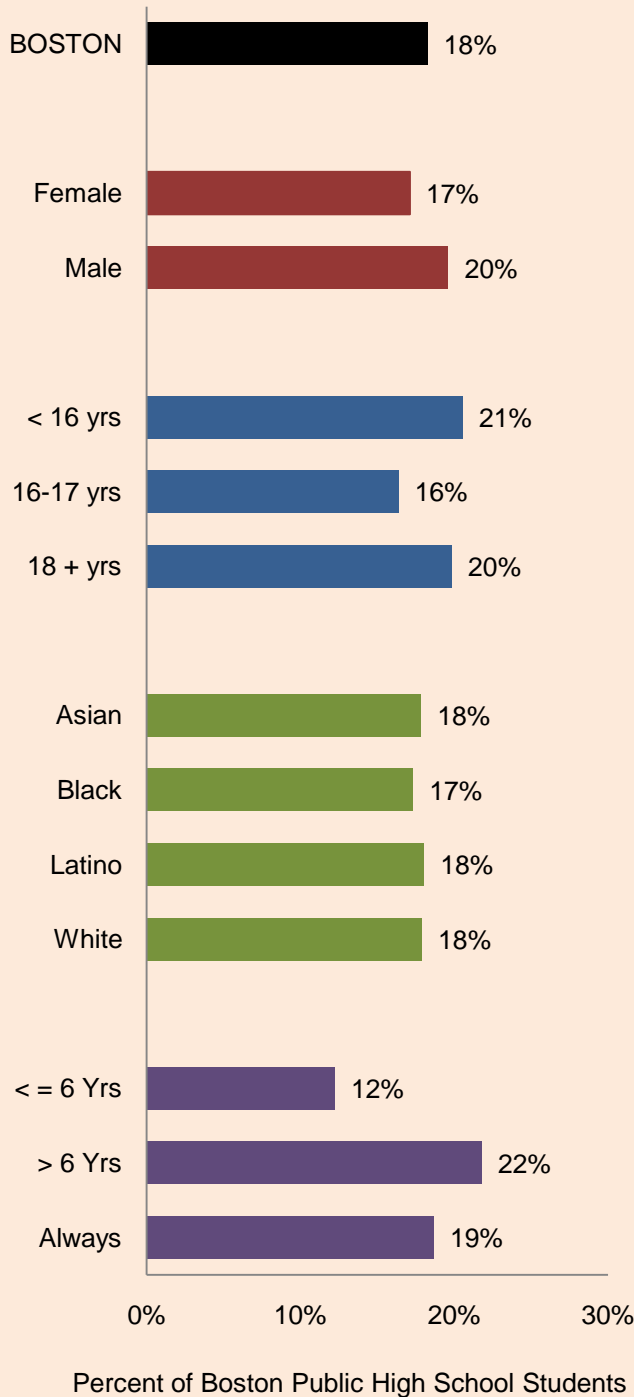
DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

There were no significant differences noted in the breakfast consumption patterns of Boston public high school students by years of residence in the US.



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

**Figure 7.5 Public High School Students who Consume Recommended Daily Fruits and Vegetables by Selected Indicators, 2009**



The US Department of Health and Human Services and the US Department of Agriculture have developed the Dietary Guidelines for Americans, which recommends that adolescents (12-17 years of age) consume three to five servings of fruits and four to eight servings of vegetables (14). Data from national surveys suggest that youth are not meeting the recommended guidelines.

In 2009, 18% of Boston public high school students reported consuming five or more daily servings of fruits and vegetables, the CDC recommended daily amount of fruits and vegetables.

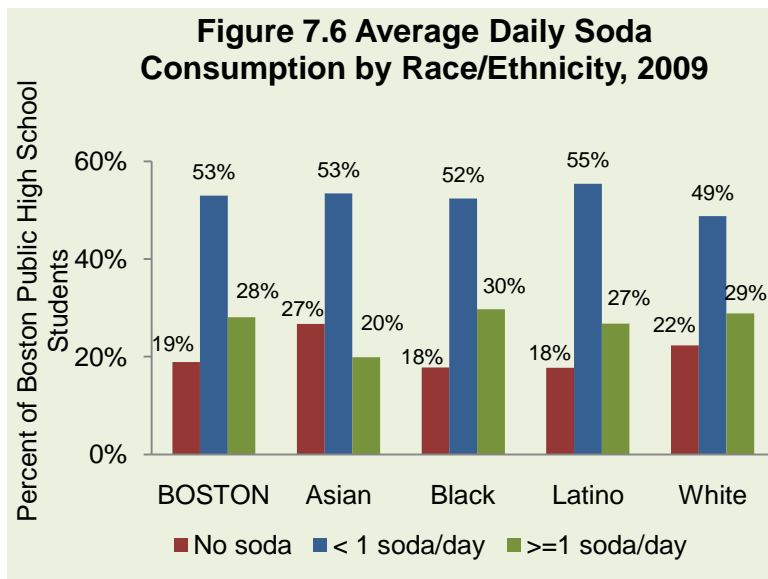
No significant differences were observed by gender, age groups, racial/ethnic groups and years of residence in the US.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

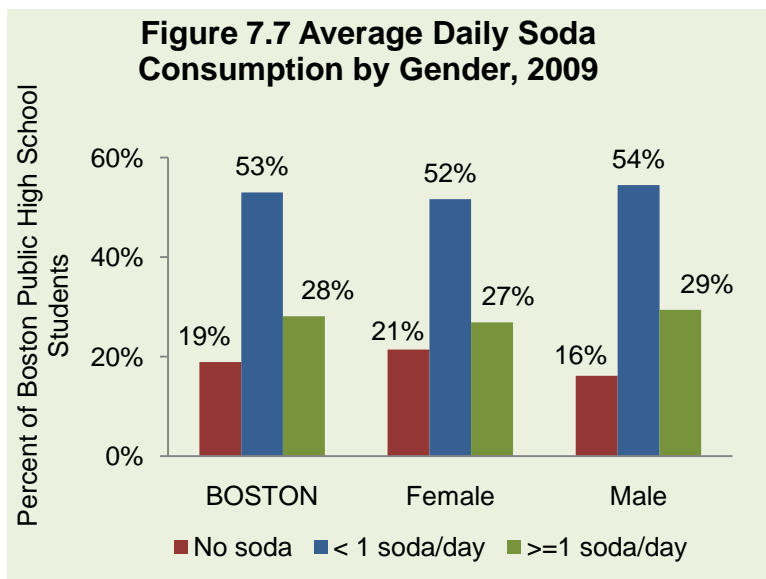
Excess weight gain among children has been associated with the consumption of sugar-sweetened beverages such as soda. Research shows that an increasing proportion of total caloric intake is derived from sugar-sweetened beverages (15).

In 2009, 28% of Boston public high school students consumed one or more sodas per day.

There were no significant differences observed in the patterns of soda consumption by race/ethnicity.



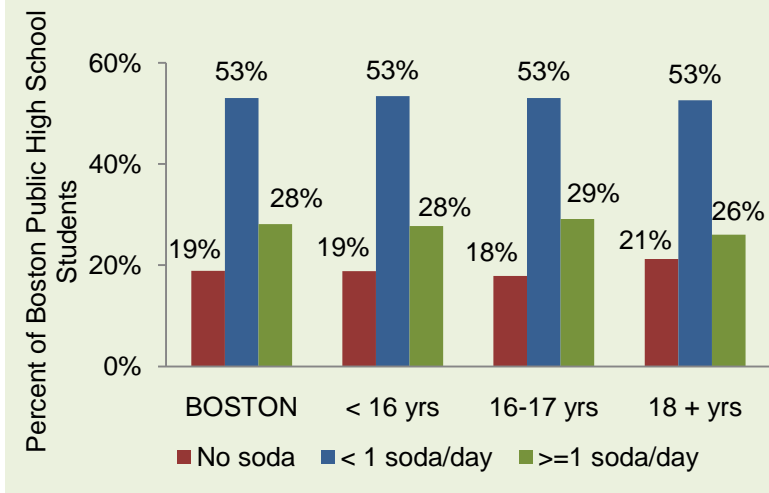
DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)



Patterns of soda consumption were statistically similar among male and female Boston public high school students.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

**Figure 7.8 Average Daily Soda Consumption by Age, 2009**



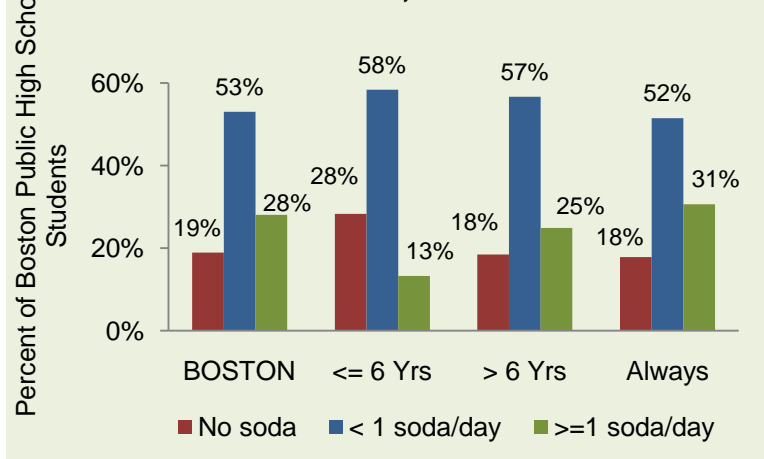
There were no significant differences observed among patterns of soda consumption by age group.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

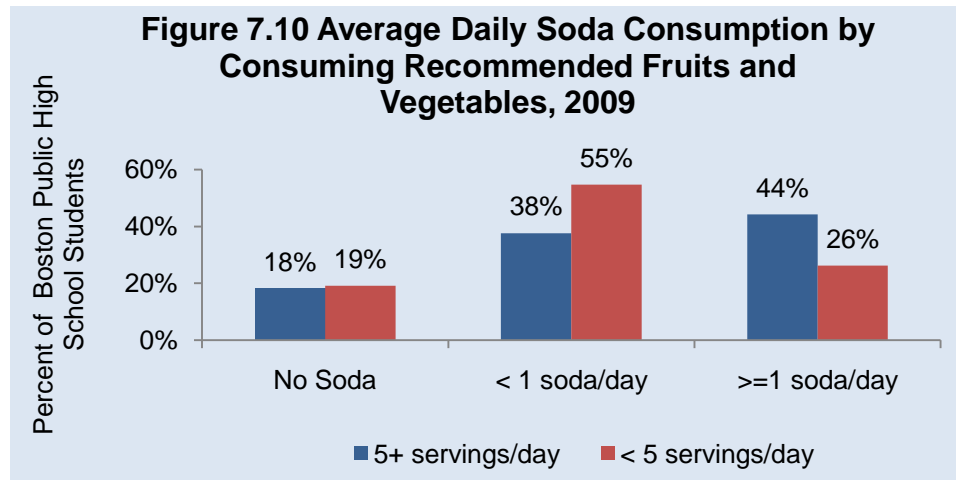
Years of residence in the US were associated with patterns of soda consumption among Boston public high school students.

Compared to students who always lived in the US, a higher percentage of students who lived in the US for six or fewer years reported consuming no soda in the past 7 days and a lower percentage reported consuming one or more sodas per day.

**Figure 7.9 Average Daily Soda Consumption by Years of Residence in US, 2009**



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

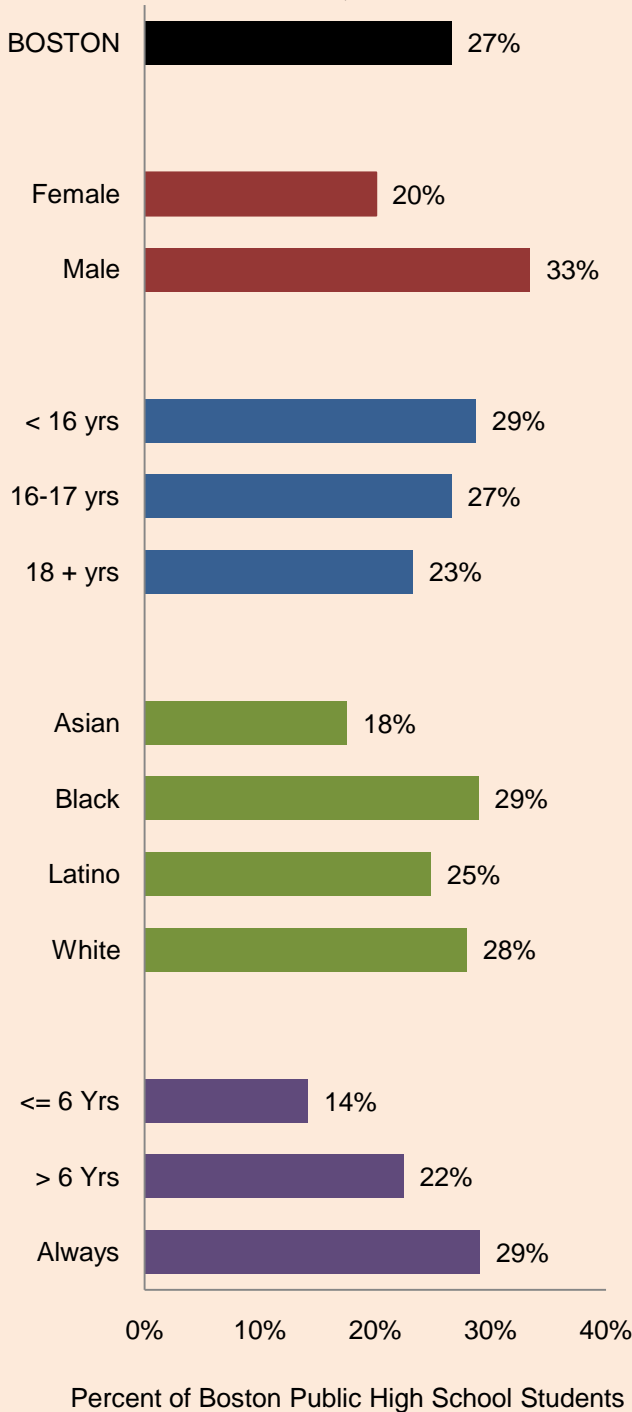


DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

A lower percentage of students who consume the recommended fruit and vegetable servings also consumed less than one soda per day compared to students who do not consume recommended fruit and vegetable servings.

A higher percentage of students who consume the recommended fruit and vegetable servings also consumed one or more sodas per day compared to students who do not consume recommended fruit and vegetable servings.

**Figure 7.11 Public High School Students who Engage in Regular Physical Activity by Selected Indicators, 2009**



Regular physical activity is defined for adolescents as engaging in physical activity for at least one hour per day on five or more days per week. Regular physical activity helps build and maintain bones and muscles, improves mood, and reduces the risk of developing chronic diseases (16).

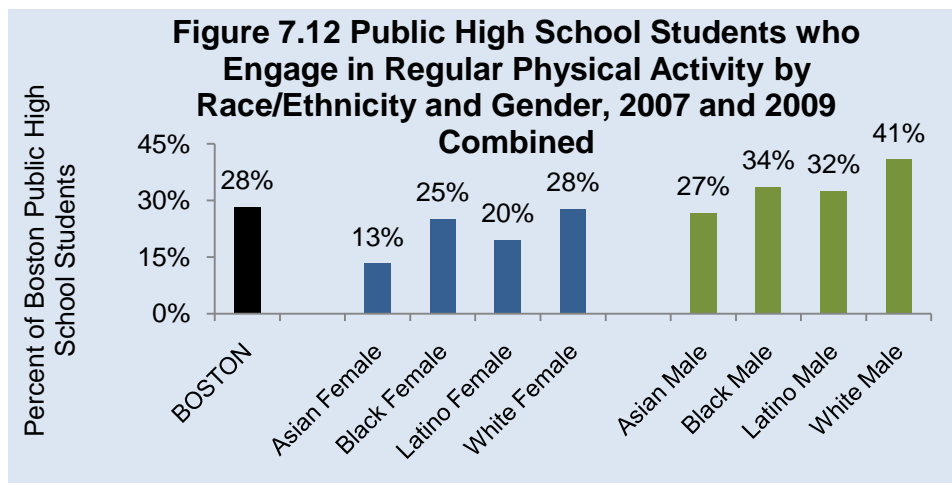
In 2009, 27% of Boston public high school students reported engaging in regular physical activity.

A lower percentage of female students engaged in regular physical activity compared to male students.

There were no statistically significant differences observed by age or race/ethnicity in engaging in regular physical activity.

A lower percentage of Boston public high school students who have lived in the US for six or fewer years participated in regular physical activity compared to students who always lived in the US.

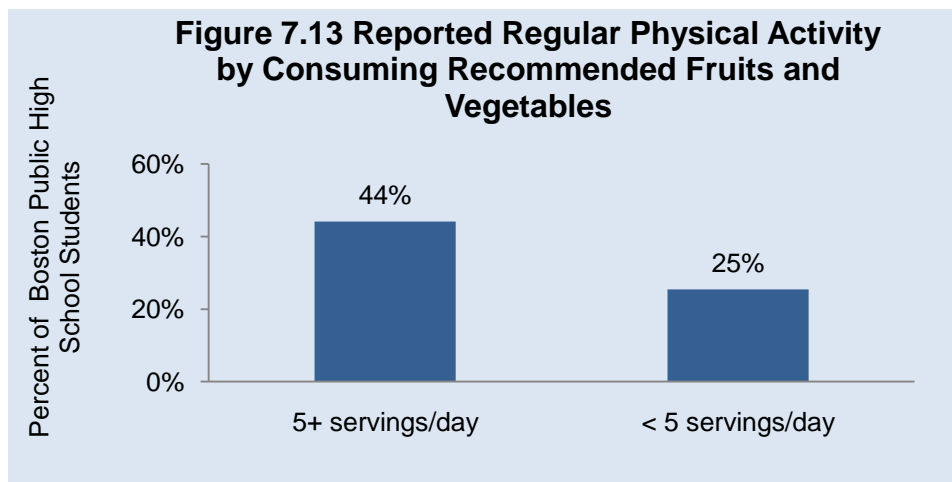
DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)



DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

In 2007 and 2009 combined, a lower percentage of Asian female students reported engaging in regular physical activity compared to Black and White female students.

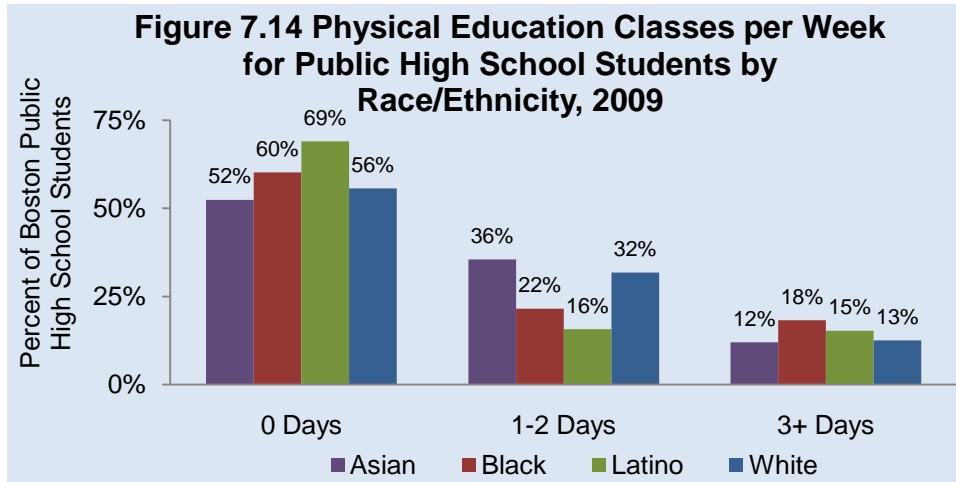
A lower percentage of Asian male students reported engaging in regular physical activity compared to White male students.



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

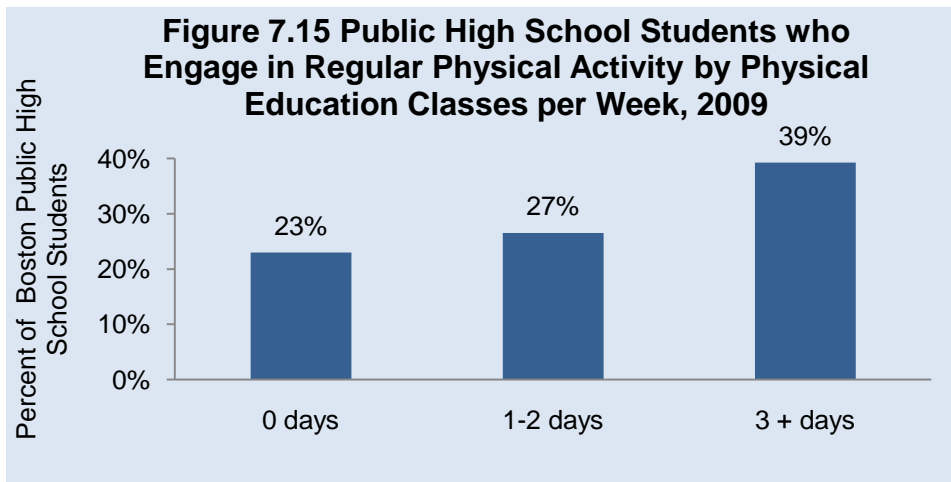
A higher percentage of public high school students who reported consuming recommended 5 + servings of fruits and vegetables engaged in regular physical activity compared to students who did not consume the recommended fruits and vegetables.





DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

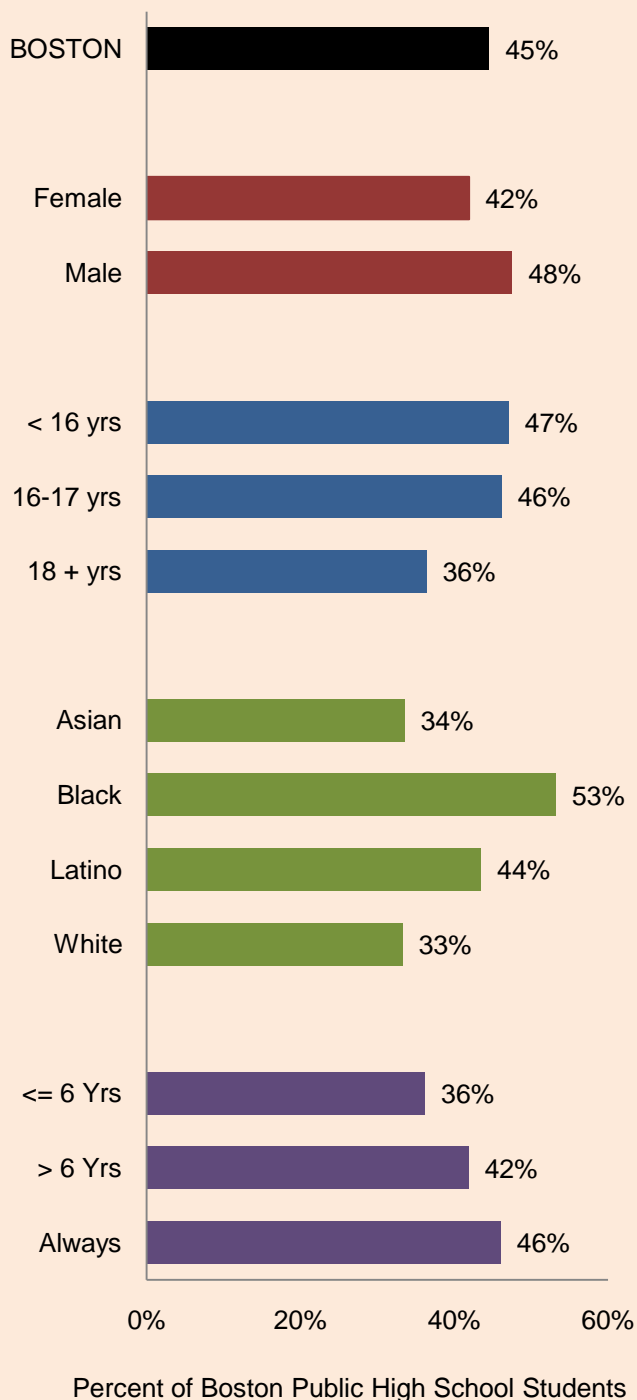
Across racial/ethnic groups, more than 50% of public high school students reported no physical education. There were no significant differences noted in the pattern of physical education classes per week by race/ethnicity.



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

Compared to students with 0 days of physical education during the past week, a higher percentage of public high school students who received three or more days of physical education also reported engaging in regular physical activity.

**Figure 7.16 Public High School Students who Watch 3 or More Hours of TV on an Average School Day by Selected Indicators, 2009**



Excessive television viewing has been linked to negative health behaviors among adolescent such lack of physical activity and consumption of unhealthy foods (8, 11).

In 2009, 45% of Boston public high school students watched three or more hours of TV on an average school day. Among these students, 72% did not engage in regular physical activity (data not shown).

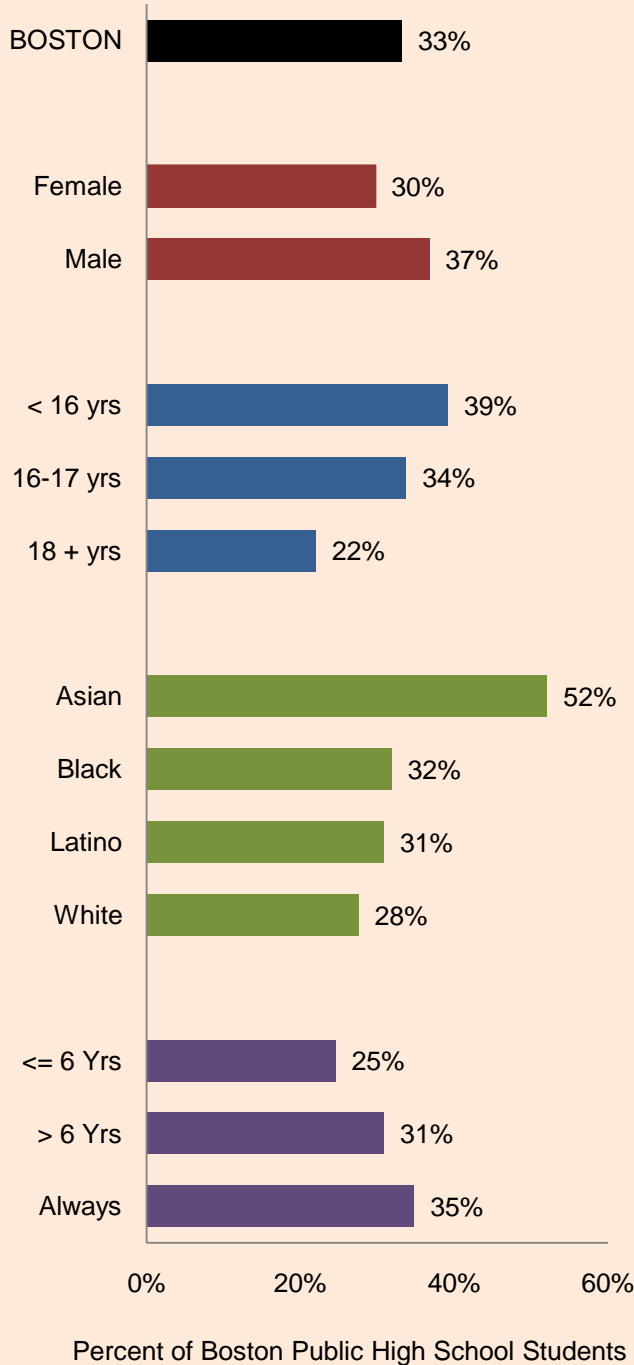
There were no significant differences in the percentage of television viewing for three or more hours by gender or age group.

A higher percentage of Black students reported watching three or more hours of TV compared to Asian and White students.

There were no significant differences observed in the percentage of television viewing by years of residence in the US.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

**Figure 7.17 Public High School Students who Play Video and Computer Games 3 or More Hours on an Average School Day by Selected Indicators, 2009**



Playing video and computer games may contribute to increased sedentary lifestyles and physical inactivity among adolescents.

In 2009, 33 % of Boston public high school students reported playing video or computer games for three or more hours on an average school day. Among these students, 73% did not engage in regular physical activity (data not shown).

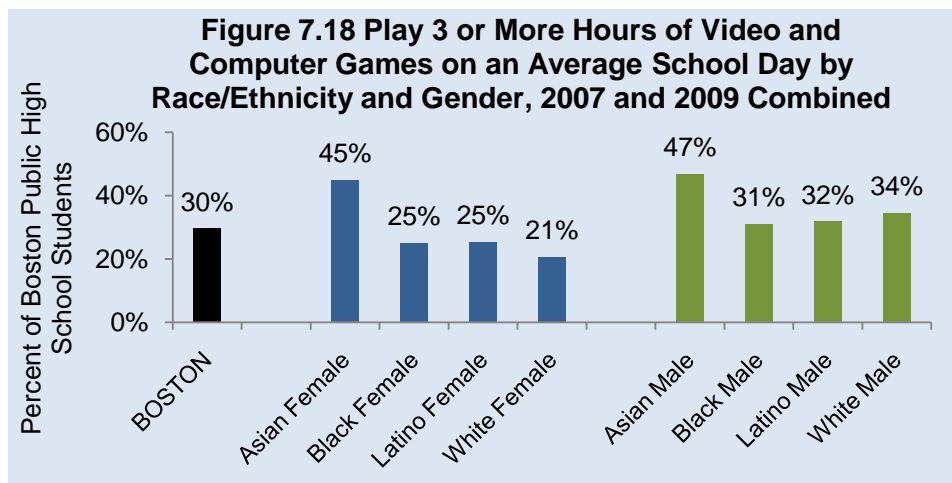
There were no significant differences noted by gender in the percentage of students who reported playing video or computer games for three or more hours.

A lower percentage of older students (18+) reported playing video or computer games for three or more hours compared to younger students.

A higher percentage of Asian students reported playing video or computer games for three or more hours compared to all other racial /ethnic groups.

The percentage of students who played video or computer games for three hours or more was statistically similar across groups based on years of residence in the US.

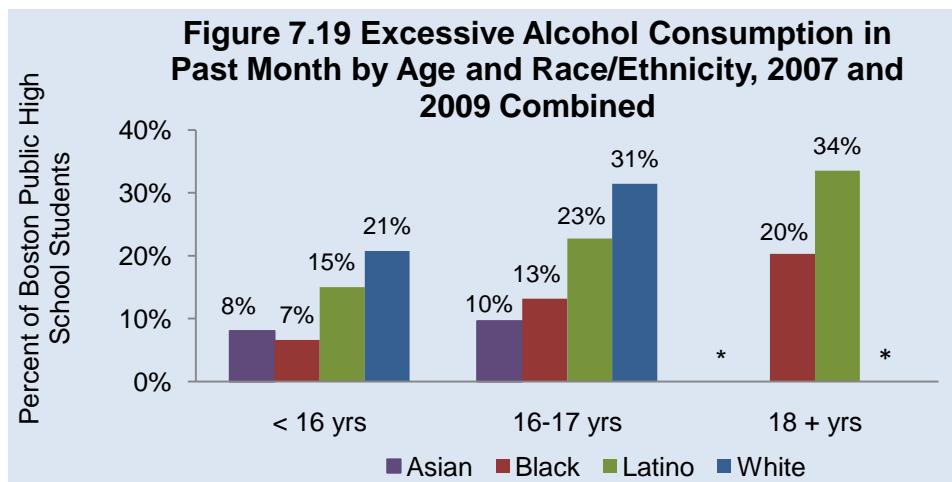
DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

A higher percentage of Asian female students played video and computer games for three or more hours compared to Black, Latino, and White female students.

A higher percentage of Asian male students played three or more hours of video and computer games compared to Black and Latino male students.



\*Insufficient sample size for Asian and White students  
 DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

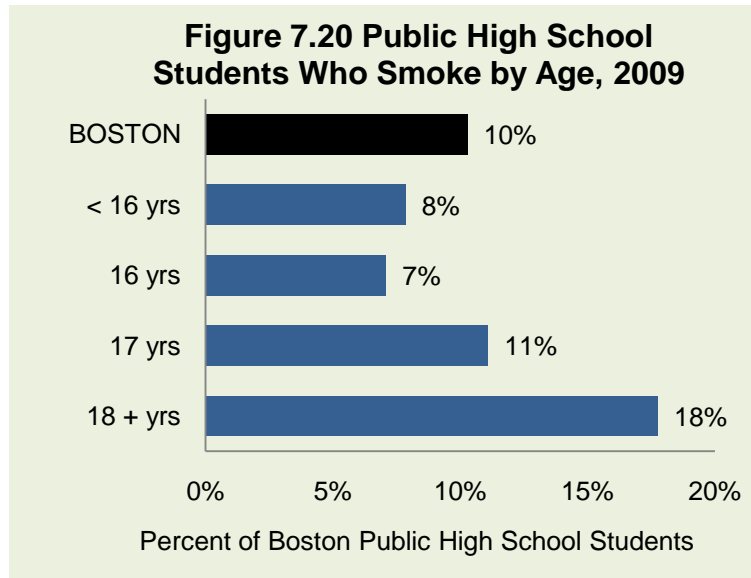
Excessive alcohol consumption or binge drinking is defined as having five or more alcoholic drinks on one occasion in the past month.

A higher percentage of White students less than 16 years of age reported binge drinking than Black and Asian students within the same age group. Among 16-17 year olds, a higher percentage of Latino and White students reported binge drinking in comparison to Asian and Black students.

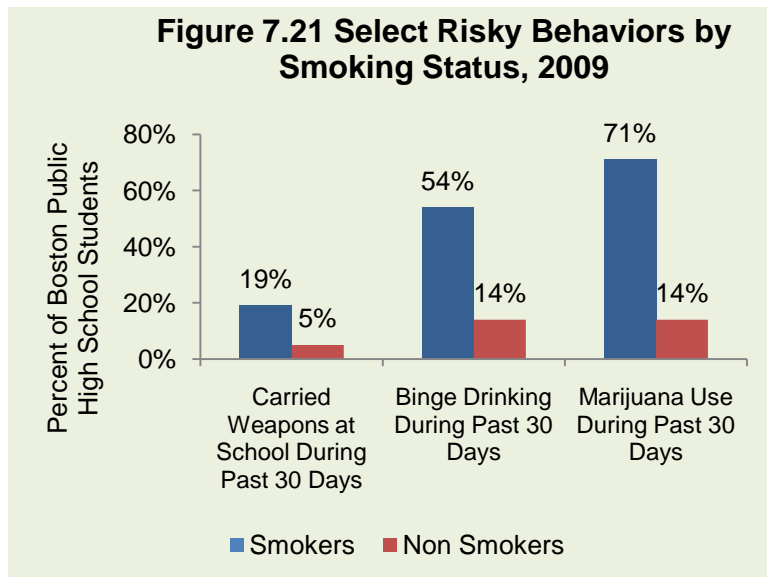
According to the American Cancer Society, as of 2008, approximately 71 million teenagers in the US were current smokers (17). Since most smoking by adults starts during adolescence and teen years, the American Academy of Pediatrics considers tobacco use such as cigarette smoking to be a pediatric disease (18).

In 2009, one in ten Boston public high school students reported smoking cigarettes.

The percentage of high school students who reported smoking was statistically similar across age groups.



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

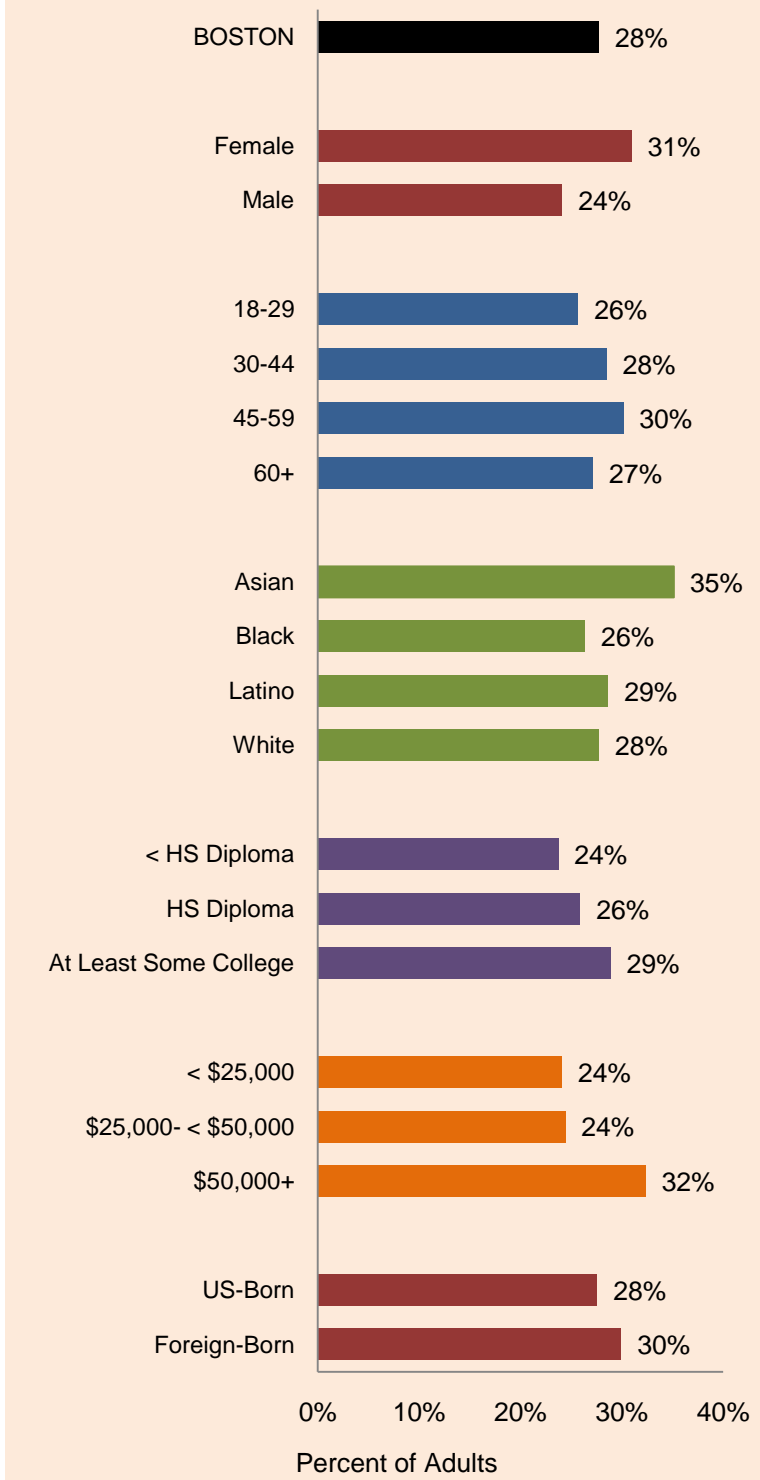


DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

Tobacco use is associated with a number of risky health behaviors including binge drinking (19).

Compared to non-cigarette smoking high school students, higher percentages of student smokers also reported past month carrying of a weapon at school, binge drinking, and marijuana use.

**Figure 7.22 Adults who Consume Recommended Daily Fruits and Vegetables by Selected Indicators, 2008**

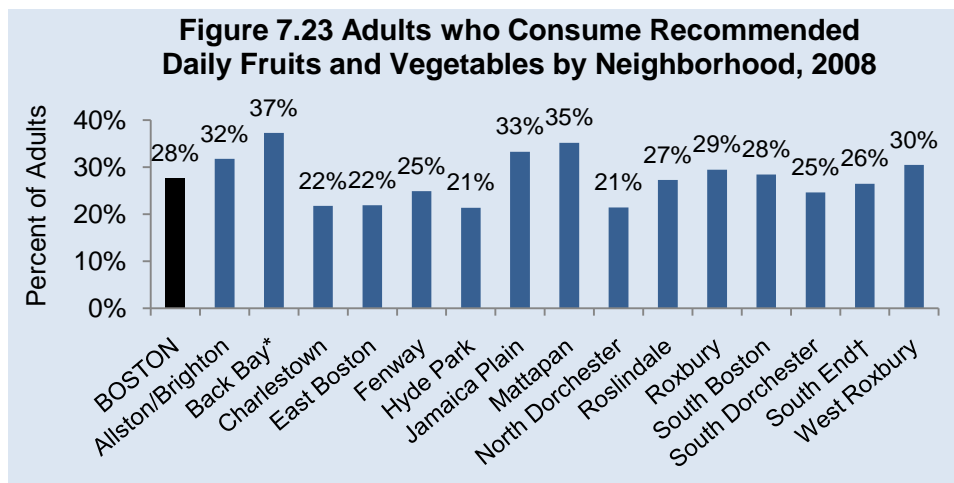


Diets rich in fresh fruits and vegetables are associated with a lower risk of cardiovascular disease, obesity, and diabetes (7).

In 2008, 28 % of adult Boston residents reported consuming the recommended five servings of fruits and vegetables per day.

No significant differences were observed by gender, age, race/ethnicity, educational attainment, income, or place of birth.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



\*Includes Beacon Hill, Downtown, North End and the West End

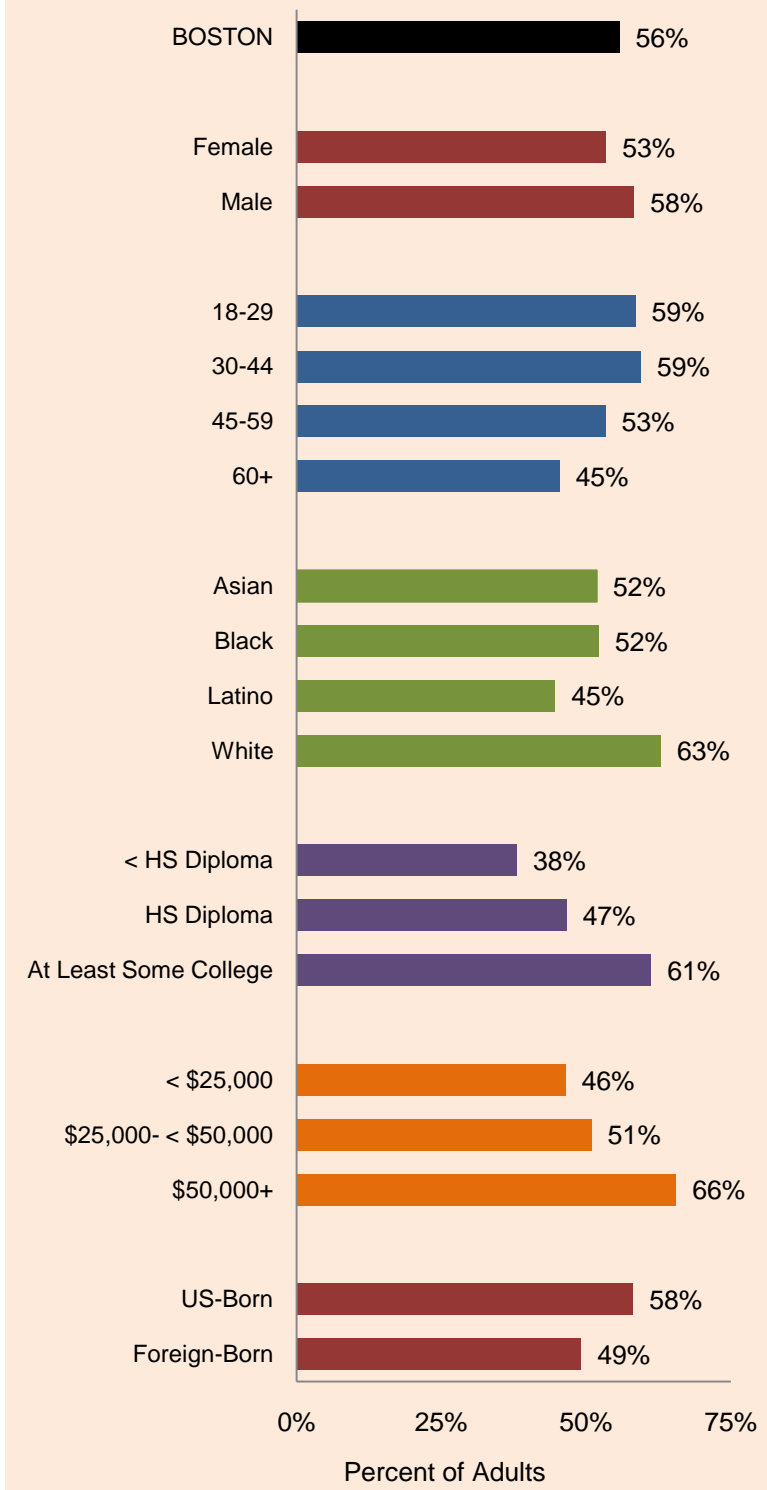
†Includes Chinatown

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Compared to Boston overall, there were no significant differences in the percentage of adults who consumed the recommended daily fruits and vegetables across Boston neighborhoods.



**Figure 7.24 Adults who Engage in Regular Physical Activity by Selected Indicators, 2008**



For adults, regular physical activity is defined as vigorous activity for 20 minutes per day on 3 or more days a week or moderate activity for 30 minutes per day on 5 or more days a week.

In 2008, 56% of Boston adult residents reported engaging in regular physical activity.

A lower percentage of older adults (60+ years) were physically active compared to Boston residents ages 18-29, 30-44, or 45-59.

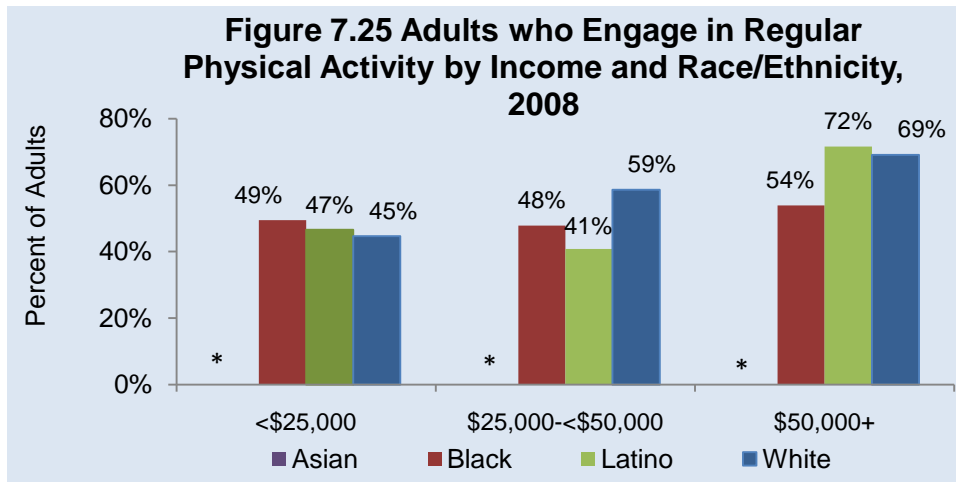
A lower percentage of Black and Latino adults were physically active compared to White adult residents in Boston.

A higher percentage of residents who had at least some college education engaged in regular physical activity compared to high school graduates or adults who had less than a high school education.

A higher percentage of residents with a household income of \$50,000 or more reported engaging in regular physical activity compared to residents with lower income.

There was no significant difference in the percentage of adults who reported engaging in regular physical activity by place of birth.

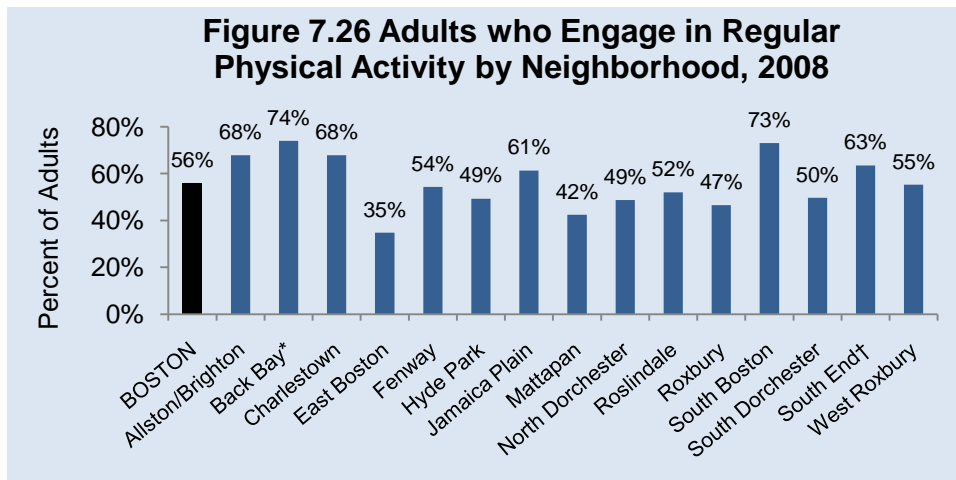
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



\*Insufficient sample size for Asian adults  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

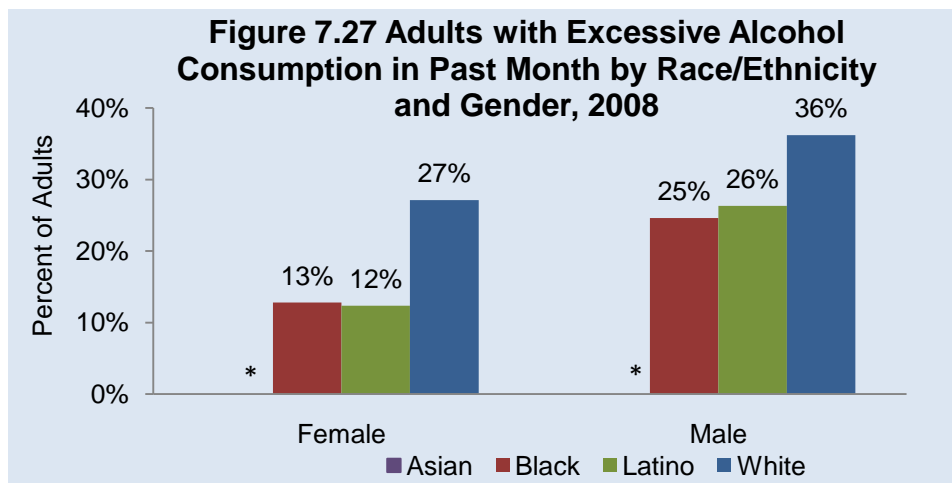
Within household income groups, there were no significant differences observed by race/ethnicity in the percentage of adults who reported engaging in regular physical activity.

Within racial/ethnic groups, differences in household income were noted. Among Latinos, a higher percentage of adults with household income of \$50,000 or more reported engaging in regular physical activity compared to Latinos with lower income. Among Whites, a higher percentage of adults with household income of \$50,000 or more reported engaging in regular physical activity compared to White adults who made less than \$25,000.



\*Includes Beacon Hill, Downtown, North End and the West End  
 †Includes Chinatown  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

The percentage of adults who reported engaging in regular physical activity varied by neighborhood. A higher percentage of residents in Back Bay and South Boston reported engaging in regular physical activity compared to Boston overall. A lower percentage of East Boston residents reported engaging in regular physical activity compared to Boston overall. A similar percentage of all other neighborhoods adult residents reported engaging in regular physical activity compared to Boston overall.

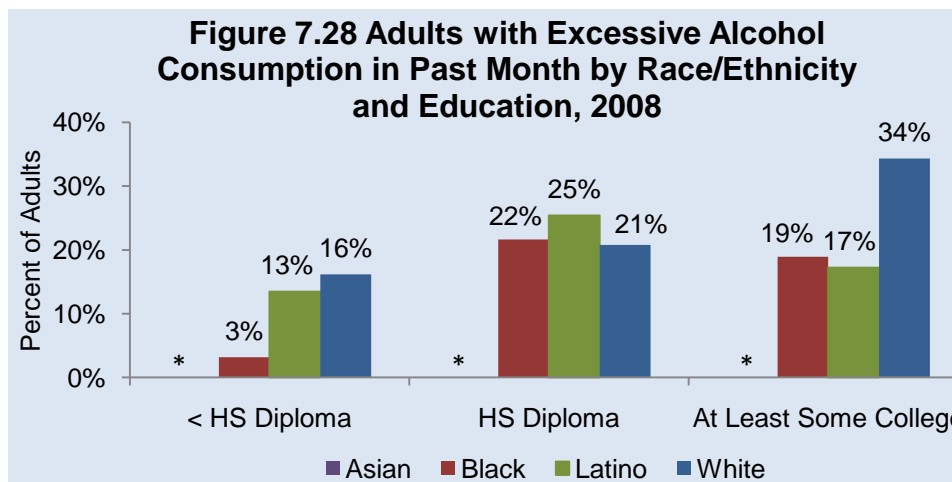


\*Insufficient sample size for Asian adults  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Excessive alcohol consumption or binge drinking is defined for adults as the consumption of five or more alcoholic drinks for men, or four or more drinks for women, on one occasion.

In 2008, a higher percentage of White female adults reported binge drinking within the past month in comparison to Black and Latino female adults.

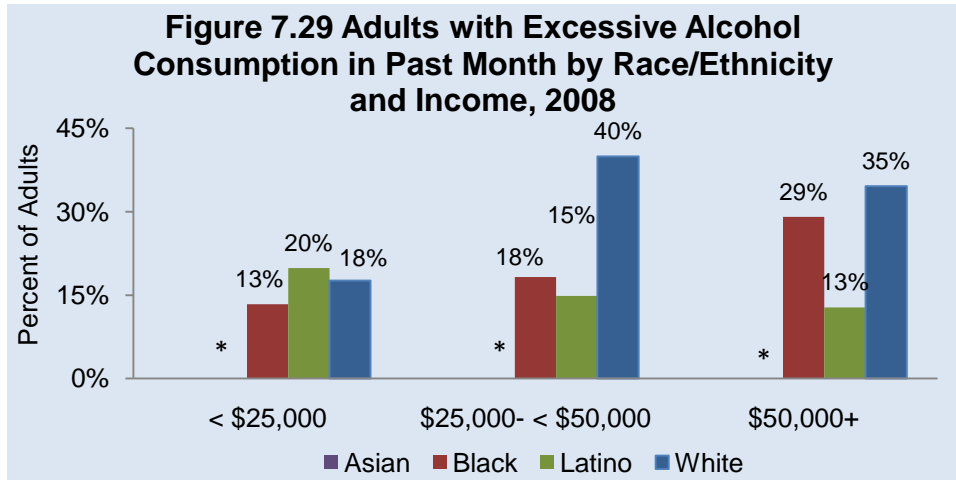
There were no significant differences in percentage of reported binge drinking among males by race/ethnicity.



\* Insufficient sample size for Asian adults  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

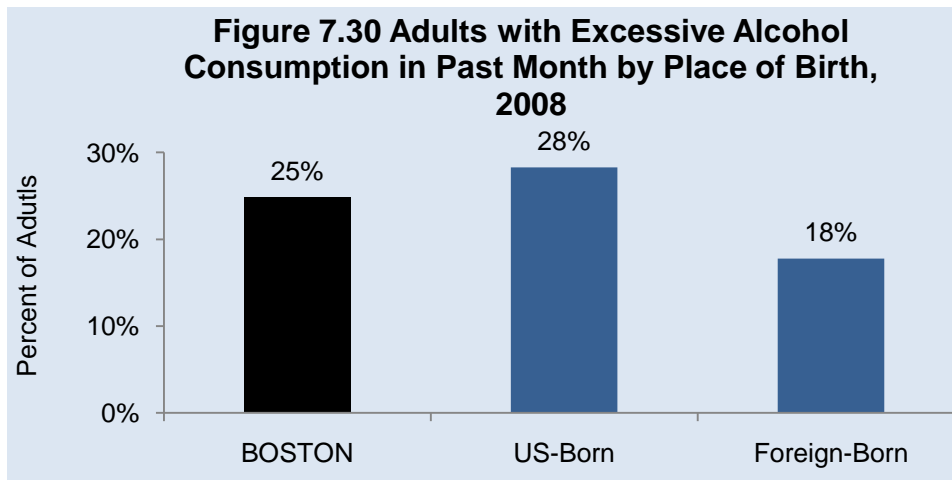
In 2008, among adults with less than a high school diploma and adults with a high school diploma, the percentage who reported binge drinking in the previous month was statistically similar across racial/ethnic groups. Among adults with at least some college, a higher percentage of White adults reported binge drinking in comparison to Black and Latino adults.

Within race/ethnicity, a higher percentage of Black adults with a high school diploma and adults with at least some college reported binge drinking in the previous 30 days in comparison to Black adults with less than a high school diploma.



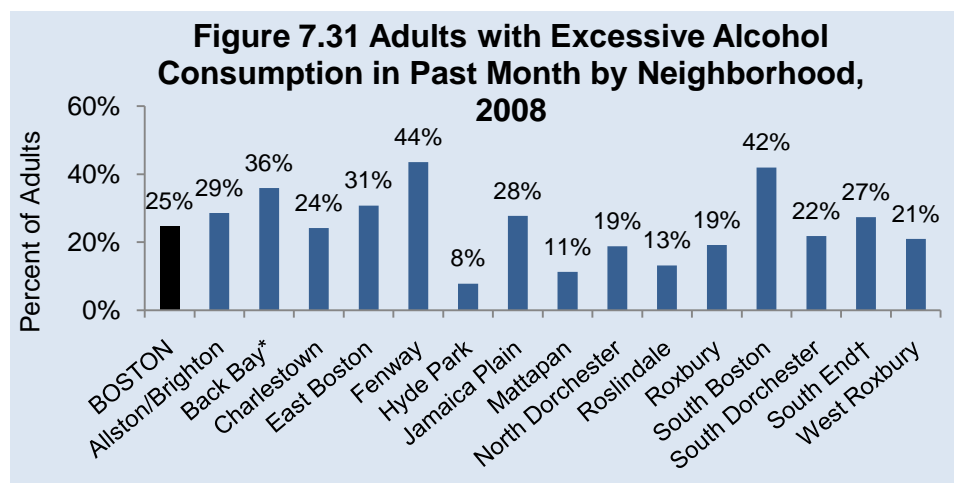
\* Insufficient sample size for Asian adults  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Among Boston adults with a household income of less than \$25,000, the percentage who reported binge drinking in the past month was statistically similar across racial/ethnic groups. Among those who reported a household income of \$25,000 to less than \$50,000, a higher percentage of White adults also reported binge drinking in comparison to Black and Latino adults. Among those with a household income of \$50,000 or more, a higher percentage of White adults reported binge drinking compared to Latino adults.



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2008, a higher percentage of US-born adults compared to foreign-born adults reported binge drinking during the previous 30 days.



\*Includes Beacon Hill, Downtown, North End and the West End

†Includes Chinatown

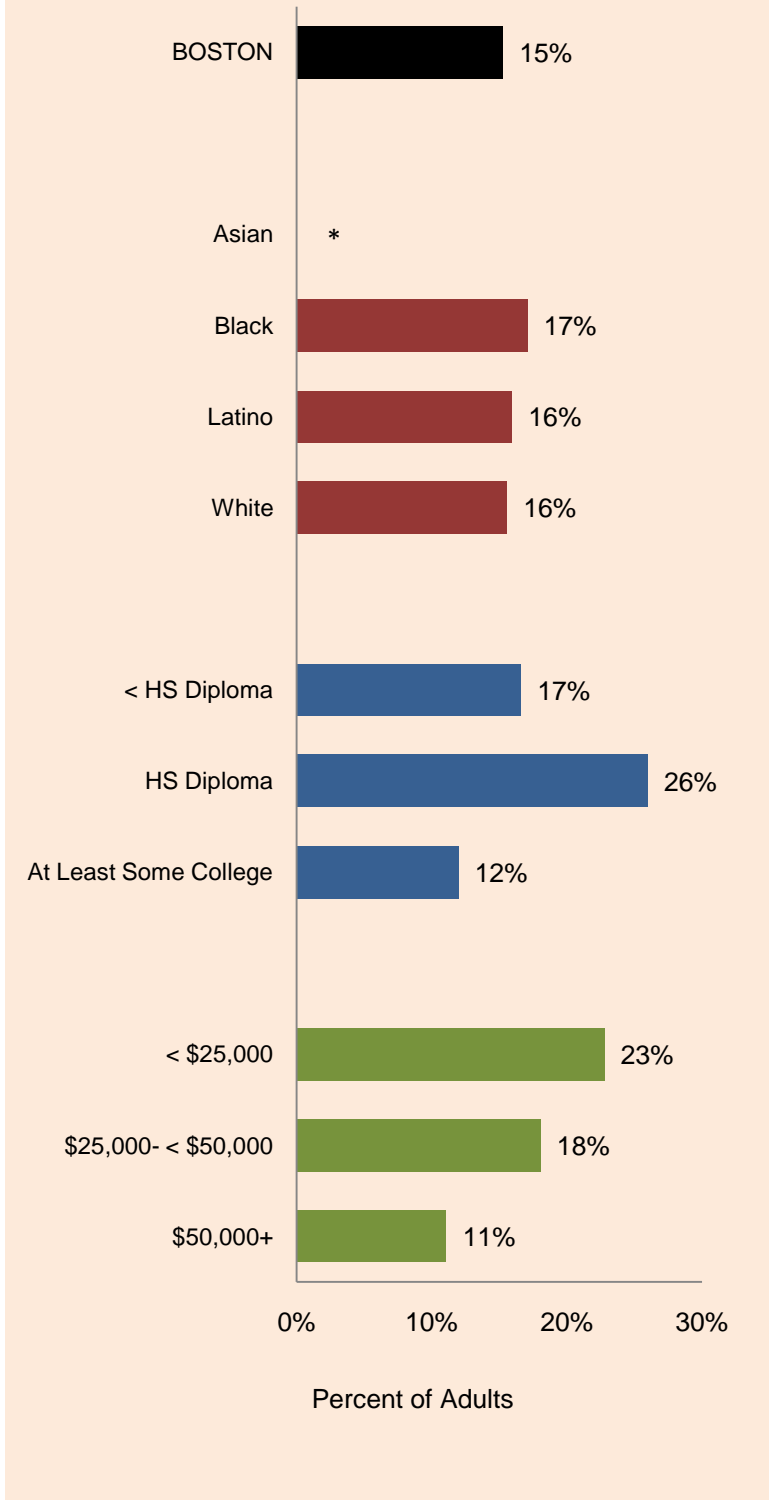
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2008, compared to Boston adults overall, a lower percentage of adults in Hyde Park, Mattapan, and Roslindale reported binge drinking during the previous month.

A higher percentage of South Boston adults reported binge drinking during the previous 30 days compared to Boston adults overall.

A similar percentage of all other neighborhoods' adults reported binge drinking compared to Boston overall.

**Figure 7.32 Adult Current Smoking by Selected Indicators, 2008**



Cigarette smoking and other tobacco use or exposure account for the most preventable causes of disease and premature death in the US (20). Forty-five million adults in the US smoke cigarettes.

In Boston, 15% of adults reported current smoking in 2008.

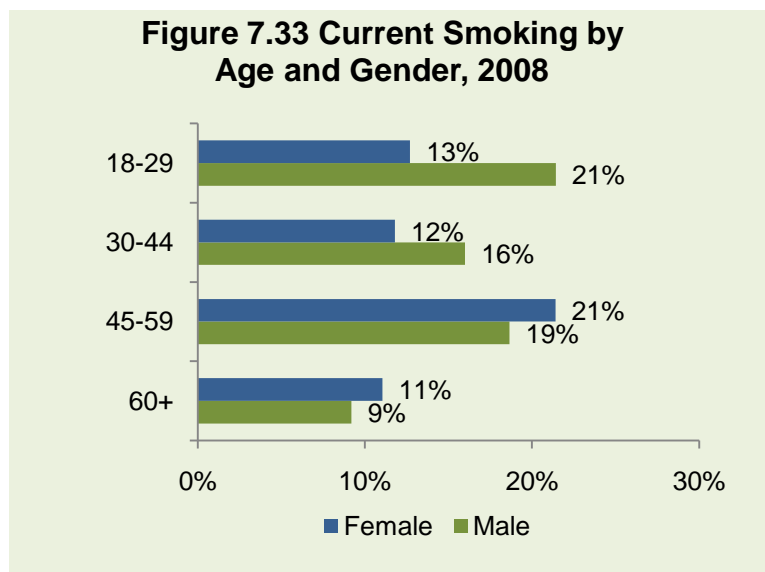
The percentage of reported current smoking was statistically similar by race/ethnicity.

A higher percentage of Boston adults who have a high school diploma reported smoking than Boston adults with at least some college.

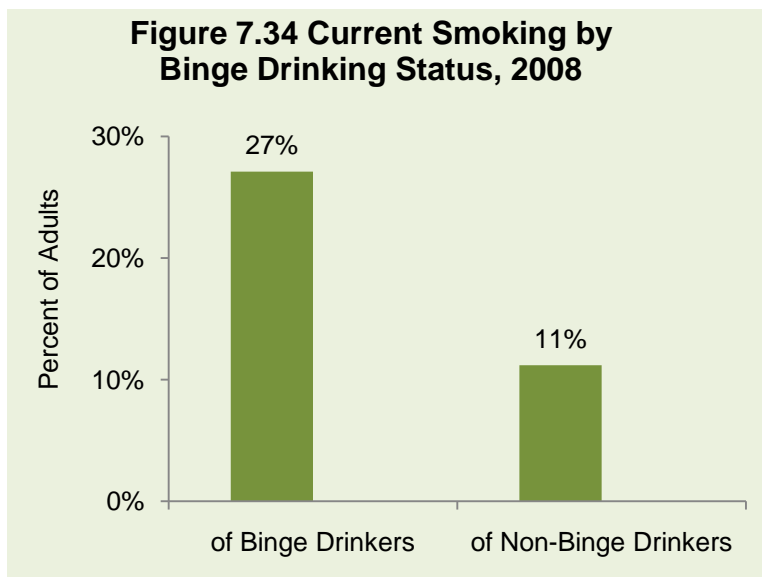
A higher percentage of adults with an annual household income of \$25,000 or less reported current smoking in comparison to adults with an annual household income of \$50,000 or more.

\*Insufficient sample size for Asian adults  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Within each age group, there were no significant gender differences in the percentage of current smoking adults.



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



A higher percentage of adults who reported binge drinking also reported smoking cigarettes compared to adults who did not report binge drinking.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



## Summary: Health Behaviors

Prior research has shown that poor dietary habits, lack of physical activity, tobacco use, and excessive alcohol consumption are major contributing factors of chronic disease development and premature deaths. In Boston, patterns of health behaviors varied by gender, race/ethnicity, and socioeconomic status.

Among Boston public high school students dietary habits are of concern. About 16% reported not eating breakfast, 28% reported consuming one or more sodas per day, and only 18% reported consuming the recommended five daily servings of fruits and vegetables.

Only 27% of the Boston public high school students reported engaging in regular physical activity. A lower percentage of female students compared to male students reported engaging in regular physical activity. More than 50% of public high school students reported receiving no physical education during the past week.

Approximately 45% of students reported watching three or more hours of television per day and 33% reported playing video and computer games for more than three hours. Racial/ethnic differences were observed. A higher percentage of Black students reported watching three or more hours of TV compared to Asian and White students. A higher percentage of Asian students reported playing video or computer games for three or more hours compared to all other racial/ethnic groups.

A higher percentage of White students 15 years or younger reported binge drinking compared to Black and Asian students within the same age category. One in ten Boston public high school students reported smoking cigarettes during the past month.

Among Boston adults, 28% reported consuming the recommended number of fruit and vegetable servings. About 56% of adults

reported engaging in regular physical activity. Differences in adult physical activity were noted by age, race/ethnicity, education, household income and neighborhood. For example, a lower percentage of older adults (60 years or older) were physically active in comparison to younger adults. A lower percentage of Black and Latino adults were physically active compared to White adult residents in Boston.

This section has shown that youth and adults in Boston have not been meeting the recommended nutritional and physical activity guidelines. Even more troubling are the racial/ethnic and gender differences noted. The lack of physical exercise and poor dietary habits has contributed to the country's obesity epidemic, which is fueling the increase in diabetes and other chronic diseases. Strategies that provide education and other services aimed at individual behavior change are important and should continue. However, to be effective in bringing about community change, approaches which recognize that health behaviors are shaped by one's social, economic, and neighborhood context must be developed.



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## Notes and Data Analysis

**Figure 7.1**

NOTE: Survey question reads, “During the past 7 days, on how many days did you eat breakfast?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.2**

NOTE: Survey question reads, “During the past 7 days, on how many days did you eat breakfast?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.3**

NOTE: Survey question reads, “During the past 7 days, on how many days did you eat breakfast?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.4**

NOTE: Survey question reads, “During the past 7 days, on how many days did you eat breakfast?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.5**

NOTE: Percentage calculated based on responses to multiple questions. Calculated variable description: ate five or more servings of fruits and vegetables (100% fruit juices, fruit, green salad, potatoes [excluding French fries, fried potatoes, or potato chips], carrots, or other vegetables) per day on five or more days during the 7 days prior to the survey.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.6**

NOTE: Survey question reads, “During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not include diet soda or diet pop.)?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.7**

NOTE: Survey question reads, “During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not include diet soda or diet pop.)?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.8**

NOTE: Survey question reads, “During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not include diet soda or diet pop.)?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.9**

NOTE: Survey question reads, “During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not include diet soda or diet pop.)?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.10**

NOTE: Data represents percentage calculated based on responses to multiple questions. Calculated variable description: “ate five or more servings of fruits and vegetables (100% fruit juices, fruit, green salad, potatoes [excluding French fries, fried potatoes, or potato chips], carrots, or other vegetables) per day on five or more days during the 7 days prior to the survey” and survey question “During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not include diet soda or diet pop.)?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.11**

NOTE: Survey question reads, “During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.)?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.12**

NOTE: Survey question reads, “During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.)?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.13**

NOTE: Data represents survey questions “During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.)?” and includes percentage calculated based on responses to

Additional data may be found on the Boston Public Health Commission website at [www.bphc.org](http://www.bphc.org).

multiple questions. Calculated variable description: “ate five or more servings of fruits and vegetables (100% fruit juices, fruit, green salad, potatoes [excluding French fries, fried potatoes, or potato chips], carrots, or other vegetables) per day on five or more days during the 7 days prior to the survey.”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.14**

NOTE: Survey question reads, “In an average week when you are in school, on how many days do you go to physical education (PE) classes?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.15**

NOTE: Data reflects survey questions, “During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.)?” and “In an average week when you are in school, on how many days do you go to physical education (PE) classes?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.16**

NOTE: Survey question reads, “On an average school day, how many hours do you watch TV?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.17**

NOTE: Survey question reads, “On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work?” (Include activities such as Nintendo, Game Boy, PlayStation, Xbox, computer games, and the Internet.)

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.18**

NOTE: Survey question reads, “On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work?” (Include activities such as Nintendo, Game Boy, PlayStation, Xbox, computer games, and the Internet.)

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.19**

NOTE: Survey question reads, “During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.20**

NOTE: Survey question reads, “During the past 30 days, on how many days did you smoke cigarettes?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.21**

NOTE: Data reflects survey questions, “During the past 30 days, on how many days did you smoke cigarettes?”, “During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club?”, “During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?” and “During the past 30 days, how many times did you use marijuana?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.22**

NOTE: Calculated as adults who reported eating five or more servings of fruits and vegetables per day for at least five days during the week prior to the survey.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.23**

NOTE: Calculated as adults who reported eating five or more servings of fruits and vegetables per day for at least five days during the week prior to the survey.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.24**

NOTE: Calculated as adults who have done moderate activities for at least 30 minutes per day on five days of a usual week or vigorous activities for at least 20 minutes per day on three days of a usual week.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.25**

NOTE: Calculated as adults who have done moderate activities for at least 30 minutes per day on five days of a usual week or vigorous activities for at least 20 minutes per day on three days of a usual week.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office



**Figure 7.26**

NOTE: Calculated as adults who have done moderate activities for at least 30 minutes per day on five days of a usual week or vigorous activities for at least 20 minutes per day on three days of a usual week.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.27**

NOTE: Survey question reads, “Considering all types of alcoholic beverages, how many times during the past 30 days did you have X [X=5 for men, X=4 for women] or more drinks on an occasion?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.28**

NOTE: Survey question reads, “Considering all types of alcoholic beverages, how many times during the past 30 days did you have X [X=5 for men, X=4 for women] or more drinks on an occasion?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.29**

NOTE: Survey question reads, “Considering all types of alcoholic beverages, how many times during the past 30 days did you have X [X=5 for men, X=4 for women] or more drinks on an occasion?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.30**

NOTE: Survey question reads, “Considering all types of alcoholic beverages, how many times during the past 30 days did you have X [X=5 for men, X=4 for women] or more drinks on an occasion?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.31**

NOTE: Survey question reads, “Considering all types of alcoholic beverages, how many times during the past 30 days did you have X [X=5 for men, X=4 for women] or more drinks on an occasion?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.32**

NOTE: Calculated as adults who have smoked at least 100 cigarettes in their life and report smoking every day or some days.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.33**

NOTE: Calculated as adults who have smoked at least 100 cigarettes in their life and report smoking every day or some days.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 7.34**

NOTE: Data reflects survey question “Considering all types of alcoholic beverages, how many times during the past 30 days did you have X [X=5 for men, X=4 for women] or more drinks on an occasion?” and current smoking “calculated as adults who have smoked at least 100 cigarettes in their life and report smoking every day or some days”.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office





## Section 8: Chronic Diseases

Chronic diseases are diseases or health conditions that are of long duration, slow progression, and may require ongoing medical care, such as asthma, diabetes, heart disease, stroke, cancer, and arthritis. In Boston, chronic diseases are among the leading causes of illness, disability, and death (see the General Health section of this report). Chronic diseases have significant implications for the health care system since 75% of health care costs are due to spending and utilization patterns related to chronic, yet preventable conditions (1).

Today, Americans are expected to live longer than any prior generation. In addition to the aging of the population, the number of people with chronic diseases is expected to continue to grow. In 2005, at least one out of every two adults had a chronic illness (2). Moreover, there are an increasing number of individuals living with multiple chronic conditions (2). Also, an alarming number of children and adolescents are increasingly afflicted with chronic conditions. Recent evidence demonstrates that about four out of ten new diabetes patients are being identified among children, mainly as a result of obesity and lack of regular physical exercise (3).

Age, education, income, insurance status, heredity, air pollution, and stress are factors associated with risk of chronic disease (4). Low income and education is associated with obesity and the onset of heart disease and diabetes (5).

Several factors may increase one's risk of developing chronic disease. Modifiable health behaviors including physical inactivity, unhealthy eating habits, excessive alcohol consumption, and tobacco use may promote the onset of certain chronic diseases. Additionally, factors related to the social determinants of health such as socioeconomic status (e.g., low educational attainment or low income), neighborhood environment (e.g., neighborhood poverty and accessibility and availability of affordable and nutritious food

options), and exposure to racism can also contribute to the increased risk of chronic disease.

Access to health care services, visits to a health care provider, and routine screenings for early detection of disease aid in the prevention of chronic diseases. Ensuring that Boston residents have healthy neighborhood environments that support healthy behaviors and facilitate positive choices is essential. Individuals, communities, health care providers, and local agencies must work together to enhance prevention efforts and better integrate the social determinants of health into disease prevention and management strategies.

Although many Boston residents are affected by chronic diseases, some subgroups of the population are disproportionately affected. For example, among adults under age 65, Blacks of all income backgrounds are more likely than other racial/ethnic groups to have a chronic disease or disability, especially asthma, heart failure, hypertension, and stroke (6).

This section includes information on asthma, diabetes, heart disease, hypertension, and obesity. Although hypertension and obesity are risk factors for a number of diseases, they are also considered chronic diseases.



## What is Asthma?

Asthma is a chronic respiratory disease characterized by episodes of coughing, wheezing, difficulty breathing, and chest tightness. The symptoms of asthma result from inflammation and the narrowing of small airways in response to environmental triggers (7). An asthma attack can be triggered by many factors including allergens (mold, pet dander, dust mites, and cockroaches), certain chemicals, exposure to tobacco smoke, and infections. Asthma can be well controlled by avoiding triggers, adhering to maintenance medication, identifying and treating attacks early, and developing an asthma action plan with a health care provider (7).

effective in reducing exposure in work environments.

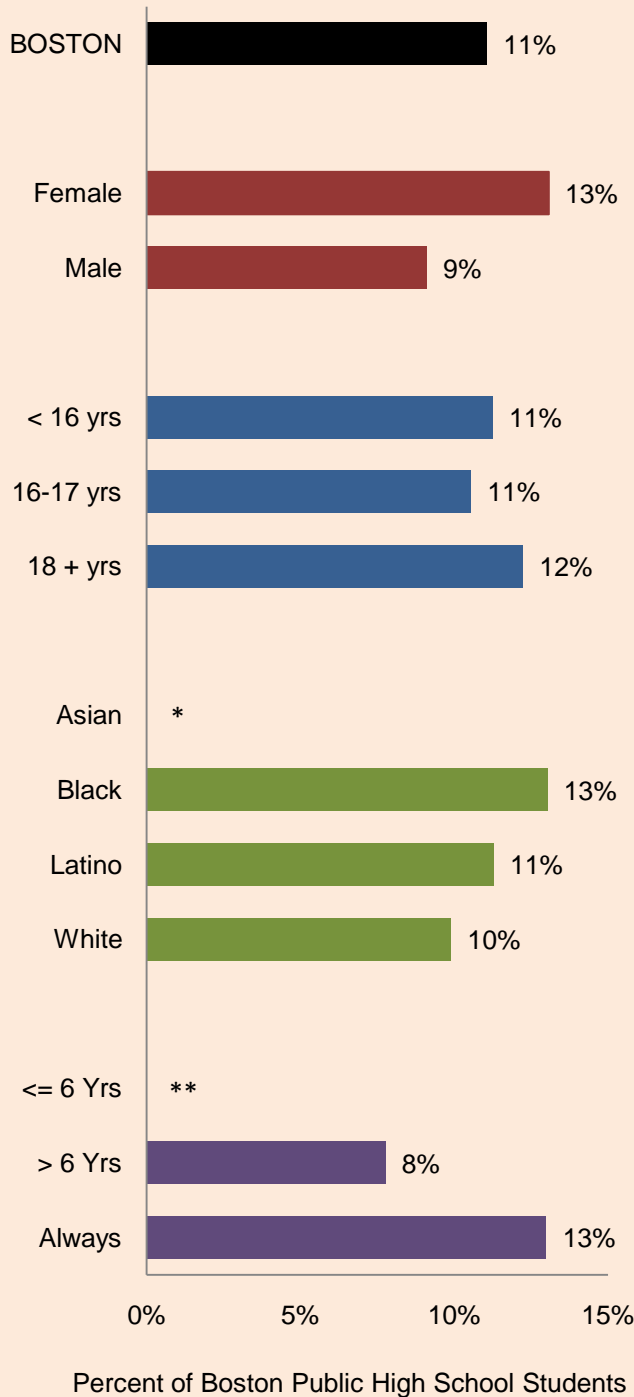
## Population at greatest risk

Young children are at risk for developing asthma. Obesity, a family history of asthma, allergies, and exposure to allergens such as dust mites and second-hand smoke can increase an individual's risk of developing asthma (7). Among racial/ethnic groups in the United States, Puerto Ricans have the highest prevalence of lifetime asthma followed by Blacks and American Indians (8).

## Prevention

Though asthma cannot be cured, it can be controlled by avoiding contact with the asthma "triggers" mentioned above and proper medical care. Continuous monitoring of the disease, patient education, and having a medical management plan is recommended (7). Creating healthy environments in homes and neighborhoods that reduce exposure to known triggers is an essential component of an effective asthma management plan and requires the full participation of city departments, community-based organizations, and families. Workplace tobacco control regulations that limit exposure to second hand smoke are

**Figure 8.1 Asthma Among Public High School Students by Selected Indicators, 2009**



In 2009, 11% of Boston public high school students reported that they currently have asthma.

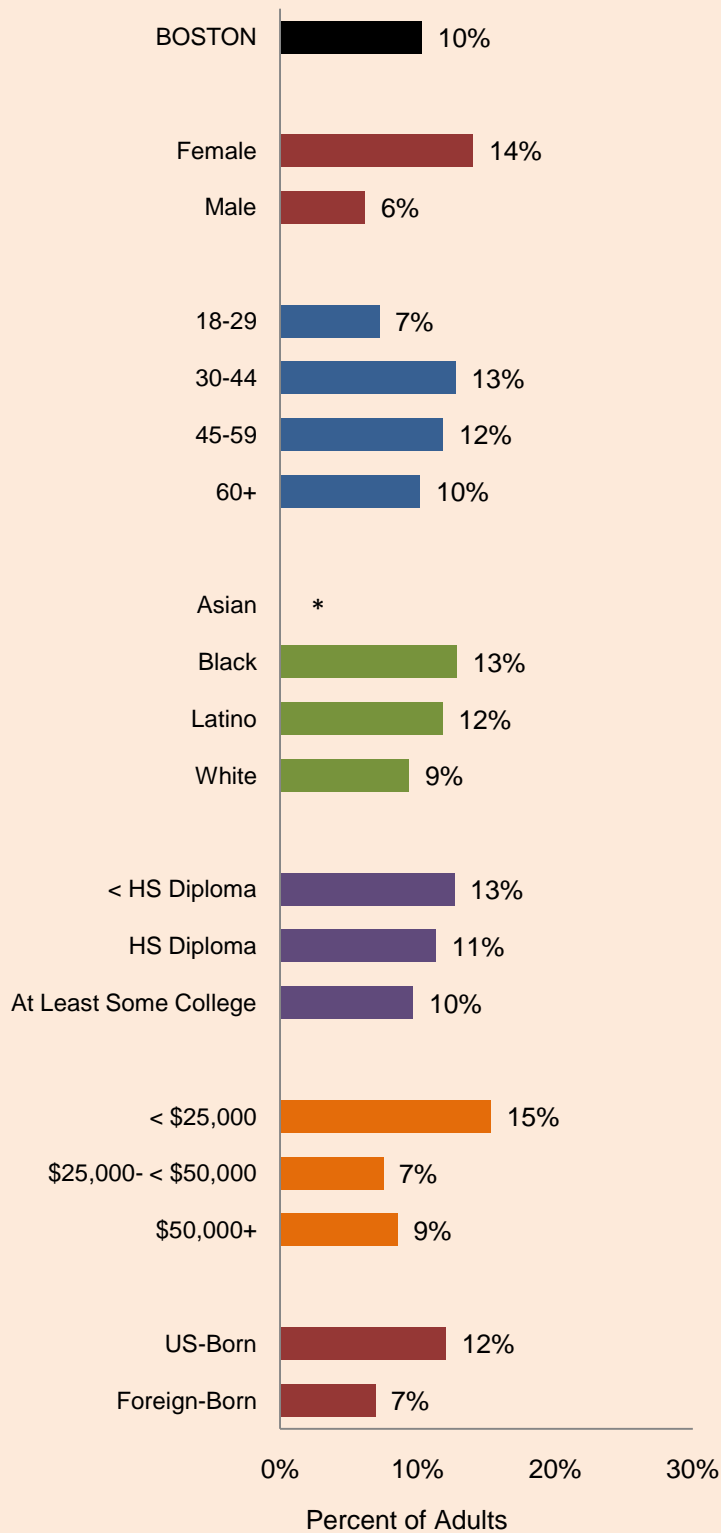
There were no significant differences between female and male students, across age groups, racial/ethnic groups, and years of residence in the US.

\*Insufficient sample size for Asians

\*\* Insufficient sample size for <=6 yrs of residence in the US

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

**Figure 8.2 Asthma in Adults by Selected Indicators, 2008**



In 2008, 10 % of the Boston adult residents reported that they currently have asthma.

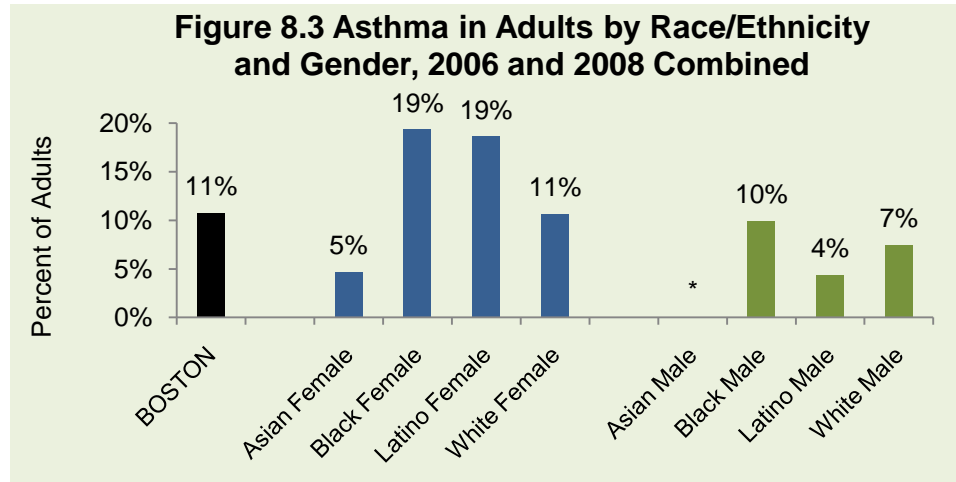
A higher percentage of female residents reported having asthma compared to male residents.

There were no significant differences in the percentages of individuals who reported having asthma across age groups, racial/ethnic groups, or education status.

A higher percentage of residents with a household income of less than \$25,000 reported that they had asthma compared to residents in the other income groups.

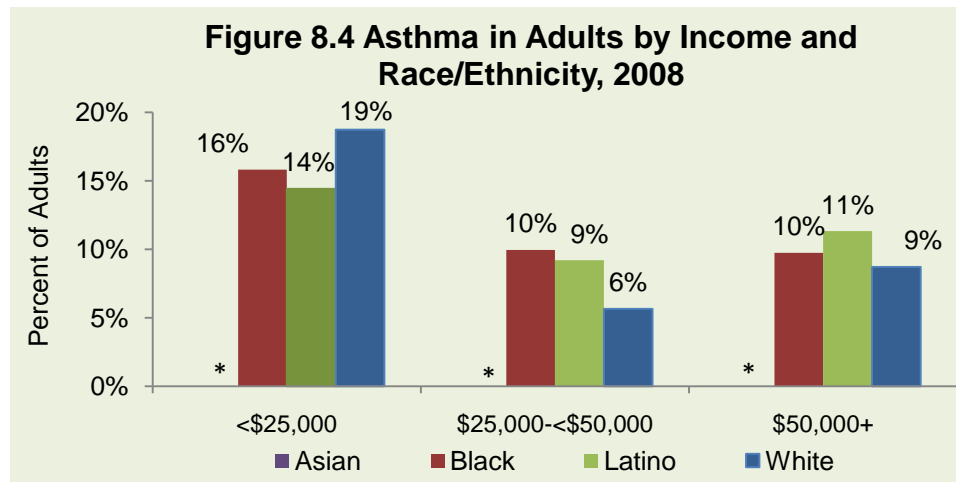
A higher percentage of residents who were US-born reported that they had asthma compared to residents who were foreign-born.

\*Insufficient sample size for Asians  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



\*Insufficient sample size for Asian males  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

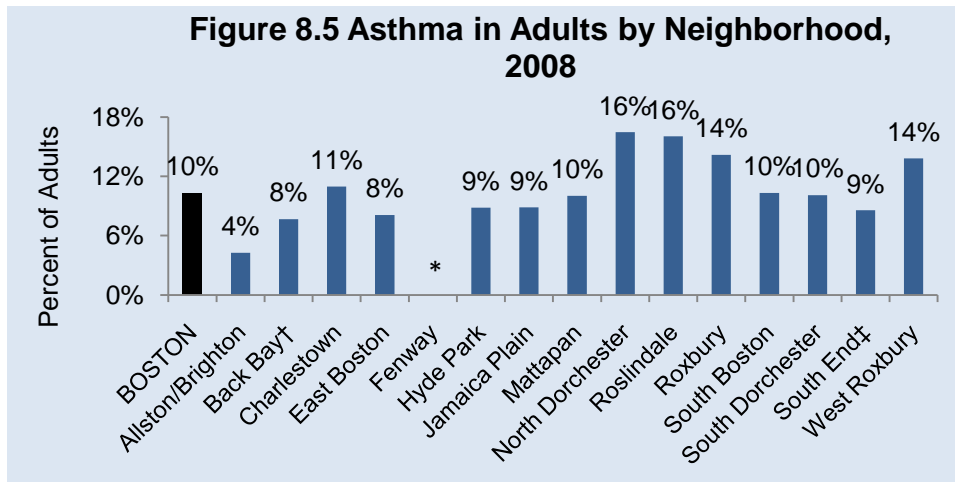
Lower percentages of Asian and White females reported that they have asthma compared to Black and Latino females.



\*Insufficient sample size for Asian adults  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

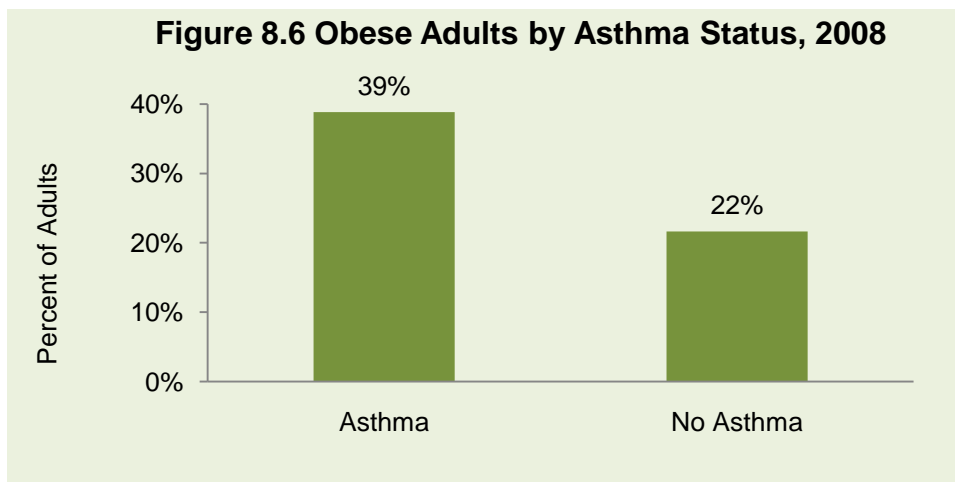
Within each household income group, the percentage of adults who reported that they have asthma was statistically similar across racial/ethnic groups.

Among White Boston residents, a higher percentage of asthma was reported in residents with a household income of less than \$25,000 compared to residents with a household income between \$25,000 and less than \$50,000.



\*Insufficient sample size for Fenway  
 †Includes Beacon Hill, Downtown, North End and the West End  
 ‡Includes Chinatown  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

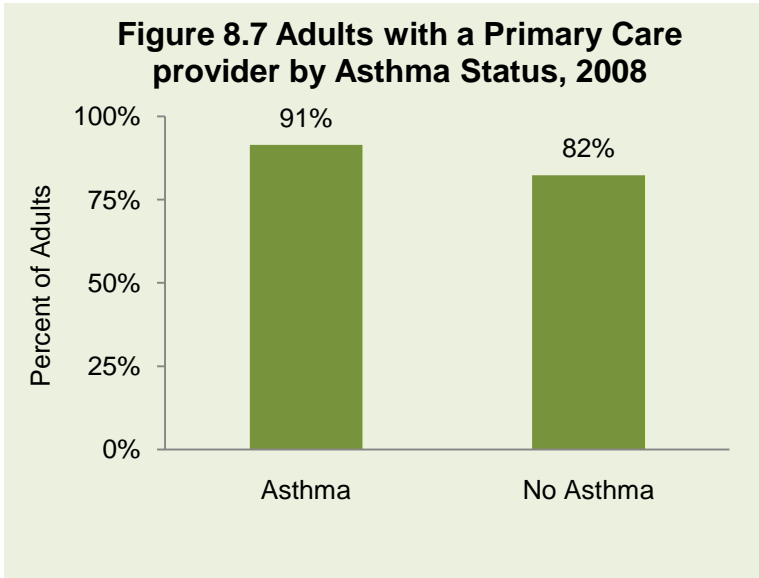
Across Boston neighborhoods, 4% to 16% of adult residents reported having asthma. A lower percentage of residents who live in Allston/Brighton reported that they have asthma compared to overall Boston. The percentage with asthma from all other neighborhoods was statistically similar to Boston overall.



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2008, 39% of the adults who had asthma were obese. A higher percentage of adults who have asthma were obese compared to adults who did not have asthma.

There were no significant differences in reported regular physical activity among adults with asthma and adults without asthma (data not shown). No significant differences were noted in smoking status among adults with asthma or without asthma (data not shown).

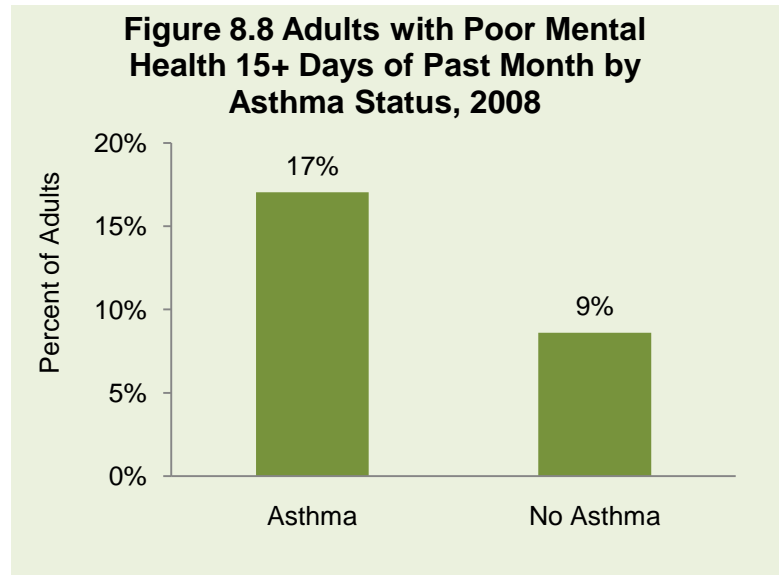


A higher percentage of adults with asthma had a primary care provider compared to adults without asthma.

The percentage of adults who saw a doctor for a routine check up within the past two years was similar among adults with asthma and adults without asthma (data not shown).

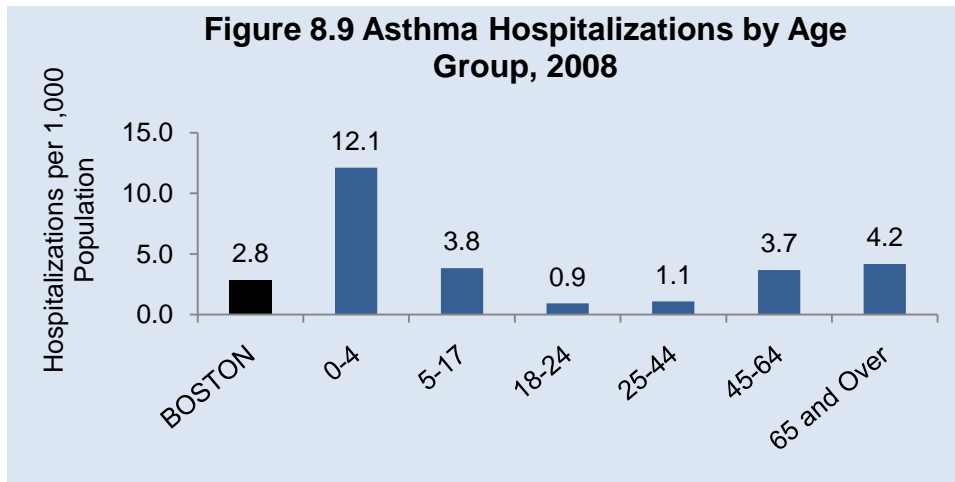
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

A higher percentage of adults who had asthma reported poor mental health for 15 days or more in the past month compared to adults who did not have asthma.



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

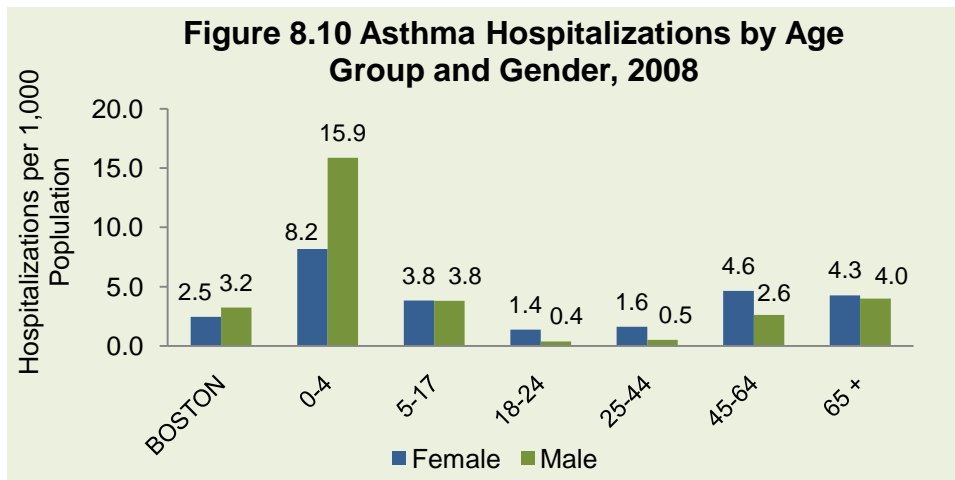




DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

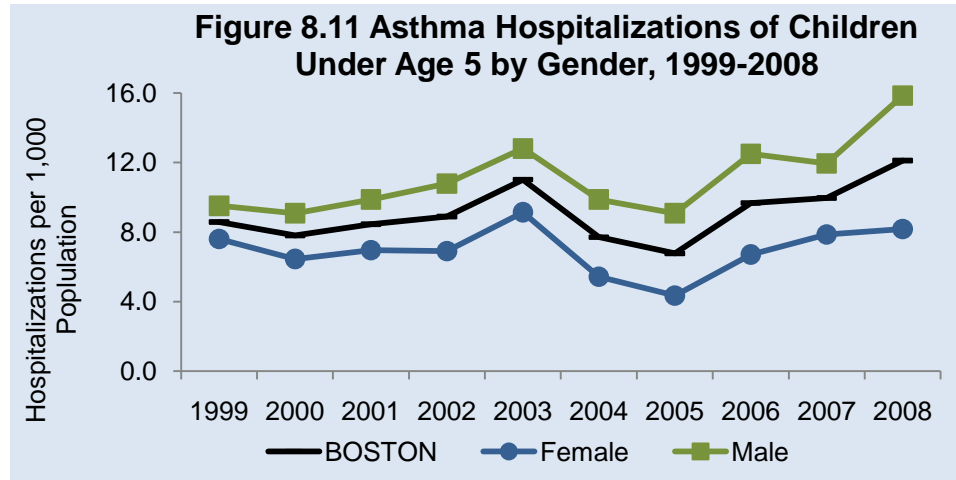
Children under age five had the highest age-specific asthma hospitalization rate. Their rate was more than four times the asthma hospitalization rate for Boston overall.

Adults ages 18-24 had the lowest asthma hospitalization rate.



DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

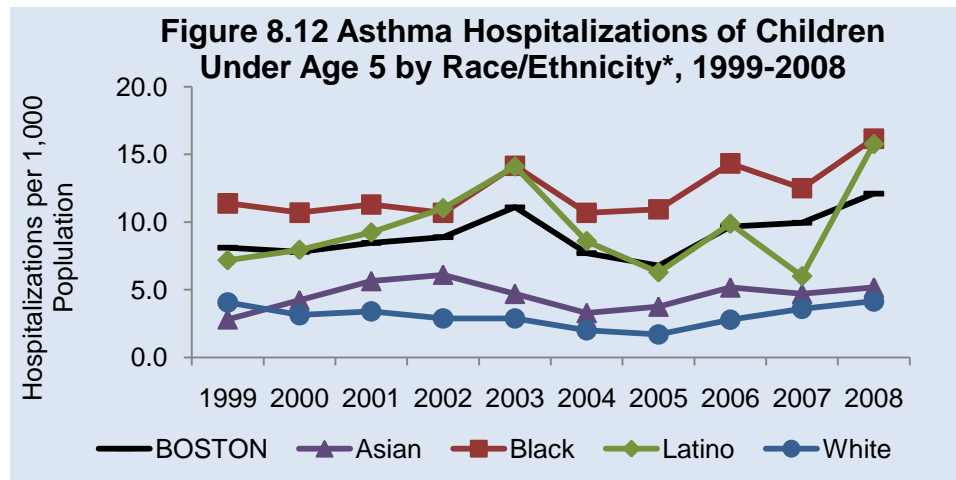
The asthma hospitalization rate varied by gender within most age groups. Among children less than five years of age, the male asthma hospitalization rate was nearly twice the female rate. However, across all adult age groups, females had higher rates of asthma hospitalization compared to males.



DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

Every year from 1999 to 2008, male children under the age of five had a higher rate of asthma hospitalizations compared to female children in the same age group.

The asthma hospitalization rate for both male and female children under age five increased from 2005 to 2008.



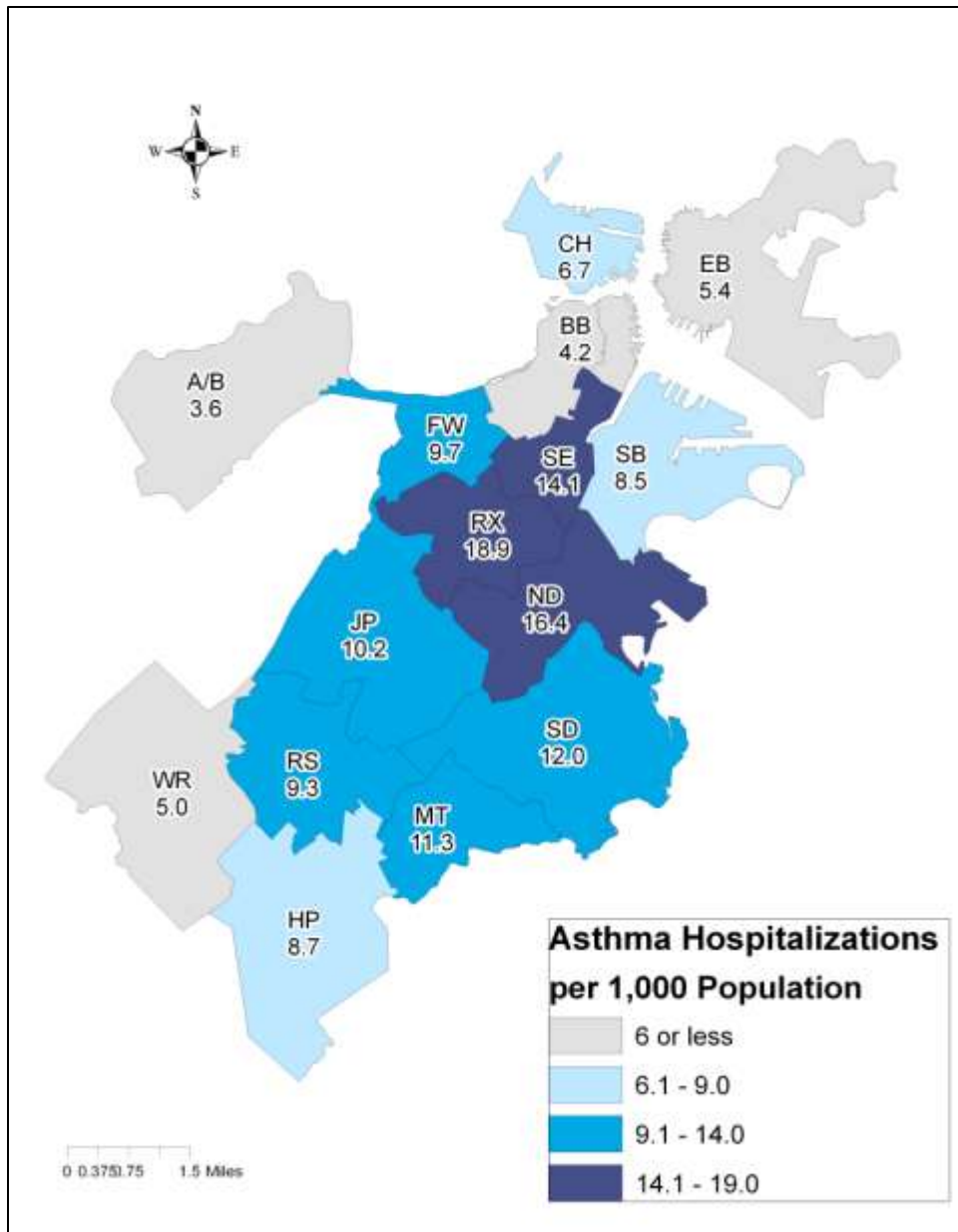
\*In 2007, hospital discharge data were adversely impacted by missing race/ethnicity information (especially Latino identification) for many discharges. Please consider these effects when interpreting differences across years.

DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

In 2008, the asthma hospitalization rate for Boston’s Black and Latino children under age five was more than three times the rate for Asian children and four times the rate for White children.

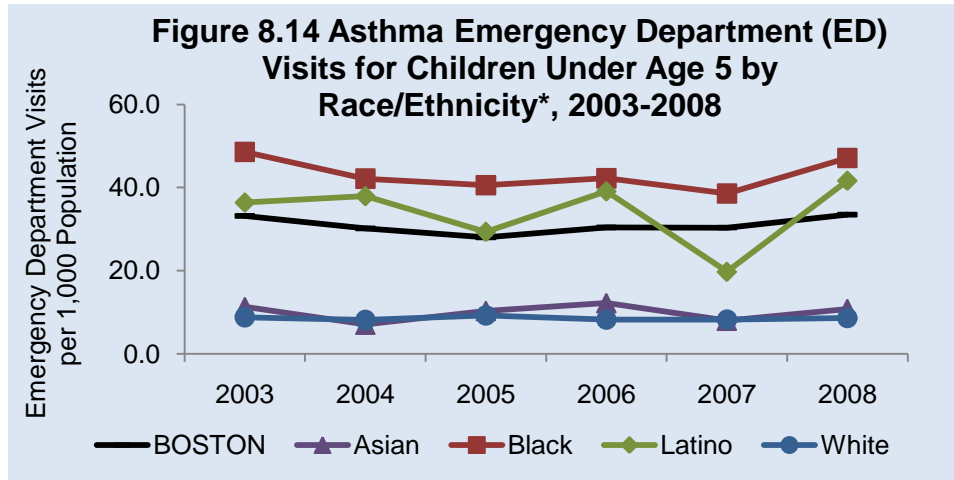
With the exception of 2002, Black children under age five consistently had the highest asthma hospitalization rate from 1999 through 2008. In 2002, 2003, and 2008, the rate for Latino children was similar to the rate for Black children. Over the ten year period, Asian and White children had lower asthma hospitalization rates than Latino and Black children.

**Figure 8.13 Asthma Hospitalization for Children under Age 5 by Neighborhood, 2006, 2007 and 2008 Combined**



ABBREVIATIONS KEY: A/B=Allston/Brighton, BB=Back Bay (includes Beacon Hill, Downtown, North End and the West End), CH=Charlestown, EB=East Boston, FW=Fenway, HP=Hyde Park, JP=Jamaica Plain, MT=Mattapan, ND=North Dorchester, RS=Roslindale, RX=Roxbury, SB=South Boston, SD=South Dorchester, SE=South End (includes Chinatown), and WR=West Roxbury  
 DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

For combined years 2006-2008, the citywide average rate of asthma hospitalization was 10.6 asthma hospitalizations per 1,000 population. The rates were highest in Roxbury, North Dorchester, South End, South Dorchester and Mattapan, which all exceeded the citywide average rate. The rate for Roxbury was approximately 79% higher than the overall Boston rate for children under age five.



\*In 2007, hospital discharge data were adversely impacted by missing race/ethnicity information (especially Latino identification) for many discharges. Please consider these effects when interpreting differences across years.  
 DATA SOURCE: Emergency Department Visit Data Base, Massachusetts Division of Health Care Finance and Policy

From 2003 to 2008, the overall Boston rate of asthma-related hospital emergency department visits for children under age five remained fairly stable.

The asthma emergency department visit rate for Black children under the age of five were higher than the overall Boston rate for all six years. The asthma emergency department visit rate for Latino children under the age of five was higher than the overall Boston rate in 2003, 2004, 2006 and 2008. From 2003 to 2008, Asian and White children had lower asthma related emergency department visit rates than Latino and Black children.

## What is Diabetes?

Diabetes Mellitus is a group of diseases in which the body cannot effectively regulate blood glucose (sugar) due to deficiencies in producing or utilizing a hormone called insulin. There are several types of diabetes including type 1 diabetes, type 2 diabetes, and gestational diabetes. Type 2 diabetes is the most common type of diabetes and will be the focus of this section. Type 2 diabetes occurs when the body loses the ability to use the insulin that it produces effectively, leading to higher levels of blood glucose (9). In a diabetic person, the body, which normally uses glucose as the source of energy for all of its functions, cannot use the available glucose. This leads to several initial symptoms such as frequent urination, excessive thirst, weight loss, fatigue and extreme hunger. Poorly controlled diabetes can lead to several debilitating complications including blindness, kidney damage, stroke, peripheral vascular disease, and heart disease including heart attack (9). The risk of complications can be lowered by controlling blood sugar, blood pressure, and blood lipid levels.

addition, controlling blood sugar levels, reducing the consumption of alcohol, quitting cigarette smoking, and maintaining normal cholesterol and blood pressure may reduce the risk of complications from diabetes (11).

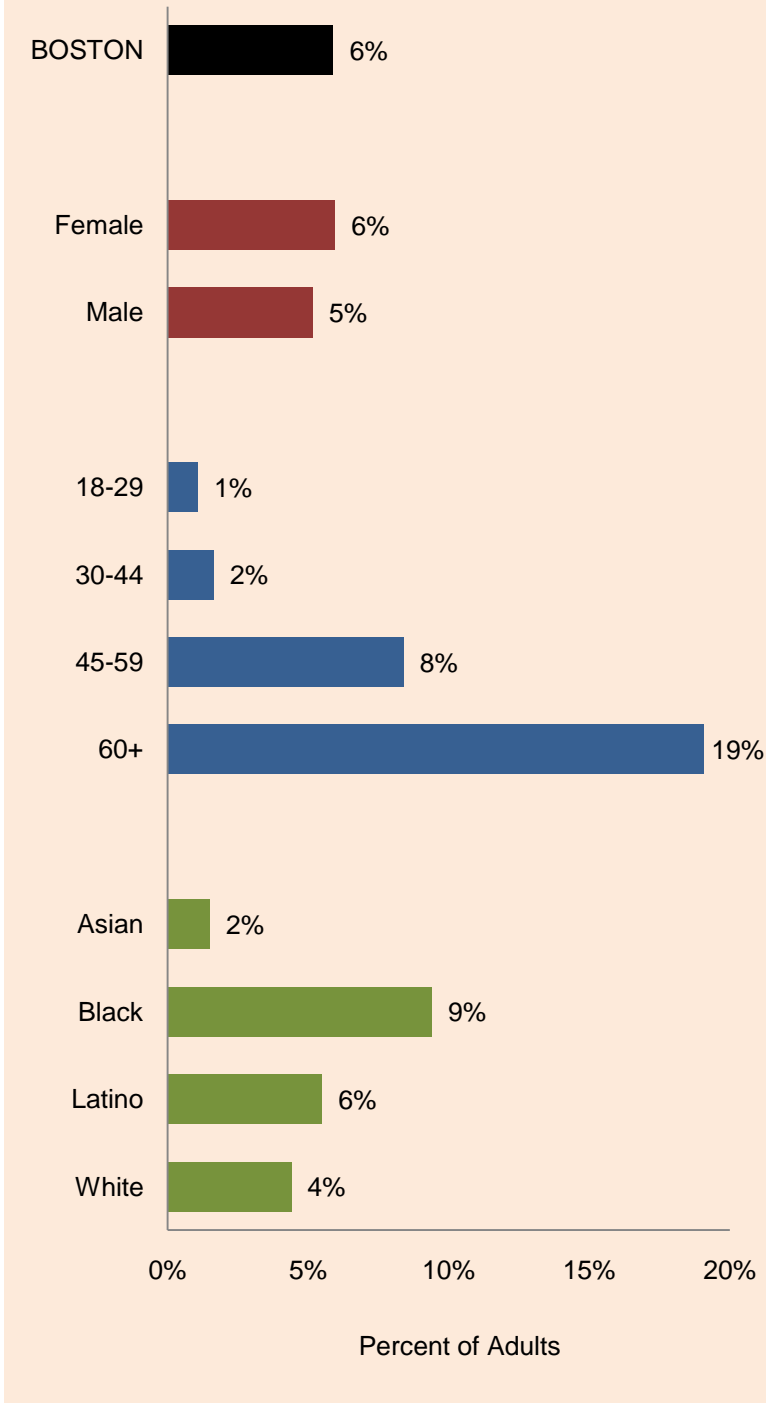
## Population at greatest risk

Individuals at increased risk are those with a family history of diabetes (having a parent, brother or sister with diabetes), older aged individuals, racial and ethnic minorities (African-American, American Indian, Asian-American, Pacific Islander, or Hispanic-American/Latino heritage), those who are overweight or obese, and those with high blood pressure or high cholesterol (10).

## Prevention

Lifestyle changes can delay or prevent the onset of diabetes, and help control diabetes once diagnosed. Eating a healthy diet, maintaining a healthy weight, and exercising regularly can help prevent diabetes. In

**Figure 8.15 Adults with Diabetes, 2006 and 2008 Combined**



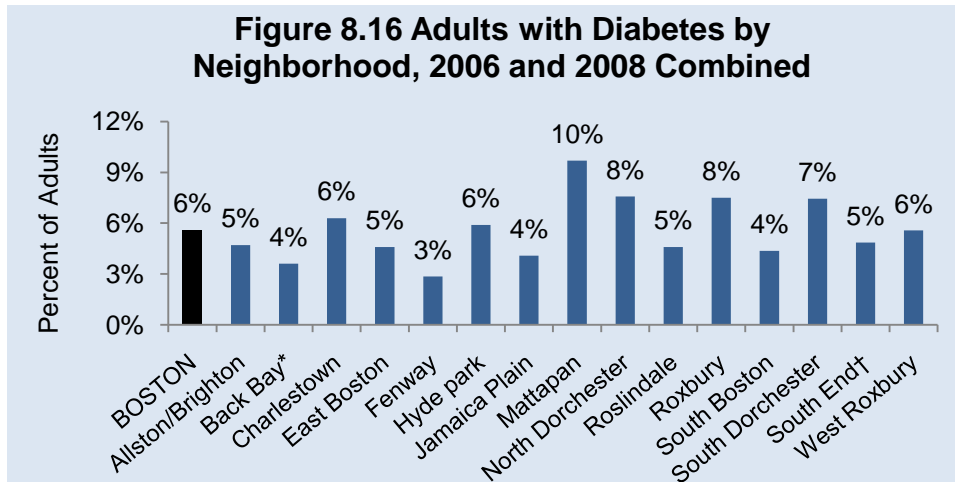
In 2006 and 2008 combined, 6% of Boston adults reported having diabetes.

A similar percentage of adult males and females reported having diabetes.

A higher percentage of adults ages 60 and over reported having diabetes compared to all other age groups. A higher percentage of adults ages 45-59 reported having diabetes compared to the younger age groups.

A higher percentage of Black adults reported having diabetes than Asian, Latino, and White adults.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2006 and 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

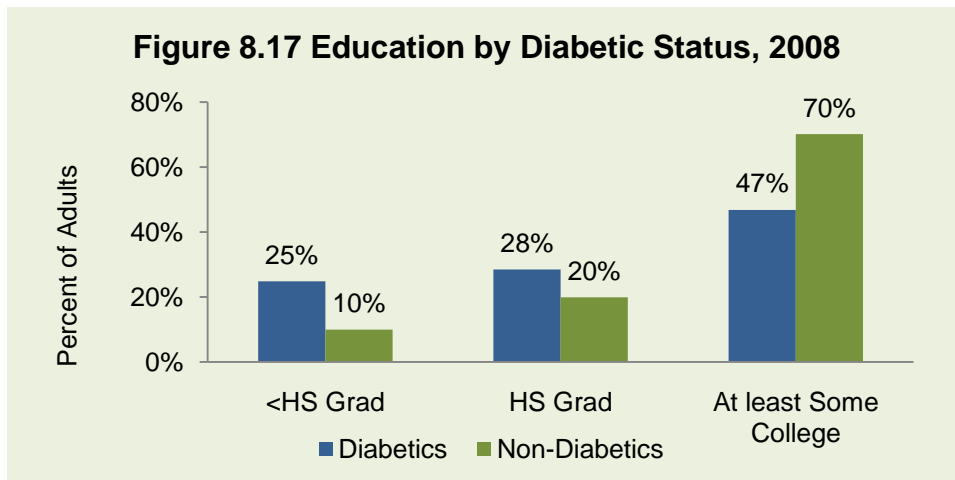


\*Includes Beacon Hill, Downtown, North End and the West End

†Includes Chinatown

DATA SOURCE: Boston Behavioral Risk Factor Survey 2006 and 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

A lower percentage of adult residents in Back Bay and Fenway reported having diabetes than Boston adults overall. Across all other neighborhoods, a statistically similar percentage of adults reported having diabetes compared to Boston overall.

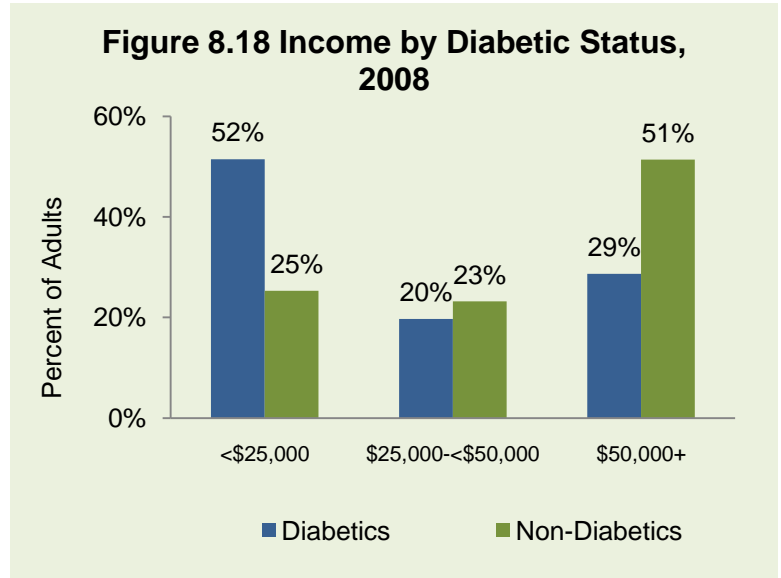


DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

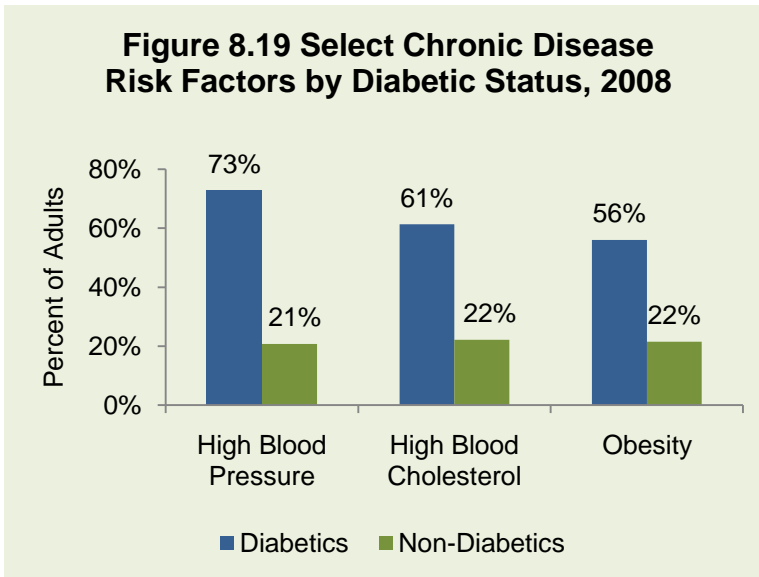
In 2008, a higher percentage of diabetic adults had less than a high school education in comparison to non-diabetic adults. A lower percentage of diabetic adults had completed at least some college in comparison to non-diabetic adults.



In comparison to non-diabetics, a higher percentage of Boston adults with diabetes reported annual household incomes of less than \$25,000 and a lower percentage reported incomes of \$50,000 or more.



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

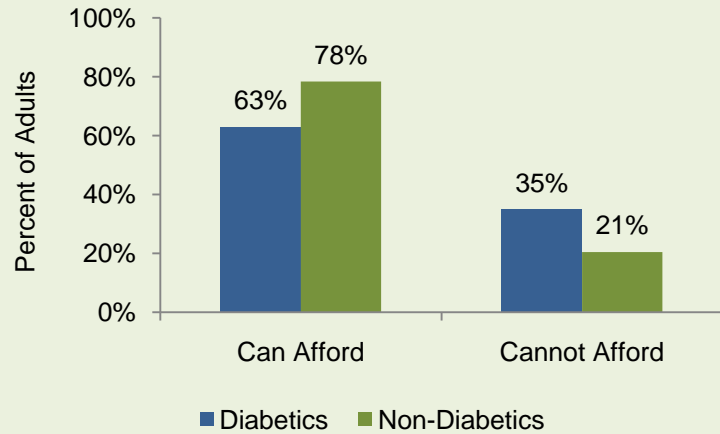


Higher percentages of Boston adults with diabetes reported having high blood pressure, high blood cholesterol, and were considered obese than Boston adults without diabetes.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

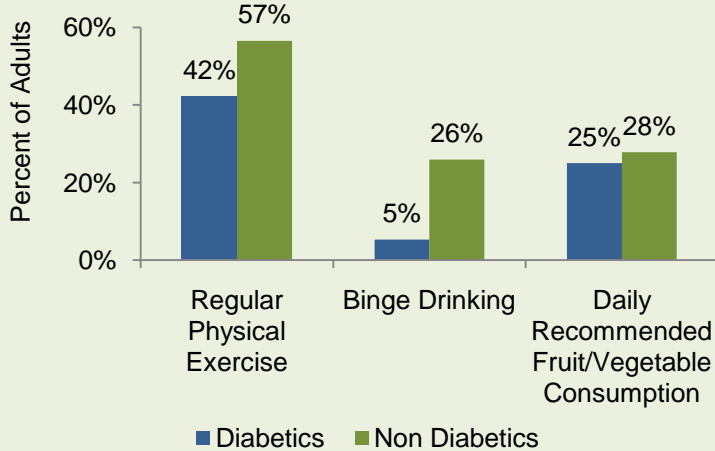
In 2008, a lower percentage of diabetic adults compared to non-diabetic adults reported that the price of fruits and vegetables where they shop was affordable. Some respondents neither agreed nor disagreed (data not shown).

**Figure 8.20 Affordability of Fruits and Vegetables by Diabetic Status, 2008**



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

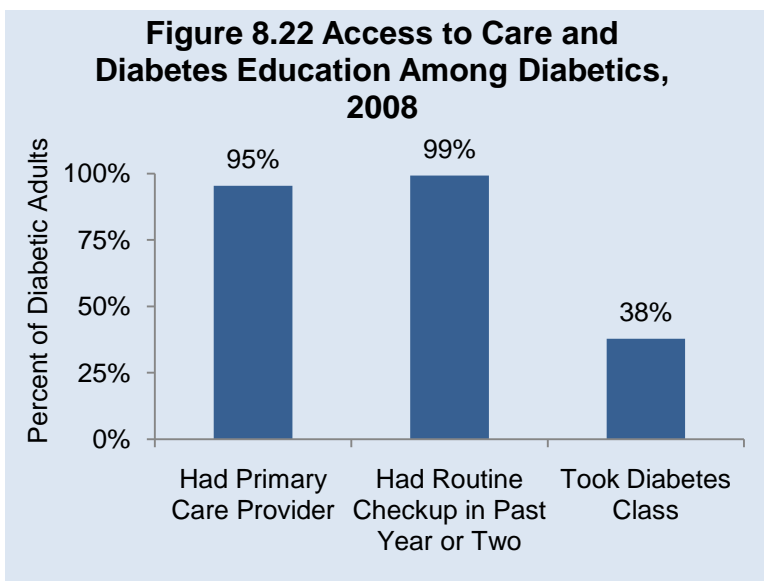
**Figure 8.21 Select Health Behaviors by Diabetic Status, 2008**



Lower percentages of Boston adults with diabetes reported regular physical exercise and binge drinking in comparison to adults without diabetes.

The percentage of adults who reported eating the recommended daily amount of fruits and vegetables was statistically similar among adults with and without diabetes.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

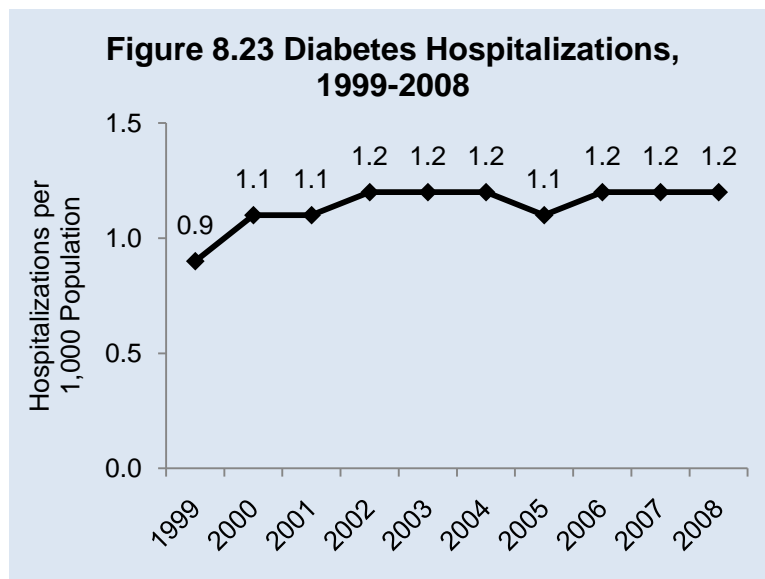


In 2008, among adults with diabetes, 95% reported having a primary care provider, 99% reported having a routine checkup in the past year or two, and 38% have taken a course on how to manage diabetes.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Diabetes can be treated in a physician’s office or clinic and with medication. However, without good primary and preventive care, individuals with diabetes are at an increased risk for complications that could require hospitalization. Prior research has shown that diabetes hospitalizations are more likely among the uninsured than the insured (12).

The age-adjusted diabetes hospitalization rate for Boston residents, based on primary diagnosis, has remained stable since 2000.

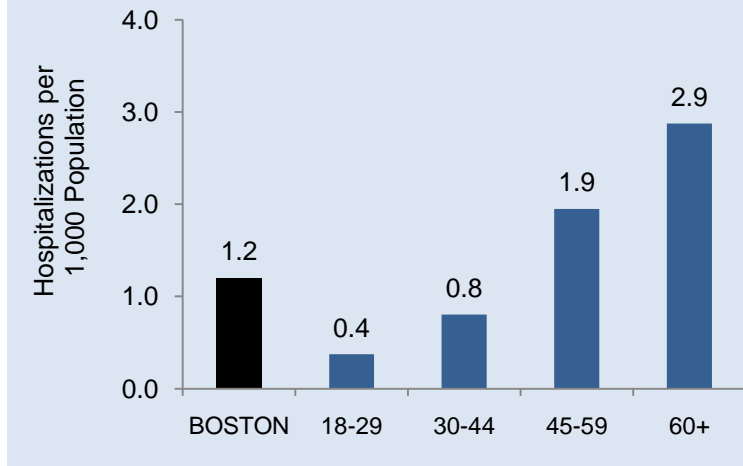


DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

In 2008, there were 573 Boston adult resident discharges with diabetes as the primary diagnosis. Sixty-nine percent of those discharges were among Boston residents ages 45 and over (data not shown).

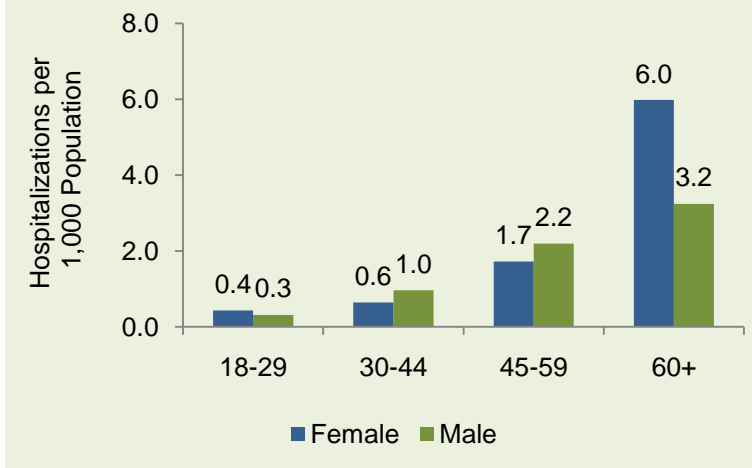
Age-specific diabetes hospitalization rates for adults increased with age. Boston adults ages 60 and over had the highest rate which was one and a half times the rate for adults ages 45-59.

**Figure 8.24 Diabetes Hospitalizations of Adults by Age Group, 2008**



DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

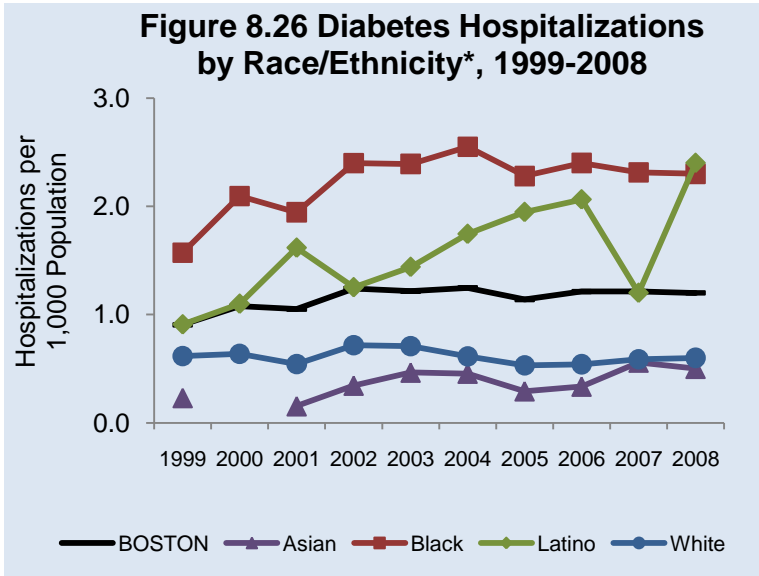
**Figure 8.25 Diabetes Hospitalizations of Adults by Age and Gender, 2008**



In 2008, the age-specific diabetes hospitalization rates for Boston adult males ages 30-44 and 45-59 were higher than their female counterparts.

Adult females ages 60 and over had the highest diabetes hospitalization rate overall which was nearly double the rate for males ages 60 and over.

DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy



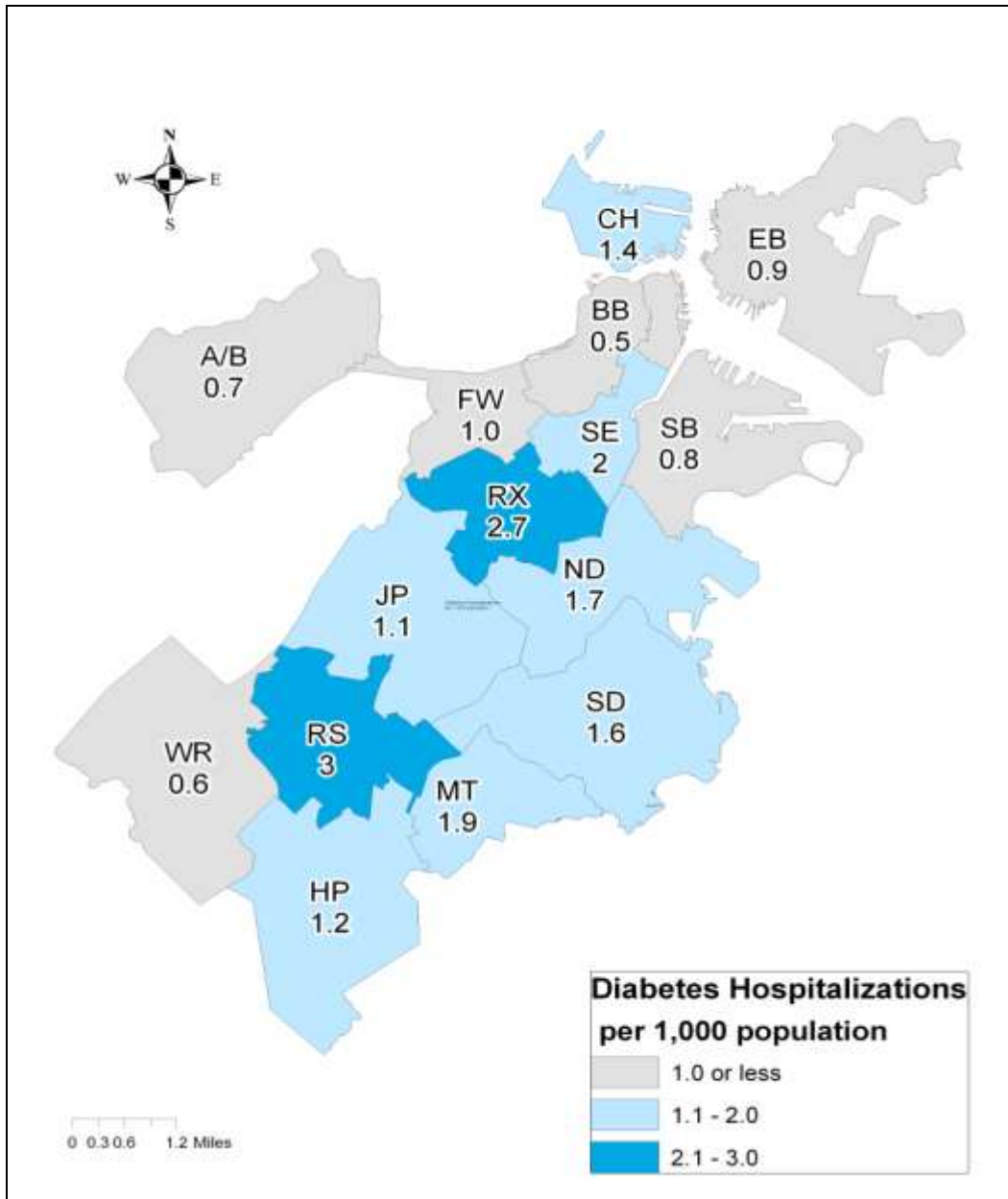
\*In 2007, hospital discharge data were adversely impacted by missing race/ethnicity information (especially Latino identification) for many discharges. Please consider these effects when interpreting differences across years.  
 DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

In 2008, the diabetes hospitalization rate for Blacks and Latinos was similar, and more than four times the rate for Asians and almost four times the rate for Whites.

Every year from 1999 through 2007, Boston’s Black residents had the highest age-adjusted diabetes hospitalization rate in comparison to other racial/ethnic groups. The 2008 rate for Blacks represented a 50% increase from 1999. There was no change in the rate between 2007 and 2008.

The rate for Latinos increased 133% from 1999 to 2006 and appeared to have sharply decreased from 2006 to 2007. However, the 2007 rate was based on an incomplete reporting year for Latinos. Better reporting of race/ethnicity for hospitalization data may have contributed to rate increases observed after 2006.

**Figure 8.27 Diabetes Hospitalizations by Neighborhood  
2006, 2007, 2008 Combined**



ABBREVIATIONS KEY: A/B=Allston/Brighton, BB=Back Bay (includes Beacon Hill, Downtown, North End and the West End), CH=Charlestown, EB=East Boston, FW=Fenway, HP=Hyde Park, JP=Jamaica Plain, MT=Mattapan, ND=North Dorchester, RS=Roslindale, RX=Roxbury, SB=South Boston, SD=South Dorchester, SE=South End (includes Chinatown), and WR=West Roxbury  
 DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

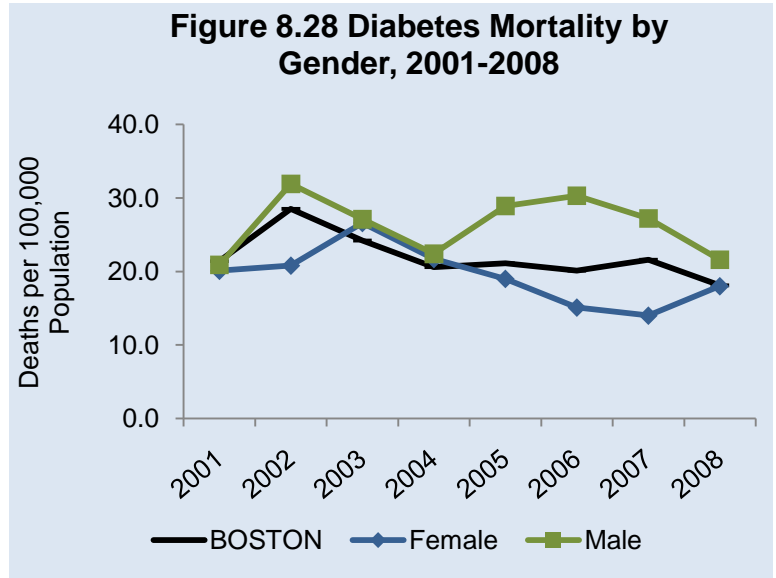
During the combined years 2006-2008, seven Boston neighborhoods had a higher average age-adjusted diabetes hospitalization rate than the overall Boston rate (1.2 per 1,000 population). Roslindale’s rate was the highest, followed by Roxbury’s rate.

Both the Roslindale rate and Roxbury rate were more than twice the overall Boston rate.

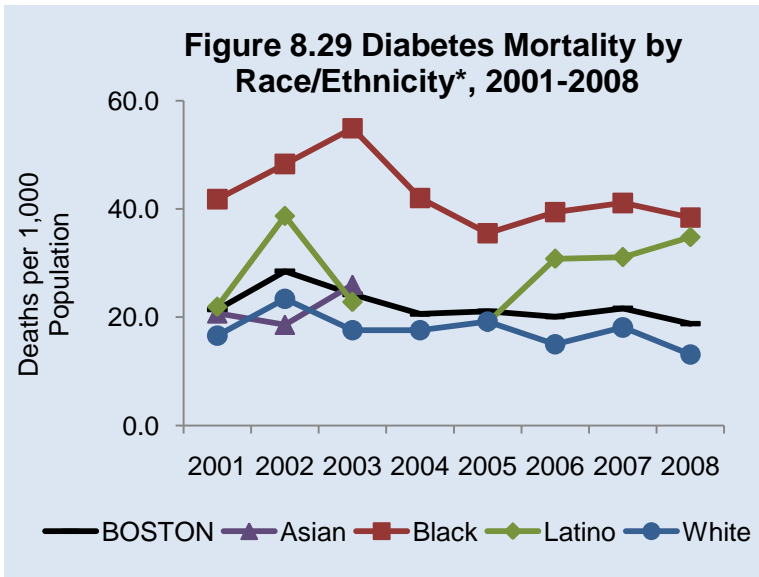
In 2007, diabetes was the seventh leading cause of death in the US (13).

The overall age-adjusted diabetes mortality rate for Boston residents in 2008 was 18.8 deaths per 100,000 population. From 2002 to 2008, the male diabetes mortality rate was generally higher than the female rate.

In 2008, the rate for males was 1.4 times the rate for females.



DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health



\*Too few deaths among Asians and Latino to permit presentation of rates for certain years.

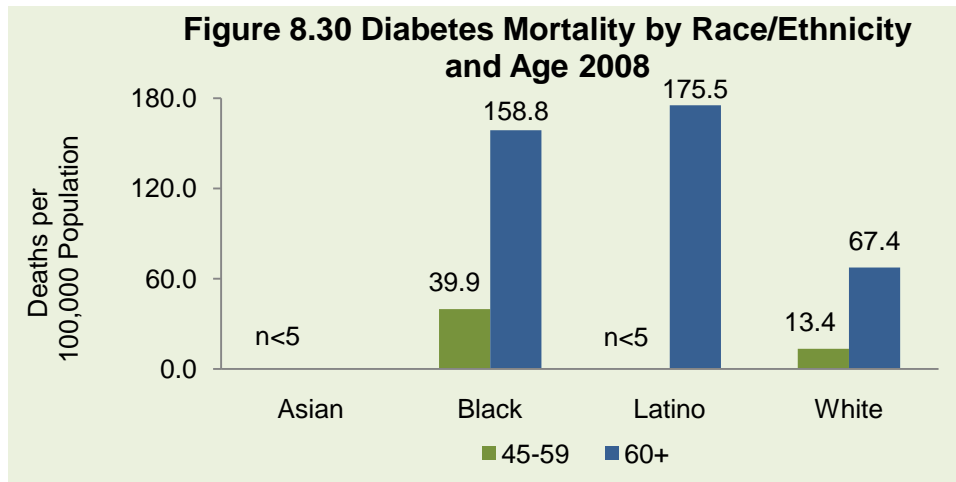
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

The Centers for Disease Control and Prevention (CDC) indicate that African Americans have a higher rate of death from diabetes than Whites (11).

From 2001 through 2008, Boston’s Black residents had the highest age-adjusted diabetes mortality rate among all racial/ethnic groups.

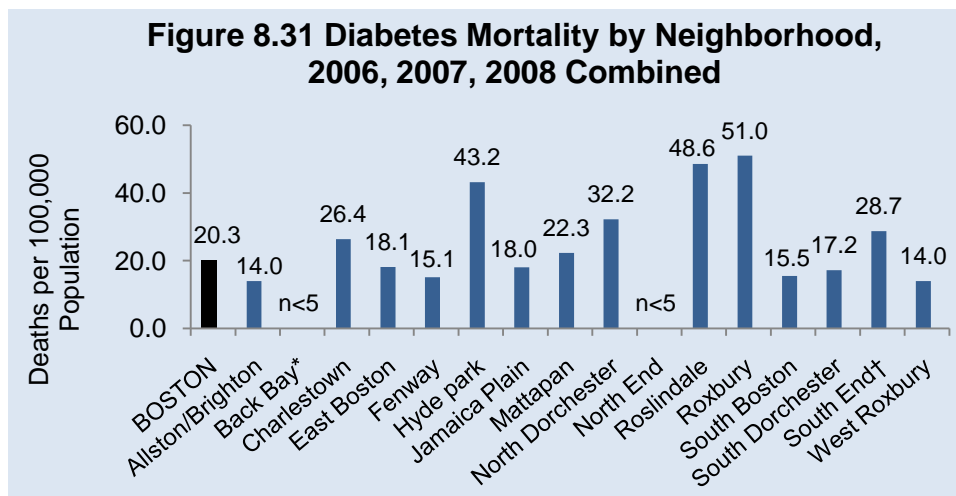
Between 2001 and 2008, the diabetes mortality rate decreased 8% for Blacks and 21% for Whites but increased 59% for Latinos. The overall Boston rate decreased 15% during the same time period.





DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

According to preliminary national data, in 2007, 96% of the diabetes deaths in the US were among individuals ages 45 and over (13). Among Boston adults in 2008, age-specific diabetes mortality rates were three times higher for Black residents ages 45-59 than for White residents of the same age group. Among residents ages 60 and over, Latinos had the highest rate and Blacks had the second highest; the age-specific diabetes mortality rate for Latino residents was 2.6 times higher than for White residents, and the rate for Black residents was 2.5 times higher than for White residents.



\*Includes Beacon Hill, Downtown, and the West End  
 †Includes Chinatown

DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

Among Boston neighborhoods with at least five diabetes deaths during the combined period of 2006-2008, Roxbury had the highest age-adjusted mortality rate. Two other neighborhoods, Roslindale and Hyde Park also had rates that were more than double the overall Boston rate.

Allston/Brighton and West Roxbury had the lowest age-adjusted diabetes mortality rates.

## What is Heart Disease?

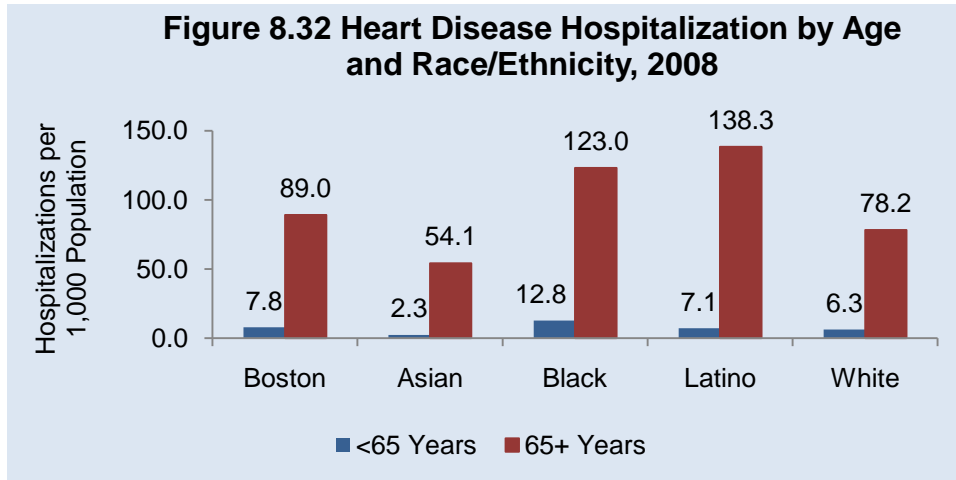
Heart disease is one of the leading causes of death for Boston residents. The term *heart disease* includes several heart conditions, such as coronary artery disease, angina, heart failure, and arrhythmias. The most common type of heart disease in the United States is coronary artery disease (CAD) (14). CAD is a narrowing of the blood vessels, which supply the heart and can lead to heart attack. Each type of heart disease can have different symptoms, although some symptoms are common to multiple conditions. Heaviness or pressure in the chest, shortness of breath, dizziness, sweating, and nausea are common symptoms of coronary artery disease. High blood pressure, high blood cholesterol, cigarette smoking, diabetes, and obesity are the most important risk factors for coronary artery disease (14).

## Population at greatest risk

Heart disease is the leading cause of death for both men and women in the US and accounts for about 30% of all deaths (11). It is also the leading cause of death for all racial and ethnic groups except for Asians and Pacific Islanders, for whom it is the second leading cause of death (11). In Boston, heart disease is the second leading cause of death for all residents overall.

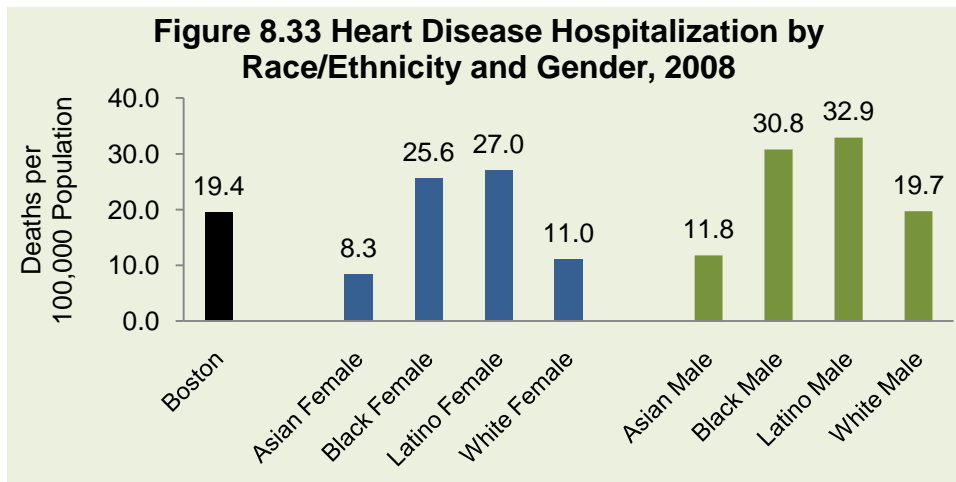
## Prevention

Preventing, treating or controlling high blood pressure, high blood cholesterol and diabetes, avoiding tobacco, reducing stress, exercising regularly, maintaining a healthy weight, and eating nutritious food can help prevent heart disease (15). Regulations that eliminate artificial trans-fats from prepared foods support heart-healthy choices.



DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

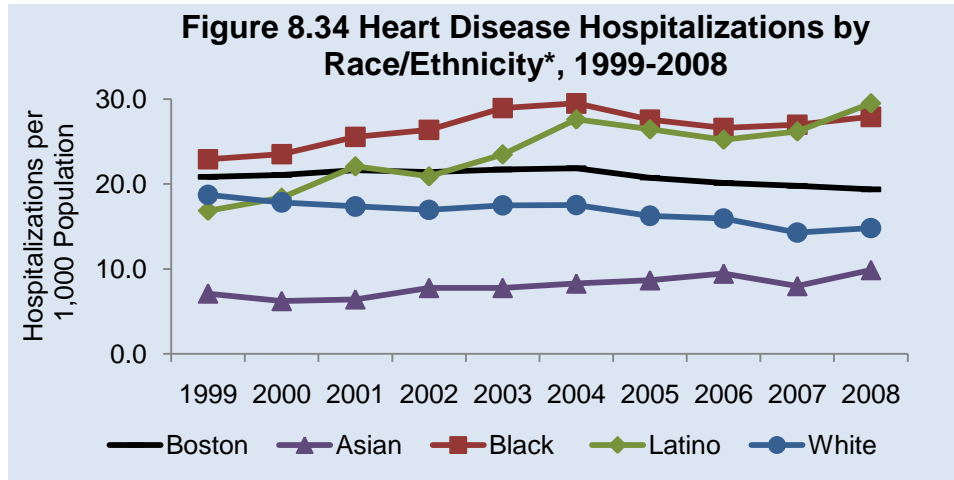
In 2008, Latino adults ages 65 and older had the highest rate of heart disease hospitalizations. This rate was 55% higher than the Boston overall rate for adults in the same age group. Black adults ages 65 and older had the second highest heart disease hospitalization rate.



DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

In 2008, within each racial/ethnic group, males had a higher rate of heart disease hospitalization than females.

Among females, Latinos had the highest rate of heart disease hospitalizations. The Latino rate was more than three times the rate for Asians and about 2.5 times the rate for White females. Black females had the second highest rate of heart disease hospitalizations. Among males, Latinos had the highest rate of heart disease hospitalizations followed by Blacks. Both rates were two and half times the rate for Asian males.



\*In 2007, hospital discharge data were adversely impacted by missing race/ethnicity information (especially Latino identification) for many discharges. Please consider these effects when interpreting differences across years.  
DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

Black residents consistently had the highest heart disease hospitalization rate from 1999 through 2007, whereas in 2008 Latino residents had the highest heart disease hospitalization rate.

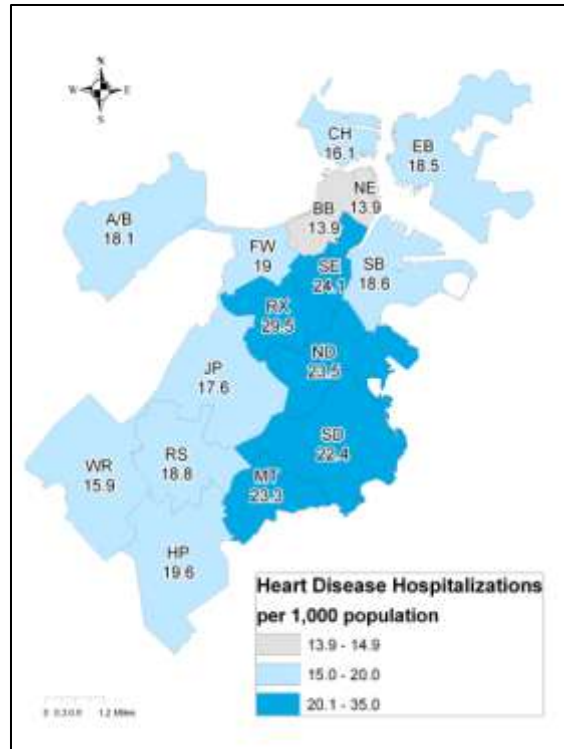
From 1999 to 2004, the rate for Latinos increased 87%. From 2004 to 2008, the Latino rate was similar to the higher rate experienced by Black residents. From 2001 to 2008, Asians and Whites had lower heart disease hospitalization rates compared to Blacks and Latinos. However the rate for Asians has increased by 55% since 2001 while the rate for Whites has decreased by 18%.

During the combined years 2006-2008, five Boston neighborhoods had a higher average annual heart disease hospitalization rate than the average overall Boston rate of 19.8 per 1,000 population.

Roxbury's rate was the highest, followed by the South End, North Dorchester, Mattapan, and South Dorchester.

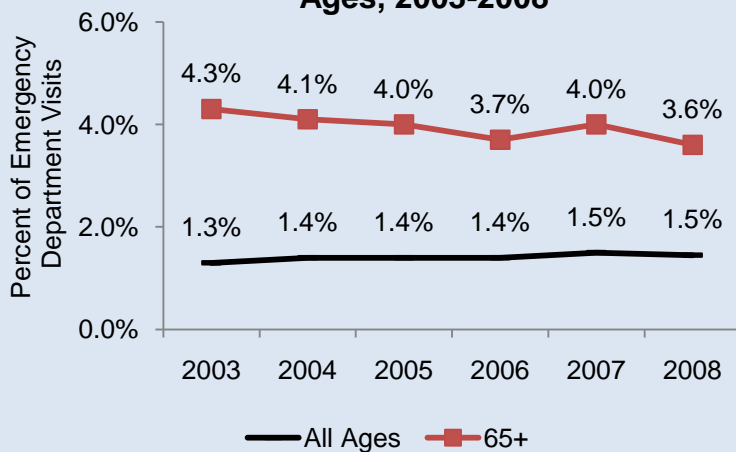
The rate for Roxbury was more than 50% higher than the overall Boston rate.

**Figure 8.35 Heart Disease Hospitalizations by Neighborhood, 2006, 2007 and 2008 Combined**



DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

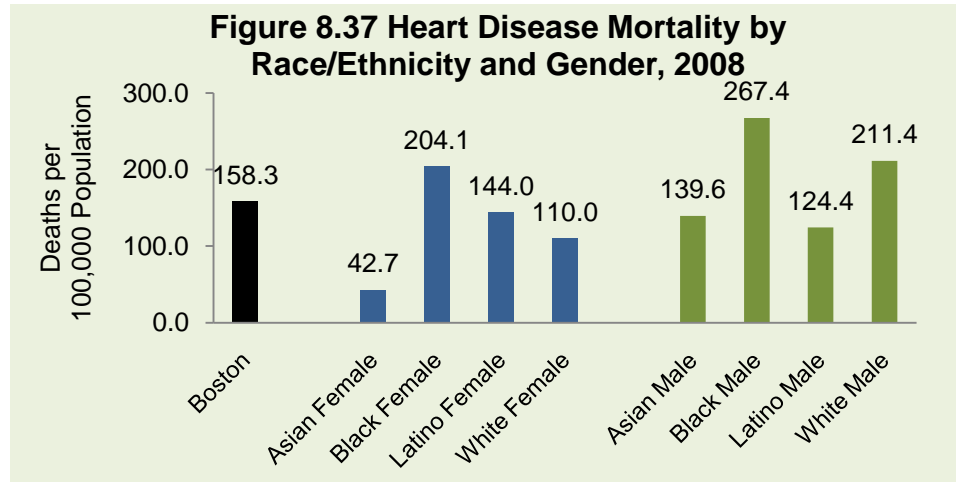
**Figure 8.36 Heart Disease Emergency Department Visits for 65+ years and All Ages, 2003-2008**



The percentage of annual emergency department visits due to heart disease for persons 65 and older was consistently higher than all other ages between 2003 and 2008.

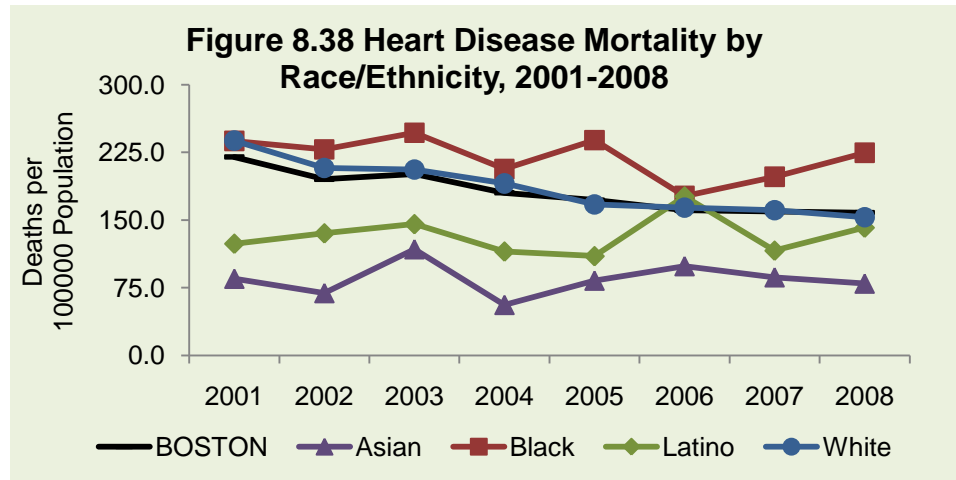
The number of heart disease emergency department visits for persons 65 and older decreased about 14% from 2003 to 2008.

DATA SOURCE: Emergency Department Visit Data Base, Massachusetts Division of Health Care Finance and Policy



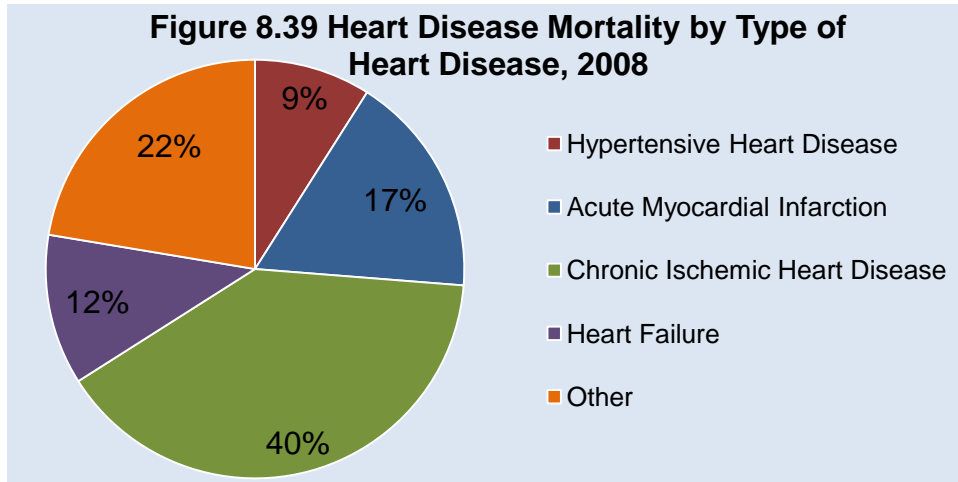
DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

In 2008, about 80% of heart disease mortality was reported among Boston residents age 65 and older (data not shown). Except for Latinos, within each racial/ethnic group the age-adjusted heart disease mortality rate was higher for males than for females.



DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

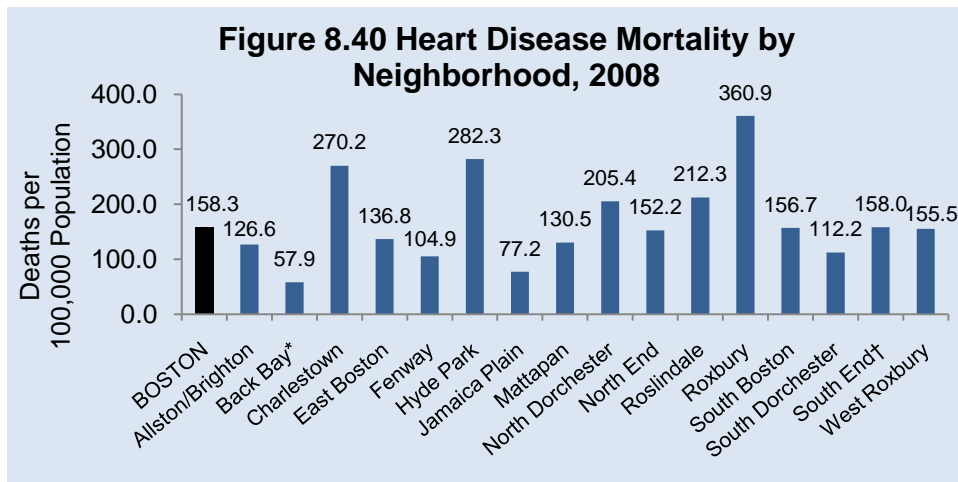
With the exception of 2006, the heart disease mortality rate was highest for Black residents between 2001 and 2008. Asians consistently had the lowest age-adjusted heart disease mortality rate across all years.



DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

In 2008, about 78% of heart disease mortality was attributed to four types of heart disease: chronic ischemic heart disease, acute myocardial infarction, heart failure, and hypertensive heart disease.

Chronic ischemic heart disease accounted for 40% of heart disease mortality in 2008.



\*Includes Beacon Hill, Downtown, and the West End

†Includes Chinatown

DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

Among Boston neighborhoods, Roxbury had the highest age-adjusted heart disease mortality rate followed by Hyde Park, Charlestown, Roslindale and North Dorchester. These five neighborhoods had a higher heart disease mortality rate compared to overall Boston.

Back Bay had the lowest heart disease mortality rate followed by Jamaica Plain.



## What is Hypertension (high blood pressure)?

As blood is pumped through the arteries by the heart, it generates force against the walls of the arteries. This force creates pressure inside the arteries. This pressure is known as blood pressure (16). Blood pressure is recorded as two numbers: the higher number is called *systolic pressure* and the lower number is called *diastolic pressure*. Normal values are less than 120 mmHg of systolic blood pressure and less than 80 mmHg of diastolic blood pressure (16). The Centers for Disease Control and Prevention (CDC) defines high blood pressure or hypertension for adults “as a systolic blood pressure of 140 mmHg or higher or a diastolic blood pressure of 90 mmHg or higher.” A person with high blood pressure may not have any symptoms until they develop a serious, often life-threatening, complication. These complications, which include heart disease, heart attacks, stroke, heart failure, kidney disease and peripheral artery disease, can be prevented through early diagnosis and management (16,17). In Boston, heart disease and stroke are among the top five leading causes of death.

regular check-ups with a health care provider can result in the diagnosis and management of high blood pressure prior to the development of complications.

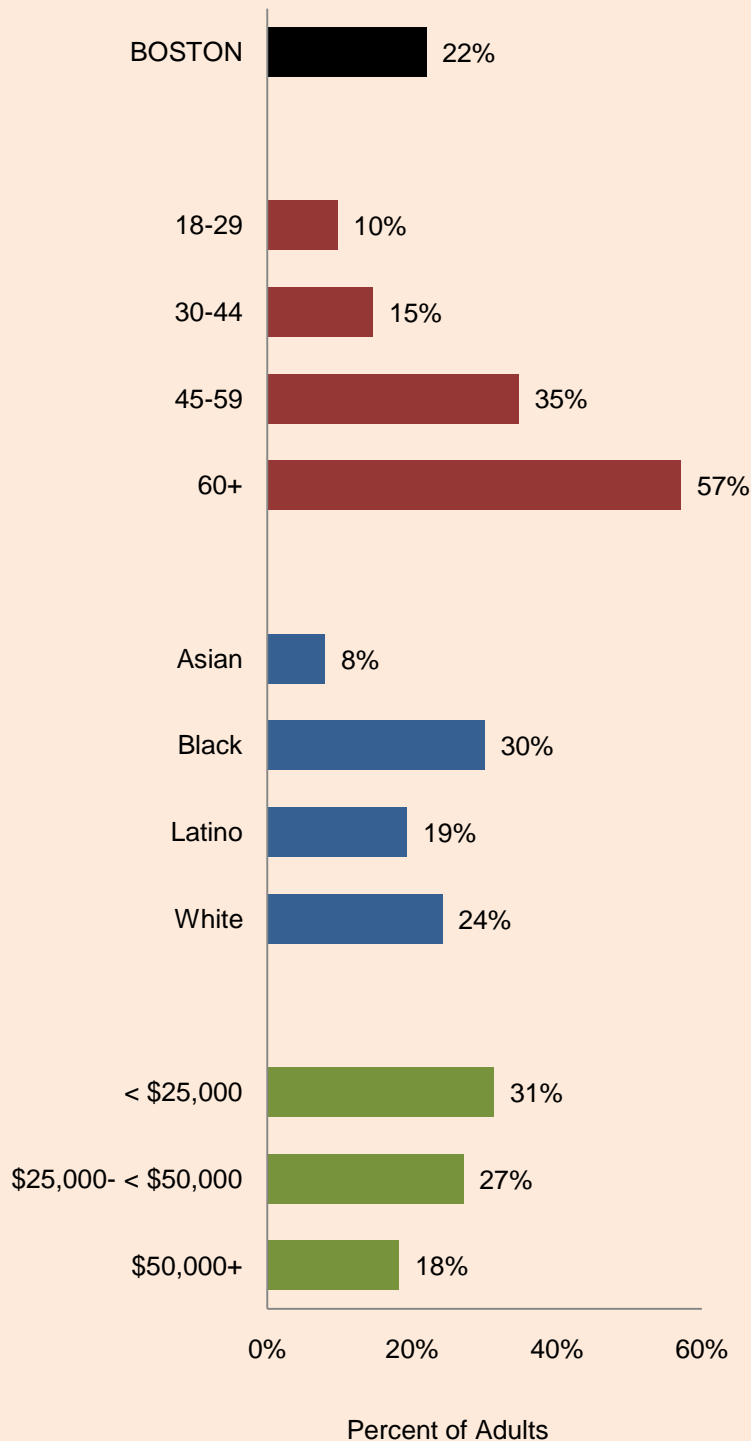
## Population at greatest risk

African Americans have a higher prevalence of high blood pressure compared to other racial and ethnic populations (17). Obese individuals, heavy drinkers, and women taking birth control pills are also at increased risk (16).

## Prevention

Maintaining a healthy lifestyle is the key to keeping blood pressure normal. Eating a healthy diet, doing regular physical activity, maintaining a healthy weight, avoiding tobacco and excess alcohol consumption, and controlling diabetes can help to maintain a healthy blood pressure (16). In addition,

**Figure 8.41 Adults with High Blood Pressure, 2008**



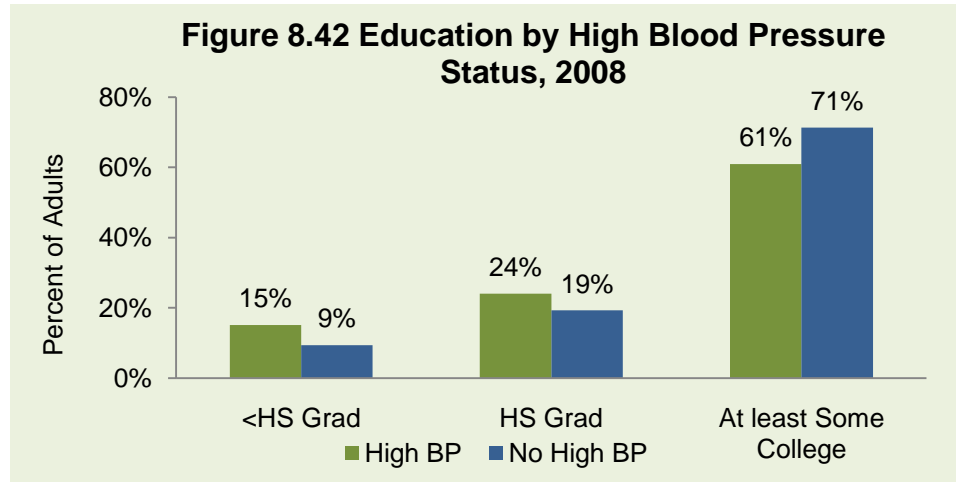
According to the American Heart Association, in 2006, 1 in 3 adults, (approximately 75 million people in the US) had high blood pressure (18).

High blood pressure is a disease that increases with age, and over half of US adults ages 60 and over have high blood pressure (19). In Boston, a higher percentage of adults ages 45 to 59 reported having high blood pressure compared to younger age groups. A higher percentage of adults 60 and over reported having high blood pressure compared to the younger age groups.

National data demonstrate that Black and Latino adults are disproportionately affected by high blood pressure experiencing higher rates compared to White adults (19). However, Boston data produced different results. In 2008, a higher percentage of Black and White adults reported having high blood pressure compared to Asian adults.

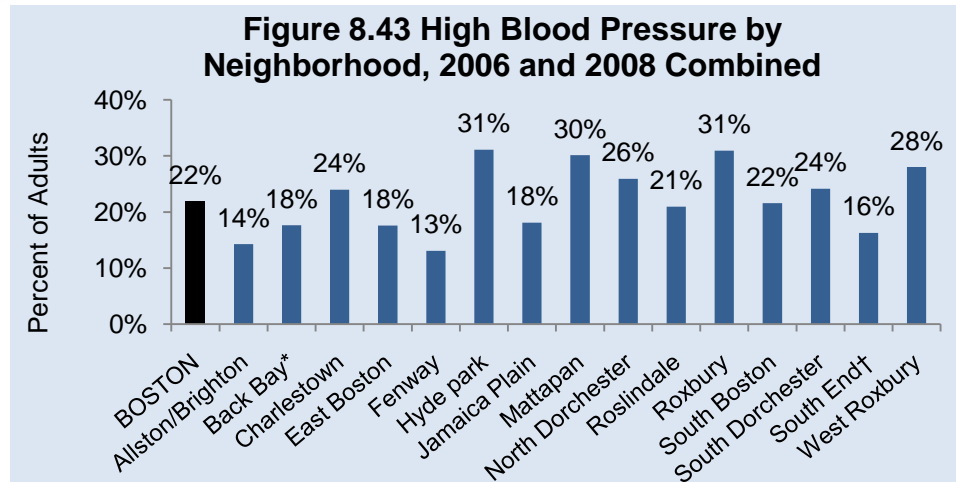
The percentage of Boston adults who reported having high blood pressure was higher for those with an annual household income of less than \$25,000 and those with an income of \$25,000 to less than \$50,000 compared to adults whose annual household income was \$50,000 or more.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2008, a higher percentage of adults with high blood pressure had less than a high school education in comparison to adults without high blood pressure. A lower percentage of adults with high blood pressure had completed at least some college in comparison to adults without high blood pressure.

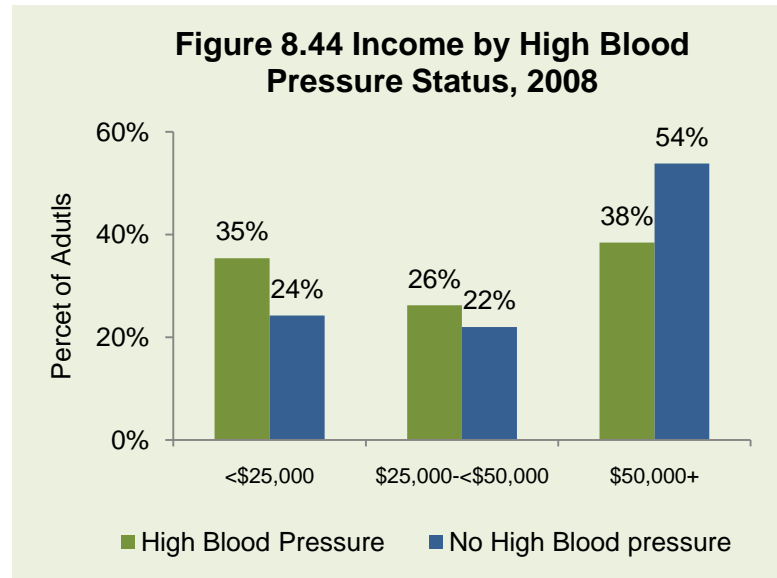


\*Includes Beacon Hill, Downtown, North End and the West End  
 †Includes Chinatown  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2006 and 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

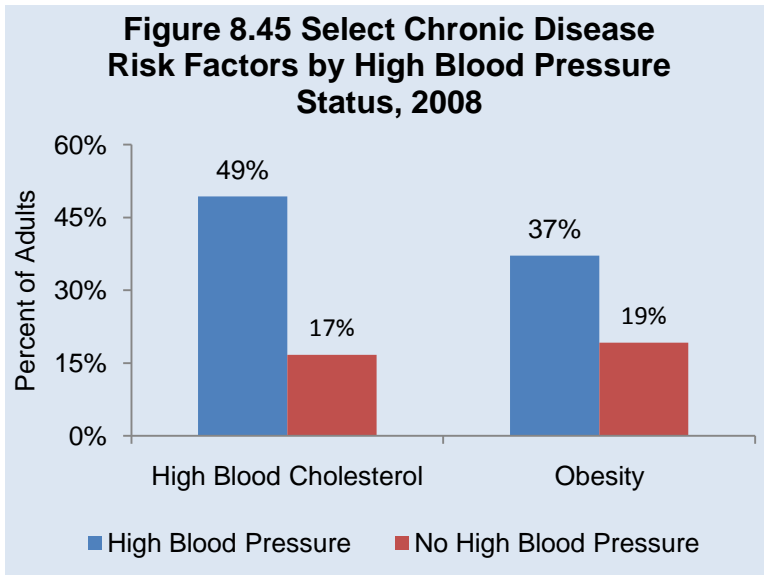
A higher percentage of Roxbury residents reported having high blood pressure than Boston residents overall. The percentage of adults with high blood pressure from Charlestown, Hyde Park, Mattapan, North Dorchester, South Dorchester, and West Roxbury was statistically similar to Boston overall.

A lower percentage of Allston/Brighton, Fenway, and South End Boston residents reported having high blood pressure than Boston residents overall.

In comparison to adults without high blood pressure, a higher percentage of Boston adults with high blood pressure reported annual household incomes of less than \$25,000 and a lower percentage reported incomes of \$50,000 or more.



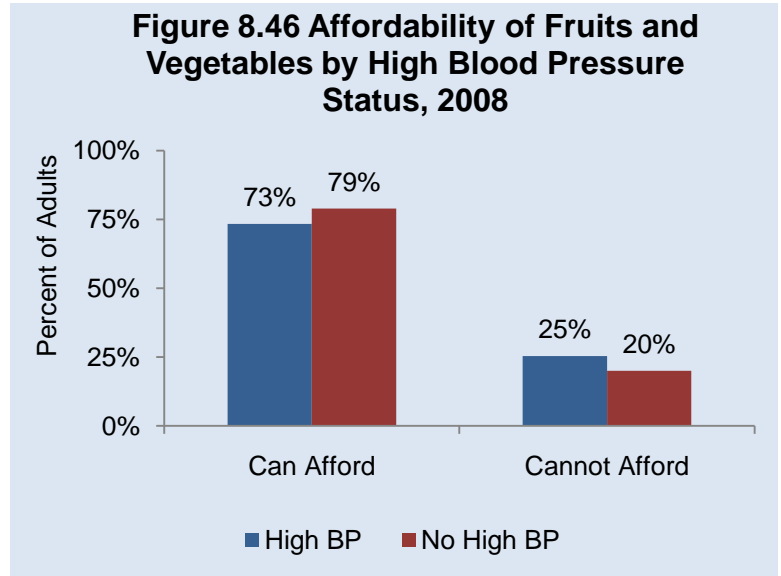
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



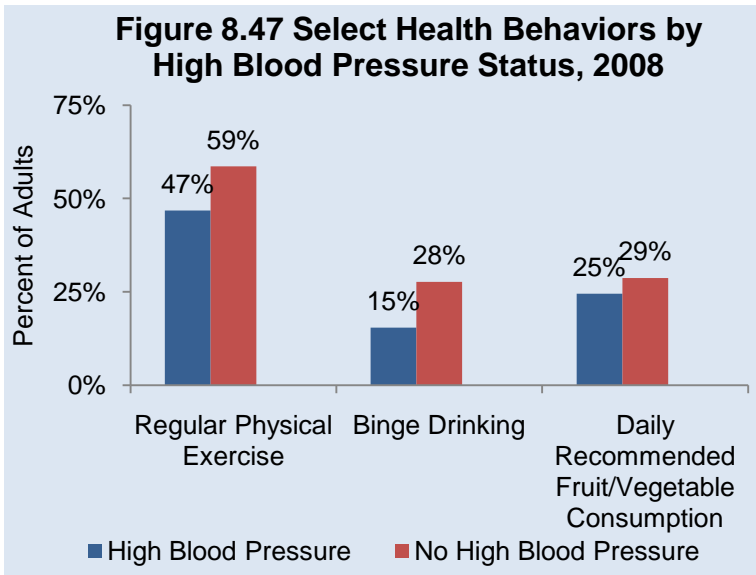
Higher percentages of Boston adults with high blood pressure reported having high blood cholesterol and were considered obese than Boston adults without high blood pressure.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2008, the percentage of adults who reported that the price of fruits and vegetables where they shop was affordable was statistically similar among adults with and without high blood pressure. Some respondents neither agreed nor disagreed (data not shown).



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

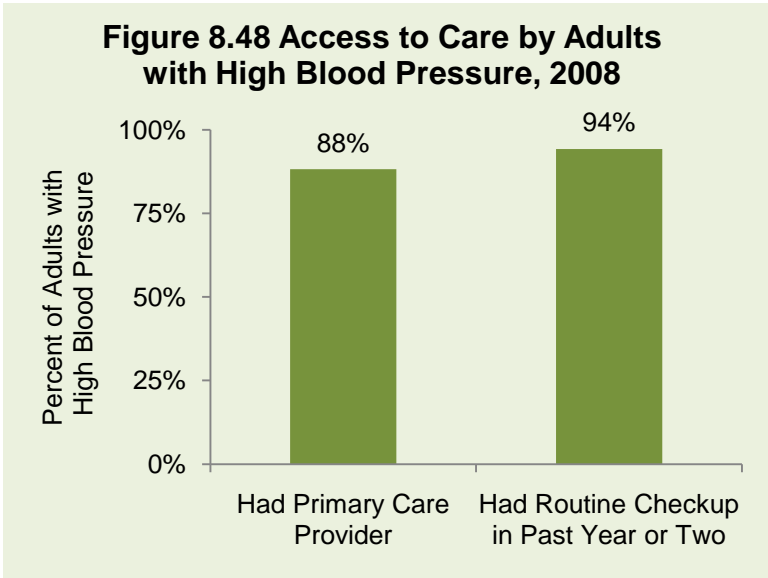


A lower percentage of Boston adults with high blood pressure reported regular physical exercise and binge drinking in comparison to adults without high blood pressure.

The percentage of adults who reported eating the recommended daily amount of fruits and vegetable was statistically similar among adults with and without high blood pressure.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

**Figure 8.48 Access to Care by Adults with High Blood Pressure, 2008**

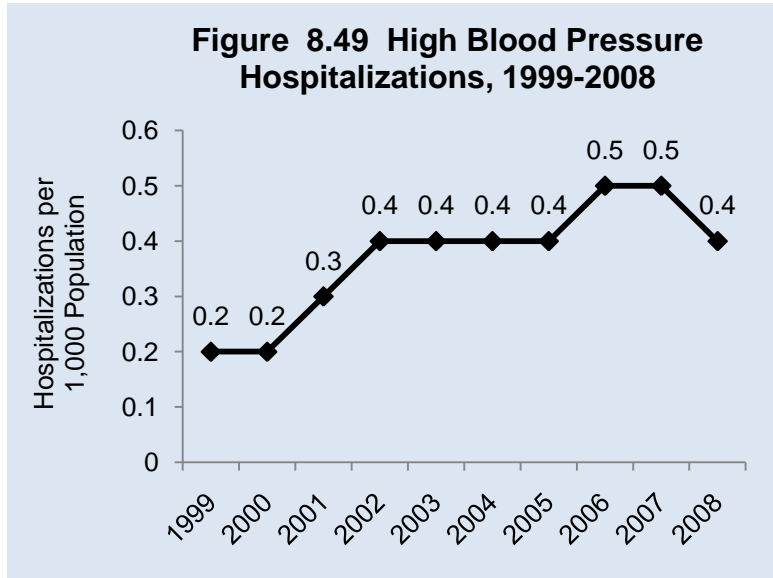


In 2008, among adults with high blood pressure, 88% reported having a primary care provider, and 94% reported having a routine checkup in the past year or two.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

The age-adjusted high blood pressure hospitalization rate for Boston residents, based on primary diagnosis, has generally remained stable.

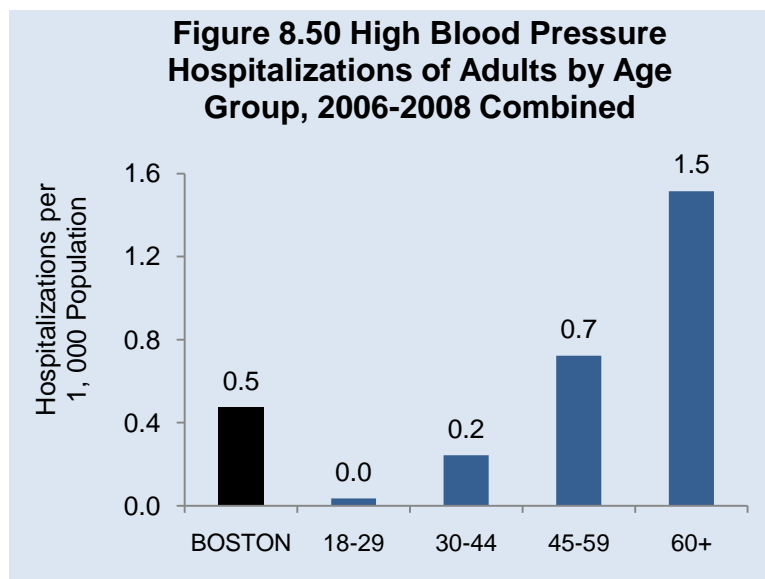
**Figure 8.49 High Blood Pressure Hospitalizations, 1999-2008**



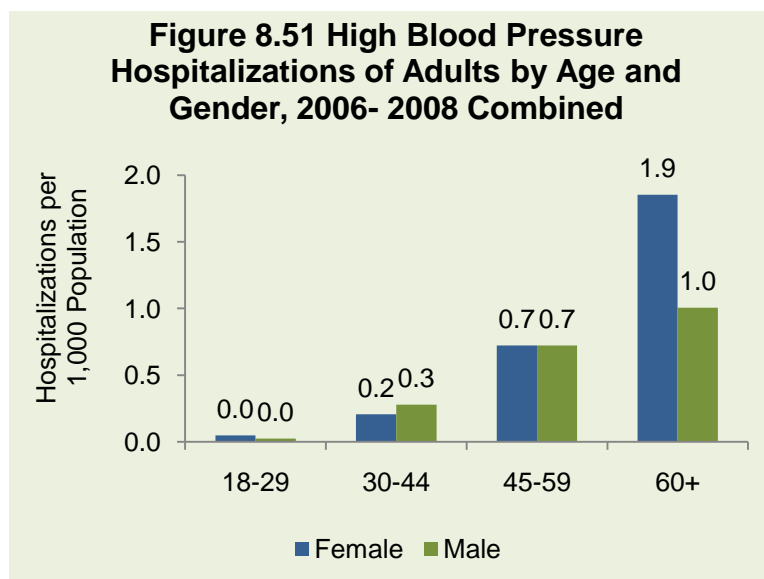
DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

From 2006 to 2008, there were 670 adult resident hospital discharges with high blood pressure as the primary diagnosis. Eighty-two percent of those discharges were among Boston residents ages 45 and over (data not shown).

Age-specific high blood pressure hospitalization rates for adults increased with age. Boston adults ages 60 and over had the highest rate which was approximately twice the rate for adults ages 45-59.



DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

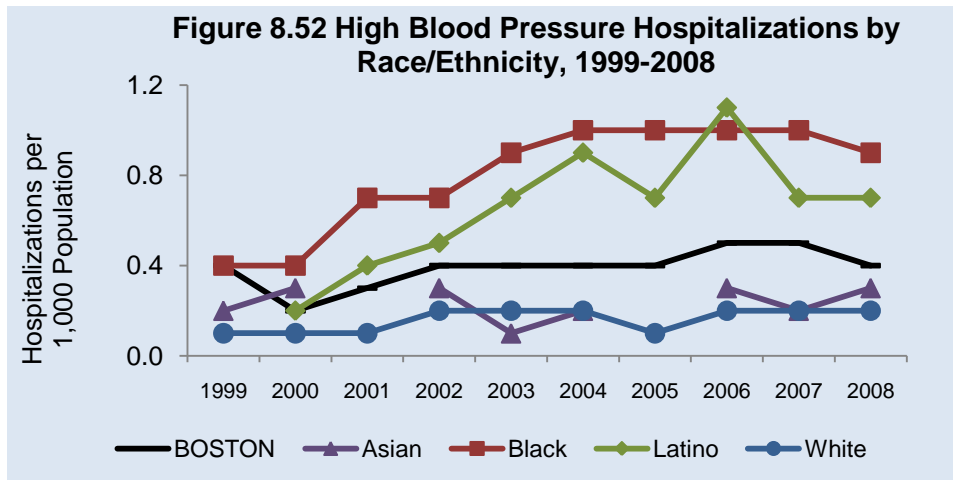


During the period 2006-2008, the average annual age-specific high blood pressure hospitalization rate for Boston females ages 60 and over was almost double the rate for adult males from the same age group.

The age-specific high blood pressure hospitalization rates were similar for males and females within the other age groups.

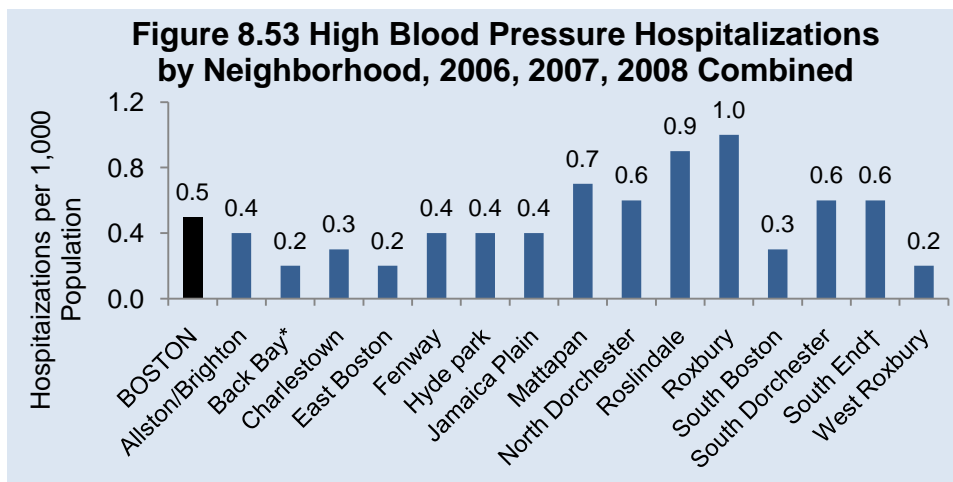
DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy





DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

In 2008, the high blood pressure hospitalization rate for Black residents was similar to the rate for Latinos, but three times the rate for Asians and four and a half times the rate for Whites. Every year from 1999 through 2008, except 2006, Boston’s Black residents had the highest age-adjusted high blood pressure hospitalization rate in comparison to other racial/ethnic groups. The 2008 rate for Blacks represented a 125% increase from 1999, but decreased 10% from 2007. The rate for Latinos increased 450% from 2000 to 2006 and appeared to have decreased 36% from 2006 to 2007. However, the 2007 rate was based on an incomplete reporting year for Latinos.



\*Includes Beacon Hill, Downtown, North End and the West End

†Includes Chinatown

DATA SOURCE: Acute Case Mix Files, Massachusetts Division of Health Care Finance and Policy

During the period 2006-2008, Roxbury, Roslindale, and Mattapan had the highest average annual age-adjusted hospitalization rates for high blood pressure.

## How are Overweight and Obesity defined?

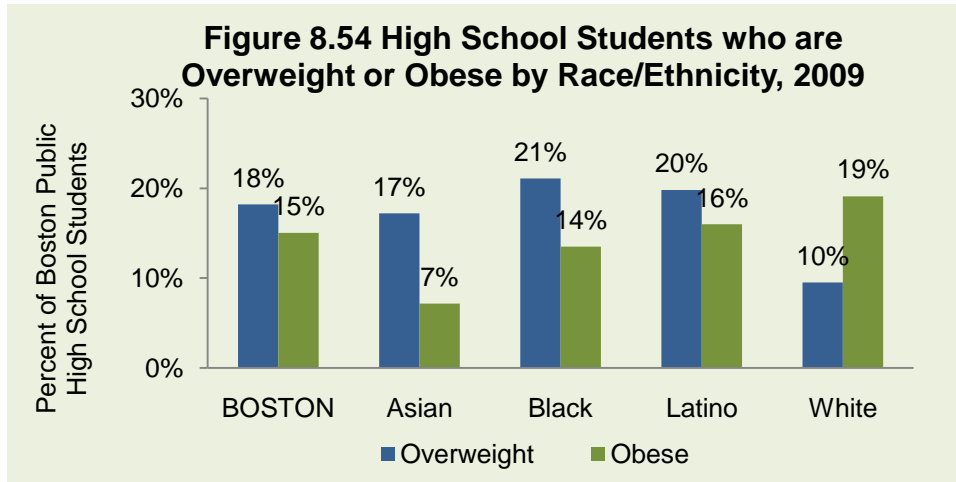
The Centers for Disease Control and Prevention (CDC) define overweight and obesity “as ranges of weight that are greater than what is generally considered healthy for a given height” (20). A measure called the body mass index (BMI) is used to evaluate overweight and obesity. BMI is calculated using an individual’s weight and height, and is a more reliable measure of body fat than weight alone. For adults, overweight is defined as a BMI between 25 and 29.9 and obese is defined as a BMI of 30 or higher (20). For adolescents, a BMI-for-age percentile is determined. Overweight is defined as a BMI at or between the 85th and 95th percentile, and obese is defined as a BMI at or above the 95th percentile for children of the same age and sex (21).

## Population at greatest risk

All people are at risk of becoming overweight or obese.

## Prevention

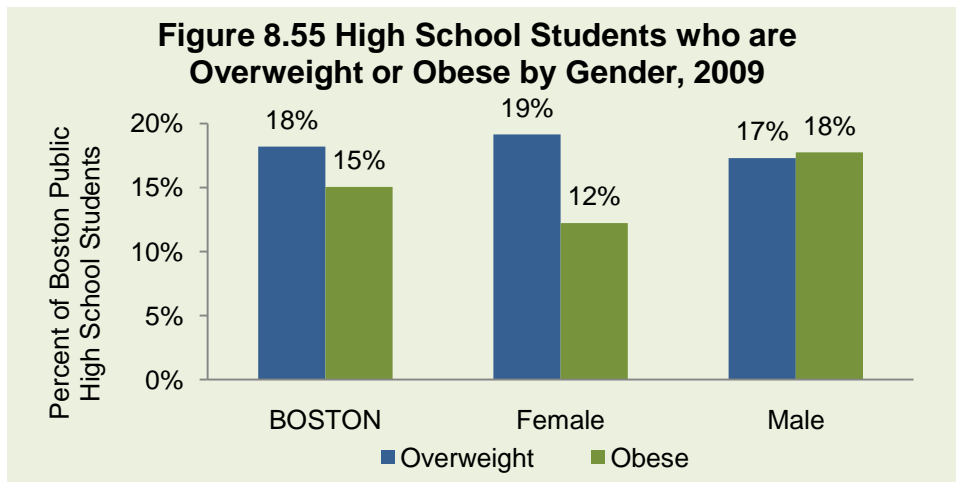
Adopting health-promoting behaviors including regular physical activity and maintaining a healthy diet with appropriate caloric consumption may help maintain or reduce an individual’s weight (22). In addition to individual behaviors, communities and local agencies can facilitate maintaining a healthy weight by ensuring the availability of fresh fruits and vegetables in every community and regulating the food industry using tools such as food labeling regulations, and banning the use of artificial trans-fats.



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

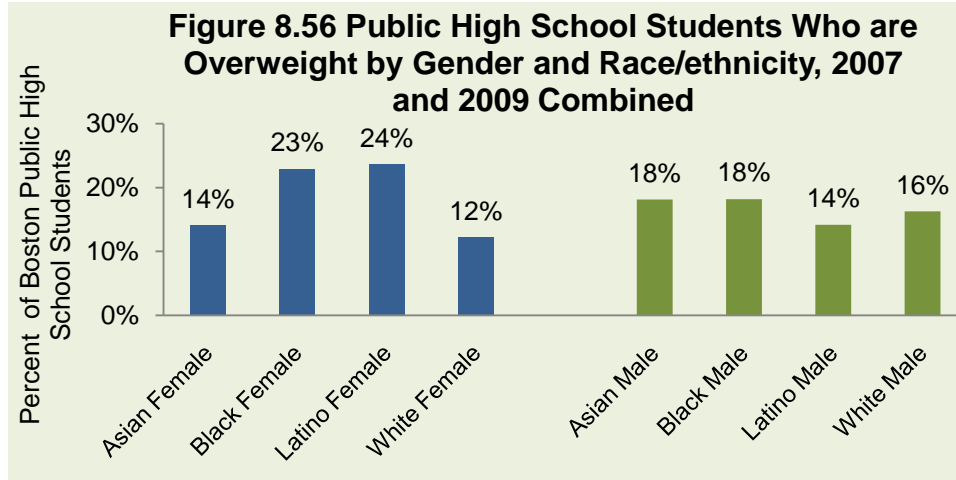
In 2009, a higher percentage of Black and Latino high school students were overweight in comparison to White students.

The percentage of obese students was statistically similar across all racial/ethnic groups.



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

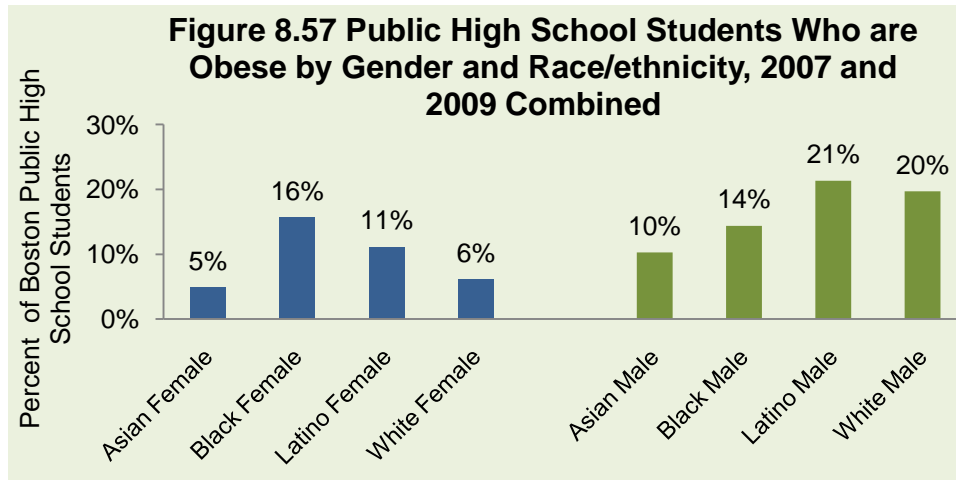
There were no significant differences in the percentages of overweight and obese students by gender.



DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

A higher percentage of Black and Latino female students were overweight in comparison to White female students.

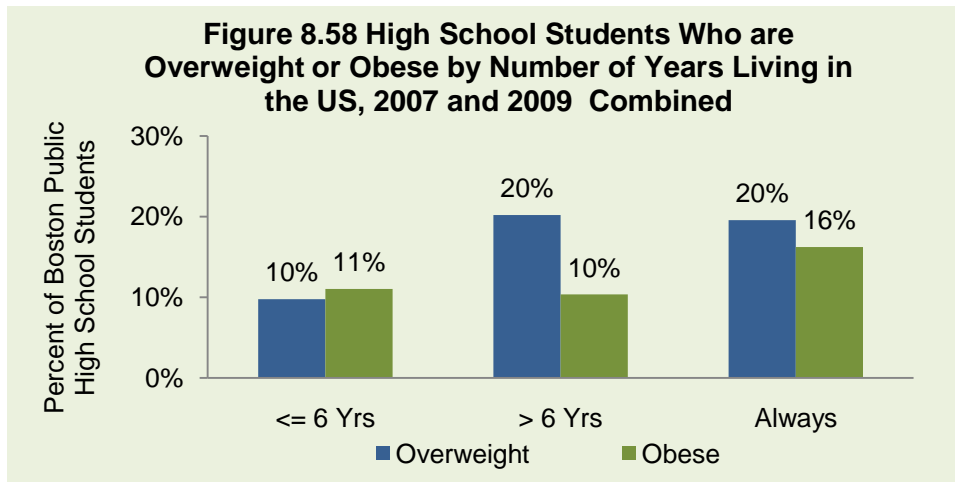
The percentage of overweight male students was statistically similar across racial/ethnic groups.



DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

A higher percentage of Black female students were obese in comparison to Asian and White female students.

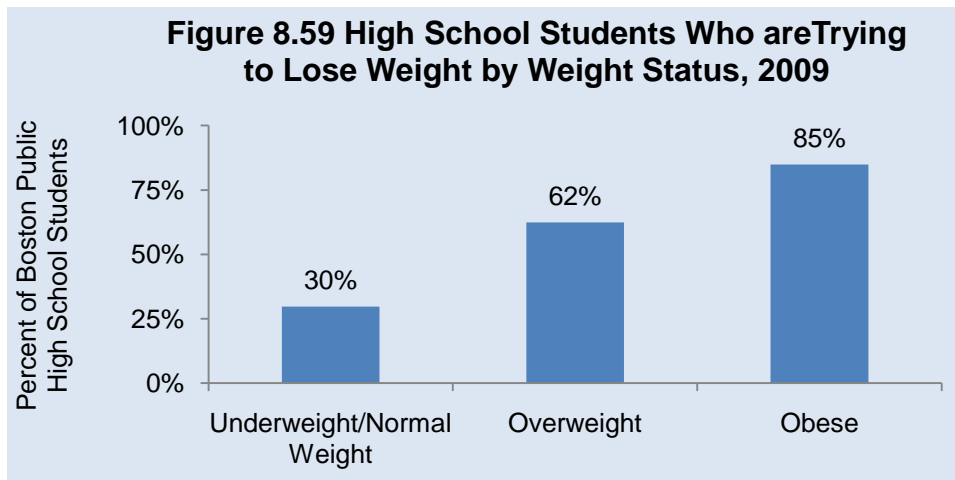
A higher percentage of Latino male students were obese in comparison to Asian male students.



DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

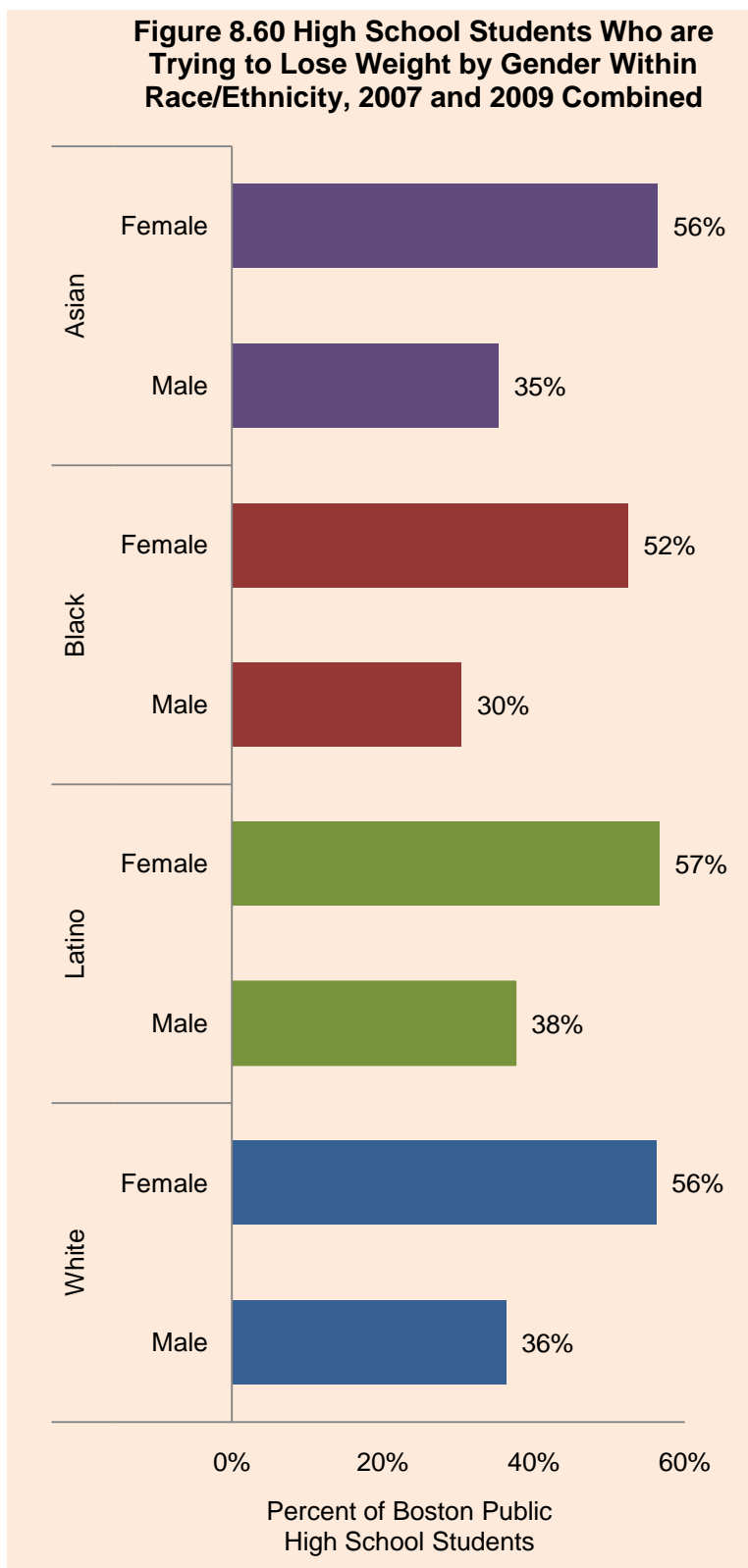
A higher percentage of students who had always lived in the US and who had lived in the US for more than six years were considered overweight in comparison to students who had lived in the US for six or fewer years.

A higher percentage of students who had always lived in the US were considered obese in comparison to students who had lived in the US for more than six years, but not always.



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

In 2009, 62% of overweight and 85% of obese high school students reported that they were trying to lose weight. Thirty percent of underweight/normal weight high school students also reported trying to lose weight.

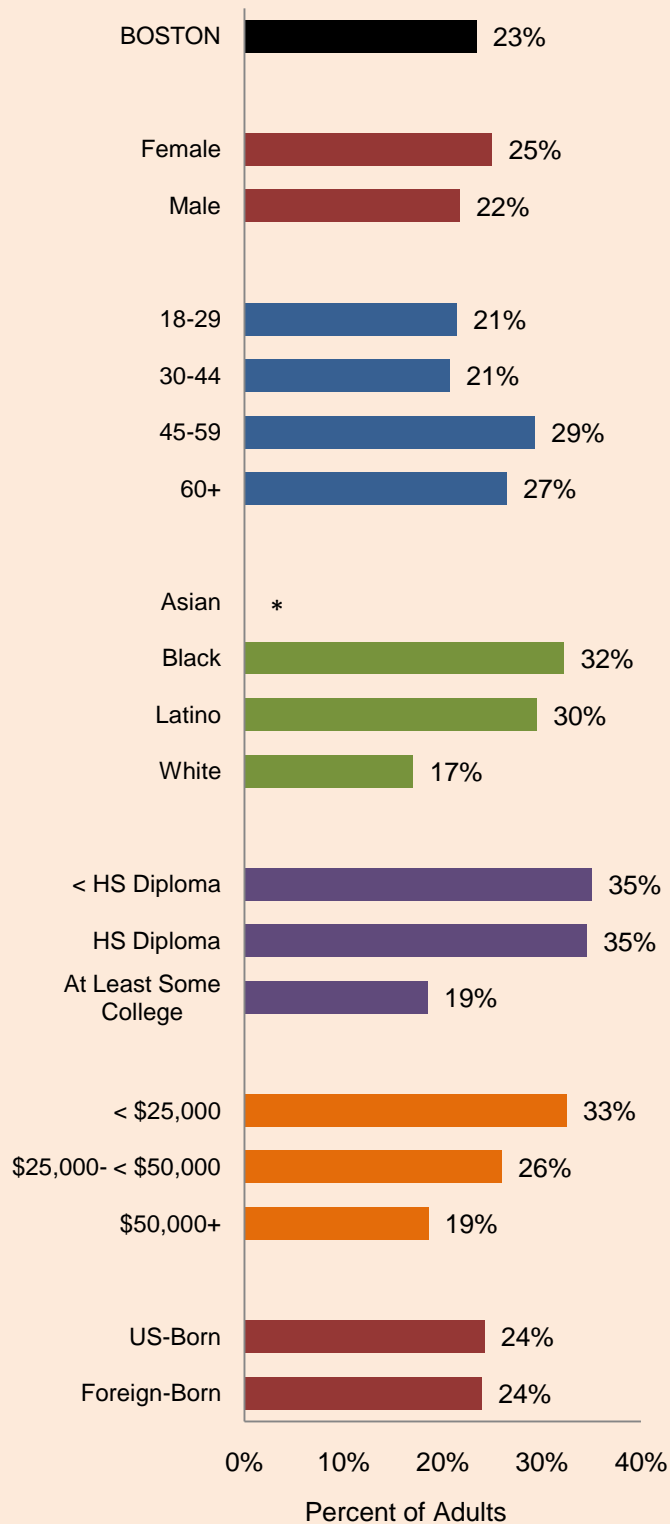


Within each racial/ethnic group, a higher percentage of female high school students reported trying to lose weight in comparison to male students.

Within gender, the percentage of students who reported trying to lose weight was statistically similar across all racial/ethnic groups.

DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavioral Surveillance System (YRBS), Centers for Disease Control and Prevention (CDC)

**Figure 8.61 Obesity in Adults by Selected Indicators, 2008**



In 2008, 23% of Boston adults were obese.

There were no significant differences in percentage of adults who were obese by gender.

A higher percentage of adults in the 45-59 age group were obese compared to adults in the 30-44 age group.

A higher percentage of Black and Latino residents were obese compared to White residents.

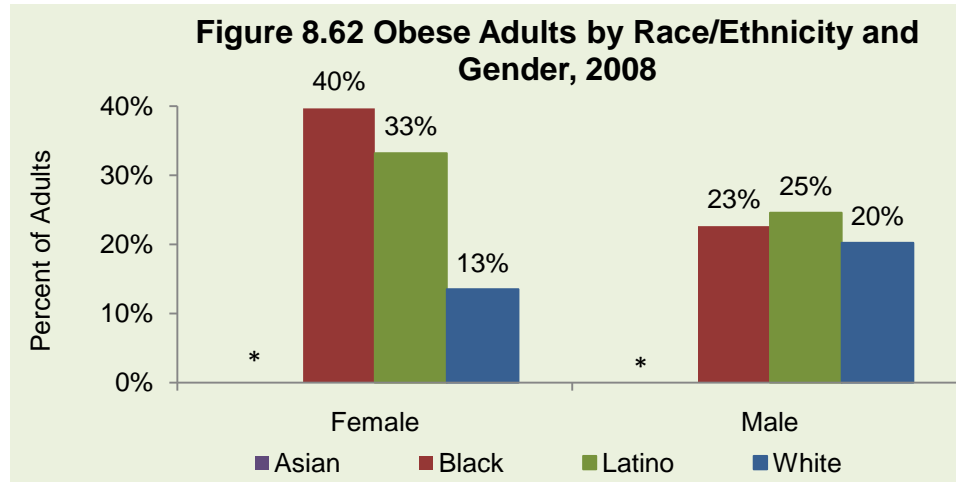
A higher percentage of adults with less than a high school diploma and adults with a high school diploma were obese compared to adults with at least some college education.

A higher percentage of residents with a household income of less than \$25,000 were obese compared to residents with a household income of \$50,000 or more.

There was no difference in the percentage of US-born or foreign-born obese adults.

\*Insufficient sample size for Asians  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

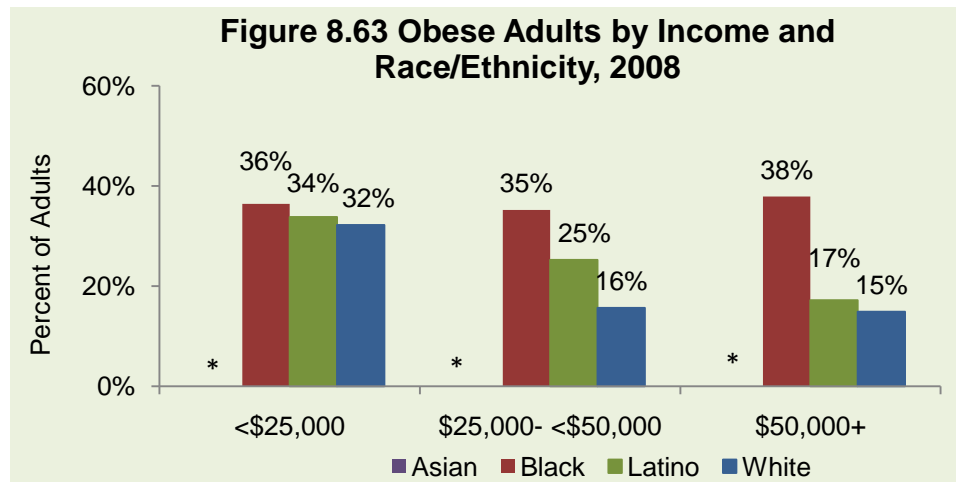




\*Insufficient sample size for Asians  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2008, a higher percentage of Black and Latino females were obese compared to White females.

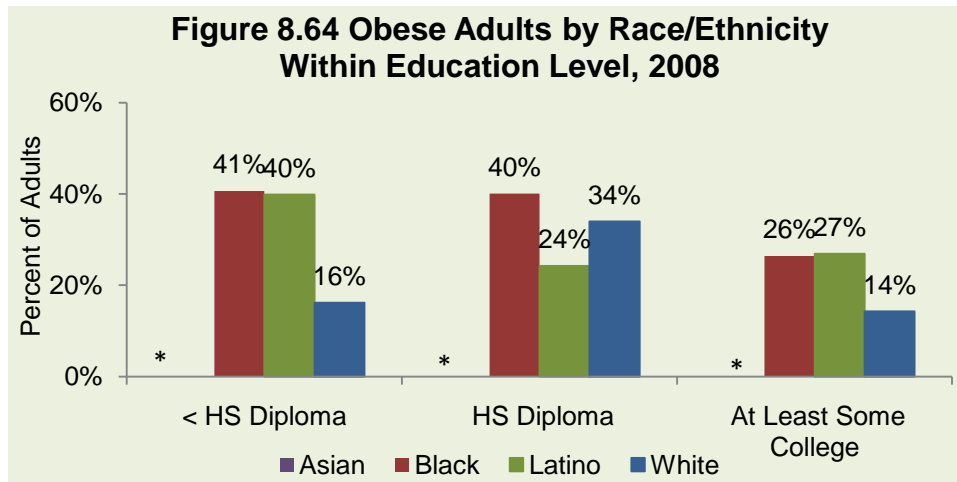
There were no significant differences among males.



\*Insufficient sample size for Asians  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Across racial/ethnic groups the percentage of adults who were obese and reported a household income of less than \$25,000 per year was statistically similar.

Compared to White adults in the same household income group, a higher percentage of Black adults with income between \$25,000 and \$50,000 or income of \$50,000 or more per year were obese.

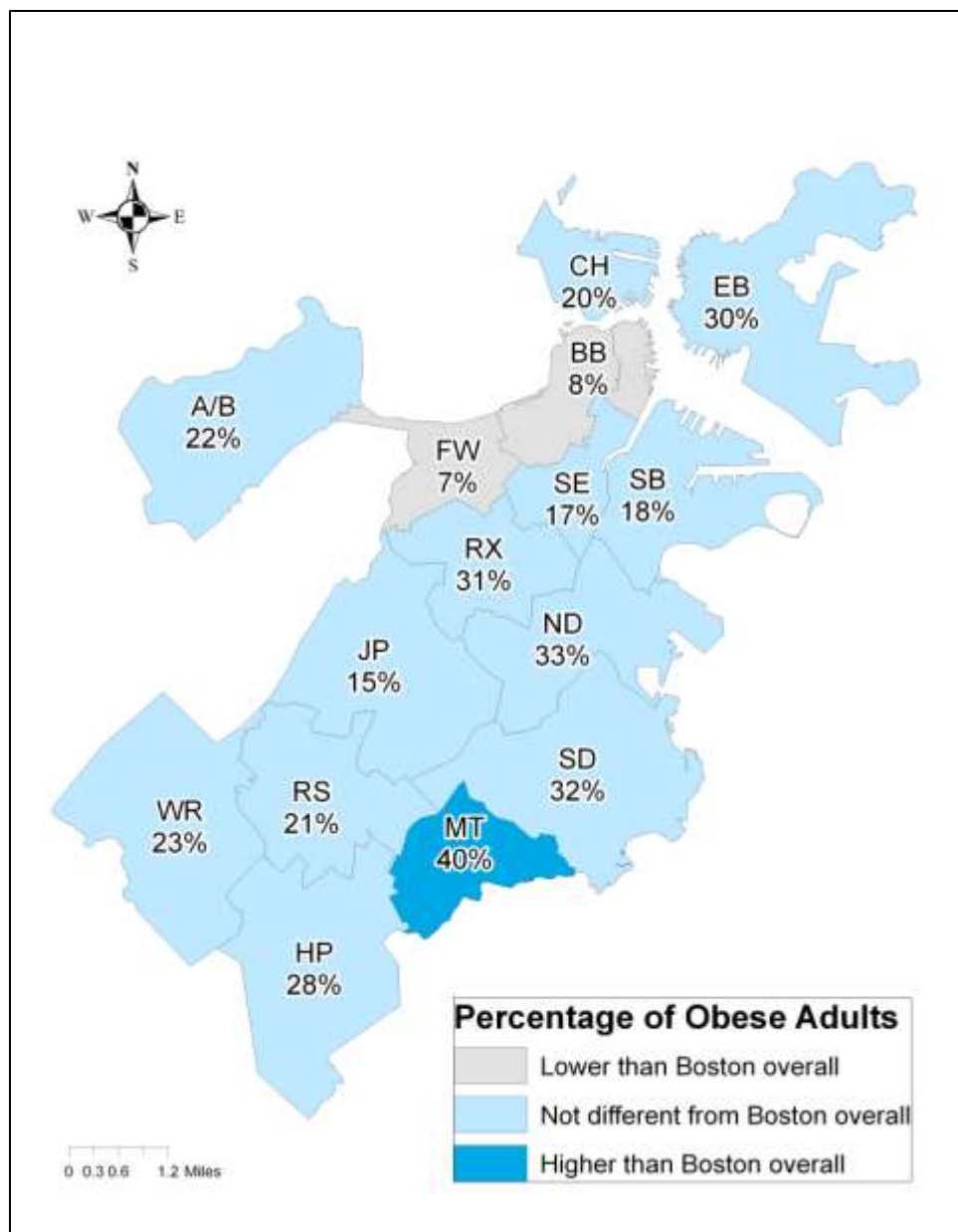


\*Insufficient sample size for Asians  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

A lower percentage of White adults with at least some college education were obese in comparison to White adults with a high school diploma.

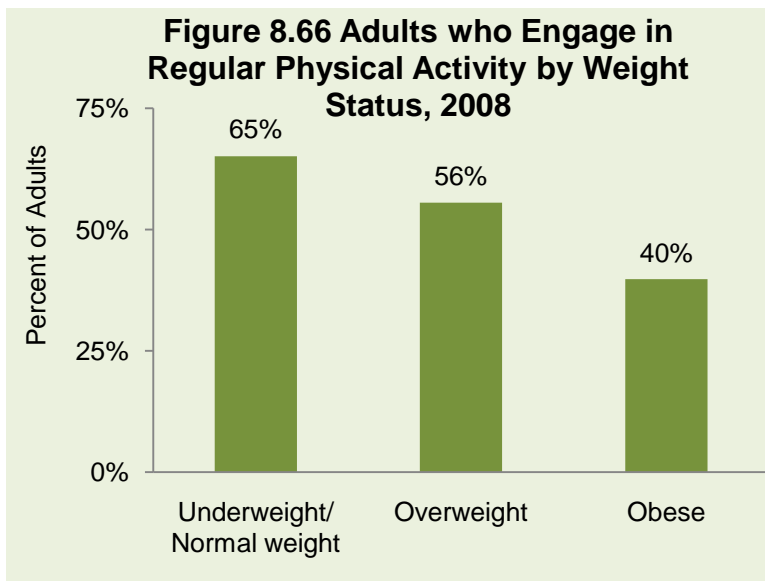
Compared to Black and Latino adults, a lower percentage of White adults with at least some college education were obese.

**Figure 8.65 Obese Adult Residents by Neighborhood, 2008**



ABBREVIATIONS KEY: A/B=Allston/Brighton (includes Beacon Hill, Downtown, North End and West End), BB=Back Bay, CH=Charlestown, EB=East Boston, FW=Fenway, HP=Hyde Park, JP=Jamaica Plain, MT=Mattapan, ND=North Dorchester, RS=Roslindale, RX=Roxbury, SB=South Boston, SD=South Dorchester, SE=South End (includes Chinatown), and WR=West Roxbury  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission

The citywide percentage of obese adults was 23%. A lower percentage of adults from Back Bay and Fenway reported BMI considered obese compared to Boston overall. The percentage for Mattapan was higher than for the Boston overall. The rest of Boston neighborhoods were statistically similar to Boston overall.



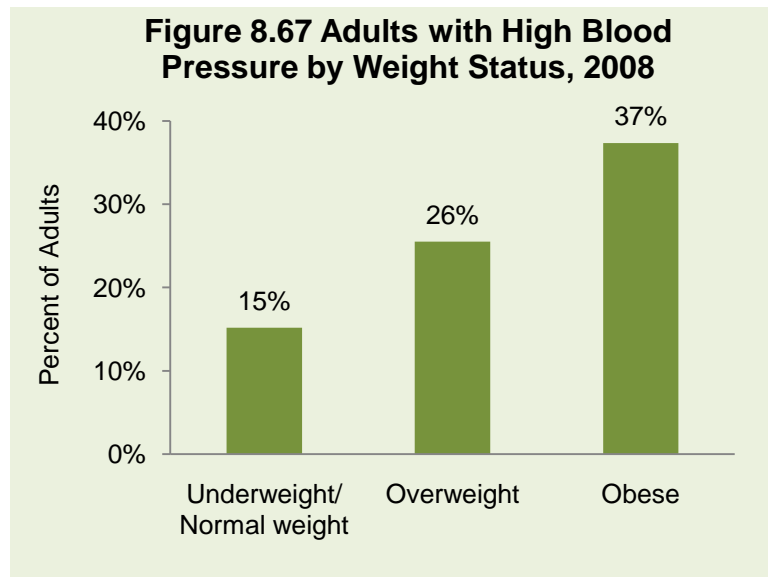
A higher percentage of adults who were underweight /normal weight and overweight reported in engaging in regular physical activity compared to adults who were obese.

No significant differences were noted in consumption of recommended servings of fruits and vegetables, cigarette smoking and binge drinking by weight status (data not shown).

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission

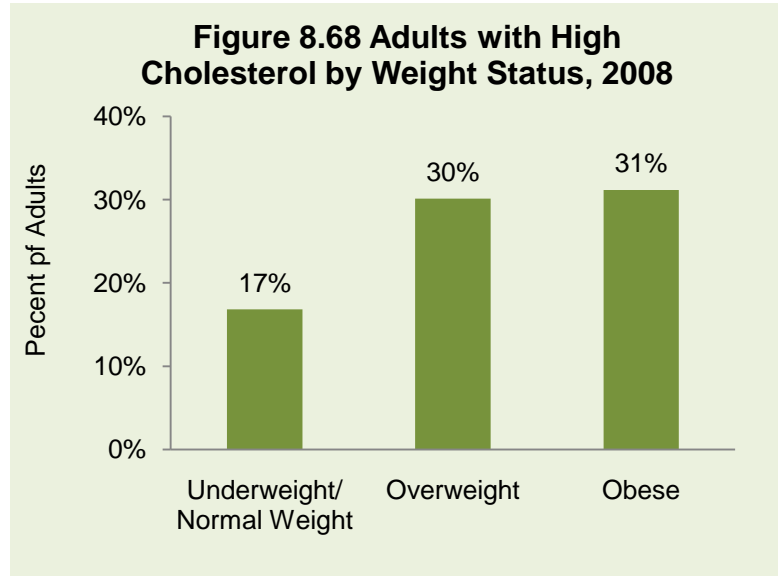
A higher percentage of adults who were overweight and who were obese had reported having high blood pressure compared to adults who were underweight/normal weight.

A higher percentage of adults who were obese reported high blood pressure compared to adults who were overweight.

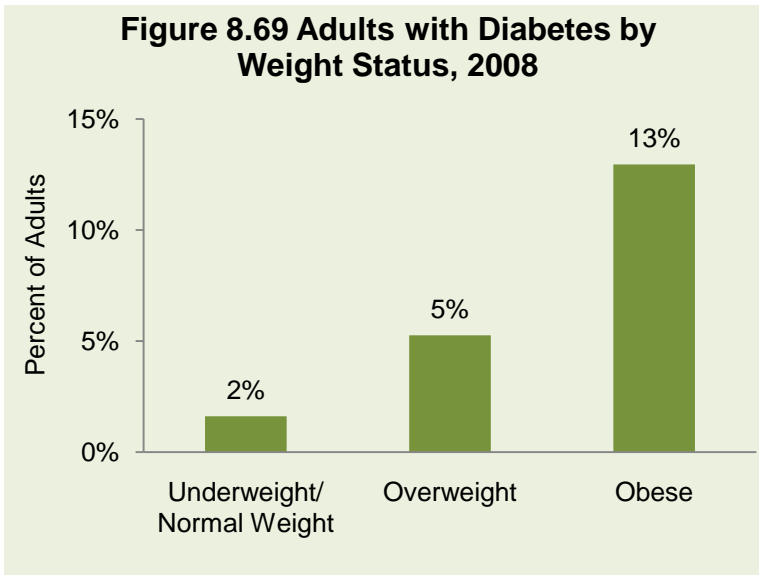


DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission

A higher percentage of adults who were overweight and who were obese reported having high blood cholesterol levels compared to adults who were underweight/normal weight.



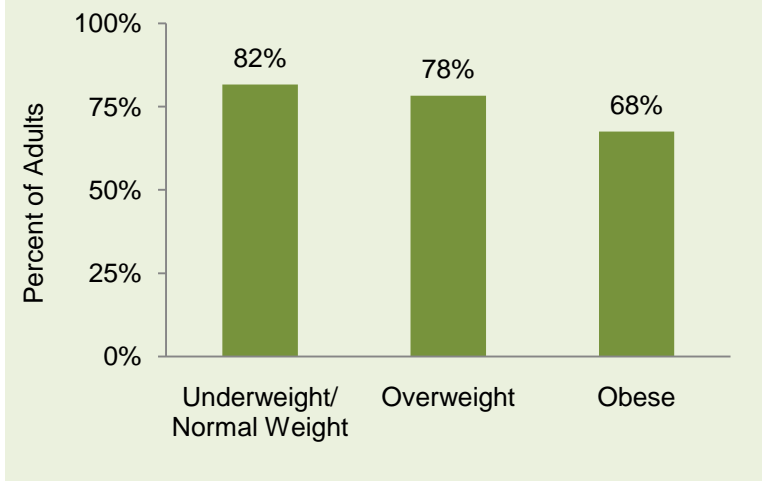
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission



A higher percentage of adults who were overweight and adults who were obese had diabetes compared to adults who were underweight/normal weight.

A higher percentage of adults who were obese had diabetes compared to adults who were overweight.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission

**Figure 8.70 Affordability of Fruits and Vegetables by Weight Status, 2008**

A lower percentage of adults who were obese agreed that the price of fruits and vegetables at the shop where they buy most of their food was affordable compared to adults who were overweight and adults who were underweight/normal weight.

There were no significant differences in reported availability and access to fruits and vegetables by weight status (data not shown).

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission

## Summary: Chronic Diseases

Chronic diseases represent a significant source of morbidity and mortality burden among US residents, and more specifically Boston residents. Racial/ethnic and geographic disparities in the distribution of chronic diseases were among Boston residents.

The burden of morbidity from chronic diseases was most pronounced among Boston's Black residents as evidenced by the higher percentages of asthma, diabetes, and obesity compared to most other racial/ethnic groups. Black children under the age of 5, continue to have the highest asthma hospitalization and emergency department (ED) visit rates. In comparison to Asian, Latino, and White adults, Black adults had a higher percentage of reported diabetes and higher rates of diabetes hospitalization and mortality. In 2008, the diabetes hospitalization rate for Black residents was more than four times the rate for Asians and almost four times the rate for Whites. From 1999 through 2007, Black residents consistently had the highest heart disease hospitalization rate, which was almost two times the rate for White residents and three times the rate for Asian residents. In 2009, a higher percentage of Black high school students were considered obese compared to Asian or White students.

Although Boston's Latino residents may not share the same chronic disease burden as Boston's Black residents, they face an unequal burden related to several conditions. For select health measures presented in the Chronic Diseases Section of this report, Boston's Latino residents, generally, do slightly better than Boston's Black residents, but not as well as Boston's Asian and White residents. Latino adult females have a higher rate of asthma than Asian or White adult females. In 2008, the heart disease age-adjusted hospitalization rate for Latinos was higher than any other racial/ethnic group.

The rates for several of the chronic diseases discussed here are lower for White and Asian

Boston residents. A lower percentage of White residents reported having asthma than Black residents. Among White children under age 5, the rate of asthma hospitalizations and ED visits are also low.

While Boston's White residents have the lowest diabetes age-adjusted mortality rate, their rate of heart disease hospitalizations is higher than that for Asians.

Boston's Asian residents are less affected by many of the chronic diseases discussed here compared to Black, Latino and White residents. Asian residents generally have the lowest percentages of reported asthma, diabetes, and hypertension among adults. The asthma hospitalization rate for Asian children under age 5 is low. They also have had the lowest heart disease age-adjusted hospitalization rate of any racial/ethnic group from 1999 to 2008. Although low, a couple of trends are troubling—heart disease hospitalization and diabetes hospitalization.

In addition to the racial/ethnic disparities observed, geographic disparities in chronic diseases were evident. For example, the Roxbury neighborhood had the highest heart disease and the second highest diabetes hospitalization rates and the highest percentage of residents reporting high blood pressure (along with Hyde Park).

We also consider the health of Boston's residents as a whole and note areas that fall short of the national Healthy People 2010 (HP2010) targets. The rate of emergency department visits for asthma (33.5 visits per 1,000 population) among Boston's youngest and most vulnerable group, children under the age of 5, falls short of the HP2010 target of no more than 8.0 visits per 1,000 population. The asthma hospitalization rate for children under age 5 is 12.1 hospitalizations per 1,000 population, which is five times the HP2010 target of 2.5 hospitalizations per 1,000 population for this age group. Among Boston adults, 22% report having been diagnosed with high blood pressure. This is higher than the HP2010 target of no more than 16% of the population



for this measure. High blood pressure is particularly insidious because of its asymptomatic nature; it is often discovered when other severe negative health effects are noticed or diagnosed.

Obesity is a known risk factor for several chronic diseases including diabetes and heart disease. According to the Centers for Disease Control and Prevention (CDC), childhood chronic diseases have increased at an alarming rate (22). Fifteen percent of Boston's high school students were obese in 2009. This is three times the HP2010 target of no more than five percent. When combined with the percentage of students who are overweight, over a third of Boston's high school students were either overweight or obese. The continued growth in obesity, especially among children and adolescents, has implications for the development of chronic disease during adulthood.

Communities and local agencies must work to support the ability of Boston residents to live in healthy environments which facilitate healthy behaviors and positive choices. Guaranteeing the presence of safe and accessible open spaces, ensuring the availability of fresh fruits and vegetables, enacting regulations that limit exposure to second hand smoke and trans-fats, and ensuring access to affordable and quality health care are all examples of measures that create an environment to support healthy choices.

Chronic diseases impact the health and well-being of individuals throughout society. The data presented here serve to highlight the urgency for prevention measures that address individual risk factors in addition to social and contextual risk factors to improve the overall population health and reduce health disparities in chronic diseases.



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## Notes and Data Analysis

### Figure 8.1

NOTE: Combination of two survey questions. Respondents asked, “Has a doctor or nurse ever told you that you have asthma?” and “Do you still have asthma?” Point estimates vary from those produced by CDC because of differences in calculation of the current asthma variable.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 8.2

NOTE: Combination of two survey questions. Respondents asked, “Have you ever been told by a doctor, nurse or other health professional that you had asthma?” If answer was “yes,” respondents were then asked, “Do you still have asthma?” Data reflect percent of adults who answered “yes” to both questions.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 8.3

NOTE: Combination of two survey questions. Respondents asked, “Have you ever been told by a doctor, nurse or other health professional that you had asthma?” If answer was “yes,” respondents were then asked, “Do you still have asthma?” Data reflect percent of adults who answered “yes” to both questions.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 8.4

NOTE: Combination of two survey questions. Respondents asked, “Have you ever been told by a doctor, nurse or other health professional that you had asthma?” If answer was “yes,” respondents were then asked, “Do you still have asthma?” Data reflect percent of adults who answered “yes” to both questions.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 8.5

NOTE: Combination of two survey questions. Respondents asked, “Have you ever been told by a doctor, nurse or other health professional that you had asthma?” If answer was “yes,” respondents were then asked, “Do you still have asthma?” Data reflect percent of adults who answered “yes” to both questions.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 8.6

NOTE: Data represents survey questions “Have you ever been told by a doctor, nurse or other health professional that you had asthma?” If answer was “yes,” respondents were then asked, “Do you still have asthma?” Data reflect percent of adults who answered “yes” to both questions. Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 8.7

NOTE: Data represents survey questions “Have you ever been told by a doctor, nurse or other health professional that you had asthma?” If answer was “yes,” respondents were then asked, “Do you still have asthma?” Data reflect percent of adults who answered “yes” to both questions and “Do you have one person you think of as your personal doctor or health care provider?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 8.8

NOTE: Data represents survey questions “Have you ever been told by a doctor, nurse or other health professional that you had asthma?” If answer was “yes,” respondents were then asked, “Do you still have asthma?” Data reflect percent of adults who answered “yes” to both questions and “During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 8.9

NOTE: Age-specific rates are presented here. These data do not include persons whose age was not reported, except in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 8.10

NOTE: Age-specific rates are presented here. These data do not include persons whose gender or age was not reported, except in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.11**

NOTE: Age-specific rates are presented here. These data do not include persons whose gender and age was not reported, except in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.12**

NOTES: Age-specific rates are presented. These data do not include persons whose age and or race/ethnicity was not reported, except in the Boston overall rate. See Technical Notes for additional caveats.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.13**

NOTES: Age-specific rates are presented.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

MAP CREATED BY: Boston Public Health Commission Research and Evaluation Office

**Figure 8.14**

NOTES: Age-specific rates are presented

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.15**

NOTE: Survey question reads “Have you ever been told by a doctor that you have diabetes?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.16**

NOTE: Survey question reads “Have you ever been told by a doctor that you have diabetes?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.17**

NOTE: Survey question reads “Have you ever been told by a doctor that you have diabetes?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.18**

NOTE: Survey question reads “Have you ever been told by a doctor that you have diabetes?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.19**

NOTE: Data represents survey questions “Have you ever been told by a doctor that you have diabetes?”, “Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?”, “Have you ever been told by a doctor, nurse, or other health professional that your blood cholesterol is high?”, and Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.20**

NOTE: Data represents survey questions “Have you ever been told by a doctor that you have diabetes?” and “The price of fruits and vegetables at the shop where I buy most of my food is affordable to me”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.21**

NOTE: Data represents survey questions “Have you ever been told by a doctor that you have diabetes?” Physical activity “Calculated as adults who have done moderate activities for at least 30 minutes per day on five days of a usual week or vigorous activities for at least 20 minutes per day on three days of a usual week.” Binge drinking survey question reads “Considering all types of alcoholic beverages, how many times during the past 30 days did you have X [X=5 for men, X=4 for women] or more drinks on an occasion?” and daily recommended fruits and vegetable consumption is “calculated as adults who reported eating five or more servings of fruits and vegetables per day for at least five days during the week prior to the survey.”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.22**

202 Additional data may be found on the Boston Public Health Commission website at [www.bphc.org](http://www.bphc.org).

NOTE: Data represents survey questions “Have you ever been told by a doctor that you have diabetes?”, “Do you have one person you think of as your personal doctor or health care provider?”, “About how long has it been since you last visited a doctor for a routine check-up? A routine check-up is a general physical exam, not an exam for a specific injury, illness, or condition.”, and “Have you ever taken a course or class in how to manage your diabetes yourself?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.23**

NOTE: Age-adjusted rates are presented here.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.24**

NOTE: Age-specific rates are presented here. These data do not include persons whose age was not reported except in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.25**

NOTE: Age-specific rates are presented here. These data do not include persons whose age and gender was not reported, except in the Boston overall rate

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.26**

NOTES: Age-adjusted rates are presented here. These data do not include persons whose race/ethnicity was not reported, except in the Boston overall rate. A rate for Asians in 2000 could not be calculated due to the low number of cases. See Technical Notes for additional caveats.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.27**

NOTES: Age-adjusted rates are presented here.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

MAP CREATED BY: Boston Public Health Commission Research and Evaluation Office

**Figure 8.28**

NOTES: Data are presented as age-adjusted rates. These data do not include persons whose gender was not reported except, in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.29**

NOTES: Data are presented as age-adjusted rates. These data do not include persons whose race/ethnicity was not reported except, in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.30**

NOTES: Data are presented as age-specific rates. These data do not include persons whose age and race/ethnicity was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.31**

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.32**

NOTES: Age-specific rates are presented here. These data do not include persons whose age and race/ethnicity was not reported, except in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.33**

NOTES: Age-adjusted rates are presented here. These data do not include persons whose race/ethnicity or gender was not reported, except in the Boston overall rate. See Technical Notes for additional caveats.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.34**

NOTE: Age-adjusted rates are presented here. These data do not include persons whose age and race/ethnicity was not reported, except in the Boston overall rate.

Additional data may be found on the Boston Public Health Commission website at [www.bphc.org](http://www.bphc.org).



DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.35**

NOTE: Age-adjusted rates are presented here.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

MAP CREATED BY: Boston Public Health Commission Research and Evaluation Office

**Figure 8.36**

NOTE: Age-specific rates are presented here.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.37**

NOTE: Data are presented as age-adjusted rates. These data do not include persons whose race/ethnicity or gender was not reported, except in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.38**

NOTE: Data are presented as age-adjusted rates. These data do not include persons whose race/ethnicity was not reported, except in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.39**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.40**

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.41**

NOTE: Survey question reads “Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?” These data do not include persons of other or unknown race/ethnicity.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.42**

NOTE: Survey question reads “Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.43**

NOTE: Survey question reads “Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.44**

NOTE: Survey question reads “Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.45**

NOTE: Data represents survey questions “Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?” and “Have you ever been told by a doctor, nurse, or other health professional that your blood cholesterol is high?” and Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.46**

NOTE: Data represents survey questions “Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?” and “The price of fruits and vegetables at the shop where I buy most of my food is affordable to me”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.47**



NOTE: Data represents data from survey questions, “Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?” and Physical activity “Calculated as adults who have done moderate activities for at least 30 minutes per day on five days of a usual week or vigorous activities for at least 20 minutes per day on three days of a usual week.” Binge drinking survey question reads “Considering all types of alcoholic beverages, how many times during the past 30 days did you have X [X=5 for men, X=4 for women] or more drinks on an occasion?” and daily recommended fruits and vegetable consumption is “calculated as adults who reported eating five or more servings of fruits and vegetables per day for at least five days during the week prior to the survey.”  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.48**

NOTE: Data represents survey questions, “Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?” “Do you have one person you think of as your personal doctor or health care provider?”, and “About how long has it been since you last visited a doctor for a routine check-up? A routine check-up is a general physical exam, not an exam for a specific injury, illness, or condition.”  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.49**

NOTE: Age-adjusted rates are presented here.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.50**

NOTE: Age-specific rates are presented here. These data do not include persons whose age was not reported except in the Boston overall rate.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.51**

NOTE: Age-specific rates are presented here. These data do not include persons whose age and gender was not reported, except in the Boston overall rate  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.52**

NOTES: Age-adjusted rates are presented here. These data do not include persons whose race was not reported, except in the Boston overall rate. Rate for Asians in 2001 and 2005 could not be calculated due to the low number of cases. See Technical Notes for additional caveats. Rate for Latinos in 1999 could not be calculated due to the low numbers of cases.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.53**

NOTES: Age-adjusted rates are presented here.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.54**

NOTE: Survey questions read: “How tall are you without your shoes on? How much do you weigh without your shoes on?” Body Mass Index (BMI) is calculated from self-reported weight and height. For adolescents, a BMI-for-age percentile is used to determine overweight/obese. Overweight in adolescents is defined as a BMI at or between the 85th and 95th percentile and obese is defined as a BMI at or above the 95th percentile for the same age and sex.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.55**

NOTE: Survey questions read: “How tall are you without your shoes on? How much do you weigh without your shoes on?” Body Mass Index (BMI) is calculated from self-reported weight and height. For adolescents, a BMI-for-age percentile is used to determine overweight/obese. Overweight in adolescents is defined as a BMI at or between the 85th and 95th percentile and obese is defined as a BMI at or above the 95th percentile for the same age and sex.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.56**

NOTE: Survey questions read: “How tall are you without your shoes on? How much do you weigh without your shoes on?” Body Mass Index (BMI) is calculated from self-reported weight and height. For adolescents, a BMI-for-age percentile is used to determine overweight/obese. Overweight in adolescents is defined as a BMI at or between the 85th and 95th percentile for the same age and sex.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.57**

NOTE: Survey questions read: “How tall are you without your shoes on? How much do you weigh without your shoes on?” Body Mass Index (BMI) is calculated from self-reported weight and height. For adolescents, a BMI-for-age percentile is used to determine overweight/obese. Obese is defined as a BMI at or above the 95th percentile for the same age and sex.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

#### Figure 8.58

NOTE: Survey questions read: “How tall are you without your shoes on? How much do you weigh without your shoes on?” Body Mass Index (BMI) is calculated from self-reported weight and height. For adolescents, a BMI-for-age percentile is used to determine overweight/obese. Overweight in adolescents is defined as a BMI at or between the 85th and 95th percentile and obese is defined as a BMI at or above the 95th percentile for the same age and sex.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

#### Figure 8.59

NOTE: Survey questions read: “How tall are you without your shoes on? How much do you weigh without your shoes on?” Body Mass Index (BMI) is calculated from self-reported weight and height. For adolescents, a BMI-for-age percentile is used to determine overweight/obese. Overweight in adolescents is defined as a BMI at or between the 85th and 95th percentile and obese is defined as a BMI at or above the 95th percentile for the same age and sex and “Which of the following are you trying to do about your weight?” Answer options include: Lose weight, Gain weight, Stay the same weight, I am not trying to do anything about my weight.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

#### Figure 8.60

NOTE: Survey questions read: “How tall are you without your shoes on? How much do you weigh without your shoes on?” Body Mass Index (BMI) is calculated from self-reported weight and height. For adolescents, a BMI-for-age percentile is used to determine overweight/obese. Overweight in adolescents is defined as a BMI at or between the 85th and 95th percentile and obese is defined as a BMI at or above the 95th percentile for the same age and sex and “Which of the following are you trying to do about your weight?” Answer options include: Lose weight, Gain weight, Stay the same weight, I am not trying to do anything about my weight.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

#### Figure 8.61

NOTES: Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese. These data do not include persons of other or unknown race/ethnicity.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

#### Figure 8.62

NOTES: Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese. These data do not include persons of other or unknown race/ethnicity.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

#### Figure 8.63

NOTES: Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese. These data do not include persons of other or unknown race/ethnicity.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

#### Figure 8.64

NOTES: Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese. These data do not include persons of other or unknown race/ethnicity.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

#### Figure 8.65

NOTES: Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

MAP CREATED BY: Boston Public Health Commission Research and Evaluation Office

#### Figure 8.66

NOTES: Data represents surveys questions, Physical activity “Calculated as adults who have done moderate activities for at least 30 minutes per day on five days of a usual week or vigorous activities for at least 20 minutes per day on three

days of a usual week” and Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese, BMI of 25- $<$ 30 is considered overweight and BMI of  $<$ 25 is considered underweight/normal weight.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.67**

NOTES: Data represents surveys questions, “Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?” and Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese, BMI of 25- $<$ 30 is considered overweight and BMI of  $<$ 25 is considered underweight/normal weight.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.68**

NOTES: Data represents surveys questions, “Have you ever been told by a doctor, nurse, or other health professional that your blood cholesterol is high?” and Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese, BMI of 25- $<$ 30 is considered overweight and BMI of  $<$ 25 is considered underweight/normal weight.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.69**

NOTES: Data represents survey question, “Have you ever been told by a doctor that you have diabetes?” and Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese, BMI of 25- $<$ 30 is considered overweight and BMI of  $<$ 25 is considered underweight/normal weight.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 8.70**

NOTES: Data represents survey question, “The price of fruits and vegetables at the shop where I buy most of my food is affordable to me” and Body Mass Index (BMI) is calculated from self-reported weight and height. An adult who has a BMI of 30 or higher is considered obese, BMI of 25- $<$ 30 is considered overweight and BMI of  $<$ 25 is considered underweight/normal weight.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office



## Section 9: Maternal and Child Health

Birth rates, infant characteristics such as birthweight, maternal health status, and infant mortality are some of the most frequently collected and reliable data available to public health professionals. Together, they provide important measures of the well-being of infants and pregnant women, and are often seen as a reflection on the health of a community.

Low birthweight (birthweight less than 5 pounds, 8 ounces or 2,500 grams) and preterm birth (gestational age less than 37 weeks of completed pregnancy) are important predictors of infant survival. These factors are associated with increased risk of serious and long-term health problems including respiratory distress, bleeding in the brain, hearing and vision loss as newborns, lasting disabilities, and even death (1).

Infant mortality is a widely recognized indicator of population health and more specifically community health. Specific components of the overall infant mortality rate, neonatal and postneonatal mortality rates, may be indicators of factors affecting the pregnancy, the delivery, and the neonate.

Low birthweight (LBW), preterm births, and infant mortality are influenced by a variety of factors, including the health status of the mother (i.e. diabetes, high blood pressure or nutritional status) and maternal health behaviors, such as smoking during pregnancy. Furthermore, infant outcomes are socially patterned, where poorer infant outcomes are strongly associated with low socioeconomic status, poor access to medical care, exposure to racism, and residence in disadvantaged neighborhoods (2, 3).

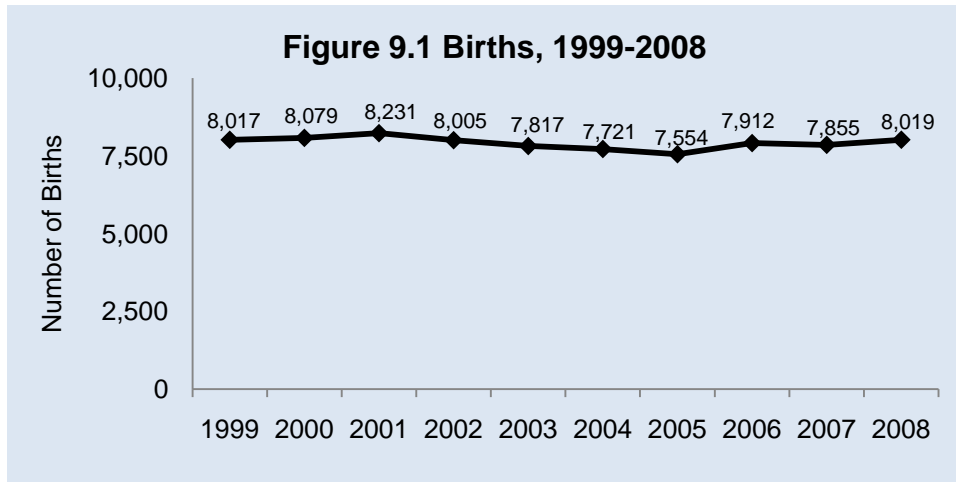
Historically, across the United States and in Boston, Black infants are two to four times more likely than White infants to die in the first year of life. Unfortunately, this pattern continues to persist. A number of studies indicate that the cumulative effect of chronic

stressors endured by women over time may play a major role in adverse outcomes for mothers and their infants (4). These stressors include, but are not limited to, domestic violence, racism, living in neighborhoods with poor housing and inadequate access to health resources and services. For example, women who are exposed to the chronic stress of racism and suffer from the related economic inequities may experience physiological changes in their body that are detrimental to their health and the healthy development of their fetus (4).

A thorough examination of infant birth and death data provides an opportunity to identify high risk groups, allocate resources toward those at highest risk, and design and evaluate effective interventions. Research is needed to continue exploring the role of cumulative and chronic stressors affecting Black women over their life course. Such research may be a key to understanding and eliminating the persistent racial/ethnic disparities that result in higher deaths among Boston's Black infants when compared to infants of all other racial/ethnic groups.

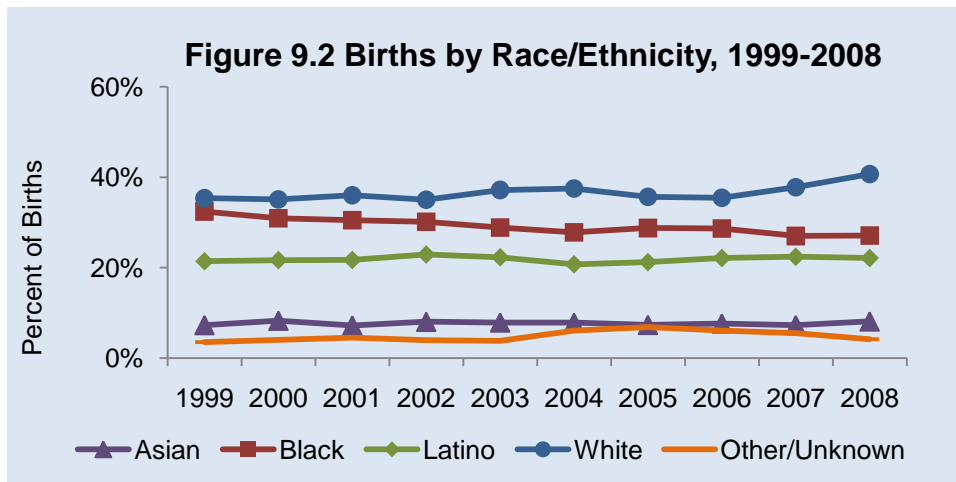
This section presents data on births, maternal characteristics, prenatal care, infant characteristics, and infant mortality. In addition, data on childhood blood lead levels are presented.





DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

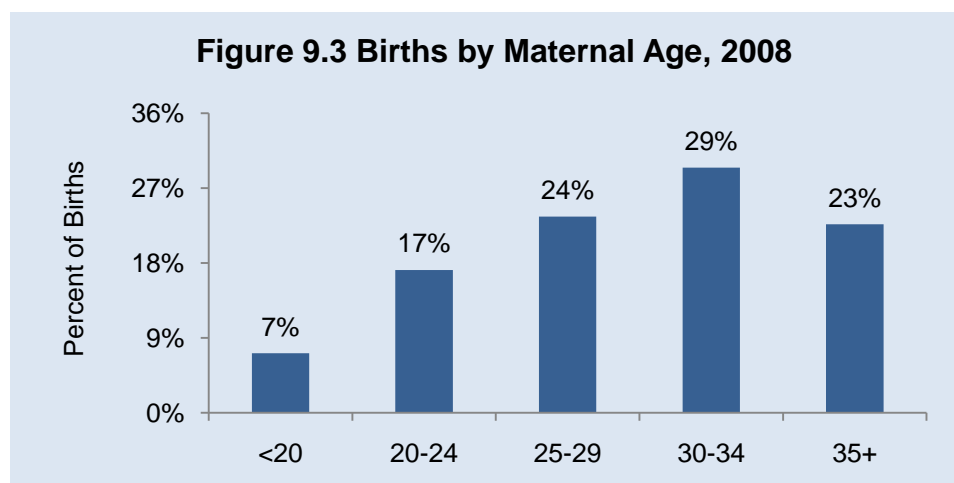
The number of births to Boston residents has remained relatively stable from 1999 to 2008.



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

White women had the highest percentage of Boston births during the ten-year period of 1999-2008. Black women had the second-highest percentage of Boston births.

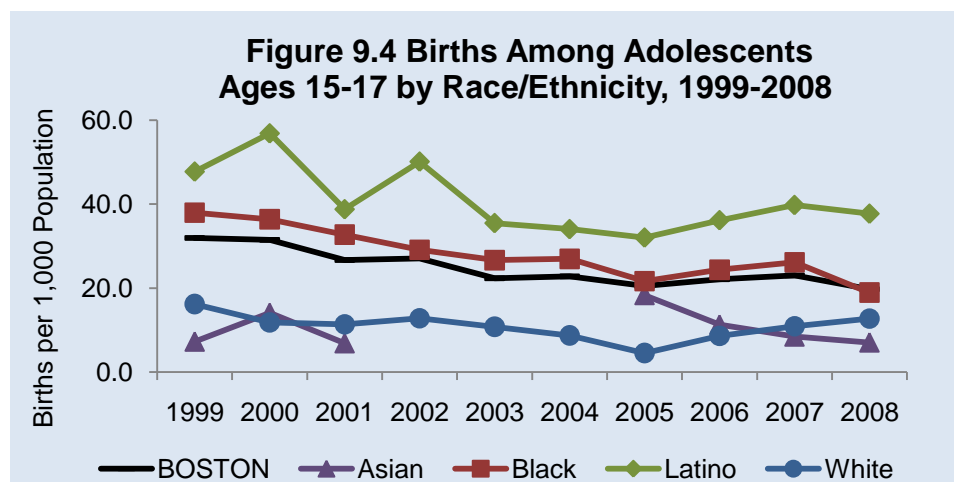
From 1999 to 2008, the percentage of births to Black women decreased while the percentage of births to White women increased. Overall, the percentage of Boston births to Asian and Latino women has remained fairly consistent over the past ten years.



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

At the national level, the largest percentage of births in 2007 (most recent data available) was to women in the age group 25-29, 27.9% (5). However, for Boston, the largest percentage of births in 2008 was to women between ages 30 and 34.

From 2007 to 2008, births to Boston women ages 35 and over increased 11% while births to teens and adolescents and to women ages 20-24 decreased 5% and 6%, respectively (data not shown). Women ages 30 and over continued to account for over 50% of Boston births.

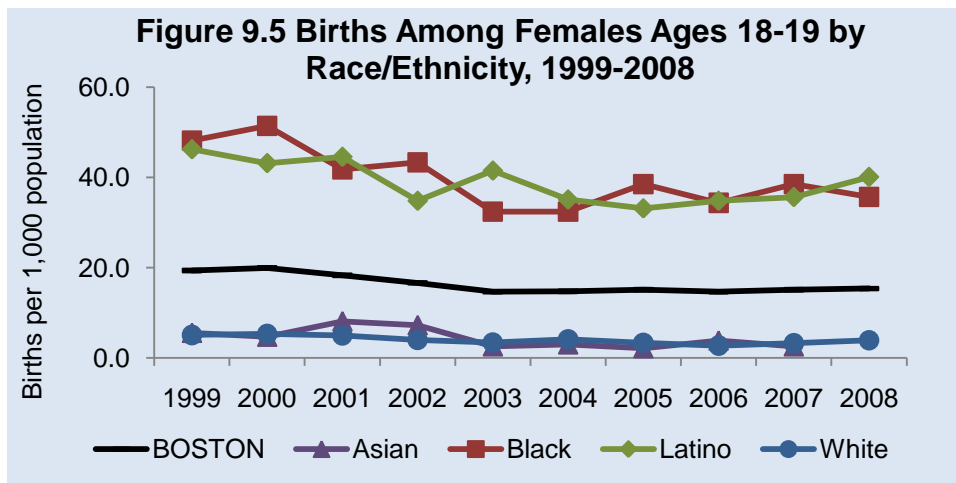


DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

Boston’s adolescent birth rate for ages 15-17 started declining in 1996 (data not shown) and continued to decline through 2005, falling 46%. From 2007 to 2008, the adolescent birth rate decreased 14%.

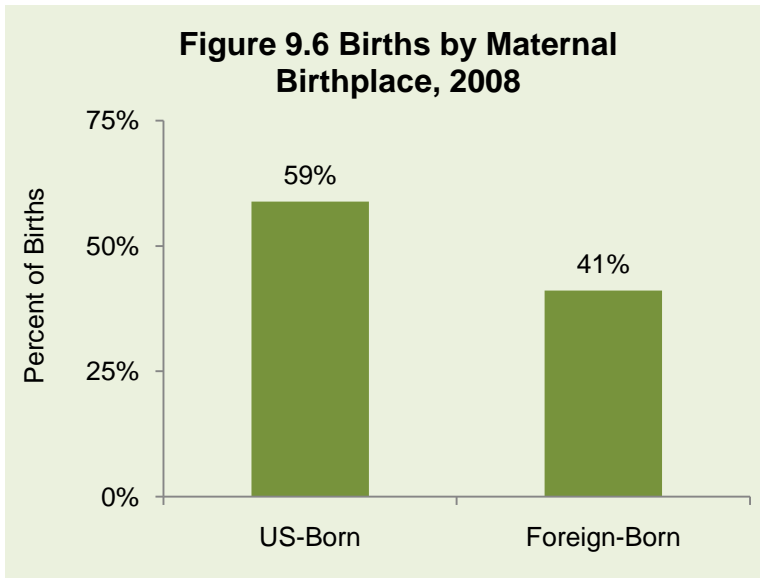
From 1999 to 2008, the Latino and Black adolescent birth rates were consistently higher than the White and Asian adolescent birth rates. From 2007 to 2008, adolescent birth rates declined for all racial/ethnic groups, except for Whites. The Black adolescent birth rate declined the most, 28%.





DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

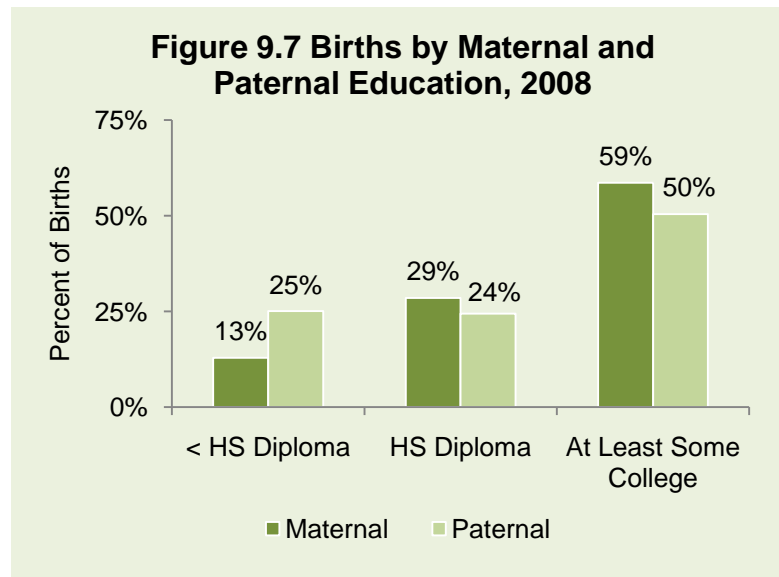
Between 1999 and 2008, the Boston birth rate for females ages 18-19 declined 21% overall. Although declines were observed for Black, Latino, and White females, 26%, 3%, and 24% respectively, the birth rate for females ages 18-19 was consistently highest among Black and Latino females.



Almost 60% of Boston births were to women born in the US.

DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

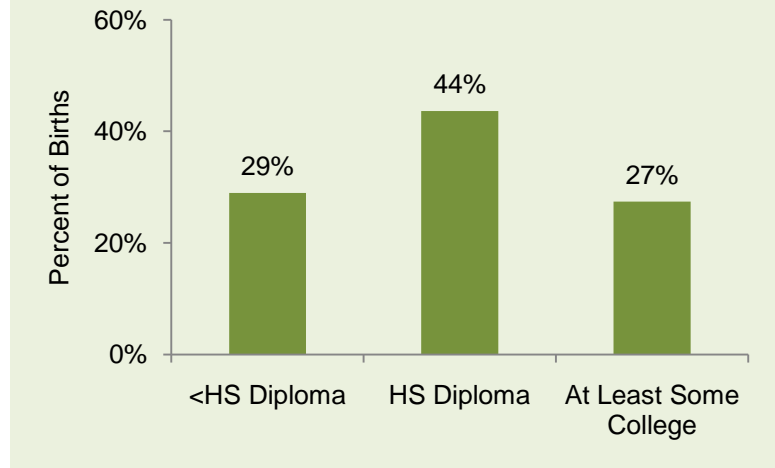
In 2008, most Boston births were to parents with at least some college education. A higher percentage of mothers than fathers tended to have a high school diploma or at least some college education. A higher percentage of fathers than mothers had less than a high school diploma.



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

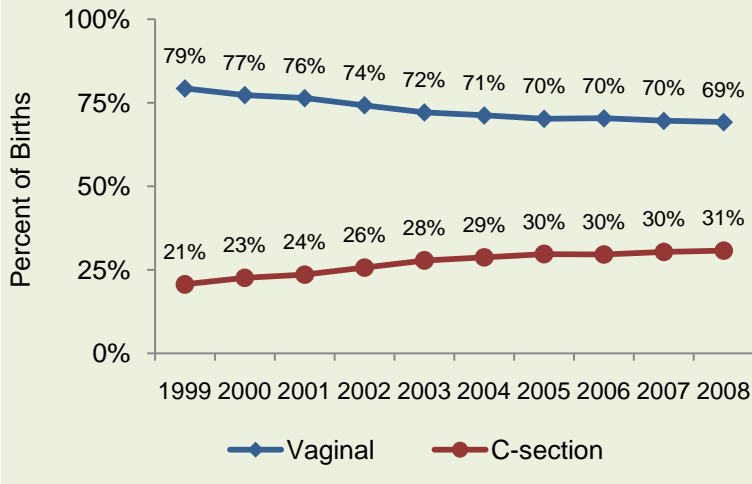
Self-reported maternal smoking substantially declined between 1995 and 2008 for Boston overall by 67% (data not shown). Of the Boston women who reported smoking during pregnancy in 2008, 73% had a high school diploma or had not graduated from high school.

**Figure 9.8 Maternal Smoking During Pregnancy by Education, 2008**



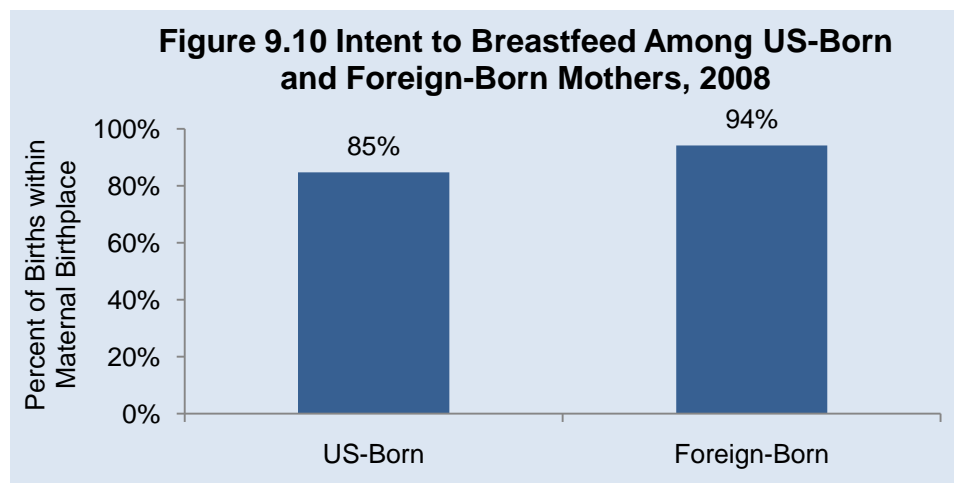
DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

**Figure 9.9 Method of Delivery 1999-2008**



From 1999 to 2008, the percentage of Boston vaginal births declined 13%, while the percentage of cesarean births increased 48%. The 2007 Boston C-section birth rate of 30% was similar to the U.S. 2007 rate of 32% (5).

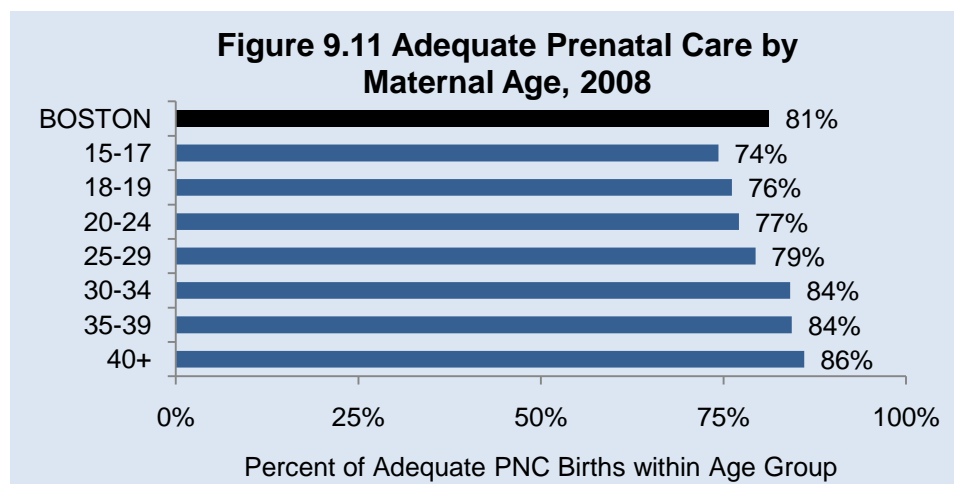
DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

Breastfeeding can benefit both infants and mothers. Breast milk contains antibodies that can protect infants from infections. For mothers, there is evidence to suggest that breastfeeding may lower the risk of breast and ovarian cancers (6).

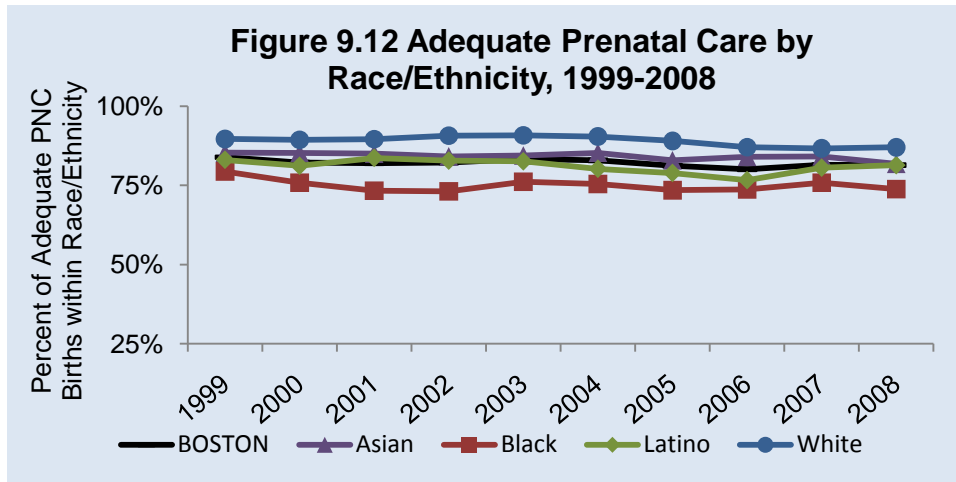
In 2008, upon discharge from the hospital, 89% of Boston mothers reported they intended to breastfeed their infants (data not shown). A higher percentage of foreign-born mothers (94%) than US-born mothers (85%) reported they intended to breastfeed.



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

Adequate prenatal care is essential to the health of pregnant women and may contribute to positive birth outcomes. Pregnant women who do not receive adequate prenatal care are at risk for having a premature birth or an infant with a low birth weight (7).

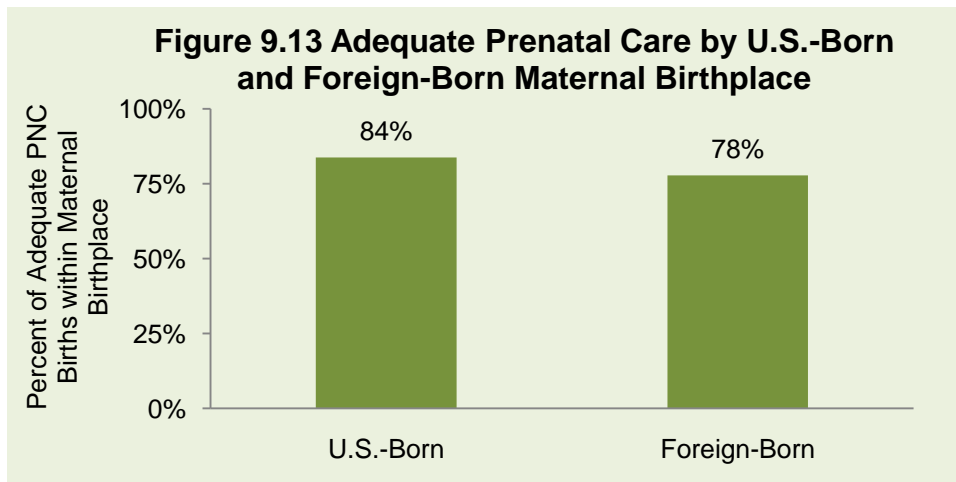
Over 80% of Boston women who gave birth in 2008 had adequate prenatal care. The percentage of Boston women with adequate prenatal care increased with maternal age. The lowest percentages of adequate prenatal care were among births to the youngest women and the highest percentages were among births to women ages 30 and over.



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

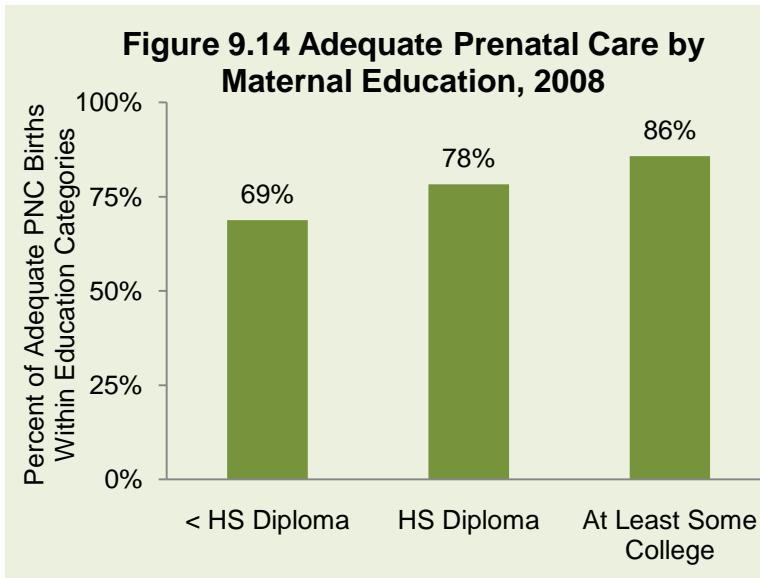
Research indicates that adequate prenatal care varies by race/ethnicity, where a greater percentage of White women tend to receive adequate care compared to other racial/ethnic groups (8).

For each year of 1999 through 2008, the majority of births to Boston women in all racial/ethnic groups had adequate prenatal, but the highest percentage of adequate prenatal care was among births to White women; Black women had the lowest percentage of adequate prenatal care.



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

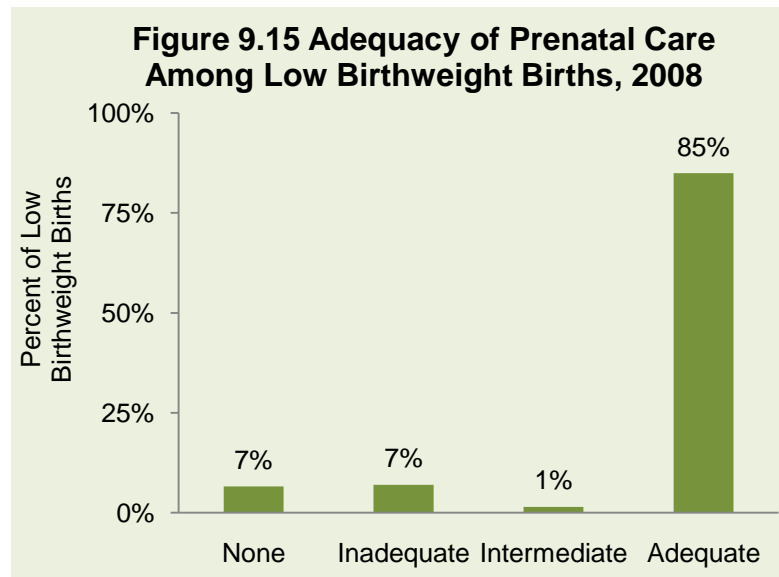
Of the 4,721 US-born Boston women who gave birth in 2008, 84% had adequate prenatal care compared to 78% of the 3,953 foreign-born Boston women who gave birth in 2008.



Across educational levels, a higher percentage of births with adequate prenatal care were to women with at least some college education. The lowest percentage of births with adequate prenatal care were to women with less than a high school diploma.

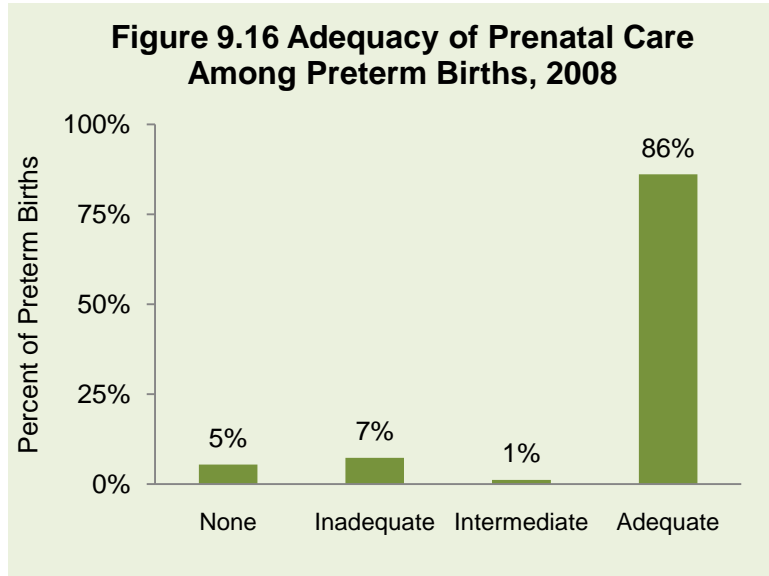
DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

Inadequate prenatal care is one of the risk factors for having a low birthweight birth. However, in 2008, most of Boston’s low birthweight births were to women who received adequate prenatal care. This implies that factors other than inadequate prenatal care should be considered in understanding the reasons behind the majority of low birthweight births experienced by Boston women.



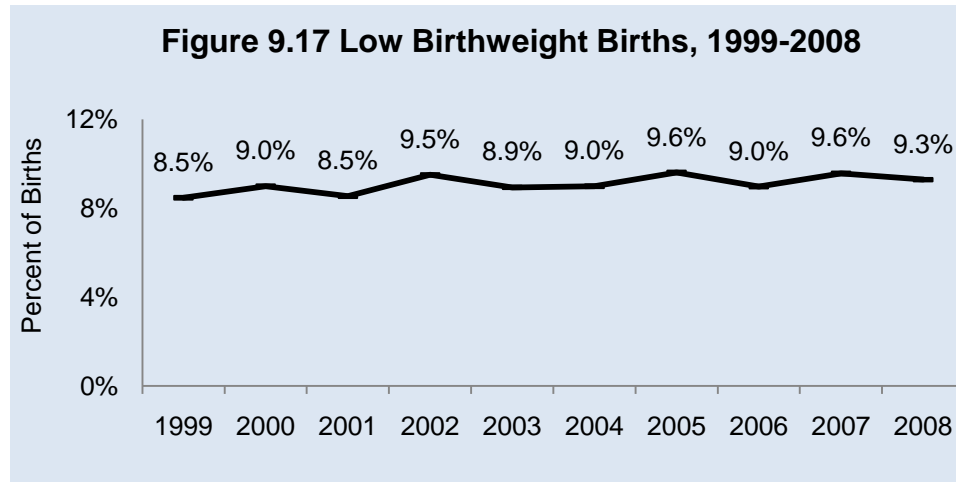
DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

The majority of Boston preterm births in 2008 were to women who received adequate prenatal care. Since inadequate prenatal care is a risk factor for preterm births and the majority of Boston preterm births involved adequate prenatal care, other factors should be examined in understanding the reasons for preterm births by Boston women.



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health





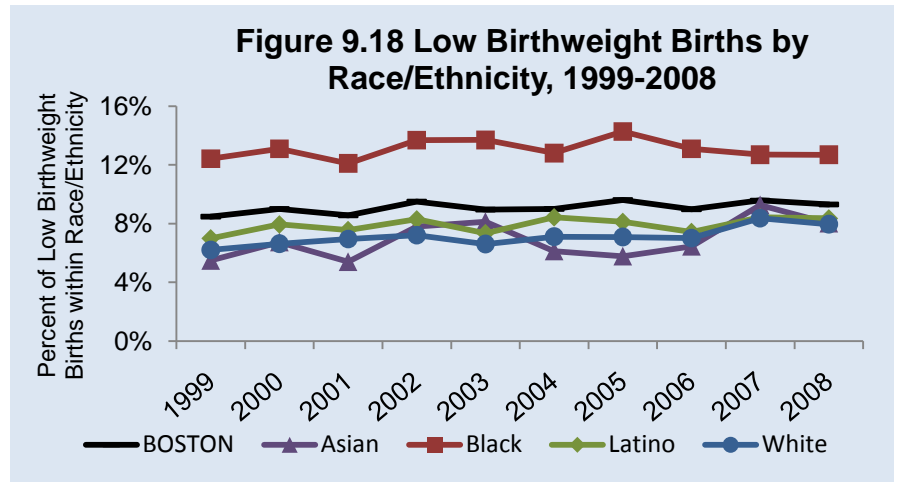
DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

A number of factors including age of the mother, smoking during pregnancy, maternal health problems, use of illegal drugs, inadequate weight gain during pregnancy, and premature births may contribute to low birthweight births (1).

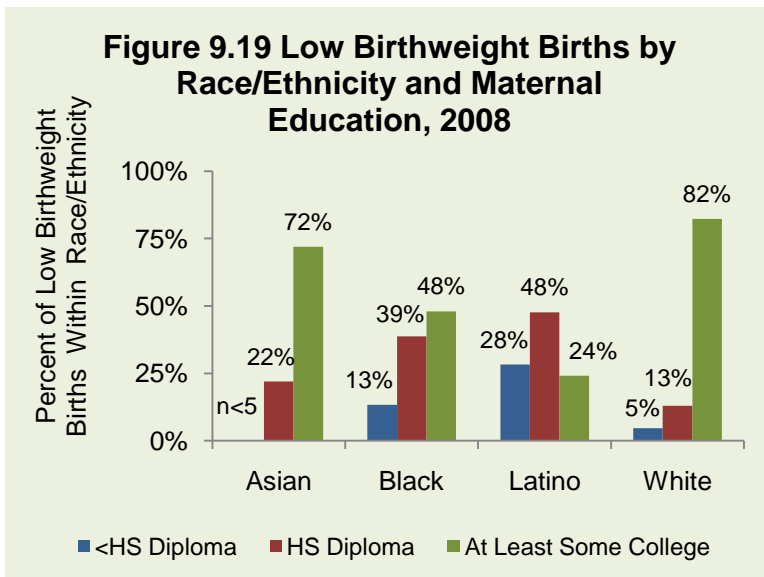
Between 1999 and 2008, Boston’s rate of low birthweight births was relatively stable, fluctuating between 8.5% and 9.3% of all births.

For each year from 1999 to 2008, the percentage of Boston low birthweight (LBW) births was consistently highest for Black women. In 2008, the LBW rate for Black women was 59% higher than the rate for Asian and White women, and 51% higher than the rate for Latino women.

Between 2005 and 2007, the LBW rate for Black women declined. From 2007 to 2008, the percentage of LBW infants decreased slightly for Asian women but remained the same for Black, Latino, and White women.



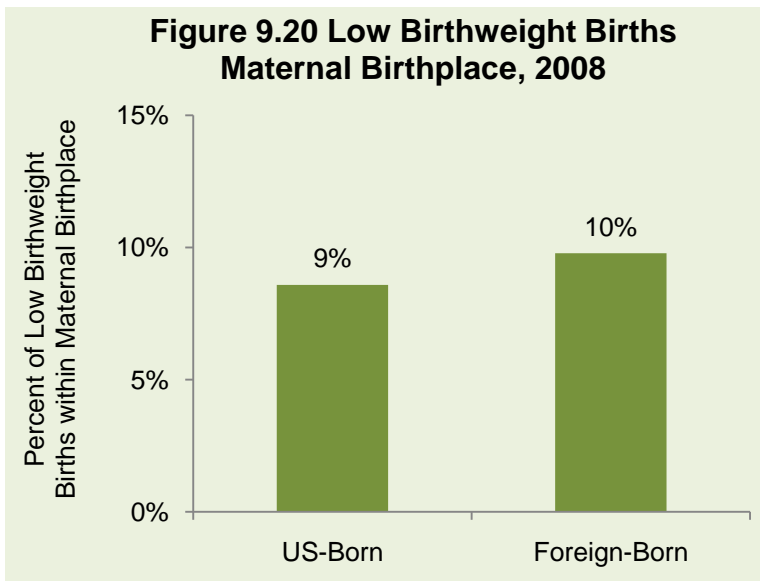
DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

The percentage of Boston low birthweight births varied by race/ethnicity and maternal education. Among Asian, Black and White women, the highest percentage of LBW births were to women who had at least some college education.

Latinos had the highest percentage of low birthweight births to women with less than a high school diploma compared to women from other racial/ethnic groups with less than a high school diploma.

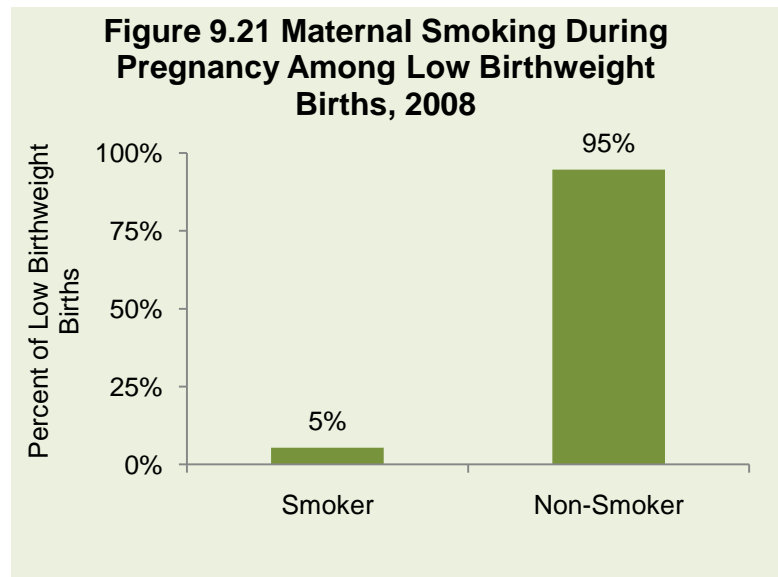


The percentage of low birthweight births in 2008 was similar for both US-born and foreign-born Boston mothers.

DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

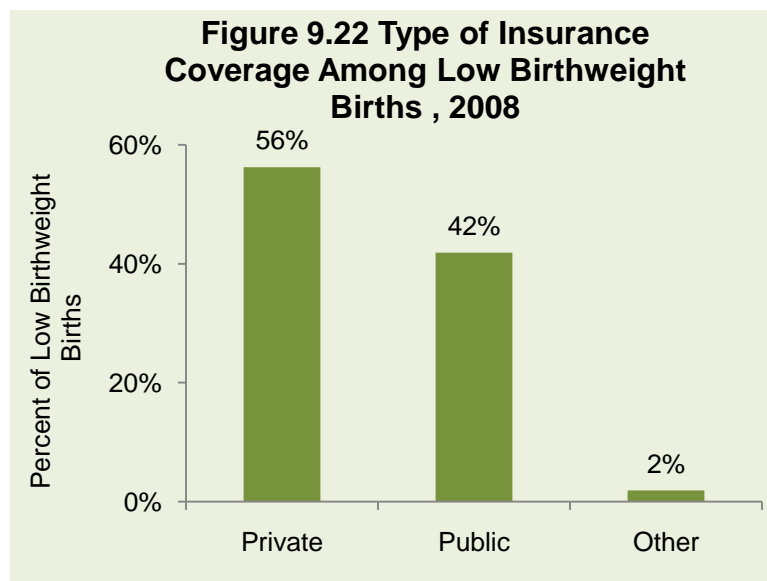
Cigarette smoking during pregnancy has been associated with an increased risk of low birthweight births (1).

Boston experienced 745 low birthweight births in 2008, but only 5% of those births were to Boston women who reported smoking during pregnancy.

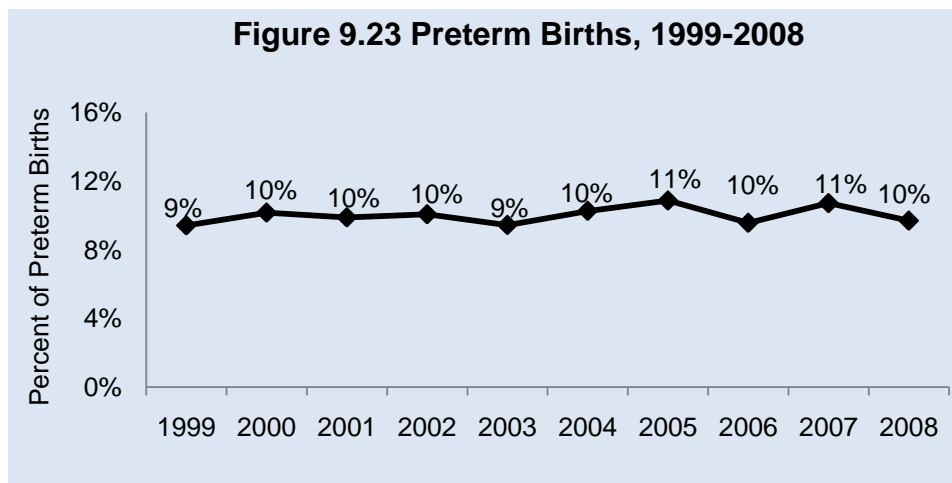


DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

In 2008, over half of Boston’s low birthweight births were to women with private insurance.

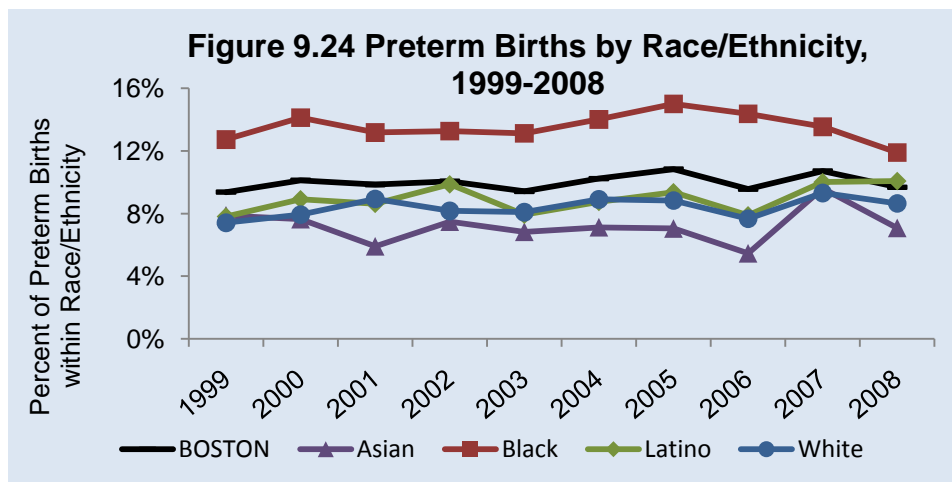


DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

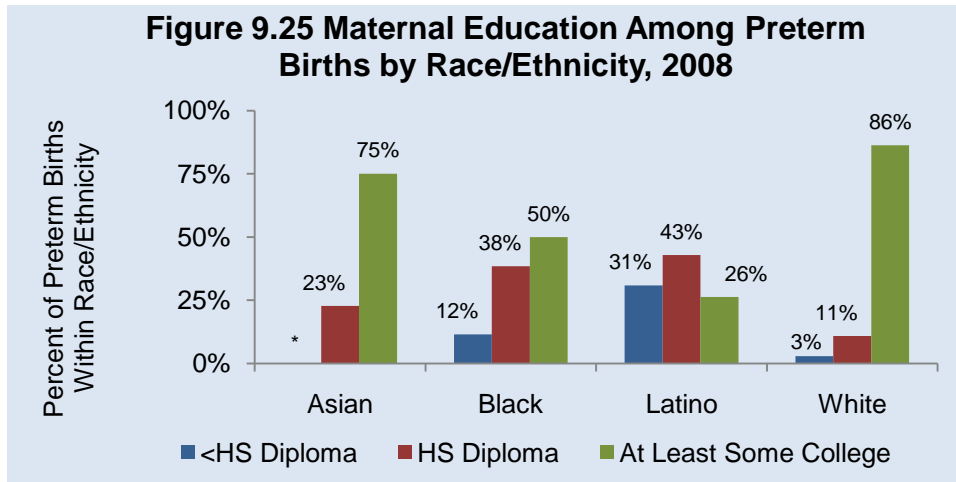
Preterm births are births in which there are less than 37 completed weeks of pregnancy. Infants born preterm have a number of health problems including respiratory distress, mental retardation, and vision problems. Complications of preterm births can result in the death of the infant. For every year from 1999 to 2008, almost one in ten births Boston was premature.



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

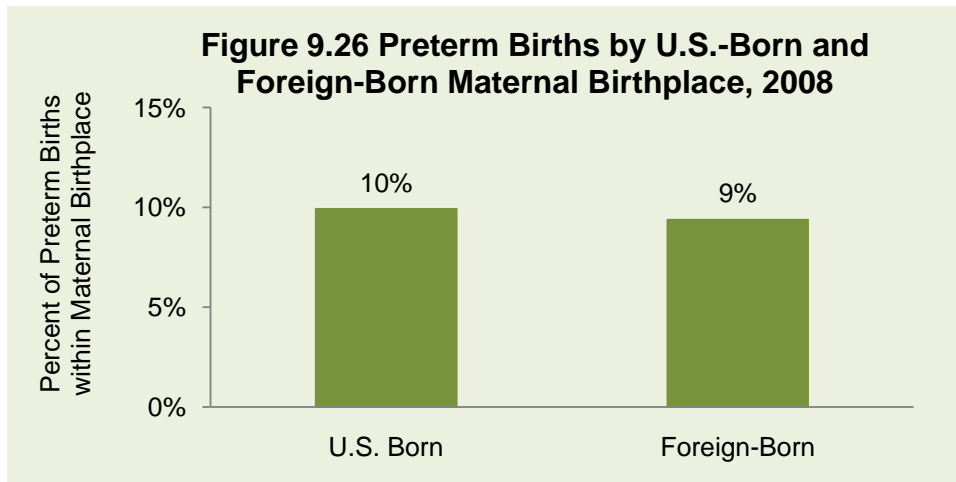
Black women in Boston had the greatest percentage of preterm births each year between 1999 and 2008 compared to women of other racial/ethnic groups. This is despite a decrease in the percentages of preterm births for Black women between 2005 and 2008. From 2007 to 2008, the percentage of preterm births decreased for Asian and Black, but remained basically unchanged for latino and White women.

In 2008, the percentage of preterm births for Black women was 68%, 18% and 38% higher than Asian, Latino, and White women, respectively.



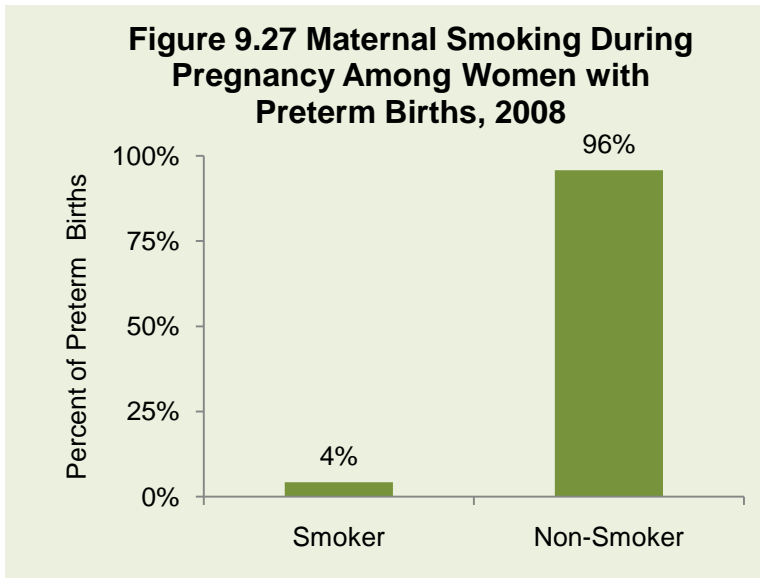
\*Too few births among Asians in this category to permit calculation of a percentage  
 DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

In 2008, most Asian, Black and White women with preterm births had at least some college education. Of Latino women with preterm births, 74% had a high school diploma or less education.



DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

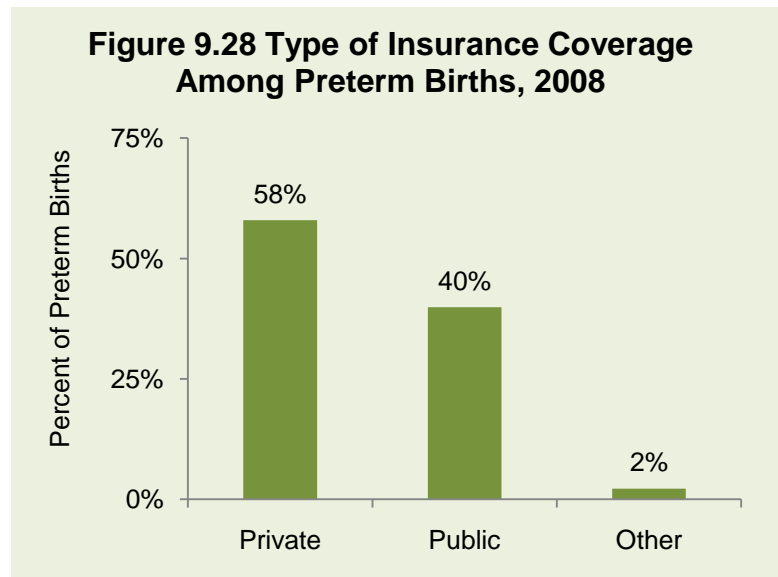
The percentage of preterm births in 2008 was similar for both US-born and foreign-born Boston mothers.



In 2008, the majority of Boston’s preterm births did not involve maternal smoking during pregnancy. Only 4% of preterm births were to Boston women who reported smoking during pregnancy.

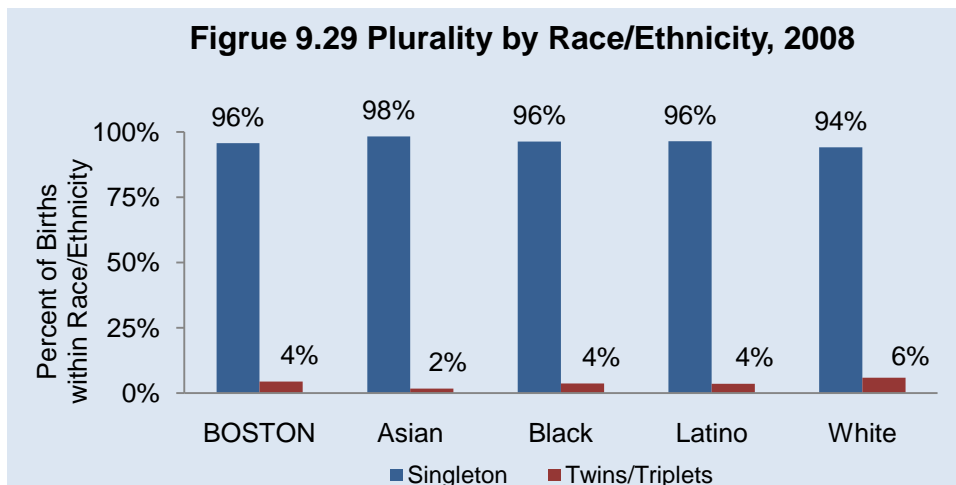
DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

In 2008, over half of Boston’s preterm births were to women with private insurance.



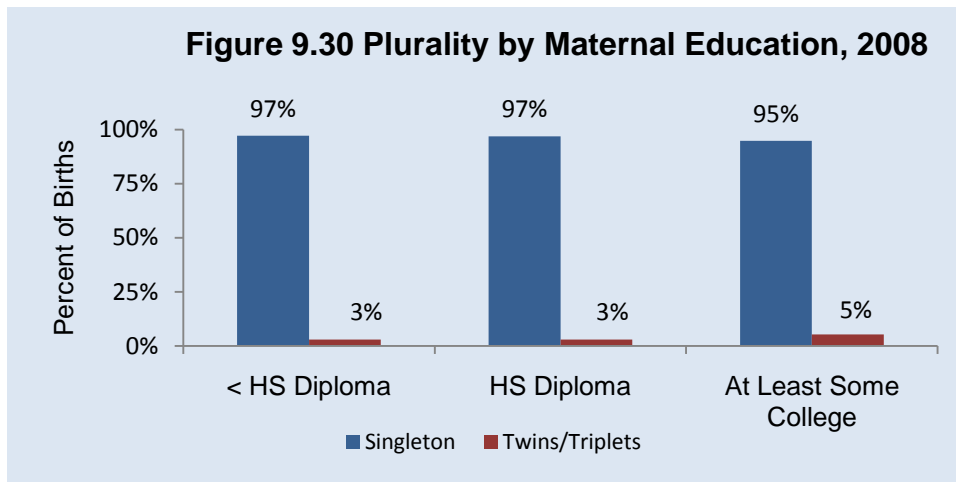
DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health





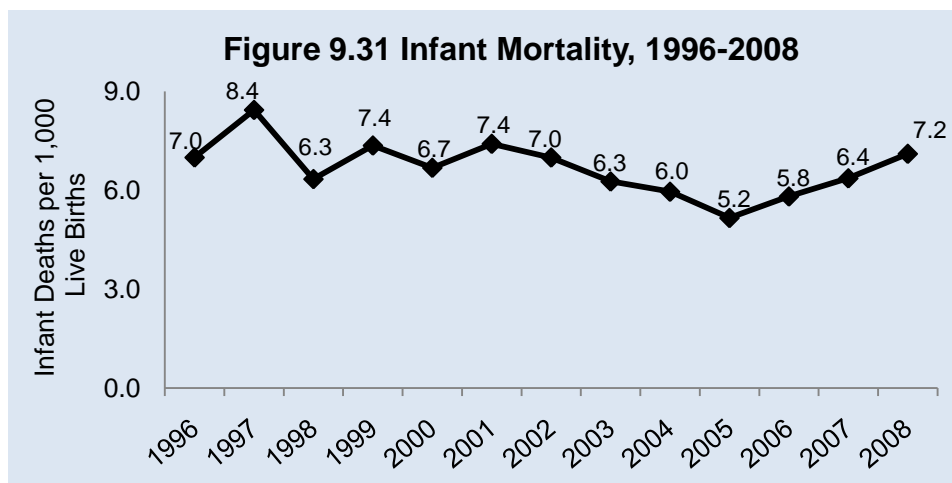
DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

Across all racial/ethnic groups, the overwhelming majority of births were singletons (single infants). The highest percentage of twins or triplets were among White births, 6%.



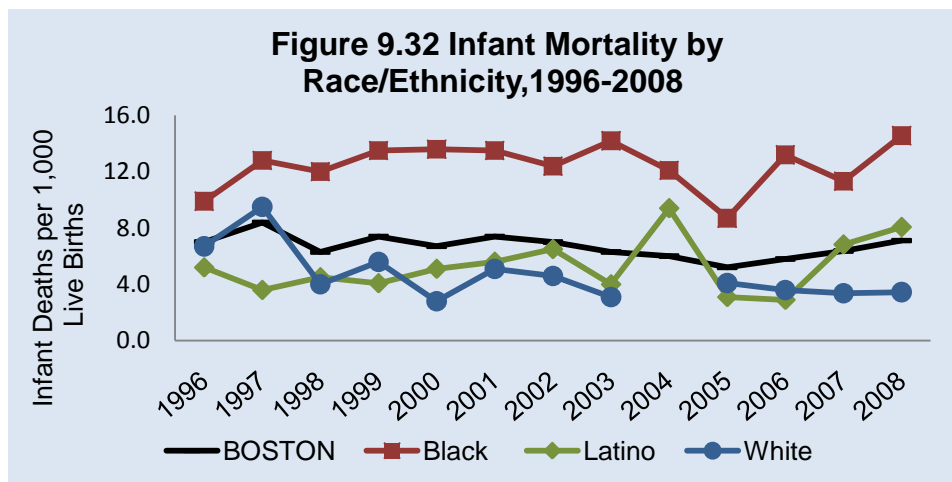
DATA SOURCE: Boston resident live births, Massachusetts Department of Public Health

In 2008, most births to Boston women were singletons and did not vary much by education of the mother. However, the highest percentage of twins or triplets were among women with at least some college education.



DATA SOURCE: Boston resident live births and deaths, Massachusetts Department of Public Health

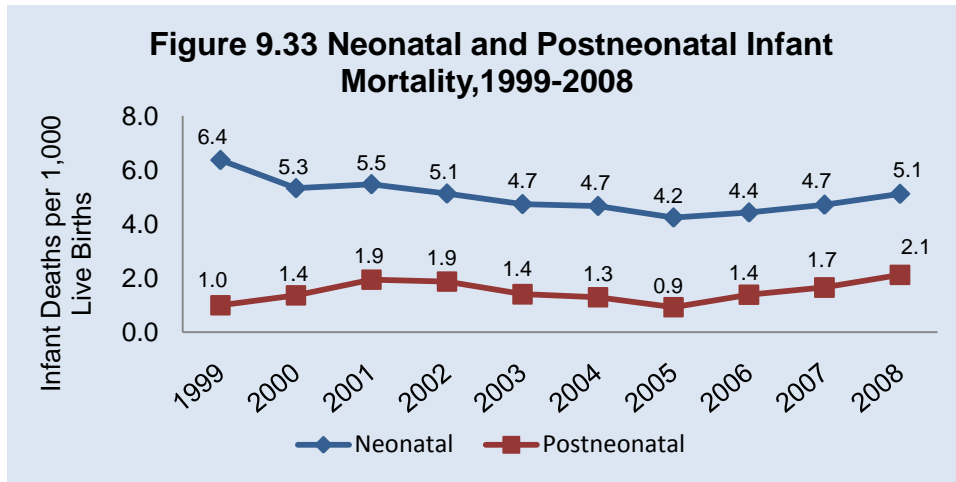
There were 58 Boston infant deaths in 2008, resulting in an infant mortality rate (IMR) of 7.2 deaths per 1,000 live births. From 2001 to 2005, the Boston IMR decreased 30% before increasing 38% from 2005 to 2008



DATA SOURCE: Boston resident live births and deaths, Massachusetts Department of Public Health

From 1996 to 2008, infant mortality rates (IMRs) have consistently been highest for Black infants. From 2007 to 2008, there was a 29% increase in the Black infant mortality rate. In 2008, the Black IMR (14.6 infant deaths per 1,000 live births) was more than four times the White IMR.

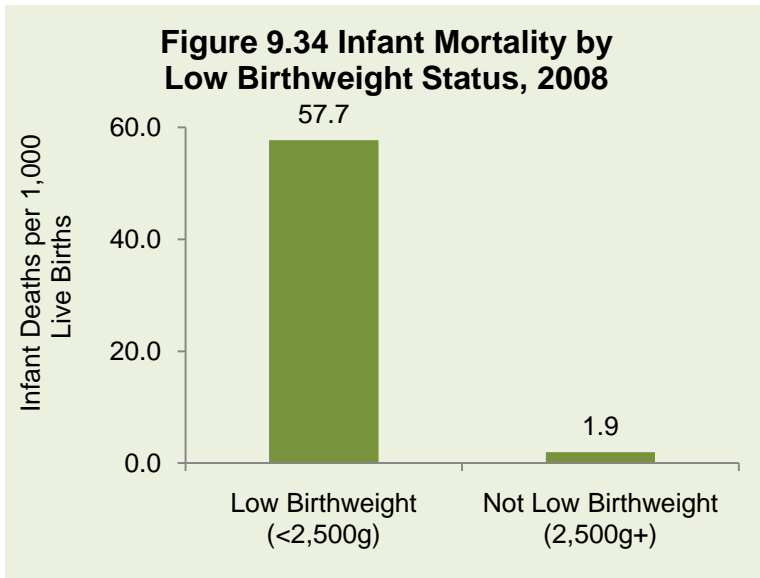
Boston Latinos had the second highest IMR in 2008 (8.1 infant deaths per 1,000), representing a 19% increase from 2007. The IMR for Whites (3.4 infant deaths per 1,000) was the same as in 2007.



DATA SOURCE: Boston resident live births and deaths. Massachusetts Department of Public Health

Most infant deaths occur during the neonatal period (live birth through 27 days of age). Infant deaths during the neonatal period are associated with preterm and low birthweight, congenital conditions of the infant, and other conditions that might originate during the perinatal period such as cardiovascular and respiratory disorders.

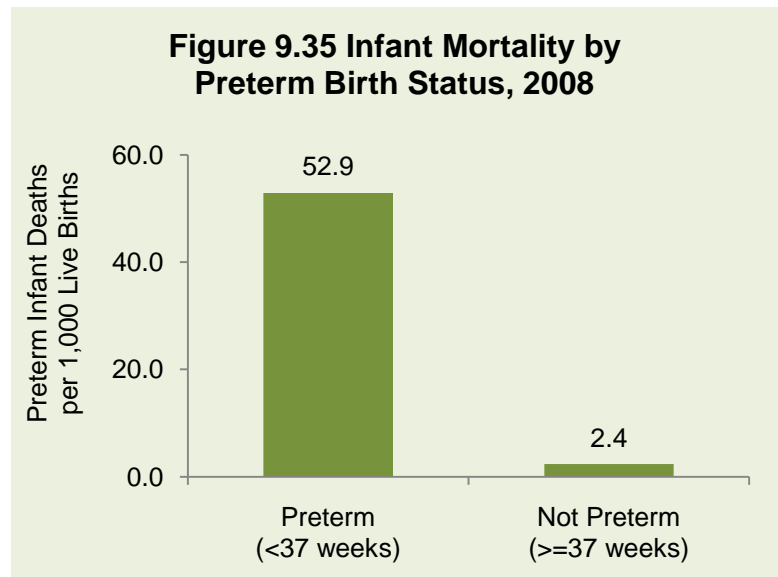
The rate of Boston infants who died during the neonatal period decreased from 1999 to 2005, but increased 21% from 2005 to 2008. The postneonatal infant mortality rate, resulting from infant deaths from 28 days of age to less than one year) more than doubled during the same period.



In 2008, the infant mortality rate (IMR) for infants with low birthweight was 30 times the rate for non-low birthweight infants.

DATA SOURCE: Boston resident linked birth/death files (death cohort), Massachusetts Department of Public Health

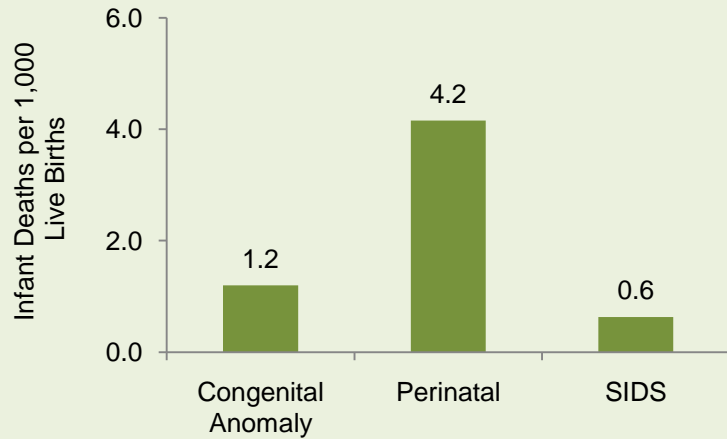
The IMR for preterm births for 2008 was 22 times the IMR for infants that were not born preterm.



DATA SOURCE: Boston resident linked birth/death files (death cohort), Massachusetts Department of Public Health

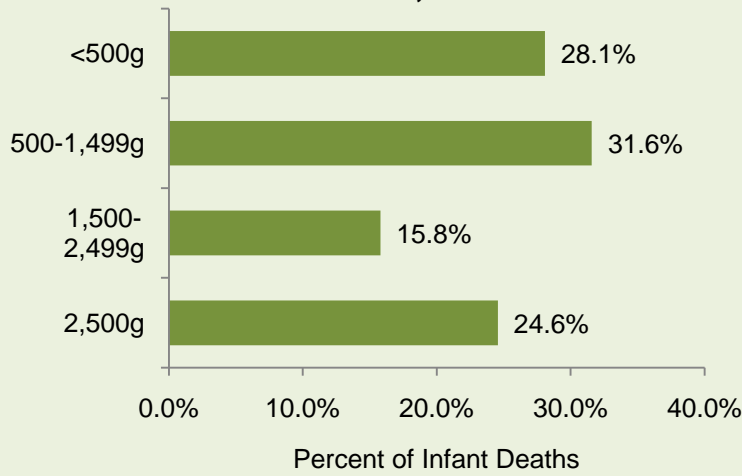
Among the causes of Boston’s infant deaths during 2007 and 2008 combined, the rate of infant mortality due to conditions originating during the perinatal period was highest. Those conditions accounted for 69% (data not shown) of Boston’s infant deaths and were mostly related to short gestation and low birthweight.

**Figure 9.36 Infant Mortality Causes of Death, 2007 and 2008 Combined**



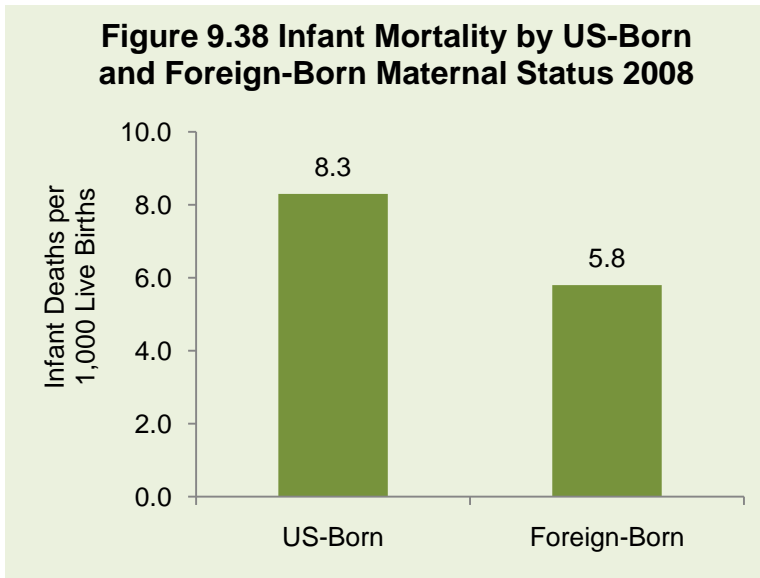
DATA SOURCE: Boston resident live births and deaths, Massachusetts Department of Public Health

**Figure 9.37 Infant Mortality Birthweight Distribution, 2008**



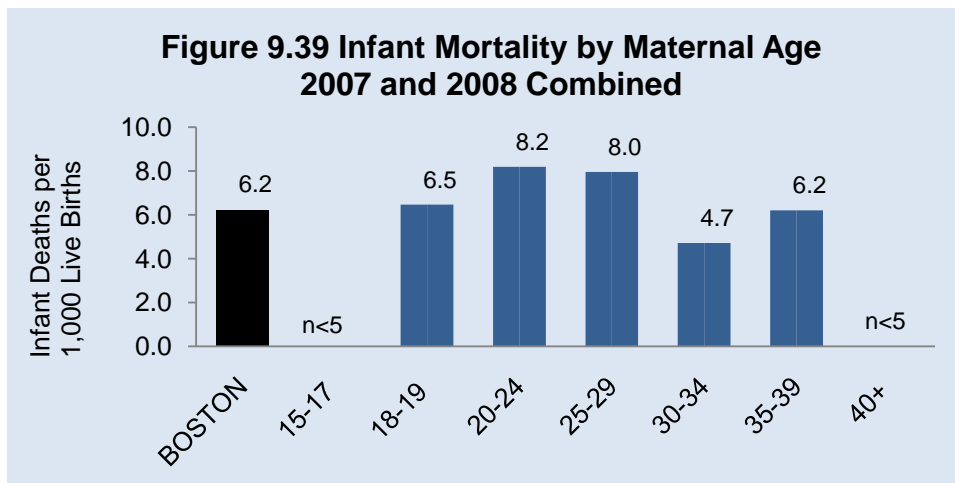
Very low birthweight refers to infants weighing less than 1,500 grams. Infants weighing less than 500 grams and those weighing 500 to 1,499 grams accounted for approximately 60% of Boston infant deaths in 2008.

DATA SOURCE: Boston resident linked birth/death files (death cohort), Massachusetts Department of Public Health



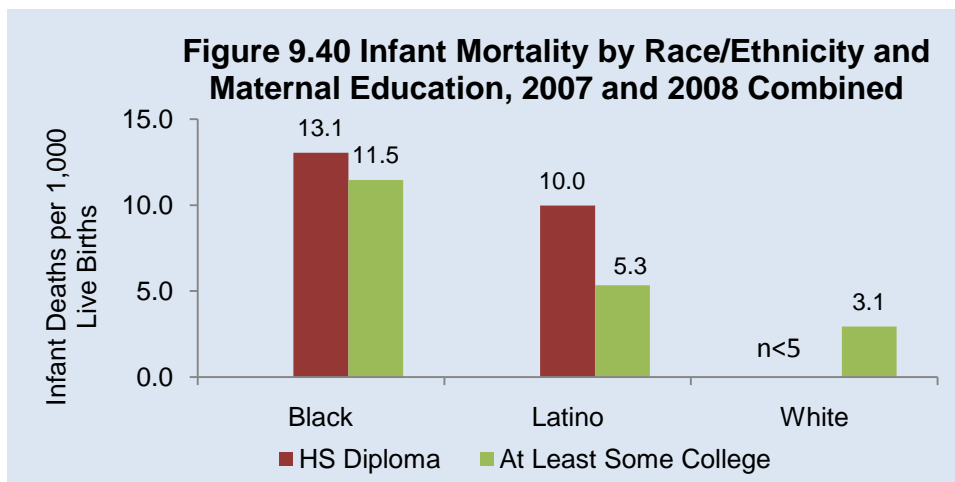
In 2008, the IMR among births to US-born women was higher than the IMR among births to foreign-born women.

DATA SOURCE: Boston resident linked birth/death files (death cohort), Massachusetts Department of Public Health



DATA SOURCE: Boston resident linked birth/death files (death cohort), Massachusetts Department of Public Health

Across maternal age groups, the highest infant mortality rates (IMRs) were among infants of mothers ages 20-24 and 25-29. Both were approximately 30% higher than the overall IMR for Boston.

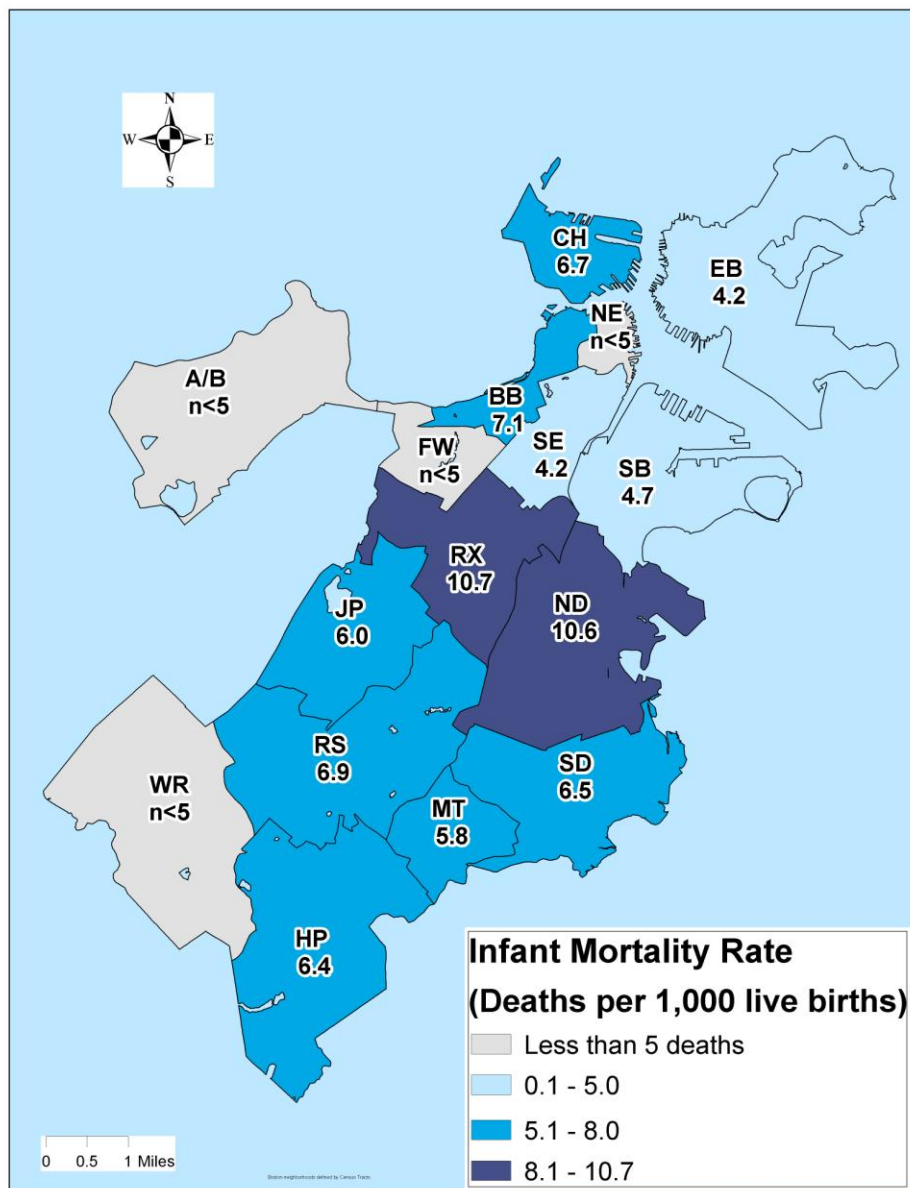


Mortality data are preliminary and should be interpreted with caution. See NOTES.  
 DATA SOURCE: Boston resident linked birth/death files (death cohort), Massachusetts Department of Public Health

The infant mortality rates (IMRs) for Black infants was the highest among all racial/ethnic groups, irrespective of maternal education. Among Black and Latino mothers, the IMR was highest for those with a high school diploma. For all racial/ethnic groups, too few infant deaths occurred for mothers with less than a high school diploma to permit the presentation of IMRs. No IMRs are presented for Asians because too few infant deaths occurred in each of the maternal education categories.

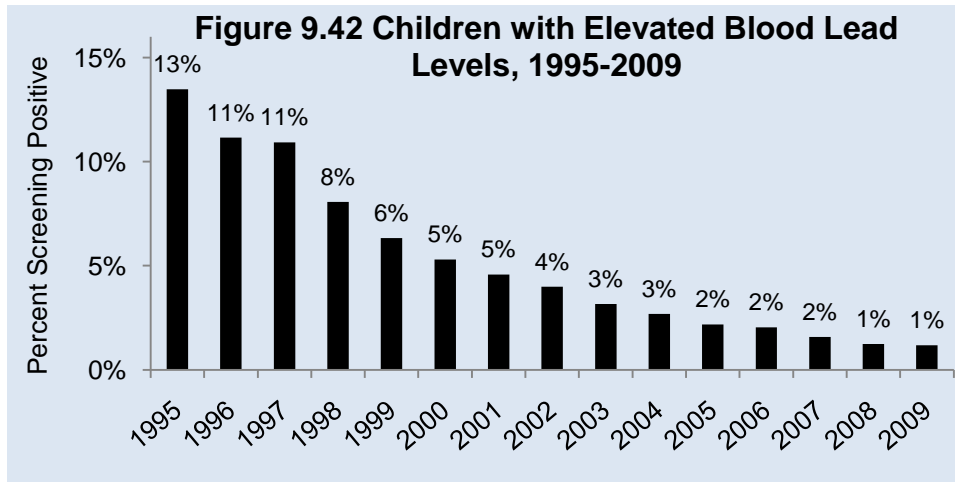


Figure 9.41 Infant Mortality by Neighborhood, 2006-2008



During 2006-2008 combined, Roxbury and North Dorchester had the highest infant mortality rates (IMRs) among Boston neighborhoods. Those rates were 65% and 63%, respectively, higher than the overall Boston rate of 6.5 infant deaths per 1,000 live births.

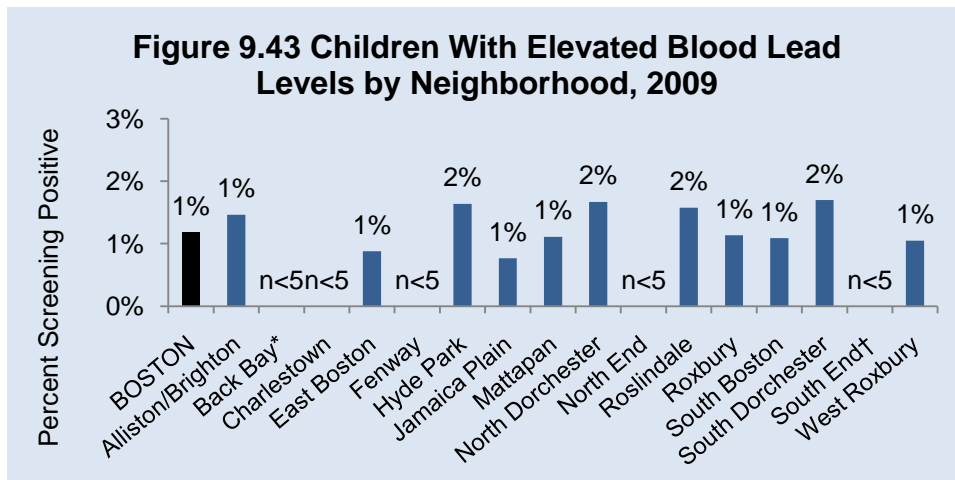
The IMRs for East Boston, Mattapan, South Boston, and the South End were below the overall Boston rate, and four other Boston neighborhoods had too few infant deaths to permit the presentation of IMRs.



DATA SOURCE: Boston Public Health Commission Office of Environmental Health

Elevated blood lead levels in children have been linked to nervous system damage, behavior and learning difficulties, stunted growth and hearing disorders.

In 2009, 23,514 children under age six were screened for elevated blood lead levels (defined as 10 micrograms per deciliter- [µ/dl] or higher). Of the children screened, 1% had elevated blood lead levels. This proportion is similar to percentages for 2008, but has decreased substantially from 1995 when 13% had elevated blood lead levels.

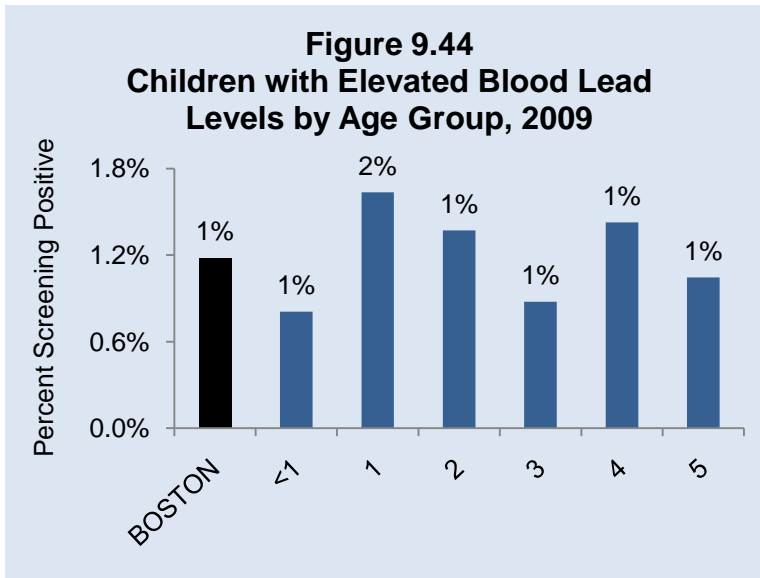


\*Uncludes Beacon Hill, Downtown, and the West End

†Includes Chinatown

DATA SOURCE: Boston Public Health Commission Office of Environmental Health

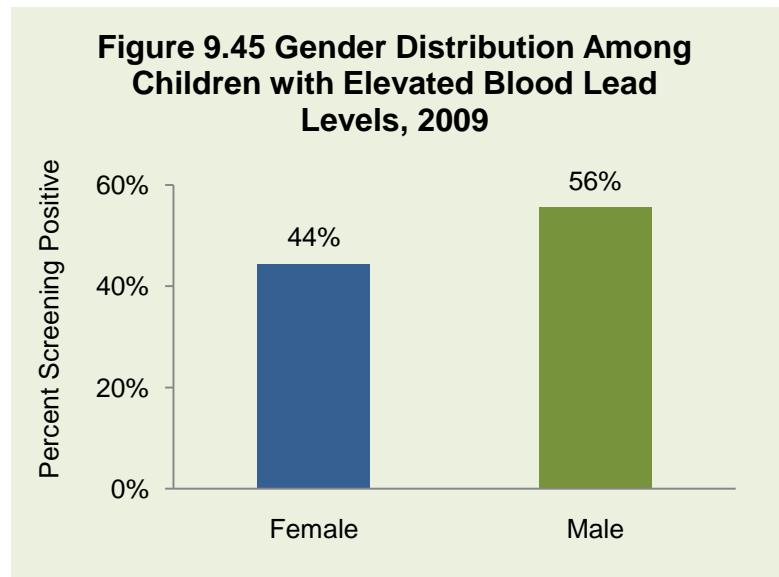
North and South Dorchester, each with 2% of tested children with elevated blood lead level had the highest percentages among Boston neighborhoods in 2009.



One year old children had the highest percentage of positive screenings in 2009 (2%).

DATA SOURCE: Boston Public Health Commission Office of Environmental Health

In 2009, a higher percentage of children who screened positive for elevated blood lead levels were male.



DATA SOURCE: Boston Public Health Commission Office of Environmental Health

## Summary: Maternal and Child Health

Maternal characteristics, socioeconomic status, and neighborhood of residence are important factors that play in the health of mothers, but more importantly, in their contribution to the major causes of poor infant health — low birthweight (LBW), preterm (premature) births, and infant mortality. In Boston, Black and Latino residents have disproportionately higher rates of infant mortality and higher percentages of low birthweight births, preterm births, and births to adolescents and teen mothers.

Between 1995 and 2007, Black women in the US had the highest percentages of both LBW and preterm births, although in 2008, White women had the highest percentage of LBW births. This may be attributable to the use of assisted reproductive technology. The Healthy People 2010 target for low birthweight births is 5.0% of live births. The Healthy People 2010 target for preterm births is 7.6% of live births. So far, these targets have not been met by Boston overall nor by most of Boston's racial/ethnic groups.

The Healthy People 2010 target for infant mortality rates is to be below 4.5 infant deaths per 1,000 live births. So far, Boston White infants have met that target for 8 of the 13-years of the period 1996-2008. Boston IMRs have consistently been highest among Black infants; in 2008, the IMR for Black infants was 14.6 infant deaths per 1,000 live births. The IMR among Latino infants was 8.1 infant deaths in 2008, an increase of 19% from 2007.

Adolescent pregnancy is a maternal characteristic associated with long-term socioeconomic consequences (2). Between 2007 and 2008, adolescent birth rates for females ages 15-17 declined for all racial/ethnic groups, with the exception of White adolescents. Although the greatest decline was observed among Black adolescents (28%), birth rates continued to be substantially higher for Black and Latino

adolescents in comparison to White and Asian adolescents.

Eliminating the widespread and pervasive inequities for birth outcomes is critical to improving the health of Boston mothers and their infants and reducing infant mortality rates for Black infants.

Among Boston children ages six and under who were screened for an elevated blood lead level, the percentage who were positive was extremely low compared to the levels experienced ten years earlier.



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## Notes and Data Analysis

**Figure 9.1**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.2**

NOTE: These data do not include persons whose race/ethnicity was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.3**

NOTE: These data do not include persons whose age was not reported, except in the Boston percentage.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.4**

NOTE: There were too few adolescent births among Asians ages 15-17 in 2002, 2003, and 2004 to permit the presentation of rates. These data do not include persons whose race/ethnicity was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.5**

NOTE: These data do not include persons whose race/ethnicity was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.6**

NOTE: These data do not include births whose maternal education level was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.7**

NOTE: These data do not include births whose maternal and paternal education levels were not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.8**

NOTE: These data do not include births whose maternal smoking status and education level were not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.9**

NOTE: Vaginal births include vaginal, VBAC, forceps, and vacuum births. Totals do not include missing values.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.10**

NOTE: These data do not include births whose maternal place of birth was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.11**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.12**

NOTE: These data do not include persons whose race/ethnicity was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.13**

NOTE: These data do not include births whose maternal place of birth was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.14**

NOTE: These data do not include births whose maternal education levels were not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.15**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office



**Figure 9.16**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.17**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.18**

NOTE: These data do not include births where mother's race/ethnicity was not reported, except in the Boston overall.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.19**

NOTE: These data do not include births where mother's race/ethnicity and education level were not reported.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.20**

NOTE: These data do not include births where mother's place of birth was not reported.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.21**

NOTE: These data do not include births whose maternal smoking status was not reported.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.22**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.23**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.24**

NOTE: These data do not include births where mother's race/ethnicity was not reported, except in the Boston overall.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.25**

NOTE: These data do not include births where mother's race/ethnicity and education level were not reported.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.26**

NOTE: These data do not include births where mother's place of birth was not reported.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.27**

NOTE: These data do not include births whose maternal smoking status was not reported.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.28**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.29**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.30**

NOTE: These data does not include births whose maternal education status was not reported.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.31**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.32**

NOTE: Rates are not presented for Asians from 1995-2008 and Whites in 2004 due to the small number of infant deaths.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.33**



DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.34**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.35**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.36**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.37**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.38**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.39**

NOTES: These data do not include births where maternal age was not reported. Rates are not presented for ages 15-17 and 40+ due to the small number of infant deaths.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.40**

NOTE: These data do not include births mother's race/ethnicity and education level were not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.41**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 9.42**

NOTE: These data may include some children over the age of 6 who may be in follow-up care.

DATA ANALYSIS: Boston Public Health Office of Environmental Health

**Figure 9.43**

NOTE: There were too few cases of children who screened positive to permit presentation of percentages for Back Bay, Charlestown, North End and South End. These data shown in the chart do not include those children whose neighborhood of residence is unknown or those children whose who are not Boston residents.

DATA ANALYSIS: Boston Public Health Office of Environmental Health

**Figure 9.44**

NOTE: These data do not include persons whose age was not reported, except in the Boston overall count and rate.

DATA ANALYSIS: Boston Public Health Office of Environmental Health

**Figure 9.45**

NOTE: These data do not include persons whose gender was not reported.

DATA ANALYSIS: Boston Public Health Office of Environmental Health

## Section 10: Sexual Health

Sexual health relates to all aspects of human sexual interaction including healthy relationships and attitudes toward sexuality, safe sexual experiences, and the absence of disease. The most accessible data available to help understand, monitor, and improve the sexual health of a population are data on self-reported sexual activity and sexual behaviors, and sexually transmitted diseases (STDs).

Estimates from the Centers for Disease Control and Prevention (CDC) suggest that there are approximately 19 million new cases of STDs each year.

Approximately half of these cases occur among people 15 to 24 years of age (1). Moreover, profound disparities in the incidence and prevalence of STDs have been documented by education, income, geographic location, sexual orientation, and race/ethnicity.

Individual sexual behaviors including age of initiation of sexual activity, number of lifetime sexual partners, condom use, and substance or alcohol use during sex are associated with the level of risk for STDs. However, prior studies have documented that these individual risk behaviors do not fully account for the marked racial disparities that disproportionately affect Blacks (2) (3). The social determinants of health, namely, poverty, poor physical conditions of neighborhoods, disproportionate incarceration, and patterns of residential segregation have been shown to be key factors in shaping the dynamics of STDs (3) (4) (5).

Active efforts to prevent, control, and eliminate disparities in sexual health must continue to address awareness and education for residents of all ages regarding the reduction of risk behaviors and the provision of preventive services in underserved neighborhoods. In addition,

increased attention must be given to the development of prevention and intervention strategies that take into account the social determinants of health.

This section provides a more detailed understanding of the sexual health of Boston youth and adult residents by presenting data on self-reported sexual behaviors and on the three reportable and most common sexually transmitted diseases: chlamydia, gonorrhea, and syphilis.

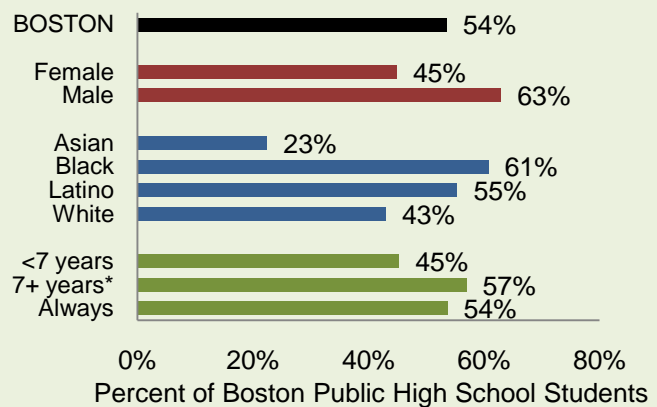


Sexual activity is an area of exploration for adolescents which may involve risky behaviors (6). Adolescent sexual activity can result in unplanned pregnancy and sexually transmitted diseases (STDs) (7).

In 2009, 54% of Boston public high school students reported ever having sex. A higher percentage of male students compared to female students reported ever having sex.

A higher percentage of Black students reported ever having sex in comparison to White and Asian students.

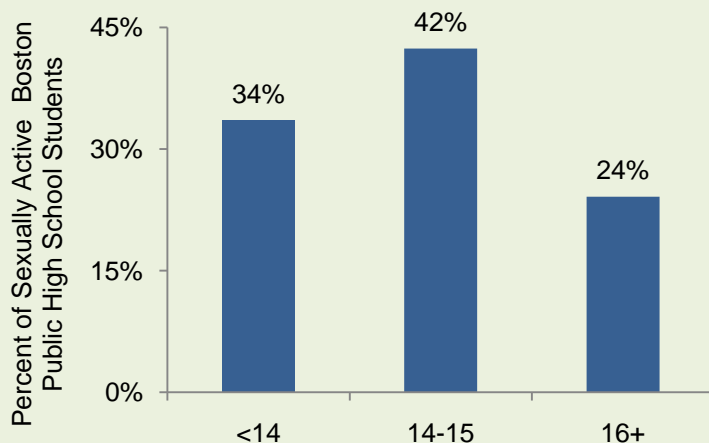
**Figure 10.1 High School Students Who Ever Had Sex by Selected Indicators, 2009**



\*Respondents had lived in the US for 7 years or more, but had not always lived in the US.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System, Centers for Disease Control and Prevention

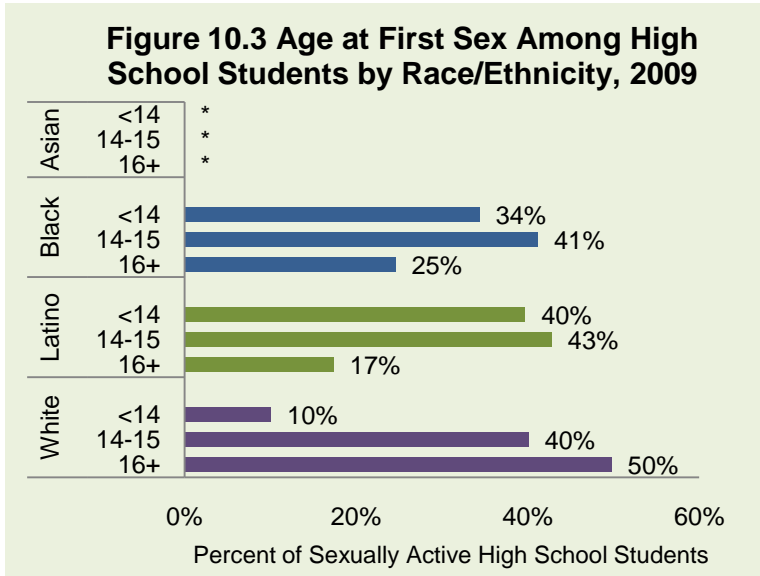
**Figure 10.2 Age at First Sex Among High School Students, 2009**



Early age at first sex has been associated with an increased risk of sexually transmitted diseases (8).

Among sexually active Boston public high school students (i.e., students who reported ever having sex), 34% reported having sex for the first time before the age of 14.

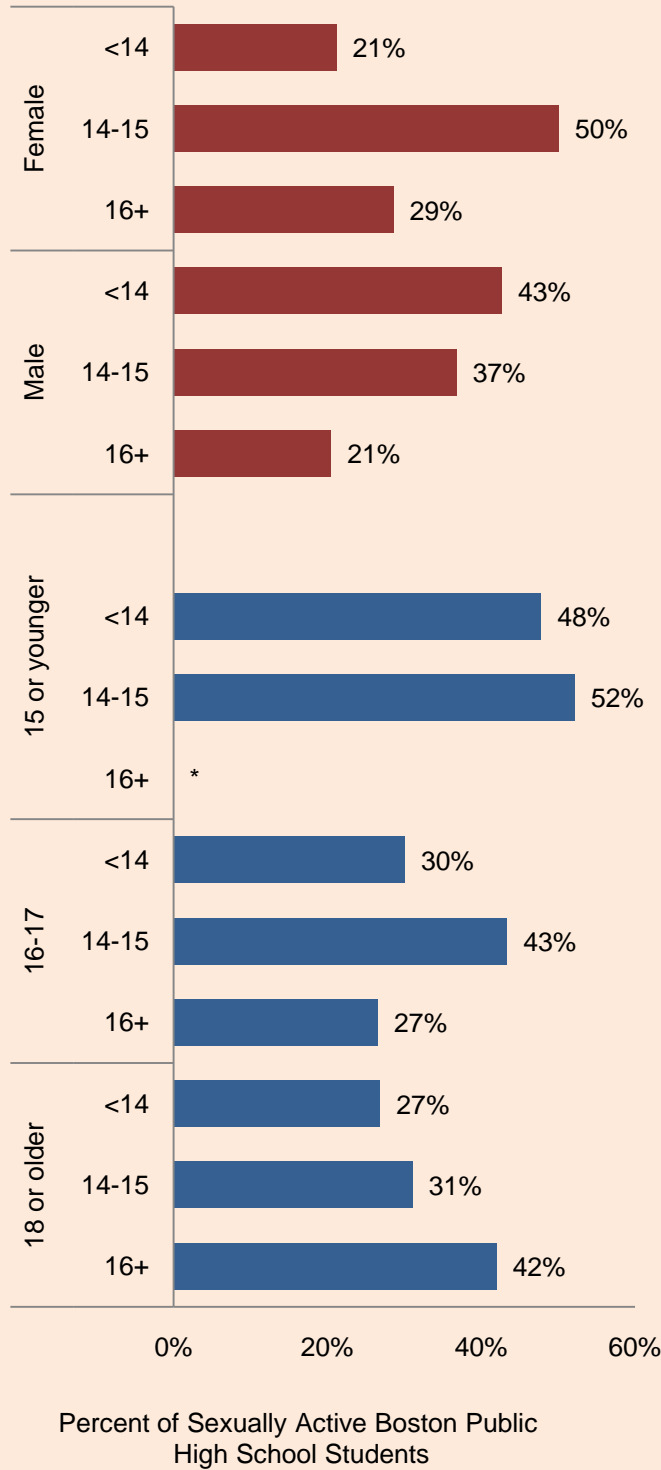
DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System, Centers for Disease Control and Prevention



Racial/ethnic differences in age at first sex were observed among sexually active Boston high school students. A higher percentage of Black and Latino adolescents reported having sex at earlier ages (before age 14) when compared to White adolescents.

\*Insufficient sample size for Asians  
 DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System, Centers for Disease Control and Prevention

**Figure 10.4 Age at First Sex Among High School Students by Gender and Age, 2009**



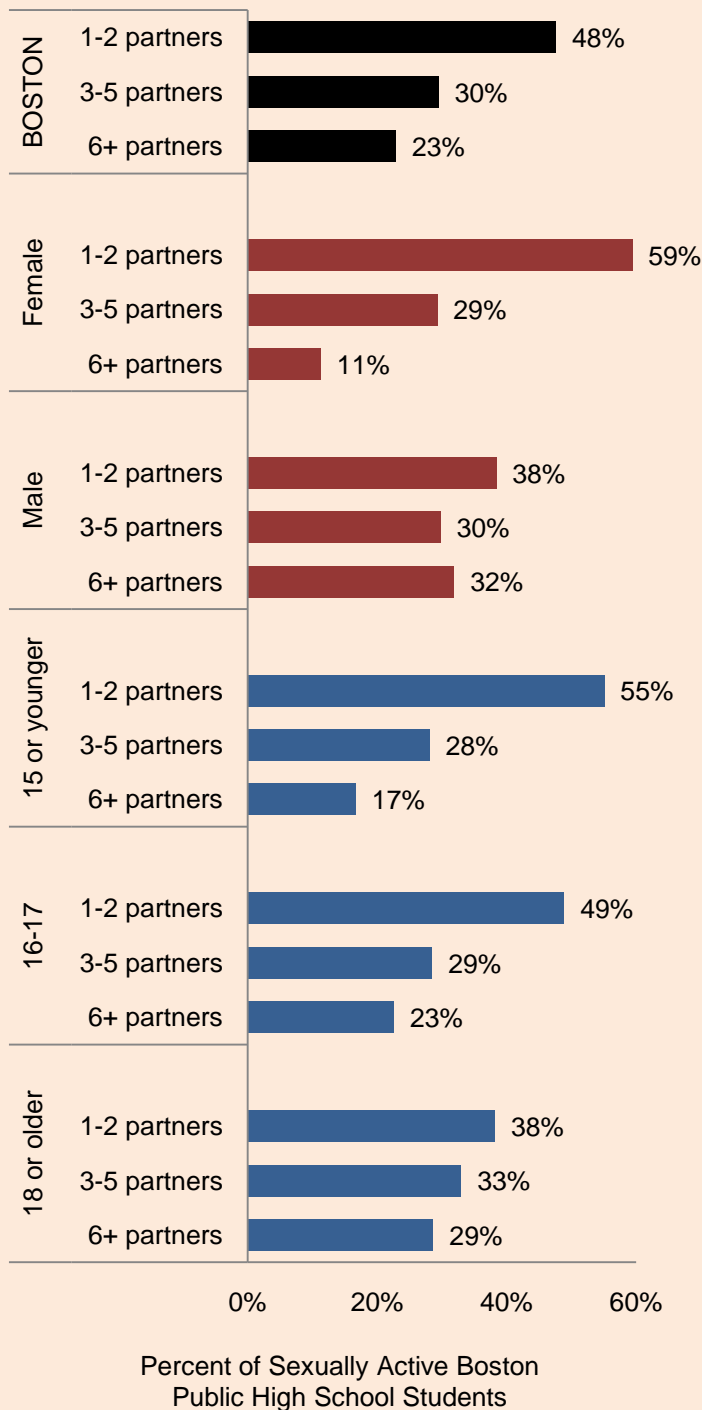
Among sexually active Boston public high school students (i.e., students who reported ever having sex), a higher percentage of males compared to females reported having sex for the first time before the age of 14.

Fifty percent of sexually active Boston public high school females reported having sex for the first time between ages 14 and 15.

Data in figure 10.4 provide the percent of students within each age group who had their sexual debut before the age of 14, between ages 14 and 15, and at the age of 16 or older.

\*Insufficient sample size  
 DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System, Centers for Disease Control and Prevention

**Figure 10.5 Number of Lifetime Partners Among High School Students By Age and Gender, 2007 and 2009 Combined**



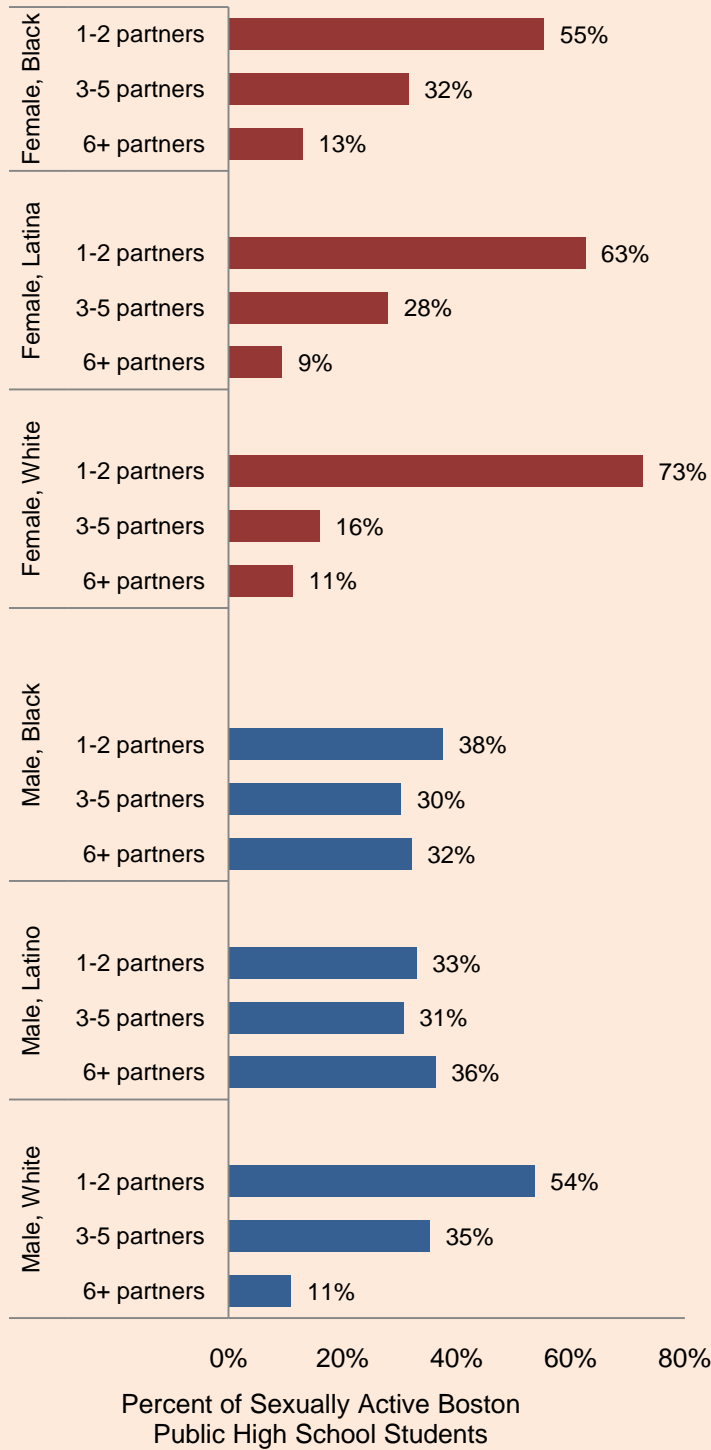
There is an association between the number of sexual partners and risk of STDs and HIV/AIDS (9, 10).

For 2007 and 2009 combined, 23% of sexually active Boston public high school students (i.e., students who reported ever having sex) reported having six or more partners.

A higher percentage of sexually active high school males compared to females reported six or more lifetime partners.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System, Centers for Disease Control and Prevention

**Figure 10.6 Number of Lifetime Partners Among High School Students By Race/Ethnicity\* and Gender, 2005, 2007 and 2009 Combined**



Gender and racial/ethnic differences in the number of lifetime sexual partners reported by high school students were observed.

Among sexually active Boston high school female students, a statistically similar percentage of Blacks, Latinos, and Whites had six or more lifetime sexual partners. Among male students, a higher percentage of Blacks and Latinos had six or more lifetime sexual partners compared to White males.

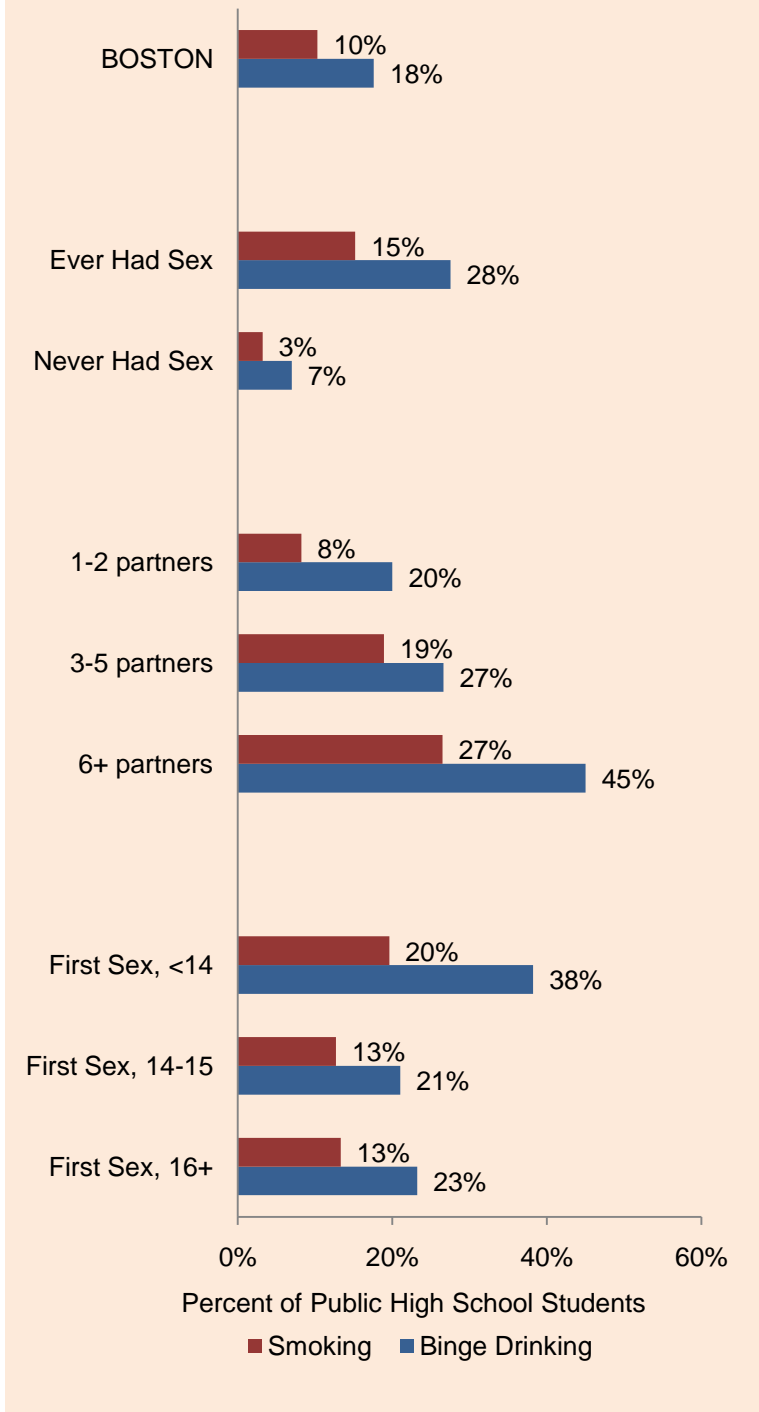
Higher percentages of Black and Latino males reported six or more lifetime sexual partners than Black and Latina females.

The composition of adolescent social and sexual networks may contribute to the variation in number of lifetime sexual partners by race/ethnicity and gender (9).

\*Insufficient sample size for Asians  
 DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System, Centers for Disease Control and Prevention



**Figure 10.7 Binge Drinking and Current Smoking Among High School Students by Selected Indicators, 2009**



There is a link between adolescent alcohol and substance use and engaging in high-risk sexual behaviors, such as early sexual debut, having sexual intercourse without a condom, and sex with multiple partners (9).

Among Boston high school students, 10% reported smoking and 18% reported binge drinking during the past 30 days.

Higher percentages of students who reported ever having sex also reported smoking and binge drinking during the past 30 days in comparison to students who never had sex.

Higher percentages of students who reported having at least six partners during their lifetime reported binge drinking and smoking during the past month compared to students who reported having one to two partners.

The percentage of high school students who reported smoking in the past 30 days was statistically similar across age at first sex.

A higher percentage of students who had their first sexual intercourse before age 14 binged during the past month compared to students who had their first sex between ages 14 and 15.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System, Centers for Disease Control and Prevention

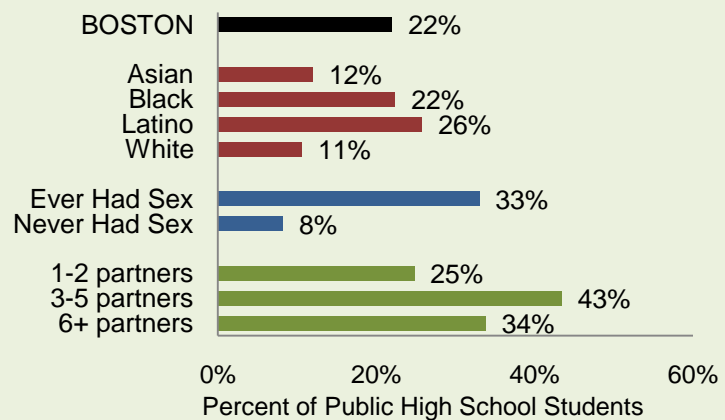
HIV testing is an important prevention strategy. Approximately 22% of Boston public high school students have ever been tested for HIV.

Higher percentages of Latino and Black students reported being tested compared to White and Asian students.

A higher percentage of students who ever had sex reported having been tested compared to students who never had sex.

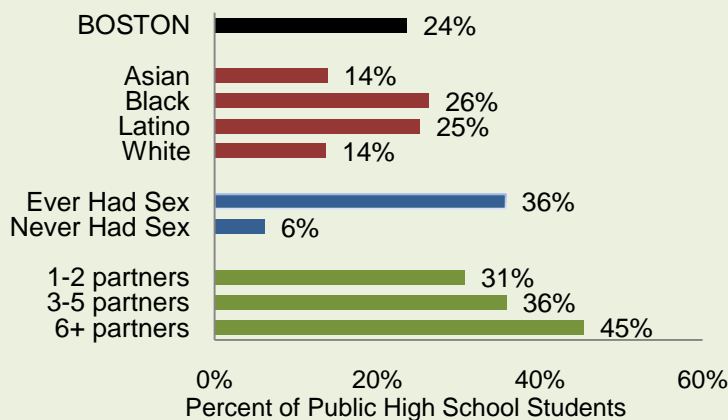
A higher percentage of students with three to five sexual partners reported ever being tested compared to students with one to two partners. There was no statistical difference seen between having three to five partners and having six or more partners.

**Figure 10.8 Ever Tested for HIV Among High School Students by Selected Indicators, 2009**



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System, Centers for Disease Control and Prevention

**Figure 10.9 Ever Tested for STDs Among High School Students by Selected Indicators, 2007**



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System, Centers for Disease Control and Prevention

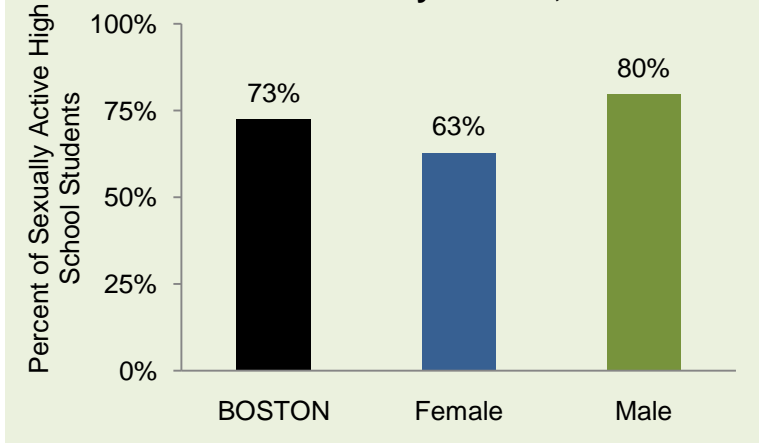
Among Boston public high school students 24% reported having been tested for STDs.

A higher percentage of Black and Latino students reported ever been tested compared to White and Asian students.

A higher percentage of high school students who reported ever having sex had been tested for STDs compared to students who never had sex.

A higher percentage of students with six or more lifetime sexual partners had been tested for STDs compared to students with one to two sexual partners.

**Figure 10.10 Condom Use During Last Sex Among Sexually Active High School Students by Gender, 2009**



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavioral Surveillance System, Centers for Disease Control and Prevention

Use of latex condoms can prevent pregnancy and the transmission of STDs and HIV/AIDS (11).

Approximately seven out of ten sexually active Boston public high school students reported using a condom during last sex.

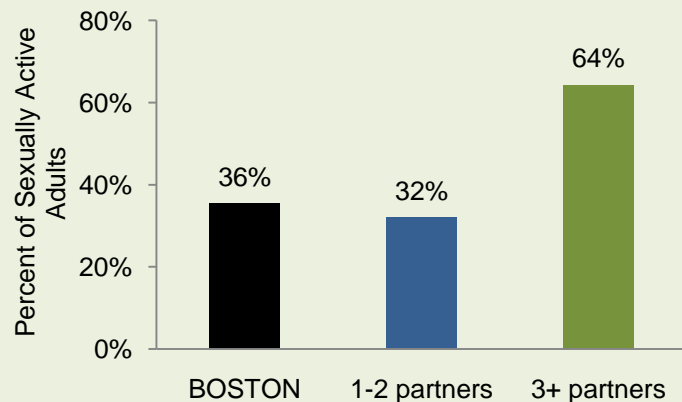
Due to using another form of contraception, women may tend not to use condoms as frequently as men (11). Among sexually active Boston public high school students, a higher percentage of males reported condom use during last sex compared to female students.

Approximately 75% of Boston residents reported having sexual intercourse in the past year (data not shown) while 36% of residents who had sex in the last year reported condom use during last sex.

A higher percentage of adults with three or more partners in the past 12 months reported condom use during last sex in comparison to adults with one or two partners.

Reasons that were selected for no condom use during last sex included: being in a monogamous relationship (53%), using another form of birth control (21%), trying to get pregnant (7%), and did not like to use condoms (6%) (data not shown).

**Figure 10.11 Condom Use During Last Sex Among Adults by Number of Partners in the Past 12 months, 2008**



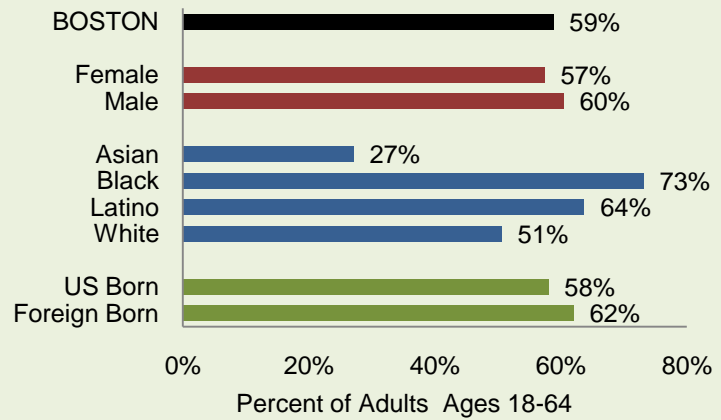
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission

Approximately 60% of adult Boston residents ages 18-64 reported having been tested for HIV.

There were no significant differences in the percentage of adults who reported having been tested for HIV by gender or country of birth.

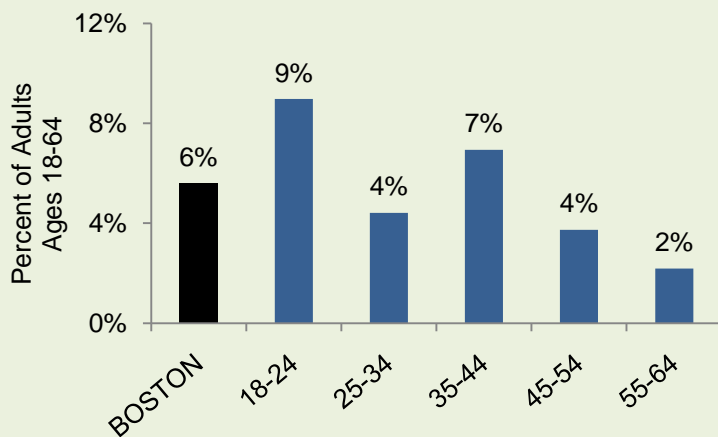
A higher percentage of Black and Latino adults compared to Asian and White adults reported being tested for HIV.

**Figure 10.12 Ever Tested for HIV Among Adults by Selected Indicators, 2008**



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission

**Figure 10.13 Risk Behaviors Among Adults by Age, 2008**



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission

High-risk factors for the transmission and acquisition of HIV/AIDS include sharing equipment for intravenous drug use; having unprotected anal, vaginal or oral sex; exchanging sex for drugs or money; and having been diagnosed with an STD (12).

Only 6% of Boston adults ages 18-64 reported at least one of the four high-risk HIV behaviors.

## What is chlamydia?

Chlamydia is a sexually transmitted disease caused by the bacterium *Chlamydia trachomatis*. Chlamydial infection is the most commonly reported disease in the United States. About 50% of infected men and 75% of infected women have no symptoms, may not be aware of their status, and do not seek testing. Chlamydia can permanently damage a woman's reproductive organs if not treated promptly (13).

## Population at greatest risk

Any person who is sexually active is at risk for chlamydia infection. However, young women ages 15-24 are at greatest risk for chlamydia infection, possibly due to the cervix not being fully matured. Since chlamydia can also be transmitted by oral or anal sex, men who have sex with men are also at risk (13).

## Prevention

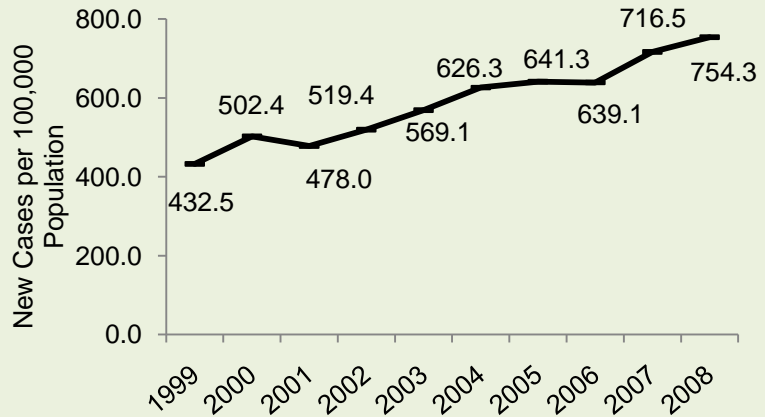
Latex male condoms, when used consistently and correctly, can reduce the risk of transmission of chlamydia. Yearly chlamydia testing of all sexually active women ages 25 or younger, older women with risk factors for chlamydia infections (those who have a new sex partner or multiple sex partners), and all pregnant women is recommended.

The US and Boston rate of reported new cases of chlamydia has been on the rise in recent years.

In 2008, the US rate of reported new cases of chlamydia, 401.3 per 100,000 population (data not shown) (13)(14) was lower than the Boston rate of reported new cases of chlamydia (754.3 per 100,000 population).

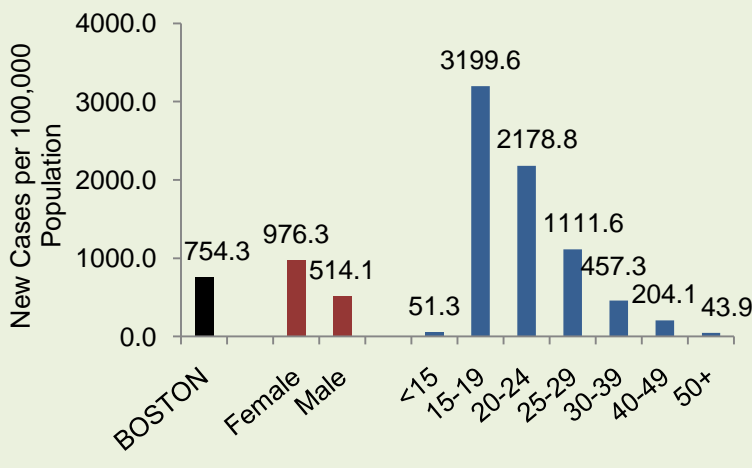
The Boston rate of new cases increased 74% from 1999 to 2008. The increase in reported chlamydia infections may reflect the expansion of chlamydia screening activities, use of increasingly sensitive diagnostic tests and an increased emphasis on case reporting (14).

**Figure 10.14 Chlamydia Rates, 1999-2008**



DATA SOURCE: Massachusetts Department of Public Health, STD Division

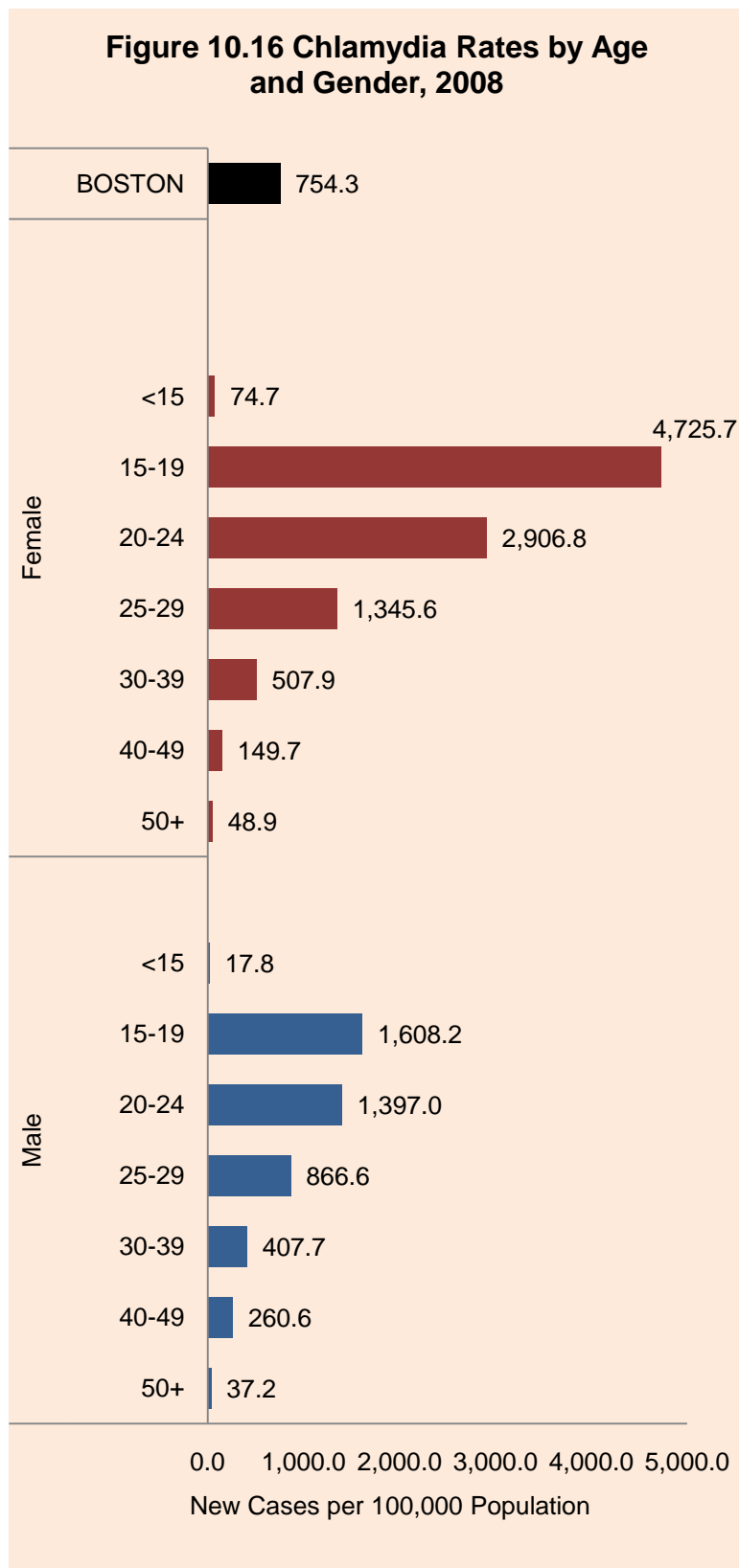
**Figure 10.15 Chlamydia Rates by Gender and Age, 2008**



DATA SOURCE: Massachusetts Department of Public Health, STD Division

The rate of new cases of chlamydia in females in 2008 was 90% higher than the rate for males. The difference between males and females may reflect a higher number of women being screened for chlamydia (14).

Reported chlamydia infection was most common among young people ages 15-19 and fell off steeply with increasing age.



DATA SOURCE: Massachusetts Department of Public Health, STD Division

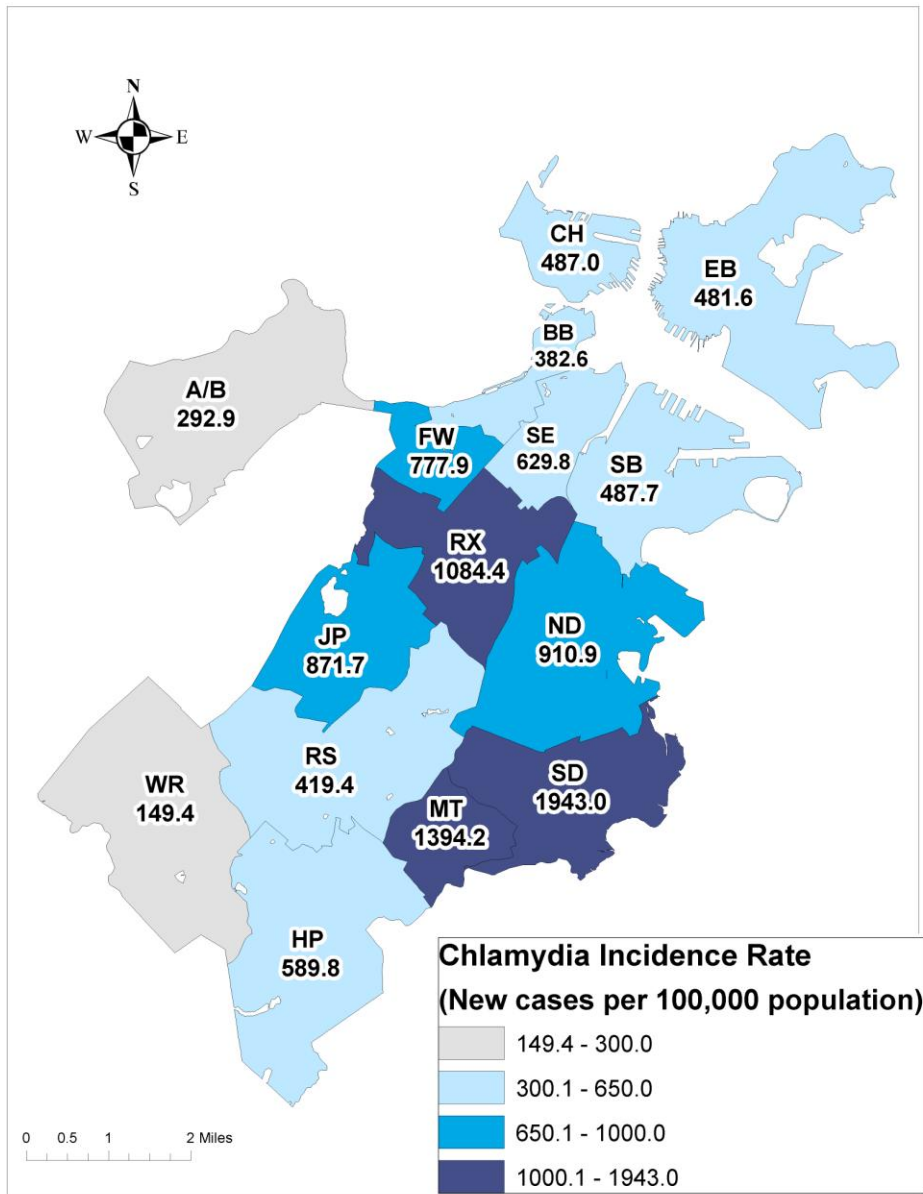
In 2008, the highest age and gender specific rate of new cases of chlamydia in the US (data not shown) was reported among females ages 15-19 (3,275.8 per 100,000 population) and females ages 20-24 (3,179.9 per 100,000 population).

A similar trend was observed in Boston; however, the age and gender specific chlamydia rates were higher. The rate of new chlamydia infections among females ages 15-19 (4,725.7 per 100,000 population) was the highest age-specific rate and was close to three times the rate of males of the same age group (1,608.2 per 100,000 population). The rate of new chlamydia cases among females ages 20-24 was twice the rate of males of the same age group.

Due to improved access to STD data and observed high percentages of missing racial ethnic group designation within STD chlamydia and gonorrhea data across years, BPHC will refrain from further reporting chlamydia and gonorrhea rates by race/ethnicity until levels of missing data fall within acceptable limits. Given that these data are collected by the Massachusetts Department of Public Health, BPHC has limited ability to influence reporting practices. For further explanation, please contact the BPHC Research and Evaluation Office.



Figure 10.17 Chlamydia New Cases by Neighborhood, 2008



DATA SOURCE: Massachusetts Department of Public Health, STD Division

Geographic differences in the incidence of chlamydia were observed among neighborhoods in Boston. In 2008, several neighborhoods had a chlamydia incidence rate well above the overall city rate (555.0 per 100,000 population). South Dorchester, Mattapan, and Roxbury had the highest incidence rates. Moreover, these neighborhoods are among those with low median household income (see Socio-Economic Conditions, Section 3).

## What is gonorrhea?

Gonorrhea is a sexually transmitted disease caused by the bacterium *Neisseria gonorrhoea*. Gonorrhea is the second most commonly reported notifiable disease in the US. Signs and symptoms include a burning sensation when urinating, or a white, yellow, or green discharge from the penis or vagina. Infected individuals may have no symptoms at all. Gonorrhea is spread through contact with the penis, vagina, mouth, or anus of an infected individual. Gonorrhea can also be spread from mother to baby during delivery. People who have had gonorrhea and received treatment may get infected again if they have sexual contact with a person infected with gonorrhea (15).

## Population at greatest risk

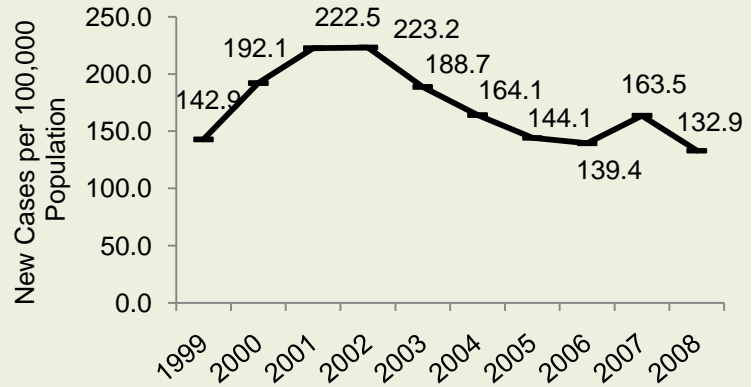
Any person who is sexually active is at risk for a gonorrheal infection. However, the highest rates of infection are seen among teenagers, young adults and African Americans (15).

## Prevention

Latex male condoms, when used consistently and correctly, can reduce the risk of transmission of gonorrhea. Any genital symptoms such as discharge or burning during urination or unusual sore or rash should be a signal to stop having sex and to see a doctor immediately (15).

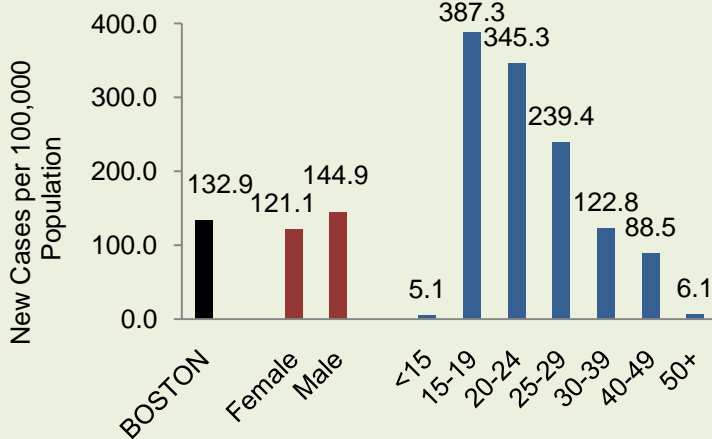
After rising sharply between 1999 and 2002, the rate of new cases of gonorrhea decreased from 2002 to 2006. The rate then increased 19.6% in 2007 and decreased 22.3% in 2008. The 2008 incidence rate of 132.9 per 100,000 population was the lowest rate for Boston since 1999.

**Figure 10.18 Gonorrhea Rates, 1999-2008**



DATA SOURCE: Massachusetts Department of Public Health, STD Division

**Figure 10.19 Gonorrhea Rates by Gender and Age, 2008**

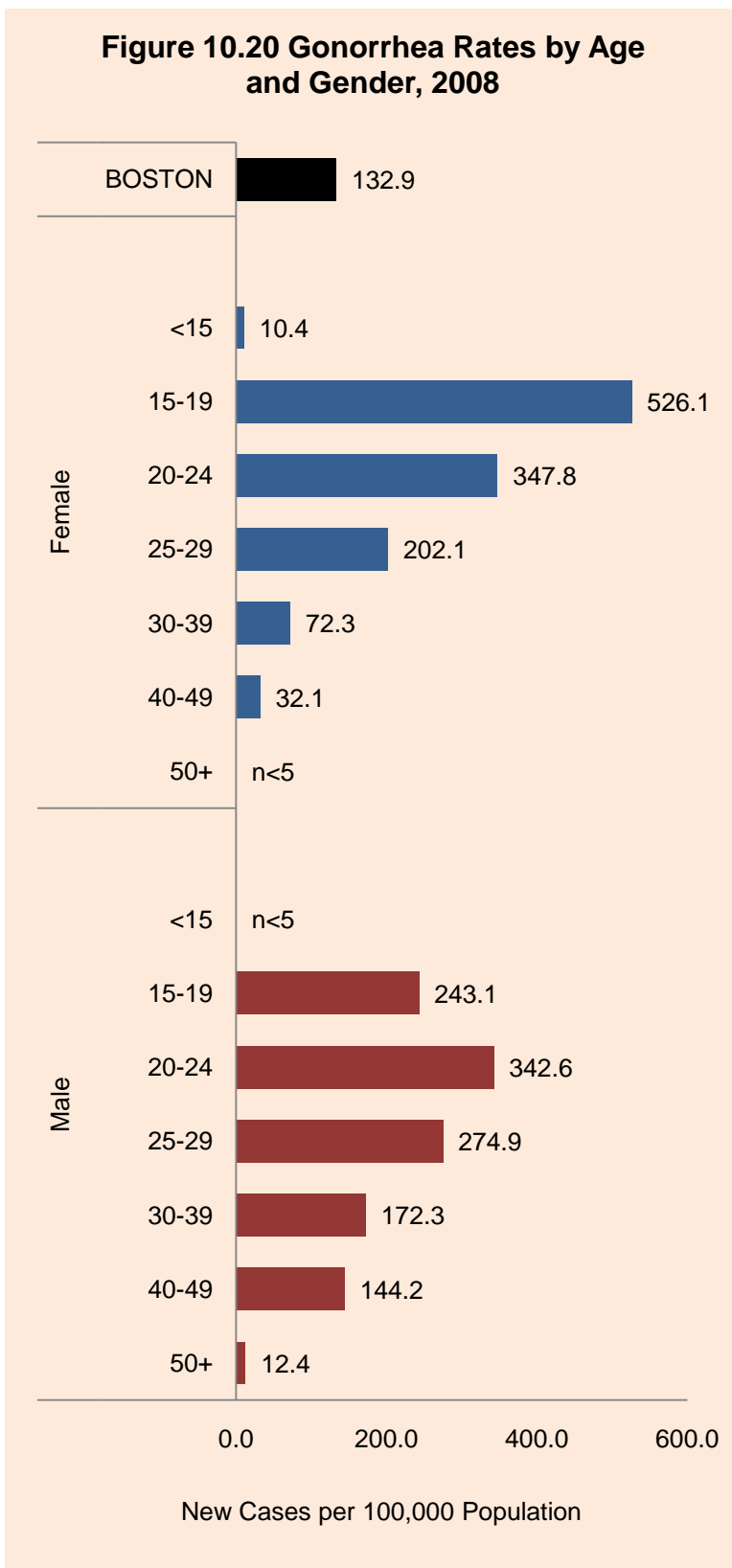


DATA SOURCE: Massachusetts Department of Public Health, STD Division

The gonorrhea incidence rate for males was 20% higher than the female rate.

Reported gonorrhea infection is most common among young people ages 15-19.

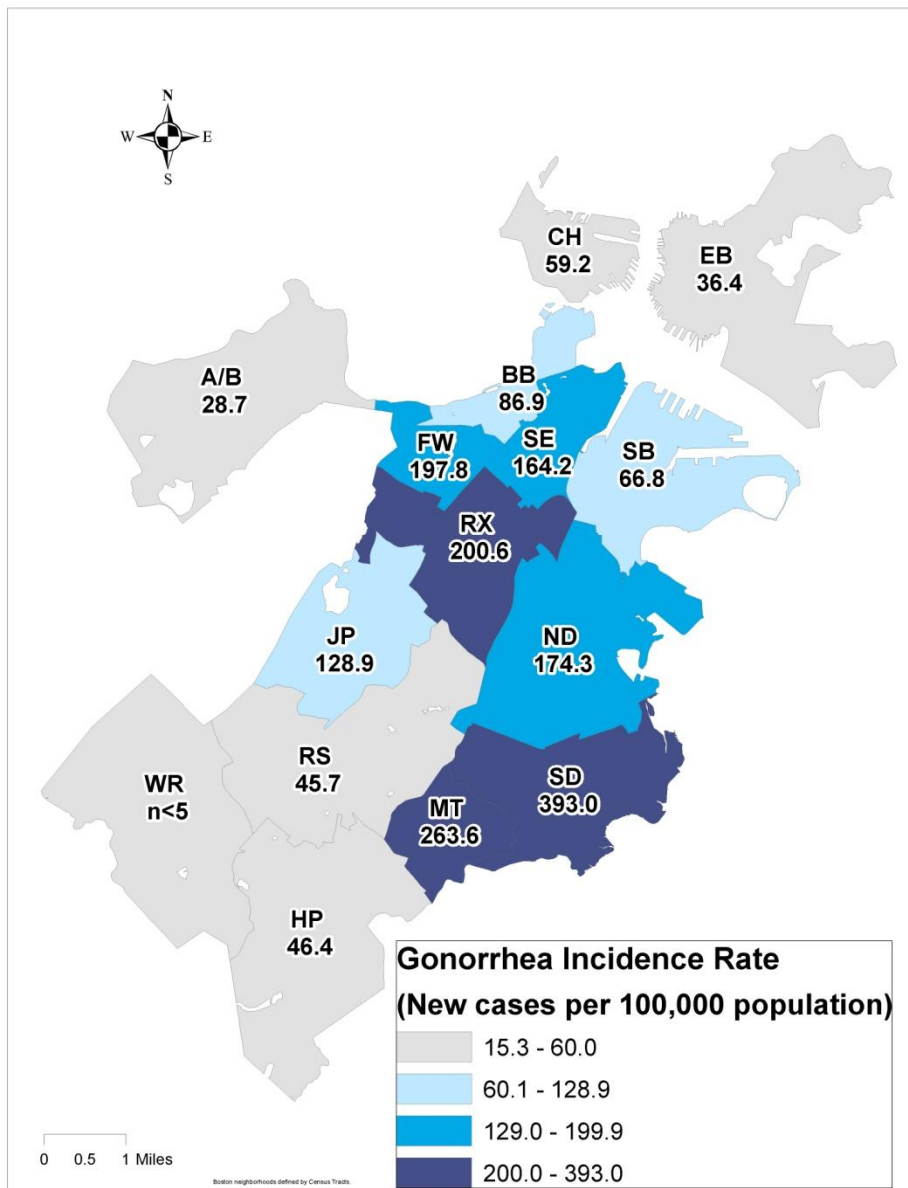
The lowest gonorrhea rate was seen among residents less than 15 years old.



The gonorrhea rate among females ages 15-19 (547.0 per 100,000 population) was the highest age-specific rate among Boston residents. This rate was more than twice the rate of males ages 15-19 (233.8 per 100,000 population). The highest rate among males, was observed among those ages 20-24 (320.2 per 100,000 population).

DATA SOURCE: Massachusetts Department of Public Health, STD Division

Figure 10.21 Gonorrhea New Cases by Neighborhood, 2008



DATA SOURCE: Massachusetts Department of Public Health, STD Division

Geographic differences in gonorrhea rates are also seen among the communities in Boston. Roxbury, South Dorchester, and Mattapan had the highest gonorrhea rates in 2008 with South Dorchester having the highest rate (393.0 per 100,000 population). As stated previously, these are the communities that have lower median household incomes in Boston and this factor may contribute to the higher gonorrhea rates.

## What is syphilis?

Syphilis is a sexually transmitted disease caused by the bacterium *Treponema pallidum*. Many people infected with syphilis do not have any symptoms for years, yet remain at risk for later complications if they are not treated. Initial symptoms include firm, round, small, and painless genital sores. In later stages, symptoms may include skin rashes and mucous membrane lesions. Sores occur mainly on the external genitals, vagina, anus, or in the rectum. Also, sores can occur on the lips and in the mouth. Syphilis is passed from person to person through direct contact with a syphilis sore. Transmission of the organism occurs during vaginal, anal, or oral sex. The syphilis bacterium can infect the baby of a woman during her pregnancy (16).

## Population at greater risk

Adults age 40 and older and men are at greater risk for syphilis infection. In 2006, men who have sex with men accounted for 64% of the syphilis cases in the US (16).

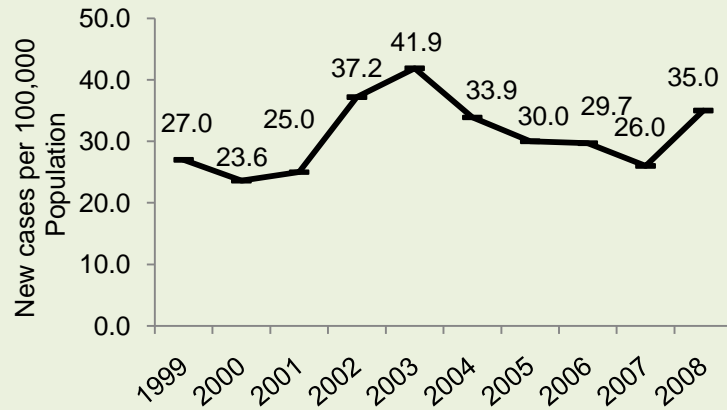
## Prevention

Latex male condoms, when used consistently and correctly, can reduce the risk of transmission of syphilis. Any genital symptoms such as an unusual sore or rash should be a signal to stop having sex and to see a doctor immediately (16).

Syphilis remains an important problem in urban areas.

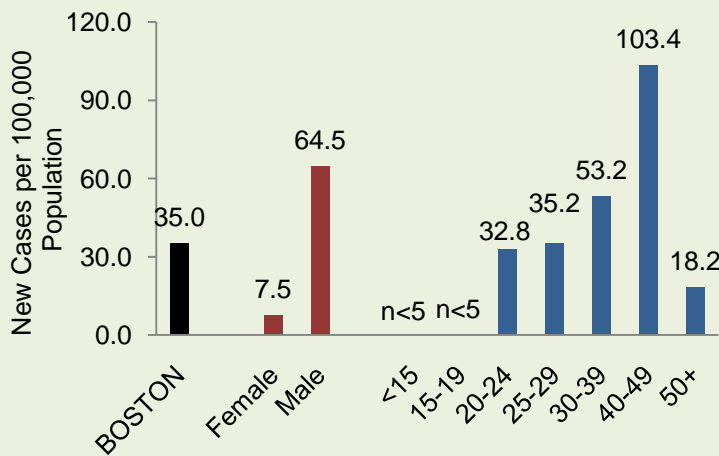
The syphilis incidence rate has fluctuated over the past decade. In 2003, the incidence peaked (41.9 cases per 100,000 population) and steadily decreased between 2003 and 2007. The syphilis rate increased 35% from 2007 to 2008. This increase is largely attributed to an increase in the number of reported syphilis infections in men who have sex with men.

**Figure 10.22 Syphilis Rates, 1999-2008**



DATA SOURCE: Massachusetts Department of Public Health, STD Division

**Figure 10.23 Syphilis Rates by Gender and Age, 2008**

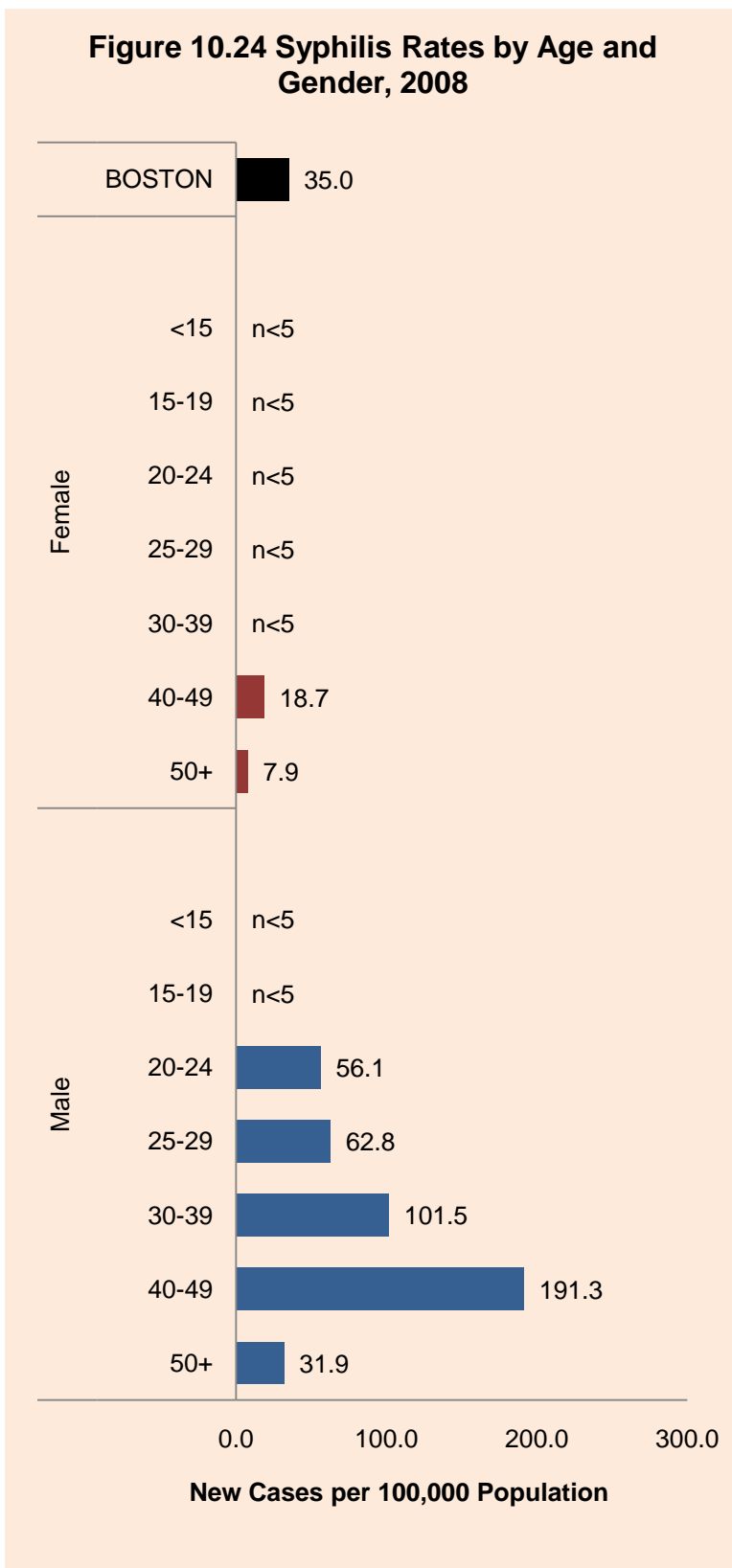


The rate of syphilis among males (64.5 per 100,000 population) was approximately 9 times the rate for females (7.5 per 100,000 population).

Syphilis is most common among adults ages 40-49.

DATA SOURCE: Massachusetts Department of Public Health, STD Division



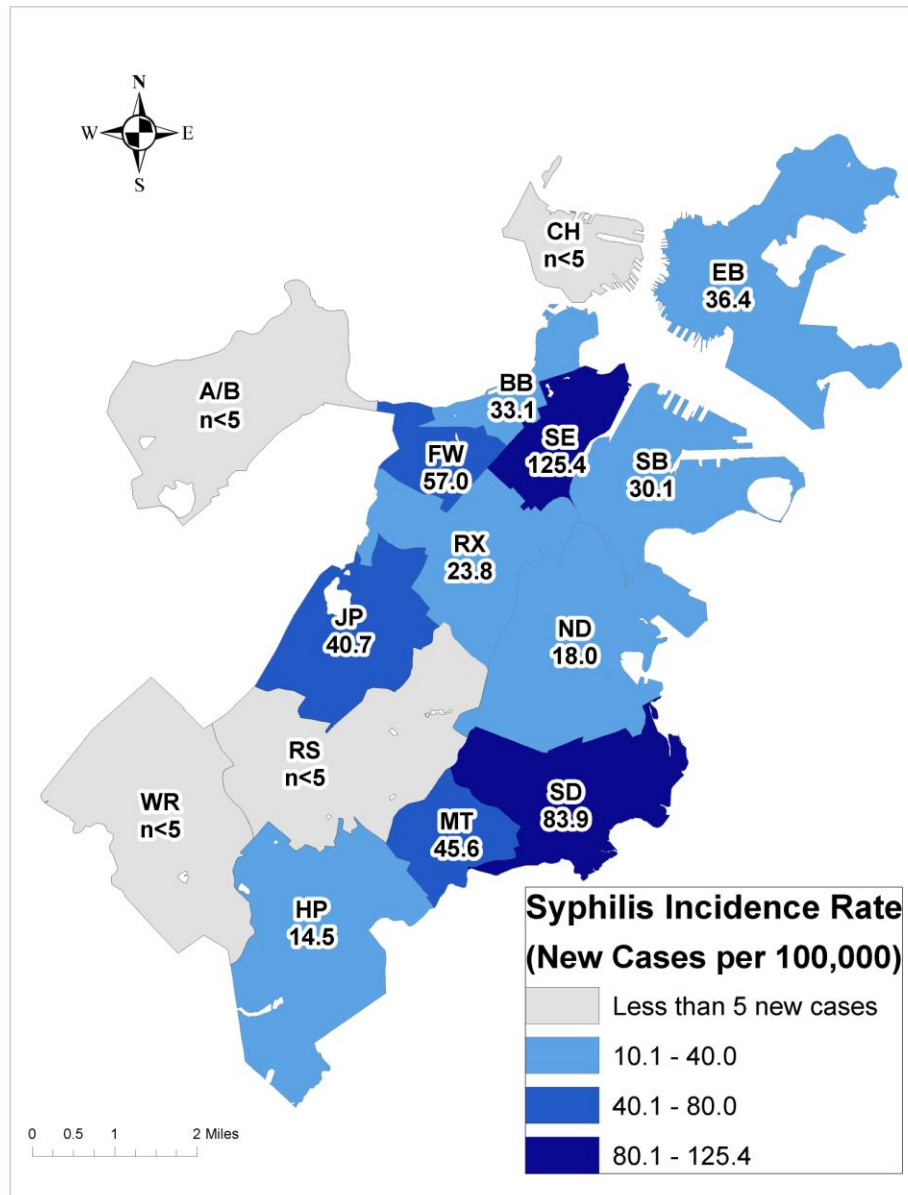


Among Boston residents, the highest rate of new cases of syphilis infection occurred among males ages 40-49 (184.4 per 100,000 population). This rate was approximately 10 times the rate among females ages 40-49 (19.4 per 100,000 population).

National estimates of syphilis suggest that the rate of new infections of syphilis is highest among men ages 20-24 and 25-29 (17.3 and 17.2 per 100,000 population, respectively) (17).

DATA SOURCE: Massachusetts Department of Public Health, STD Division

Figure 10.25 Syphilis New Cases by neighborhood, 2008



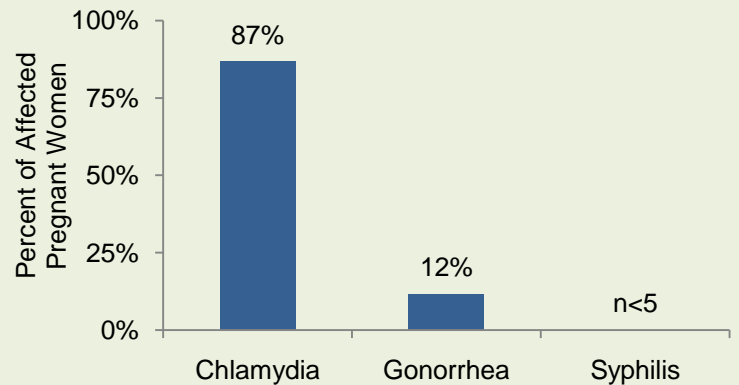
DATA SOURCE: Massachusetts Department of Public Health, STD Division

In 2008, the South End and South Dorchester had the highest syphilis rates in Boston. The South End syphilis rate (125.4 per 100,000 population) was approximately three and a half times the overall Boston rate (35.4 per 100,000 population). The syphilis rate for South Dorchester (83.9 per 100,000 population) was approximately twice the overall Boston rate.

Women who have STDs can pass the infection to the baby before, during, or after the baby's birth. This can lead to harmful effects in babies, including stillbirth, low birth weight, and neurologic damage (18).

Among pregnant women reporting a sexually transmitted disease, approximately nine in ten were chlamydia infections, and about one in ten was a gonorrhea infection.

**Figure 10.26 Chlamydia, Gonorrhea and Syphilis Among Affected Pregnant Women, 2008**



DATA SOURCE: Massachusetts Department of Public Health, STD Division

## Summary: Sexual Health

The data presented here provide a picture of the sexual behavior, activity, and burden of sexually transmitted diseases among Boston public high school students and adult residents.

Over half of public high school students reported ever having sexual intercourse and 34% of those who had sex reported having sexual intercourse for the first time before age 14. Risky sexual behaviors among high school students differed by gender and race/ethnicity. For example, higher percentages of males reported ever having sex, sexual debut at an early age, and greater number of lifetime sexual partners compared to females. Compared to Asian and White students, a higher percentage of Black students reported ever having sexual intercourse. In addition, a higher percentage of Black and Latino male students reported having a greater number of lifetime sexual partners than White males and a higher percentage of Black and Latino students reported ever being tested for HIV and STDs in comparison to White and Asian students.

Among adults, condom use during the most recent sex was highest among persons who had three or more partners compared to those with one to two partners in the past year. Over half of adults ages 18-64 reported ever being tested for HIV and the highest percentages of ever being tested were reported among Black and Latino adults.

The rate of new infections of chlamydia has been on the rise in recent years. Females ages 15-19 experienced higher rates of new chlamydia infections than any other age group. A 19% decrease in the rate of new infections of gonorrhea occurred from 2007 to 2008. Females ages 15-19 had the highest rate of infections compared to males and other age groups. The syphilis rate of new infections increased 35% from 2007 to 2008. Males ages 40-49 had the highest rate of new

syphilis infections compared to any other group.

Variations in the incidence of new chlamydia, gonorrhea, and syphilis infections were observed among Boston neighborhoods. South Dorchester, Roxbury, and Mattapan had the highest rates of chlamydia and gonorrhea infections, while South Dorchester and the South End had the highest syphilis rate.

With respect to sexual health, certain experiences of males, females, racial and ethnic groups, age groups and even neighborhoods varied dramatically while other experiences were shared across members of a certain group. Since individual risk behaviors do not completely explain the disparities in sexual health outcomes, it is important that future efforts to prevent and control STDs address the role of the social determinants of health in promoting and facilitating the transmission of STDs.



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## Notes and Data Analysis

**Figure 10.1**

NOTE: Survey question reads: "Have you ever had sexual intercourse?"

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.2**

NOTE: Survey question reads: "How old were you when you had sexual intercourse for the first time?"

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.3**

NOTE: Survey question reads: "How old were you when you had sexual intercourse for the first time?"

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.4**

NOTE: Survey question reads: "How old were you when you had sexual intercourse for the first time?"

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.5**

NOTE: Survey question reads: "During your life, with how many people have you had sexual intercourse?"

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.6**

NOTE: Survey question reads: "During your life, with how many people have you had sexual intercourse?"

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.7**

NOTE: A "current smoker" was defined as answering at least "1 day" to the following question: "During the past 30 days, on how many days did you smoke cigarettes?" A "binge drinker" was defined as answering at least 1 day to the following question: "During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?"

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.8**

NOTE: Survey question reads: "Have you ever been tested for HIV, the virus that causes AIDS? (Do not count tests done if you donated blood.)"

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.9**

NOTE: Survey question reads: "Have you ever been tested for other sexually transmitted diseases (STDs) such as genital herpes, chlamydia, syphilis or genital warts?"

DATA ANALYSIS: Boston Public Health Office of Environmental Health

**Figure 10.10**

NOTE: Survey question reads: "The last time you had sexual intercourse, did you or your partner use a condom?"

DATA ANALYSIS: Boston Public Health Office of Environmental Health

**Figure 10.11**

NOTE: Survey questions read: "Now, thinking back about the last time you had sex, did you or your partner use a condom?" and "During the past 12 months, with how many people have you had sex?"

DATA ANALYSIS: Boston Public Health Office of Environmental Health

**Figure 10.12**

NOTE: Survey question reads: "Have you ever been tested for HIV? Do not count tests you may have had as part of a blood donation. Include saliva tests or testing fluid from your mouth?"

DATA ANALYSIS: Boston Public Health Office of Environmental Health



**Figure 10.13**

NOTE: Survey question reads: "I'm going to read you a list. When I'm done, please tell me if any of the situations apply to you. You do not need to tell me which one. You have used intravenous drugs during the past year, You have been treated for a sexually transmitted or venereal disease in the past year, You have given or received money or drugs in exchange for sex in the past year. You had anal sex without a condom in the past year.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.14**

NOTE: Data are presented as crude incidence rates. Rates for previous years may differ from those reported in previous publications due to file updates by the Massachusetts Department of Public Health.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.15**

NOTE: These data do not include persons whose sex and age were not reported, except in the Boston overall rate. Data are presented as crude incidence rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.16**

NOTE: These data do not include persons whose sex and age were not reported, except in the Boston overall rate. Data are presented as crude incidence rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.17**

ABBREVIATIONS KEY: A/B=Allston/Brighton, BB=Back Bay (includes Beacon Hill, Downtown, North End, and the West End), CH=Charlestown, EB=East Boston, FW=Fenway, HP=Hyde Park, JP=Jamaica Plain, MT=Mattapan, ND=North Dorchester, RS=Roslindale, RX=Roxbury, SB=South Boston, SD=South Dorchester, SE=South End (includes Chinatown), and WR=West Roxbury

NOTES: These data do not include homeless persons, individuals whose neighborhood of residence was not reported, inmates of correctional facilities, and clients of drug treatment programs, except in the Boston overall counts and rates. Data are presented as crude incidence rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

MAP CREATED BY: Boston Public Health Commission Research and Evaluation Office

**Figure 10.18**

NOTE: Data are presented as crude incidence rates. Rates for previous years may differ from those reported in previous publications due to file updates by the Massachusetts Department of Public Health.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.19**

NOTE: These data do not include persons whose sex and age were not reported, except in the Boston overall rate. Data are presented as crude incidence rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.20**

NOTE: These data do not include persons whose sex and age were not reported, except in the Boston overall rate. Data are presented as crude incidence rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.21**

ABBREVIATIONS KEY: A/B=Allston/Brighton, BB=Back Bay (includes Beacon Hill, Downtown, North End, and the West End), CH=Charlestown, EB=East Boston, FW=Fenway, HP=Hyde Park, JP=Jamaica Plain, MT=Mattapan, ND=North Dorchester, RS=Roslindale, RX=Roxbury, SB=South Boston, SD=South Dorchester, SE=South End (includes Chinatown), and WR=West Roxbury

NOTES: These data do not include homeless persons, individuals whose neighborhood of residence was not reported, inmates of correctional facilities, and clients of drug treatment programs, except in the Boston overall counts and rates. Data are presented as crude incidence rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

MAP CREATED BY: Boston Public Health Commission Research and Evaluation Office

**Figure 10.22**

NOTE: Data are presented as crude incidence rates. Rates for previous years may differ from those reported in previous publications due to file updates by the Massachusetts Department of Public Health.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office



**Figure 10.23**

NOTE: These data do not include persons whose sex and age were not reported, except in the Boston overall rate. Data are presented as crude incidence rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.24**

NOTE: These data do not include persons whose sex and age were not reported, except in the Boston overall rate. Data are presented as crude incidence rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 10.25**

ABBREVIATIONS KEY: A/B=Allston/Brighton, BB=Back Bay (includes Beacon Hill, Downtown, North End, and the West End), CH=Charlestown, EB=East Boston, FW=Fenway, HP=Hyde Park, JP=Jamaica Plain, MT=Mattapan, ND=North Dorchester, RS=Roslindale, RX=Roxbury, SB=South Boston, SD=South Dorchester, SE=South End (includes Chinatown), and WR=West Roxbury

NOTES: These data do not include homeless persons, individuals whose neighborhood of residence was not reported, inmates of correctional facilities, and clients of drug treatment programs, except in the Boston overall counts and rates. Data are presented as crude incidence rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

MAP CREATED BY: Boston Public Health Commission Research and Evaluation Office

**Figure 10.26**

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

## Section 11: Infectious Diseases

Infectious diseases are caused by bacteria, viruses, parasites or fungi and can be spread, directly or indirectly, from one person to another. In the United States, the disease and mortality burden from infectious diseases substantially declined during the 20th century (1). These declines are partly attributed to improvements in sanitation, living conditions, the development and widespread use of vaccines to prevent illnesses, and drugs to treat and cure disease. However, the re-emergence of infectious diseases that were thought to be controlled or on the verge of eradication, pose a significant challenge to the public's health. Food-borne illnesses including salmonella, the re-emergence of vaccine preventable diseases such as pertussis, multi-drug resistant strains of tuberculosis, chronic manifestations of diseases (i.e. HIV/AIDS and Hepatitis B and C), and the threat of newly emerging infectious diseases such as, severe acute respiratory syndrome (SARS) and the 2009 H1N1 virus, are among the many potential threats.

Social, economic, behavioral, environmental, and political factors have been noted in the emergence and re-emergence of infectious disease patterns, as well as the transmission and risk of disease (2). Disadvantaged populations are often more susceptible and disproportionately affected by infectious diseases as a result of social inequalities. Additionally, issues related to globalization, migration, and urbanization have also contributed to the rapid and pandemic spread of infectious diseases such as SARS and influenza viruses (e.g., 2009 H1N1 virus).

Effective prevention measures and treatment exist for many of the most common and deadly infectious diseases. Schools, health care providers, public health agencies, and community organizations must continue to work with individuals and communities to raise awareness of proven prevention strategies and enhance access to preventive and treatment care.

This section provides information on six infectious diseases that affect Boston residents: chronic hepatitis B, hepatitis C, pertussis, salmonella, tuberculosis, and influenza. In addition to providing data on disease burden, each section provides definitions, identifies populations at greatest risk, and describes established prevention strategies. Data on hepatitis A and acute hepatitis B are not presented due to the absence of a sufficient number of new cases to perform a detailed analysis. Data on sexually transmitted infections including chlamydia, gonorrhea and syphilis can be found in the Sexual Health section of the report.



## What is Hepatitis B Infection?

Hepatitis B is an infection in the liver caused by the hepatitis B virus. It can be a serious disease that can cause cirrhosis (scarring of the liver) and liver cancer. Most people who get acute hepatitis B infection disease recover from it. However, about 10% of people who are infected will develop chronic hepatitis B infection and carry the virus for a long time, perhaps their entire lifetime. Hepatitis B virus is spread by contact with the blood, semen, vaginal fluids, or certain other body fluids of an infected person. When these fluids enter a person's blood through a break in the skin (such as a needle stick) or through sexual contact, the virus can also enter. The virus can be spread by having sex (particularly when a barrier such as a condom is not used) or by sharing needles (for injecting drugs, ear or body piercing, or tattooing) with an infected person. Health care workers who are stuck by used needles can become infected. Pregnant women who have the virus in their blood can pass it to their babies while giving birth.

## Population at greatest risk

Injection drug users, adults in correctional facilities, health care workers, men who have sex with men, hemodialysis patients, individuals engaged in high risk sexual activity such as having multiple sex partners, individuals who have been diagnosed with a sexually transmitted disease, infants born to mothers who are infected at the time of delivery and recipients of body piercing and tattoos are at increased risk for hepatitis B infection. Even though progress has been made to reduce the disparities in the incidence of new infection, there is still a higher prevalence among Asians/Pacific Islanders and Blacks than among other populations.

## Prevention Strategies

The best way to prevent hepatitis B is to receive three doses of hepatitis B vaccine.

Pregnant women who have chronic hepatitis B infection should have appropriate care so that their babies can receive preventive treatment. Other practices to prevent infection are:

- Using barrier protection such as condoms when having sex
- Wearing protective gloves if handling body fluids such as blood
- Never sharing a toothbrush, razor or injection needle
- Not using illegal drugs. If using illegal drugs, seek treatment to try to stop. If you continue to use drugs, make sure to do the following to reduce risk:
  - Use a new, sterile syringe and equipment (including cotton, filters, caps, spoons, cookers and alcohol swabs) every time you inject.
  - If you cannot get a new syringe, use bleach to clean your works and equipment for at least 2 minutes.

## What is Hepatitis C Infection?

Hepatitis C is a virus that causes liver disease. Approximately 70%–80% of people with acute hepatitis C do not have any symptoms. Some people, however, can have mild to severe symptoms soon after being infected, including fever, abdominal pain, loss of appetite, dark urine, and clay-colored bowel movements. The virus is spread primarily through blood. The hepatitis C virus can be spread whenever blood or fluids containing blood come in contact with an opening on the skin or other tissues. This can occur even when these openings cannot be seen. Hepatitis C virus can also be transmitted by sexual contact.

follow standard (universal) precautions for every patient

- Never share a toothbrush, razor or injection needle
- If you have hepatitis C, do not donate blood, sperm, or organs

## Population at greatest risk

People most at risk are those who have had a blood transfusion or an organ transplant before 1992, or people who use or have used needles contaminated by blood (for example, the injection of drugs).

## Prevention Strategies

There is no vaccine for hepatitis C. The best way to prevent hepatitis C is to avoid contact with the blood and other body fluids of infected people. This means:

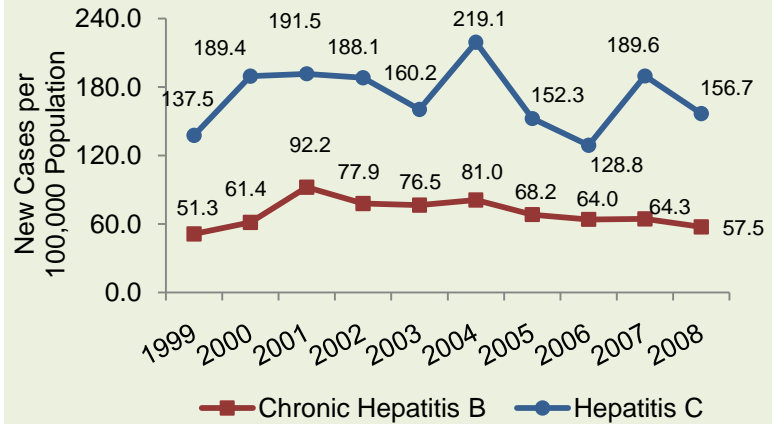
- Find out about drug treatment programs that can help you stop using drugs
- If injecting drugs, never share works (cotton, cooker, water, or syringe) with anyone. Free equipment is available on the BPHC Needle Exchange Van
- If you snort drugs, do not share straws since these can get blood on them too
- Use a latex condom every time you have sex
- Only get tattoos or body piercing from places using sterile equipment
- Health care workers and custodial staff in hospitals or places where needles or sharps are used should

The chronic hepatitis B incidence rate increased 80% from 1999-2001 before decreasing 38% from 2001 to 2008. The rate, however, decreased 11% from 2007 to 2008.

The incidence rate of reported hepatitis C infection decreased 17% from 2007 to 2008 in Boston.

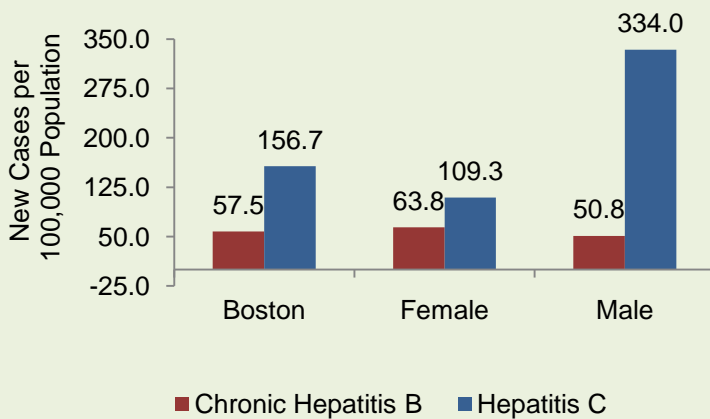
In 2008, the rate of chronic hepatitis B was almost three times the hepatitis C rate.

**Figure 11.1 Hepatitis Types B and C Cases, 1999-2008**



DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

**Figure 11.2 Hepatitis Types B and C by Gender, 2008**

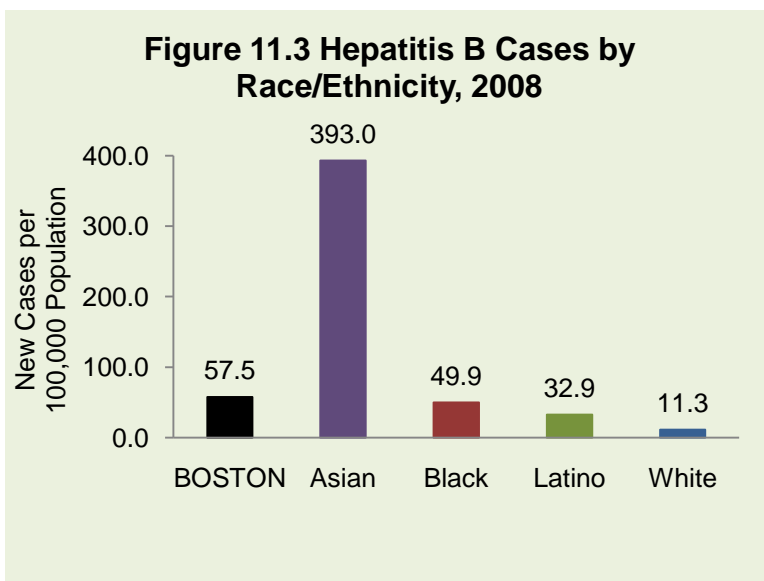


Gender differences were observed in the incidence rate of chronic hepatitis B and hepatitis C.

The female incidence rate of reported chronic hepatitis B infection was 26% higher than the rate for males.

The incidence rate of reported hepatitis C infection for males was three times as high as the rate for females.

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division



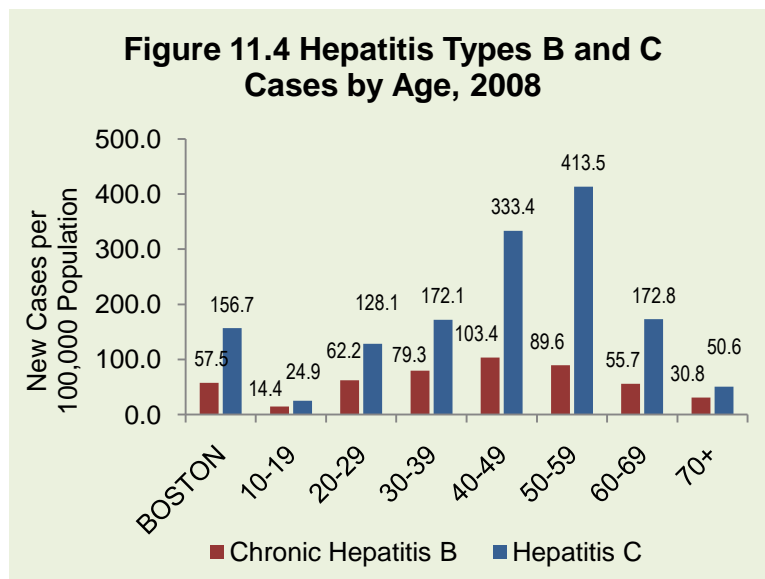
Racial/ethnic differences in the incidence of hepatitis B were observed among Boston residents. Asians were disproportionately affected by hepatitis B and had a substantially higher rate (393.0 per 100,000 population) than other racial/ethnic groups.

Data on hepatitis C are not presented by race/ethnicity due to a large proportion of cases in which race/ethnicity was not identified.

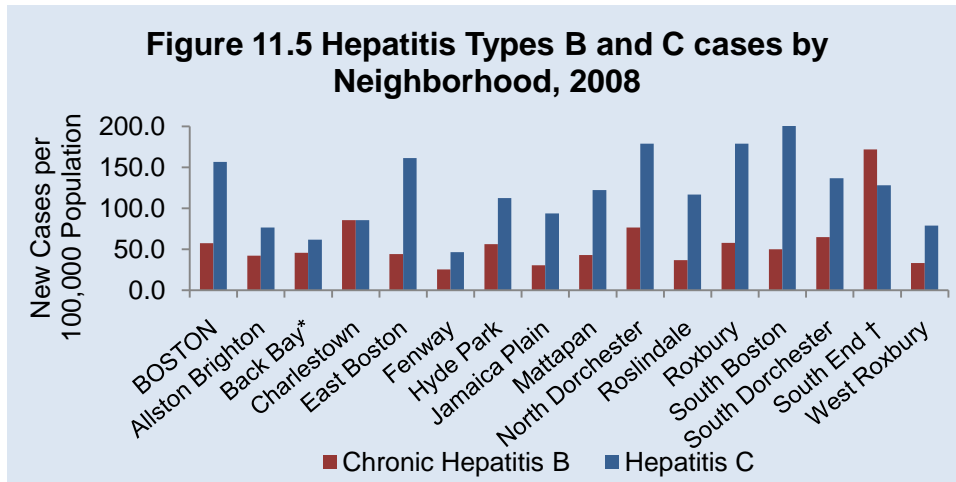
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

The highest age-specific incidence rate of chronic hepatitis B was among adults ages 40-49 with a rate 1.8 times that of Boston overall. The number of cases among children under ten years old was less than five (data not shown). Routine vaccination of children has substantially decreased the rates of hepatitis B, particularly among children (3).

The incidence rate of hepatitis C was highest among adults ages 50-59 with a rate 2.6 times that of Boston overall, and among adults ages 40-49 with a rate 2.1 times the Boston rate. Cases among children under ten years continue to be rare (data not shown).



DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division



\*Includes Beacon Hill, West End, and North End

†Includes Chinatown

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

The highest incidence rates of reported chronic hepatitis B infection among Boston neighborhoods were in Charlestown, North Dorchester and South End. The incidence rate in South End, the neighborhood with the highest rate (172.1 new cases per 100,000 population, was three times the overall Boston rate of 57.5 new cases per 100,000.

The highest incidence rates of reported hepatitis C infection among Boston neighborhoods were in East Boston, North Dorchester, Roxbury, and South Boston. The incidence rate in South Boston, the neighborhood with the highest rate (203.0 new cases per 100,000 population, was 1.3 times the overall Boston rate of 156.7 new cases per 100,000..

The variations in rates may reflect differences in local screening practices in various neighborhoods.



## Pertussis (Whooping Cough)

Pertussis (also called “whooping cough”) is a respiratory illness caused by a bacterium. The bacteria that cause pertussis live in the nose, mouth and throat and are sprayed into the air when an infected person sneezes, cough or talks. People nearby can then breathe in the germs. Transmission of pertussis occurs by droplets or direct contact with mucus or saliva from an infected person. People with pertussis can spread the disease starting two weeks before until three weeks after their cough starts. Pertussis is highly contagious. However, treatment with appropriate antibiotics can make a person non-contagious after five days.

### Population at greatest risk

Children who are too young to be fully vaccinated and those who have not completed the primary vaccination series are at highest risk for severe illness. Adolescents and adults become susceptible when immunity wanes.

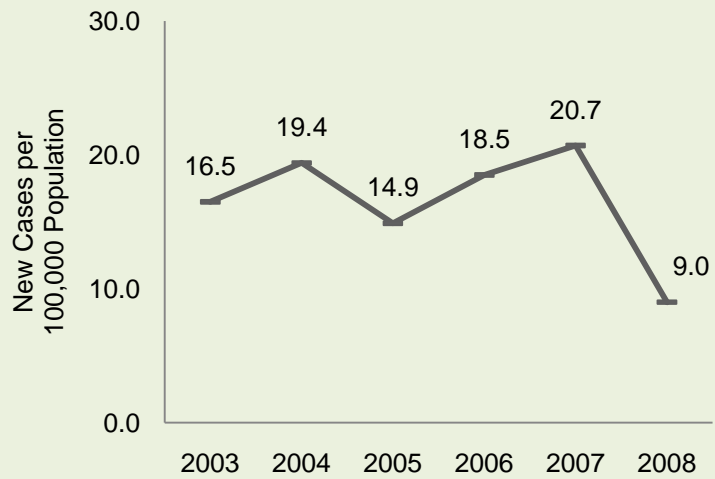
### Prevention Strategies

Vaccination is the best way to protect against pertussis. Pertussis vaccine is usually combined with tetanus and diphtheria vaccines (called DtaP or DTP) and given to children at 2 months, 4 months, 6 months, 15-18 months and at 4-6 years old. Adolescents and adults can get a vaccine called Tdap to protect against pertussis, tetanus, and diphtheria. At this time, only one dose of Tdap vaccine is recommended. The Tdap vaccine is usually given to adolescents at 11 to 12 years of age.

In 2007, the national rate of pertussis was 3.6 per 100,000 population (data not shown). The rate for Boston was 5.8 times the national rate in 2007 (4).

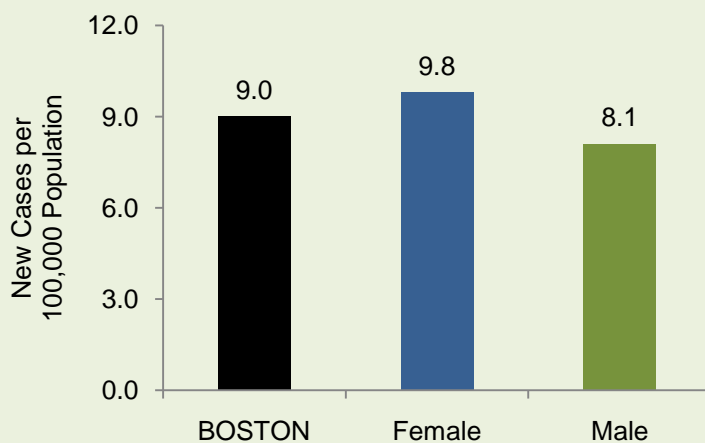
In 2008, the Boston incidence rate of reported pertussis decreased 57% from 20.7 new cases per 100,000 population in 2007 to 9.0 new cases per 100,000 population. The decrease was likely due to the expanded use of a vaccine (Tdap) to prevent pertussis.

**Figure 11.6 Pertussis Cases, 2003-2008**



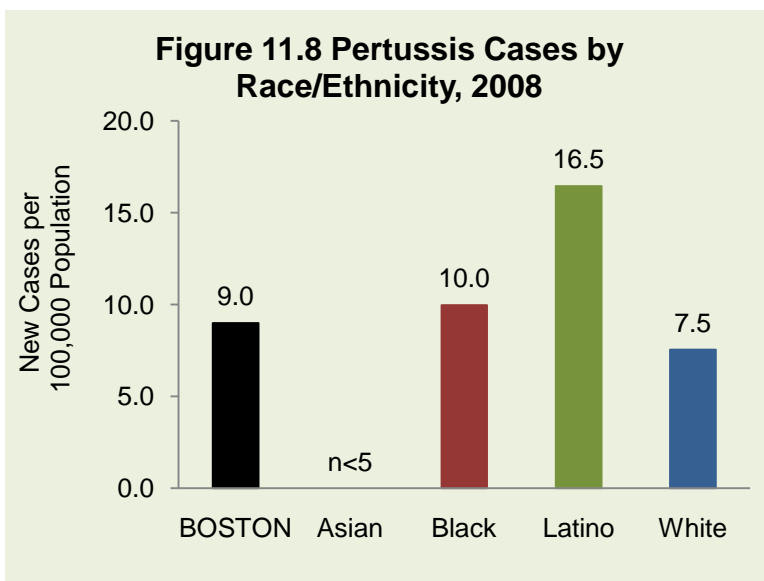
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

**Figure 11.7 Pertussis Cases by Gender, 2008**



The incidence rate of reported pertussis for males (8.1 new cases per 100,000 population) and females (9.8 new cases per 100,000 population) was similar.

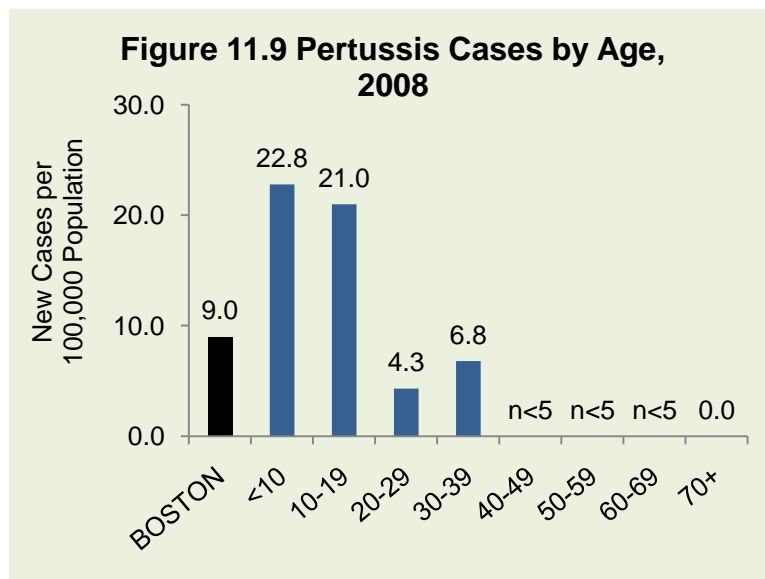
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division



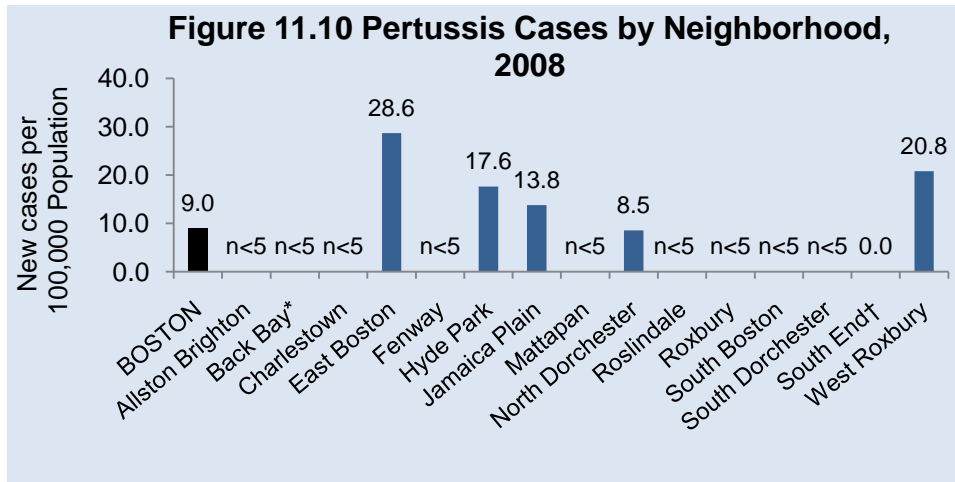
Latino Boston residents had the highest incidence of reported pertussis, a rate 1.8 times that of Boston overall.

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

The highest age-specific incidence rates of reported pertussis were among children under 10 years of age and those between the ages of 10-19. Both age groups experienced pertussis at a rate that was more than twice the Boston rate.



DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division



\*Includes Beacon Hill, West End, and North End

†Includes Chinatown

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

The highest incidence rates of reported pertussis among Boston neighborhoods in 2008 were in East Boston, Hyde Park, Jamaica Plain, and West Roxbury. East Boston had the highest incidence rate of reported pertussis (28.6 new cases per 100,000 population), 3.2 times as high as the overall Boston rate.

In part, these rates may reflect differences in local immunization rates, particularly among adolescents, and testing practices.

## What is Salmonella Infection?

Salmonella is a bacterium that causes diarrhea, fever, and stomach cramps. The germ is found in the stool (feces) of infected people and animals. It must be swallowed to cause illness. Usually this happens when someone eats food that has not been properly prepared, handled, or cooked. Salmonella is common in undercooked food products from animals, such as eggs, egg products, meat, poultry, and unpasteurized dairy products; however, all foods can become contaminated.

- Cooking food to proper temperatures kills the germ.
- Freeze or refrigerate leftovers immediately. Keep leftover meat well wrapped in the refrigerator.

## Population at greatest risk

Children are the most likely to get salmonella infection. Those at risk for severe infection include young children, the elderly, and those who may have a compromised immune system.

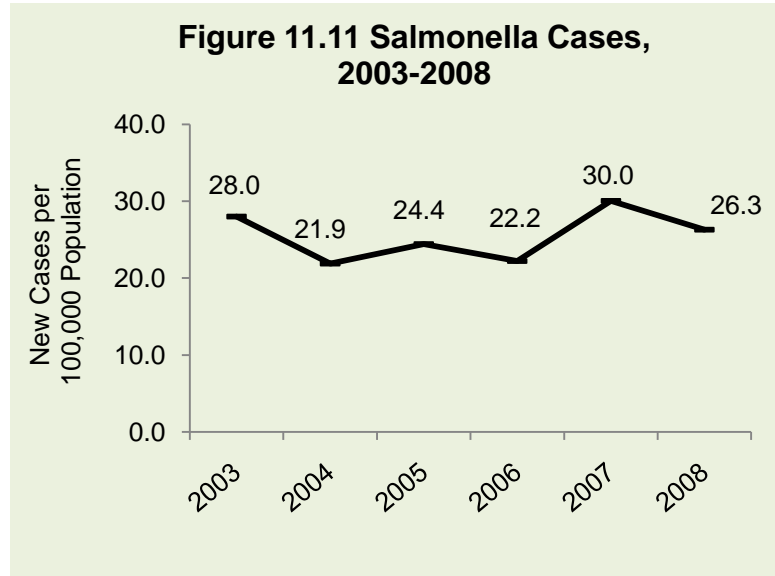
## Prevention Strategies

The following strategies will effectively prevent Salmonella infection:

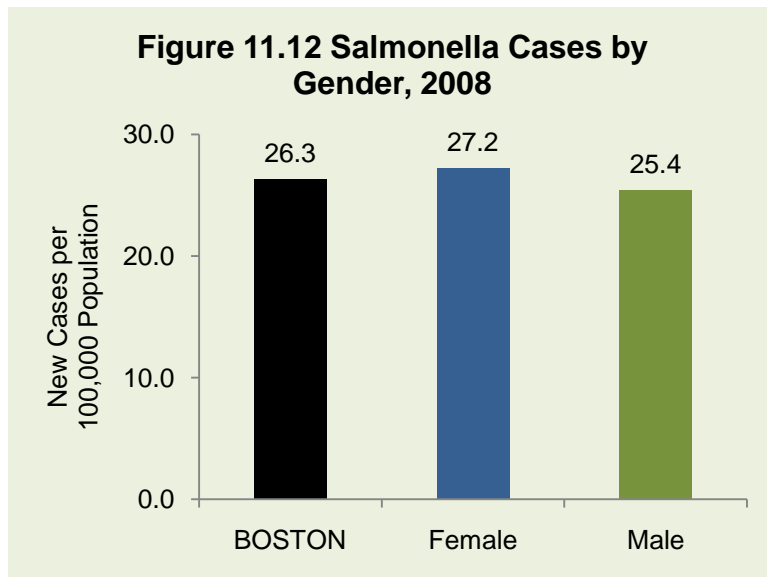
- Carefully wash hands with soap and warm water before and after preparing food, after using the toilet and after handling pets.
- Food surfaces and utensils, including knives, cutting boards, counter tops and dishes, should be washed with clean warm, soapy water before and after preparing food. Keep everything that touches food clean.
- Wash all fruits and vegetables with clean drinking water and use a brush if needed.
- Place appropriate food items in the refrigerator or freezer right away. Refrigerator temperatures should be at 40°F or below. Freezer temperatures should be below 0°F.

Food-borne diseases result in an estimated 76 million illnesses in the US each year (5) (data not shown). Salmonella cases are the most common and account for approximately one in five deaths in the US (5).

The Boston incidence rate of reported Salmonella infection was relatively stable from 2003 to 2008; however, it decreased 12% from 30.0 new cases per 100,000 population in 2007 to 26.3 new cases per 100,000 population in 2008.

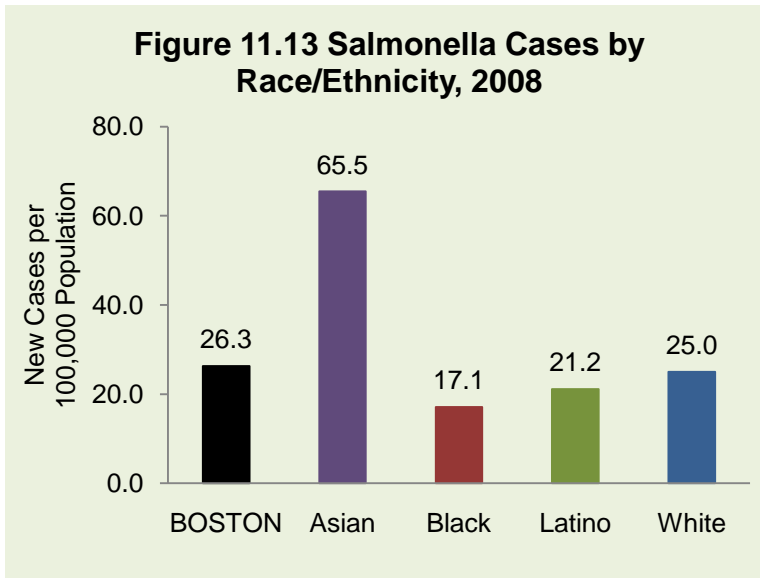


DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division



The incidence rate of reported Salmonella infection for males (25.4 per 100,000 population) and females (27.2 per 100,000 population) was similar.

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

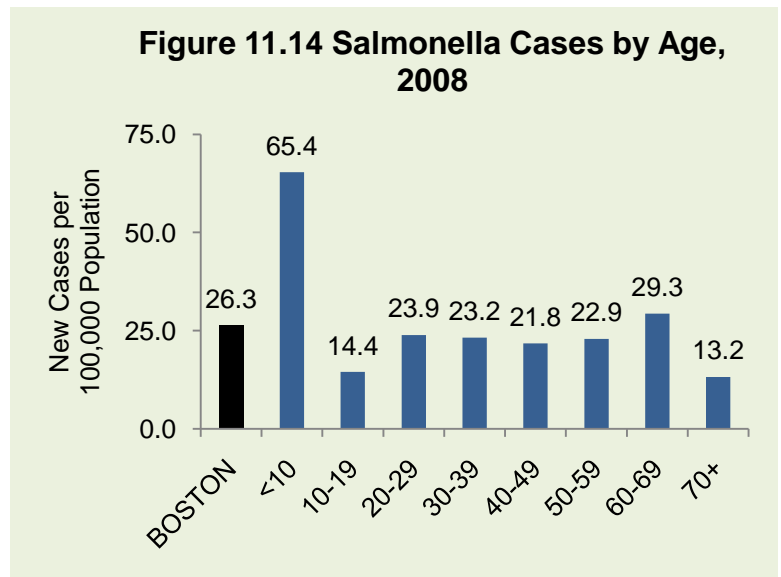


DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

Racial/ethnic differences in the incidence of salmonella were observed. Asian Boston residents had the highest incidence (65.5 new cases per 100,000 population) of reported Salmonella infection in comparison to other racial/ethnic groups. The Asian rate was between two to four times the rates for the other racial/ethnic groups.

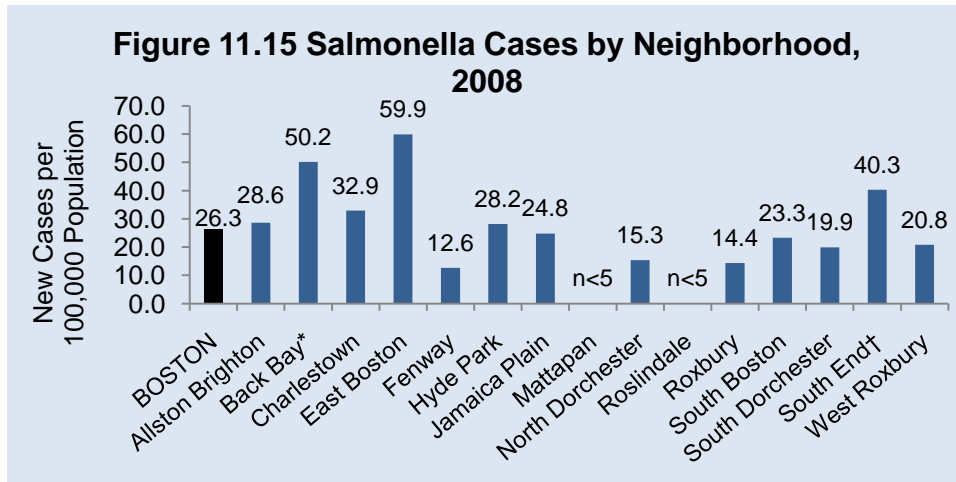
The 2008 incidence rate among Asians represents a 29% decrease from 2007 (data not shown). This decrease is partly attributable to food safety initiatives in the Asian community.

Children younger than 10 years of age are most vulnerable to Salmonella. The highest incidence rate of reported Salmonella infection was among those younger than 10 years of age with a rate 2.5 times that of Boston overall.



DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division





\*Includes Beacon Hill, West End, and North End

†Includes Chinatown

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

The highest incidence rates of reported Salmonella infection among Boston neighborhoods in 2008 were in Back Bay, East Boston, and the South End. East Boston had the highest incidence rate of reported Salmonella infection (59.9 new cases per 100,000 population), 2.3 times as high as the overall Boston rate. In part, these rates may reflect differences in local diagnostic practices.

## What is Tuberculosis?

Tuberculosis (TB) is a disease caused by bacteria that mostly affects the lungs. When a person with TB disease of the lungs coughs, sneezes, laughs, or sings, the germs get into the air. Anyone who is near the person can breathe TB germs into their lungs which can live in the body without causing sickness. This is called TB infection without disease (latent TB).

The immune system traps TB germs and keeps them from making the person sick. However, sometimes the TB germs are able to spread and cause TB disease (active TB). Symptoms of TB disease include fever, weight loss, coughing, night sweats, and chest pain.

A TB skin test is the best way to tell if a person has TB infection. A positive reaction usually means that the person has been infected with the TB germ. It does not necessarily mean that the person has TB disease (active TB).

Other tests, such as a chest x-ray are needed to see if the person has TB disease (active TB). It is important for people who have a positive skin test to see a health care provider.

Special drugs that kill TB germs can cure TB disease. If someone has TB disease, he/she will need to take medicine for six to nine months to kill the germs. Medicine to prevent TB germs from ever becoming active is also available.

## Population at greatest risk

Individuals who have spent time with a person known or suspected to have active TB disease, have HIV infection or another condition that weakens the immune system, have lived in a country where TB disease is common or lived/worked in a homeless shelter, prison/jail, or nursing home are at greatest risk for TB.

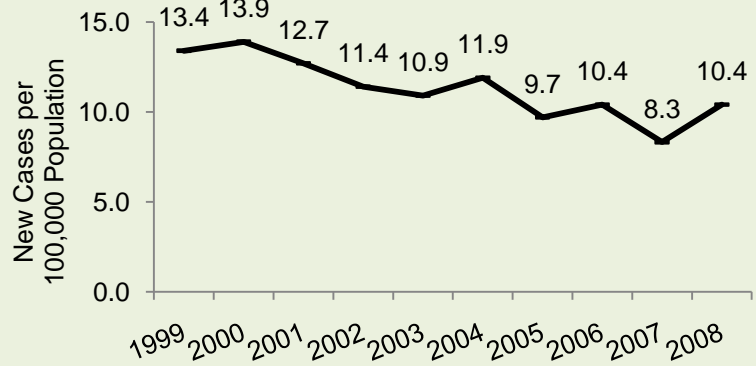
## Prevention Strategies

The best way to control TB is to diagnose and treat people with TB infection before they develop active disease. People who have a high risk of TB should get a skin test once a year. If an individual tests positive for latent TB infection, medications are available to reduce the risk of developing active TB.

The incidence rate of TB in the United States in 2008 was 4.2 cases per 100,000 persons (data not shown), the lowest recorded rate since 1953 (6). The rate of TB in Boston was 10.4 cases per 100,000 population in 2008, which was more than twice the US rate.

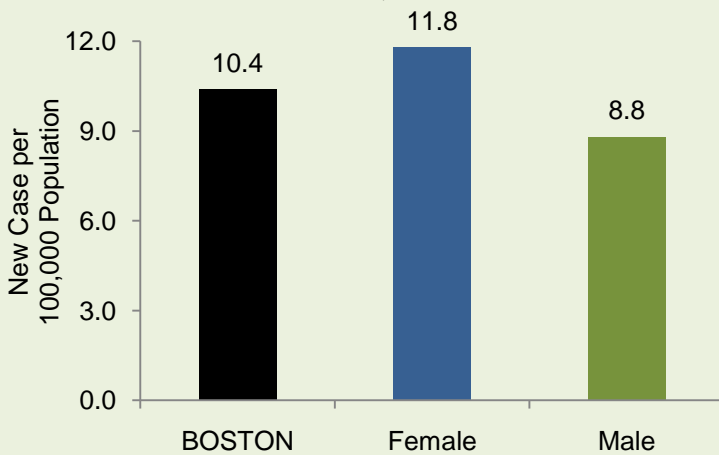
The Boston TB incidence rate has decreased 22% from 1999-2008. However, the rate increased 25%, from 8.3 cases per 100,000 population in 2007 to 10.4 cases per 100,000 population in 2008.

**Figure 11.16 Tuberculosis Cases, 1999-2008**



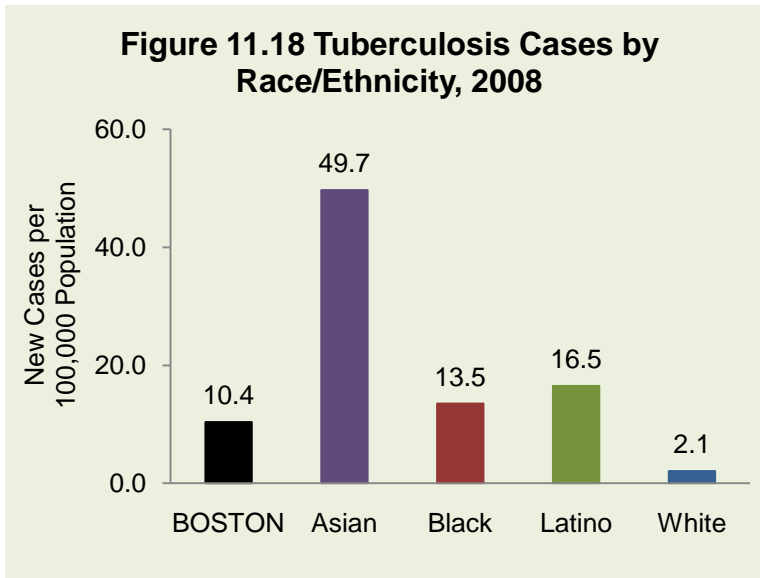
DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

**Figure 11.17 Tuberculosis Cases by Gender, 2008**



In 2008, the Boston incidence rate of reported tuberculosis was 1.3 times as high in females as in males.

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division



DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

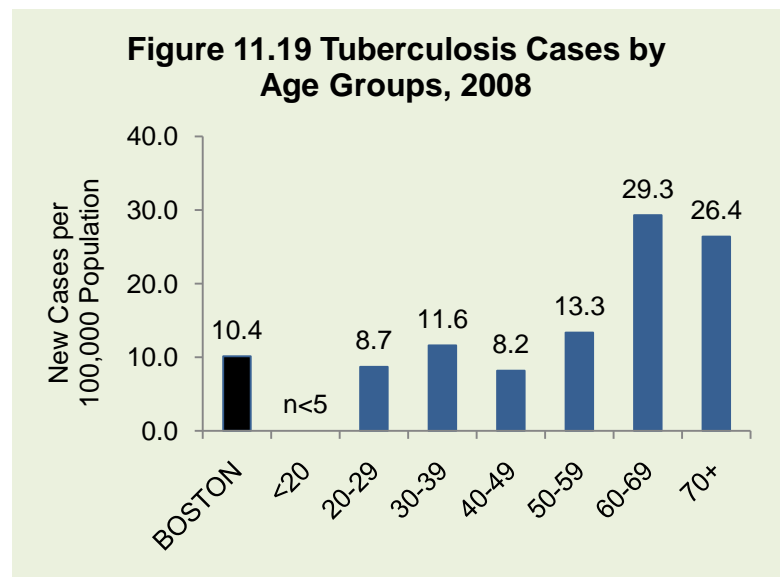
In 2008, the TB rate among Asians in the US was 25.6 cases per 100,000 population. Among Blacks, Latinos and Whites in the US, the TB rates were 8.8, 8.1, and 1.1 cases per 100,000 population, respectively (5).

In Boston, the highest incidence rate for reported tuberculosis was among Asians, with a rate 4.8 times that of the Boston overall rate. Latino

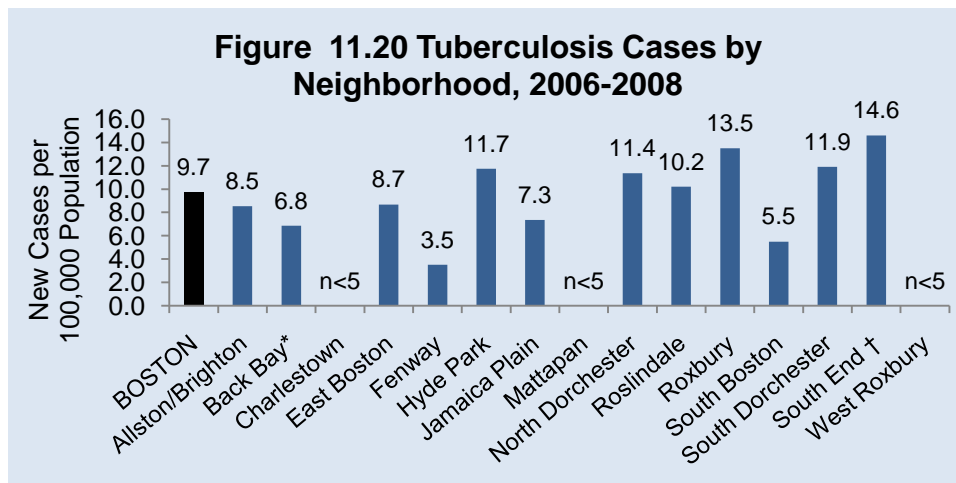
residents had a rate that was 1.6 times that of the Boston rate. Black residents had a rate 1.3 times that of the Boston rate.

Differences in rates across racial/ethnic groups may be related to immigration of individuals from countries with higher rates of tuberculosis.

Among Boston residents, the highest incidence rate of reported tuberculosis was among those ages 60-69 with a rate 2.9 times that of Boston overall. Boston residents ages 70 and older had a rate 2.6 times that of the Boston rate.



DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division



\*Includes Beacon Hill, West End, and North End

†Includes Chinatown

DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

The highest average incidence rates of reported tuberculosis among Boston neighborhoods in 2006-2008 were in Hyde Park, North Dorchester, Roxbury, South Dorchester, and the South End. The South End had the highest average incidence rate of reported tuberculosis, 1.5 times the overall Boston rate. In part, these higher incidence rates may be a reflection of some communities having higher percentages of individuals emigrating from countries with higher rates of tuberculosis.

## What is Influenza?

Influenza (often called “flu”) is a contagious disease caused by the influenza virus. Symptoms include sudden fever, cough, muscle aches, headache, runny nose, sore throat and general weakness. Flu may also cause diarrhea and vomiting in some people. These symptoms can range from mild to severe. Flu can be dangerous, particularly for the very young, the very old and those with underlying medical problems. Most people have mild illness lasting a few days; however, some may develop pneumonia or other serious complications. Every year, flu causes thousands of hospital admissions in the United States. Flu is spread when an infected person sneezes, coughs, or talks and the viruses that cause flu are sprayed from the nose and throat into the air. People nearby can then breathe in the virus. Flu symptoms usually start 1 to 3 days after a person breathes in the virus. An infected person is most contagious 1 day before symptoms begin until 4 days afterward; however, some adults and children are able to spread the virus longer.

The 2009 H1N1 flu, known as “swine flu” early on, is a new strain of flu virus causing illness in people. In April 2009, this specific type of H1N1 flu was first reported in the United States. The 2009 H1N1 flu is spread the same way, causes the same symptoms and is treated the same way as seasonal flu. The main difference between seasonal flu and 2009 H1N1 flu is that since this is a new strain of flu most people do not have immunity or protection against 2009 H1N1 flu. Therefore, since few people have protection against 2009 H1N1 flu, more people could become sick with this type of flu.

## Population at greatest risk

Anyone can become ill with the flu. Those particularly susceptible include: pregnant

women, all children, persons with underlying medical problems, the elderly, persons who live in long term care facilities, and those who take care of persons at high risk from influenza (such as infants under 6 months of age and healthcare workers).

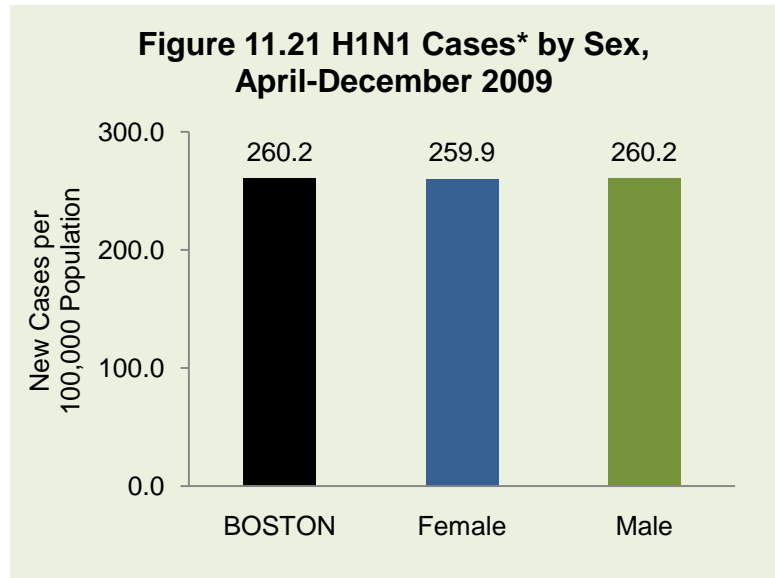
## Prevention strategies

Flu vaccine is the best way to prevent the flu. There are two types of vaccines available; one is a shot given in the arm and the other is a spray given in the nose. A person needs to get a seasonal flu vaccine every year to be protected. Because the 2009 seasonal flu vaccine did not protect against 2009 H1N1 flu, two vaccines were necessary in 2009 (seasonal flu vaccine and 2009 H1N1 flu vaccine). Anyone who wants to avoid getting sick with the flu should get a flu vaccine every year. Those particularly susceptible to the flu should get seasonal flu vaccine. Flu vaccine cannot give someone flu, but it takes two weeks after getting vaccinated to be protected. Be sure to take other precautions against getting the flu during this time.

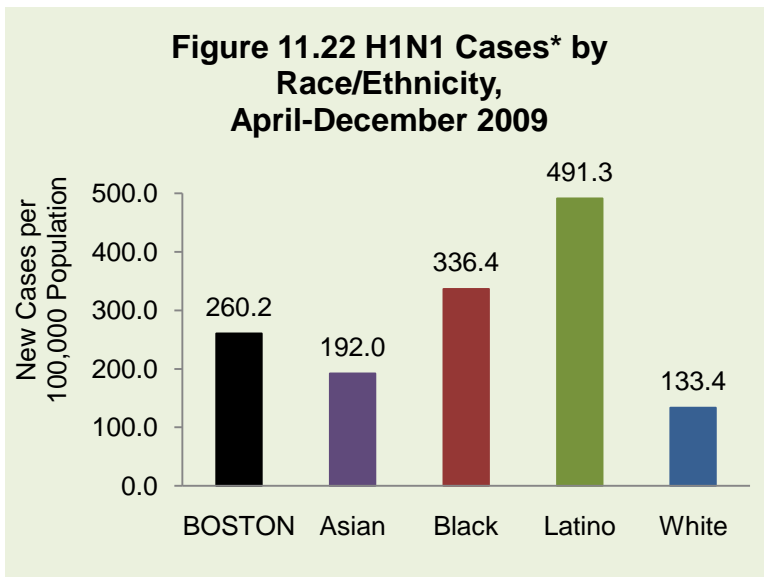
In addition to vaccine, there are many ways you can help to prevent the spread of flu.

- Cover your nose and mouth with a tissue every time you cough or sneeze. Then throw the used tissue in a waste basket. If you don't have a tissue, sneeze or cough into your upper sleeve.
- Clean your hands often with soap and water or an alcohol-based hand cleaner.
- Stay home when you are sick. It is recommended that you stay at home for 24 hours after your fever has gone away (without medications to reduce the fever). Avoid close contact with people who are sick, if possible.

The Boston H1N1 influenza incidence rate, including influenza A non-specified cases, was 260.2 per 100,000 population from April to December, 2009. The incidence rate across genders was similar.



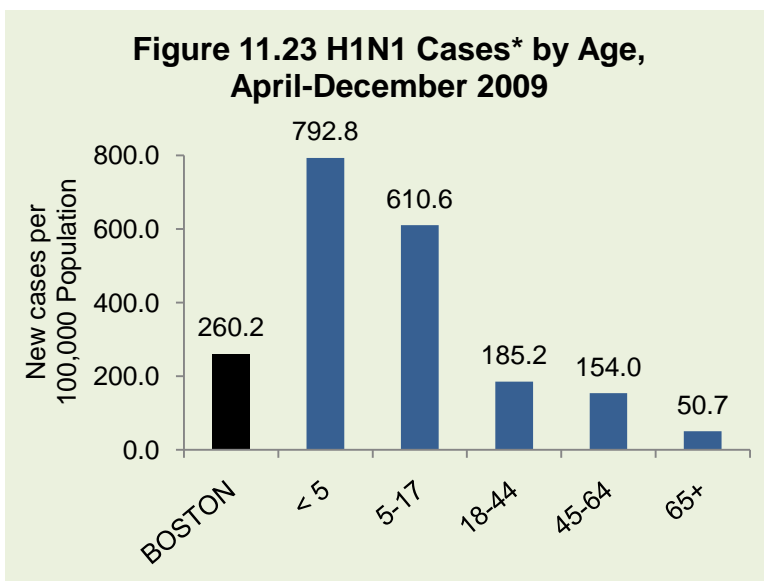
\*Cases include confirmed H1N1 cases and Influenza A non-specified cases  
 DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division



In Boston, the incidence rate of H1N1 influenza was highest among Latino residents (491.3 per 100,000 population) and was approximately twice the Boston overall rate. White residents had the lowest H1N1 incidence rate (133.4 per 100,000), which was half the Boston overall rate. The incidence rate among Black residents (336.4 per 100,000) was about three times the incidence rate of White residents and 1.3 times the Boston overall rate.

\*Cases include confirmed H1N1 cases and Influenza A non-specified cases  
 DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division





In Boston, the highest incidence rate of H1N1 was seen among children less than five years old (792.8 per 100,000), which was three times the Boston overall rate. Residents ages 65 and older had the lowest incidence rate (50.7 per 100,000 population). Those 5-17 years of age had a rate 2.3 times that of the Boston rate.

\*Cases include confirmed H1N1 cases and Influenza A non-specified cases  
 DATA SOURCE: Communicable Disease Database, Boston Public Health Commission, Communicable Disease Control Division

## Summary: Infectious Diseases

Chronic hepatitis B, hepatitis C, pertussis, salmonella and tuberculosis are among the most common infectious diseases that affect Boston residents.

From 2007 to 2008, the rate of chronic hepatitis B and hepatitis C infections decreased by 11% and 17%, respectively. These decreases are consistent with national declines in incidence. Among Asian, Black, Latino and White residents of Boston, Asians had the highest incidence rate of chronic hepatitis B. However, race/ethnicity identification was not available for 6.2% of chronic hepatitis B cases and 17.9% of hepatitis C cases. Males and adults ages 40-59 were disproportionately affected with hepatitis C. Recent national data suggest that injection drug use is one of the most common risk factors.

There was a marked decrease (57%) in the incidence of pertussis between 2007 and 2008. The decrease was likely due to the expanded use of a vaccine (Tdap) to prevent pertussis. Data presented revealed that Boston residents under age 10 and between the ages of 10 and 19 had higher rates of pertussis than the older age groups. Among racial/ethnic groups, Latinos had the highest rate of new cases. The neighborhood of East Boston had the highest rate of pertussis than residents of other neighborhoods. Higher case rates of pertussis in individuals ages 19 and under, Latinos and East Boston residents may reflect, in part, the immunization status of those disproportionately affected.

In 2008, children under 10 years of age had a higher rate of salmonella infection than the other age groups. Asians had the highest incidence of salmonella infection in comparison to other racial/ethnic groups. East Boston had a higher rate of salmonella compared to other Boston neighborhoods. The differences in neighborhood rates could reflect differences in local diagnostic practices.

While overall national rates of tuberculosis have declined, a few states, including Massachusetts have experienced increases in the incidence of tuberculosis. In Boston, the incidence rate of tuberculosis increased by 25% between 2007 and 2008. The rate of tuberculosis was highest among Boston's Asian residents and second highest among Latino residents. Data from the CDC regarding national estimates of tuberculosis suggest that the higher rates of tuberculosis are observed among foreign-born Asians and Latinos.

The novel H1N1 influenza virus also impacted Boston residents. Latino residents and children under age five were disproportionately affected by the H1N1 influenza virus.

In summary, Boston Asian residents were disproportionately affected by hepatitis B, salmonella, and tuberculosis. Younger residents and Latinos had higher rates of pertussis and salmonella. Comprehensive community-based prevention and treatment programs with strategies to address health care access should help to reduce the disparities for treatable infectious diseases.



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## Notes and Data Analysis

### Figure 11.1

NOTES: Incidence rates are presented only when there are least 5 occurrences of disease. Hepatitis A and acute hepatitis B are not shown because there were less than 5 occurrences of those infections.

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

### Figure 11.2

NOTES: Incidence rates are presented only when there are least 5 occurrences of disease. Hepatitis A and acute hepatitis B are not shown because males and female had less than 5 occurrences of those infections. These data do not include individuals whose gender was not reported, except in the Boston overall rates.

DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

### Figure 11.3

NOTES: Incidence rates are presented only for race/ethnicities that had at least 5 occurrences of disease. Hepatitis A and acute hepatitis B are not shown because all race/ethnicities had less than 5 occurrences of those infections. These data do not include individuals whose race/ethnicity was not reported or was reported as other, except in the Boston overall rates.

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

### Figure 11.4

NOTES: Incidence rates are presented only for those age groups that had at least 5 occurrences of disease. Hepatitis A and acute hepatitis B are not shown because all age groups had less than 5 occurrences of those infections. These data do not include individuals whose age was not reported, except in the Boston overall rates.

DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

### Figure 11.5

NOTES: Incidence rates are presented only for those age groups that had at least 5 occurrences of disease. Hepatitis A and acute hepatitis B are not shown because all neighborhoods had less than 5 occurrences of those infections. These data do not include homeless persons, individuals whose neighborhood of residence was not reported, correctional facilities, or drug treatment programs. The rates shown are new cases per 100,000 population.

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

### Figure 11.6

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

### Figure 11.7

NOTE: These data do not include persons whose gender was not reported, except in the Boston overall count and rate.

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

### Figure 11.8

NOTE: There were too few cases among Asians to permit calculation of a rate.

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

### Figure 11.9

NOTE: Incidence rates are presented only for those age groups with at least 5 cases of pertussis.

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

### Figure 11.10

NOTE: Incidence rates are presented only for those neighborhoods with at least 5 cases of pertussis. These data do not include homeless persons, individuals whose neighborhood of residence was not reported, inmates of correctional facilities, and clients of drug treatment programs, except in the Boston overall rates.

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.11**

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.12**

NOTE: These data do not include persons whose gender was not reported, except in the Boston overall count and rate.

DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.13**

DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.14**

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.15**

NOTE: Incidence rates are presented only for those neighborhoods with at least 5 cases of salmonella. These data do not include homeless persons, individuals whose neighborhood of residence was not reported, inmates of correctional facilities, and clients of drug treatment programs, except in the Boston overall counts and rates.

DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.16**

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.17**

NOTE: These data do not include persons whose gender was not reported, except in the Boston overall count and rate.

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.18**

NOTE: Incidence rates are presented only for those age groups with at least 5 cases of tuberculosis.

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.19**

NOTE: Incidence rates are presented only for those age groups with at least 5 cases of tuberculosis.

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.20**

NOTE: Incidence rates are presented only for those neighborhoods with at least 5 cases of tuberculosis. These data do not include homeless persons, individuals whose neighborhood of residence was not reported, inmates of correctional facilities, and clients of drug treatment programs, except in the Boston overall counts and rates.

DATA ANALYSIS: Boston Public Health Commission, Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.21**

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.22**

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office

**Figure 11.23**

DATA ANALYSIS: Boston Public Health Commission Communicable Disease Control Division

GRAPHIC: Boston Public Health Commission Research and Evaluation Office



## Section 12: Mental Health

The World Health Organization defines mental health as “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (1). This definition encompasses more than the mere absence of a mental disorder (1), but connotes that mental health embodies the psychological capacity to make healthy decisions that promote overall quality of life.

Mental health illnesses and disorders can cause disruptions in a person’s thinking, behaviors, feeling, and emotions, which subsequently influence one’s ability to relate to others, impair functioning and limit major life activities. It is estimated that 26.2% of Americans ages 18 and older and 13% of children and adolescents ages 8-15 suffer annually from a diagnosable mental disorder (2, 3). Common mental disorders include: major depressive disorder; anxiety disorder; post traumatic stress disorder (PTSD); bipolar disorder; obsessive compulsive disorder (OCD); panic disorder; and substance abuse. Additionally, indicators of psychological distress (i.e. feeling sad or blue) are used to characterize the burden of mental health in the population.

Mental health disorders occur in persons of all ages and social groups. Factors such as family history, stressful life events (e.g. death of a loved one, economic hardship), chronic medical conditions, early exposure to toxins, abuse, lack of social support, and discrimination have been associated with an increased risk of developing a mental disorder (5). Recent research suggests that many people with a history of mental disorder had the first onsets during childhood or adolescence (6).

There are marked differences in the distribution of mental disorders by gender, race/ethnicity, socioeconomic status, and neighborhood of residence (2, 7-11). For

example, females are more likely to suffer from depression (2). Blacks and Latinos are less likely to have a lifetime prevalence of mental disorders compared with Whites; however, they are more likely to have a longer course of persistent and disabling disorders (7).

By accessing appropriate care, people with mental health disorders can improve their quality of life. Treatment for disorders may involve receiving psychotherapy, supportive counseling, or medication. However, evidence suggests that less than one-third of adults and one-half of children with a diagnosable mental disorder receive mental health services annually (6). Furthermore, access to mental health care remains a challenge for many people (2, 7, 10, 11). In some communities, barriers such as availability, accessibility, stigma, and misunderstanding surrounding mental health contribute to the unmet needs for treatment and counseling (6, 7, 10, 11). Cultural influences, language barriers, institutionalized racism, and self-reliance also may prevent Asians, Blacks, and Latinos from seeking the appropriate mental health care services (7, 10).

This section provides a snapshot of several indicators of mental health including self-reported assessments of stress, sadness, anxiety, depression, and suicide among Boston youth and adults in the past year. In addition, this section presents patterns of treatment and counseling for Boston residents.



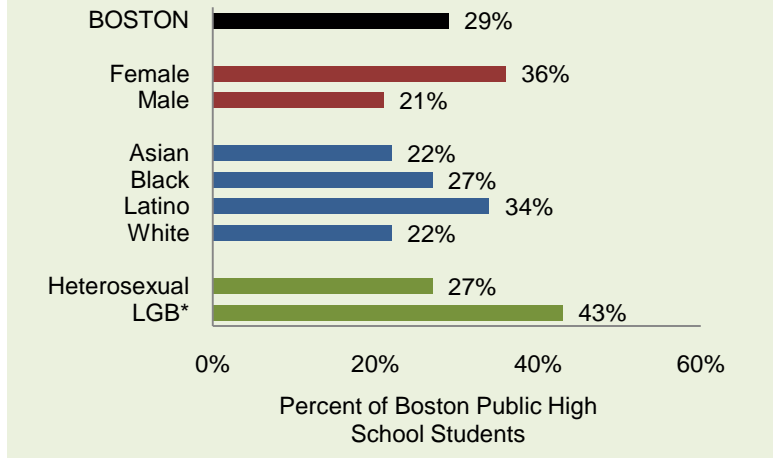


Persistent feelings of sadness or hopelessness are associated with an increased risk of self-harm and suicide (6, 12).

Nearly 30% of Boston public high school students reported feeling sad or hopeless for two weeks straight during the past year. A higher percentage of female students compared to male students reported these feelings.

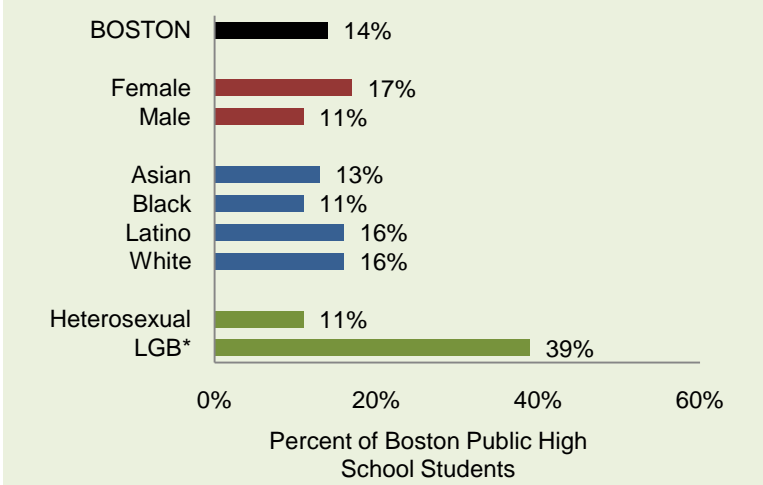
A higher percentage of high school students who identified as lesbian, gay, bisexual or “not sure” (LGB) reported these symptoms compared to heterosexual high school students.

**Figure 12.1 Sad or Hopeless for Two Weeks Straight During Past Year by Selected Indicators, 2009**



\*Includes lesbian, gay, bisexual and “not sure”  
 DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

**Figure 12.2 Purposely Hurt Oneself During Past Year by Selected Indicators, 2009**



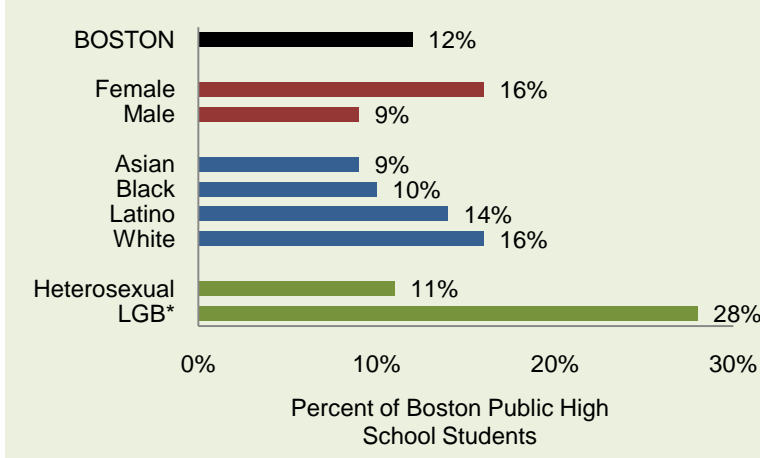
\*Includes lesbian, gay, bisexual, and “not sure”  
 DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Self-harm is the intentional, self-inflicted injuring of one’s body, often causing tissue damage (12-14). Cutting is the most common form of self-harm; however, burning, scratching, banging or hitting body parts, and the ingestion of toxic substances or objects are also common behaviors (12,13).

In 2009, the percentage of Boston public high schools students who reported purposely hurting themselves was statistically similar across gender and race/ethnicity.

A higher percentage of LGB public high school students (39%) reported purposely hurting themselves compared to heterosexual public high school students.

**Figure 12.3 Seriously Considered Attempting Suicide During Past Year by Selected Indicators, 2009**



\*Includes lesbian, gay, bisexual, and "not sure"  
 DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Suicidal behavior includes thoughts about ending one’s life (“suicidal ideation”), developing a plan, non-fatal suicide attempts, and ending one’s life (6, 15).

National estimates from 2007 indicate that a greater percentage of high school females seriously considered suicide compared to males (16). In addition, several studies have shown that suicide occurs at significantly higher rates among lesbian, gay, bisexual, or transgender (LGBT) high school students (17).

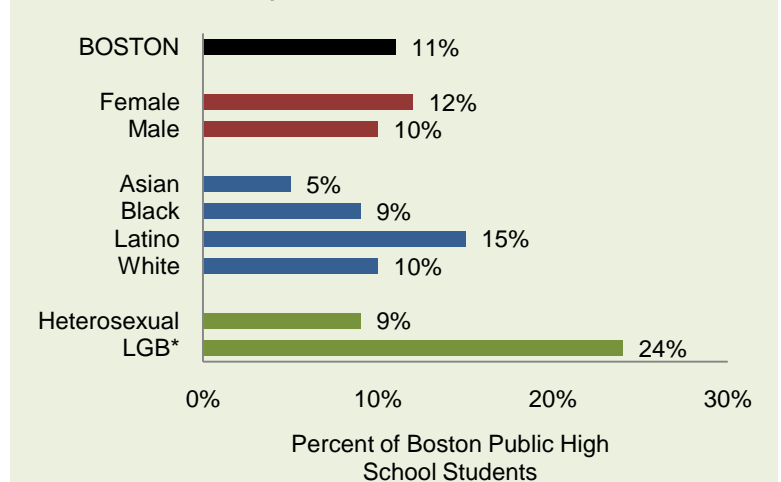
In 2009, a higher percentage of LGBT students seriously considered suicide.

The most recent national estimates indicate that 6.9% of high school students reported making at least one suicide attempt in the previous 12 months (16). Although males are more likely to commit suicides, females are more likely to attempt suicide (15).

For Boston public high school students, the percentage of students who reported a suicide attempt was statistically similar by gender and race/ethnicity.

A higher percentage of LGBT Boston public high school students reported attempting suicide during the past year in comparison to heterosexual Boston public high school students.

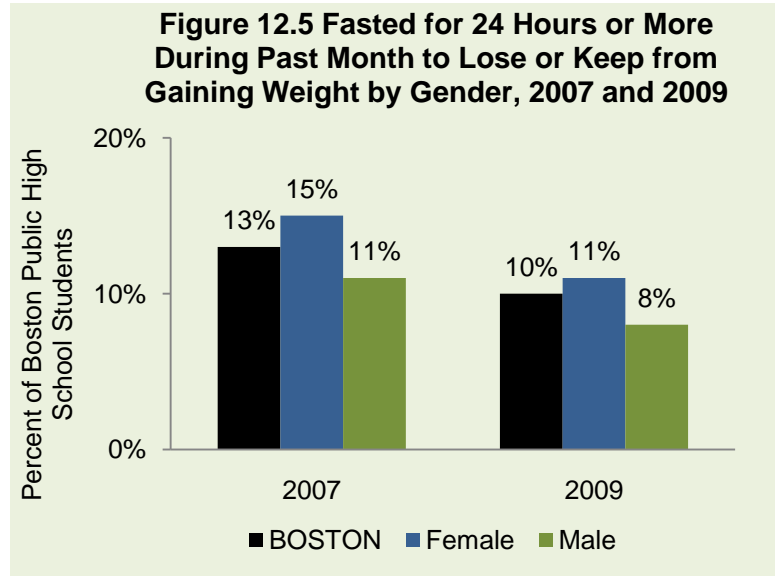
**Figure 12.4 Attempted Suicide During Past Year by Selected Indicators, 2009**



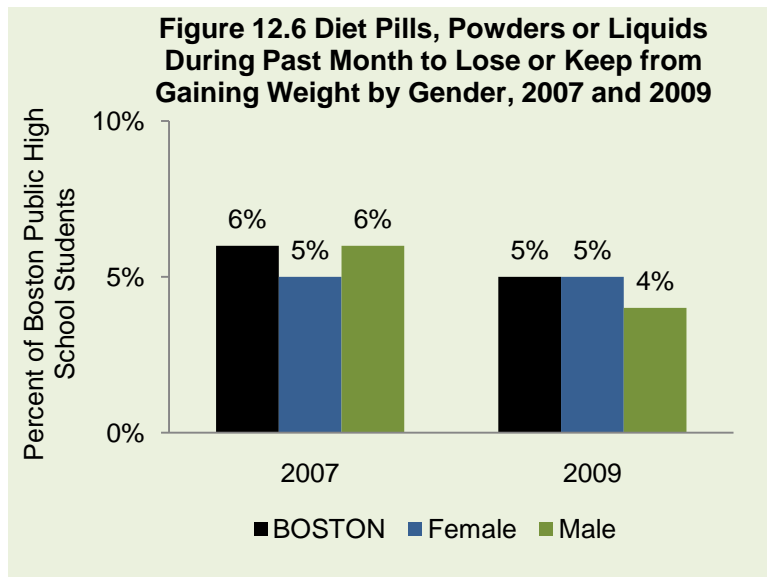
\*Includes lesbian, gay, bisexual, and "not sure"  
 DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Low self-esteem, depression, and body dissatisfaction are correlated with unhealthy weight control behaviors (18). These behaviors include purging (by vomiting or use of laxatives), diet pills, skipping meals, and smoking (18).

In 2007 and 2009, there was no difference in the self-reported percentage of students that reported fasting for 24 hours or more during the past month to lose or keep from gaining weight. There were no significant differences observed by gender.



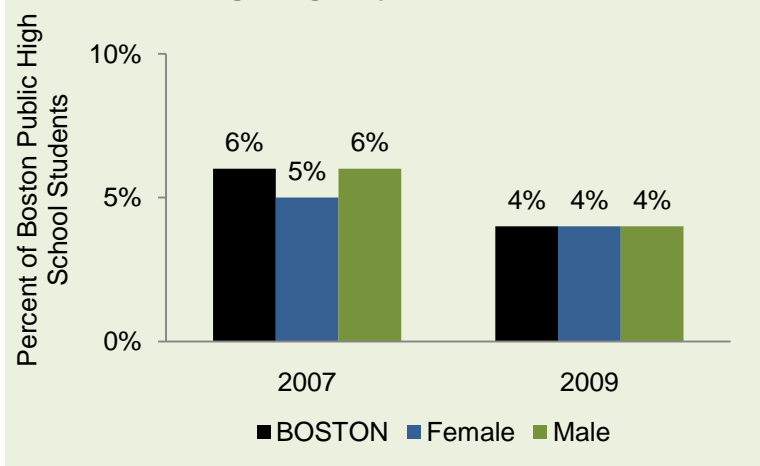
DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)



In 2007 and 2009, the self-reported percentage of high school students that reported taking diet pills, powders, or liquids without a doctor’s advice to lose weight or to keep from gaining weight was statistically similar. There were no significant differences observed by gender.

DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

**Figure 12.7 Vomited or Took Laxatives During Past Month to Lose or Keep From Gaining Weight by Gender, 2007 and 2009**



DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

The percentage of high school students reporting vomiting or taking laxatives during the past month to lose or keep from gaining weight was statistically similar by gender.

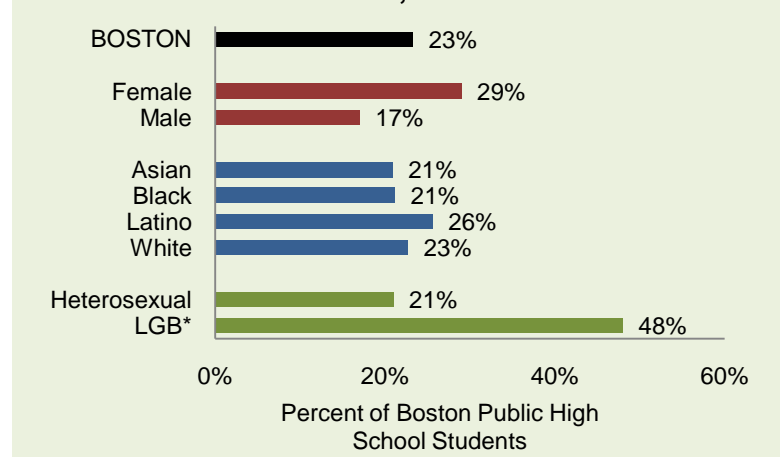
There is some concern that the growing attention to childhood and adolescent obesity may lead to an increase in eating disorder behaviors (19, 20). However, the 2007, and 2009 data collected from Boston public high school students do not suggest that there have been any significant changes over time or by gender in vomiting or taking laxatives.

A higher percentage of females reported that they visited a school counselor, therapist, or psychologist during the past year compared to males.

The percentage of students reporting this finding was statistically similar among racial/ethnic groups.

Compared to heterosexual students, a higher percentage of LGB students (nearly 50%) reported that had they visited a school counselor, therapist, or psychologist during the past year.

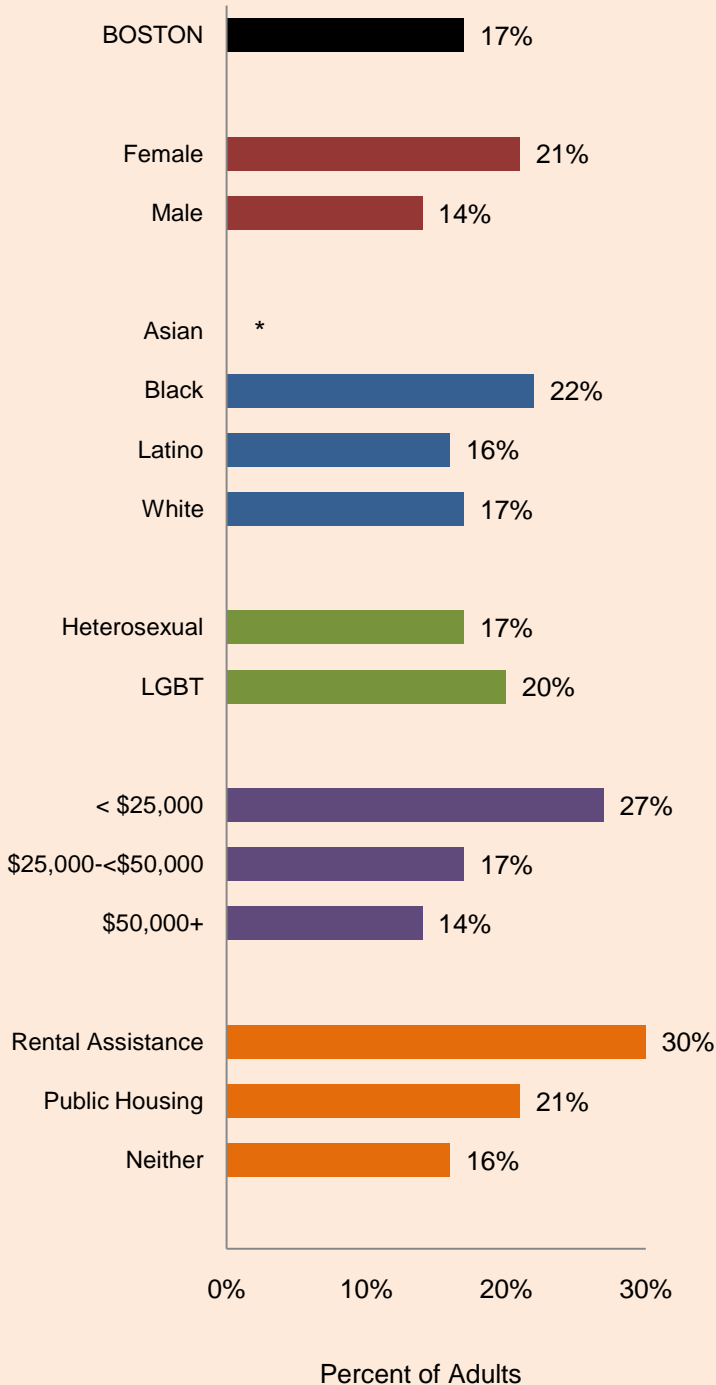
**Figure 12.8 Visited a School Counselor, Therapist, or Psychologist During Past Year, 2009**



\*Includes lesbian, gay, bisexual and "not sure"

DATA SOURCE: Boston Youth Survey, 2008, Harvard School of Public Health

**Figure 12.9 Felt Worried, Tense, or Anxious 15+ Days of Past Month by Selected Indicators, 2008**



\* Insufficient sample size for Asians

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Persistent feelings of anxiety are an indicator of psychological distress.

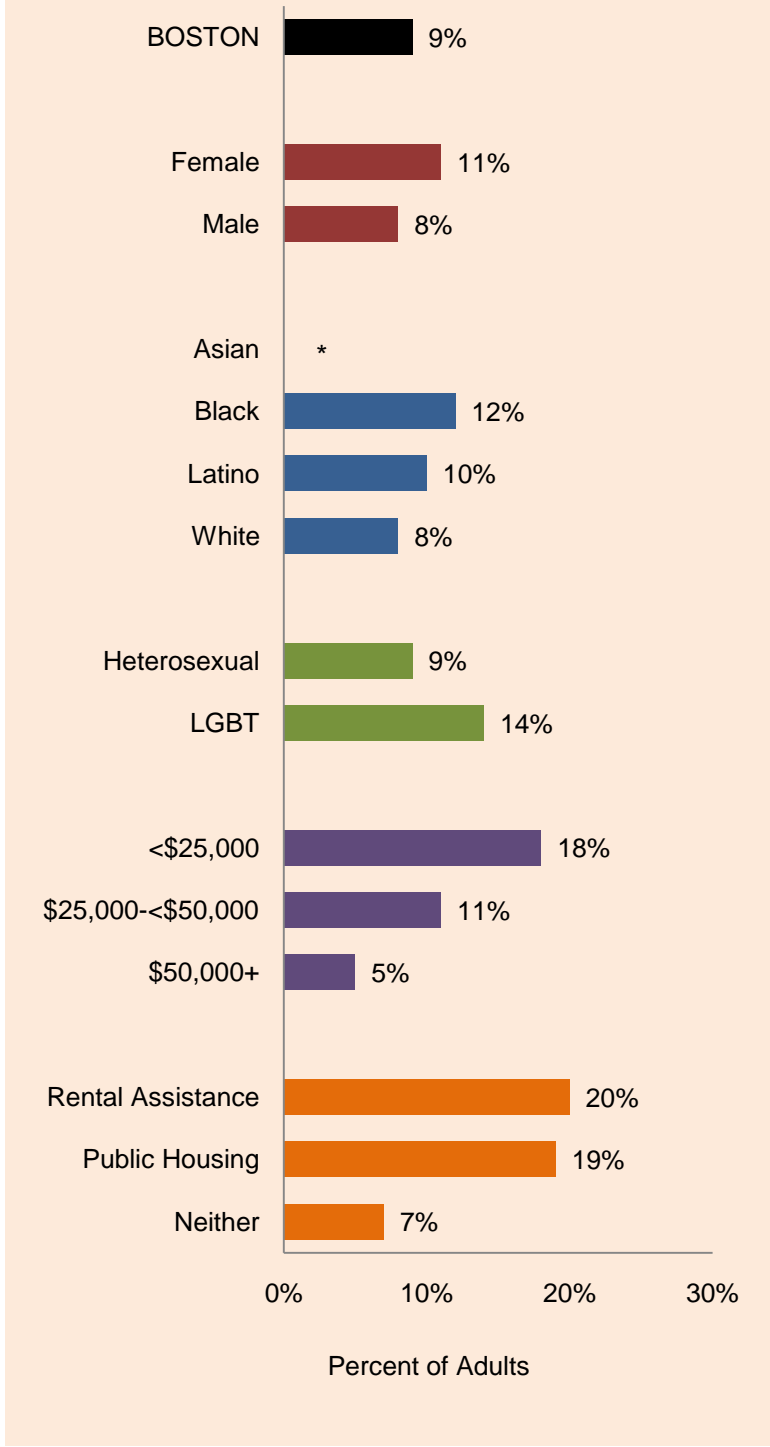
Nearly one in five adults in Boston reported persistent symptoms of anxiety (i.e., feeling worried, tense, or anxious for more than 14 days during the past month). A higher percentage of female adults reported these persistent symptoms compared to male adults. There were no significant differences observed by race/ethnicity or sexual orientation.

Low socioeconomic status is associated with living in an unsafe neighborhood and can increase feelings of stress, anxiety, and resentment (7,9).

A household income gradient was observed between income and persistent symptoms of anxiety. A higher percentage of adults with an annual household income of less than \$25,000 reported these symptoms compared to adults with household income greater than \$50,000 and adults with income of at least \$25,000 but less than \$50,000.

Receiving rental assistance or residing in public housing can be considered indicators of financial stress or disadvantage. Prior studies have demonstrated an association between these living situations and poorer mental health outcomes (9). A higher percentage of adults receiving rental assistance reported persistent symptoms of anxiety in comparison to adults neither receiving rental assistance nor residing in public housing.

**Figure 12.10 Felt Sad, Blue, or Depressed 15+ Days of Past Month by Selected Indicators, 2008**



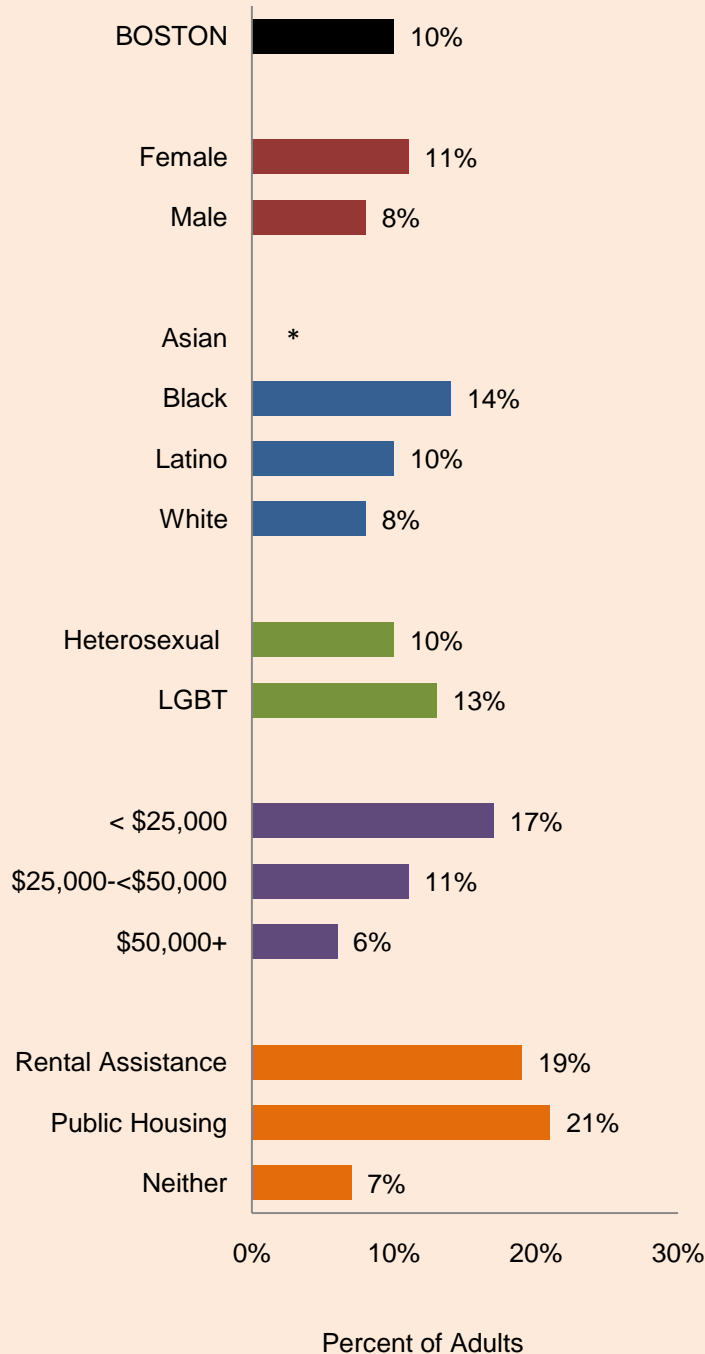
In 2008, 9% of Boston adults reported persistent symptoms of depression (i.e., feeling sad, blue, or depressed for more than 14 days during the past month). The percentage of adults reporting these persistent symptoms was statistically similar by gender, race/ethnicity and sexual orientation.

Individuals with low income experience a higher lifetime and 12 month incidence of depressive disorders (21). Among Boston adults, a higher percentage of adults with annual household income less than \$25,000 reported persistent symptoms of depression compared to adults with annual household income greater than \$50,000.

A higher percentage of adults receiving rental assistance and living in public housing reported persistent symptoms of depression compared to adults neither receiving rental assistance nor residing in public housing.

\*Insufficient sample size for Asians  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

**Figure 12.11 Poor Mental Health 15+ Days of Past Month by Selected Indicators, 2008**



According to the CDC, Frequent Mental Distress (FMD) occurs among individuals who self-report having greater than or equal to 14 days (during the past month) of poor mental health, which includes stress, depression and problems with emotions (23).

A higher percentage of Black adults reported persistent poor mental health (i.e., poor mental health for more than 14 days during the past month) compared to White adults. There were no significant differences observed by gender or sexual orientation.

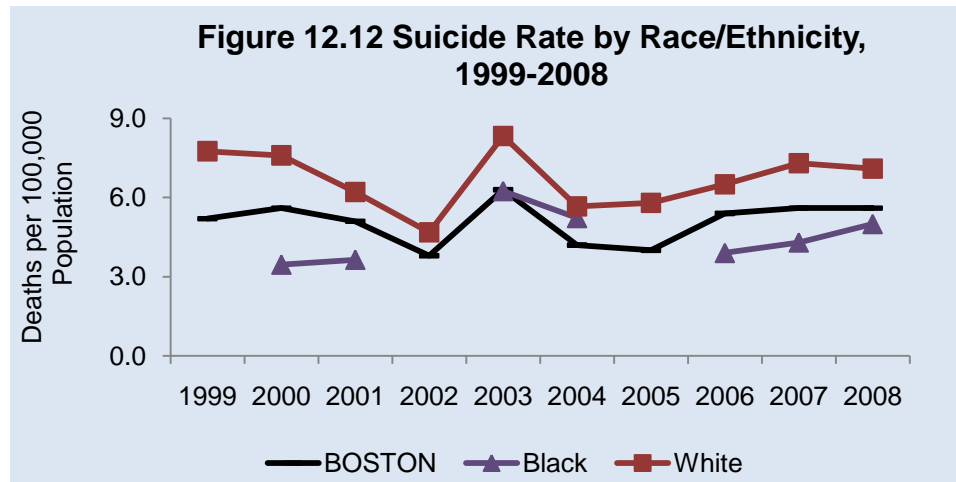
A higher percentage of adults with household income less than \$25,000 annually reported persistent poor mental health compared to those with household income \$50,000 or more.

A higher percentage of adults who reported receiving rental assistance or who lived in public housing reported persistent poor mental health than adults neither receiving rental assistance nor residing in public housing.

\*Insufficient sample size for Asians

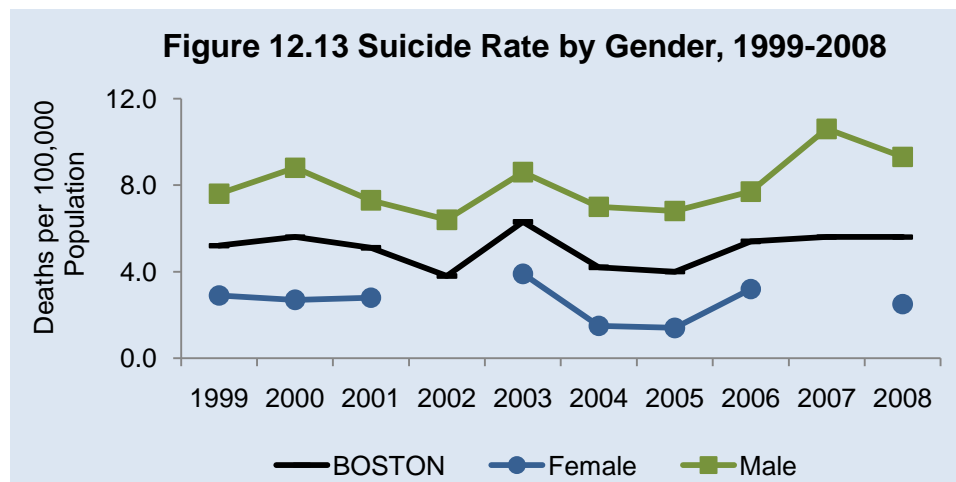
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission





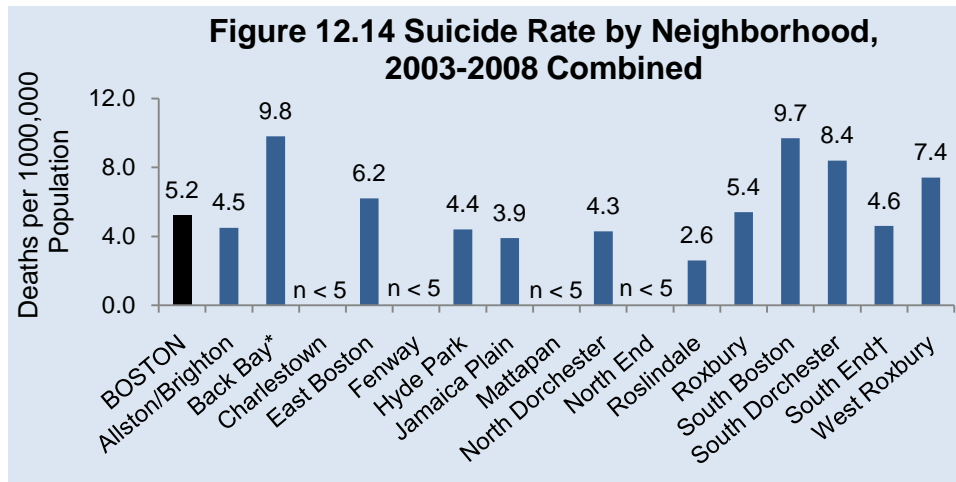
Rates are not presented for Asians and Latinos due to insufficient sample size  
 Rates for Blacks in 1999, 2002, and 2005 not shown due to insufficient sample size  
 DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

National data indicate that the suicide rate for Whites is significantly higher than the rate for Asians, Blacks and Latinos (24). Similarly, the suicide rate for White Boston residents was consistently higher than the rate for Black Boston residents.



Rates are not presented for females in 2002 and 2007 due to insufficient sample size  
 DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

National data indicate that males constitute 79% of all U.S. suicide victims (24). In Boston, the suicide rate for males was consistently and considerably higher than for females from 1999 to 2008. In 2008, the rate for males (9.3 deaths per 100,000 population) was over 3 times the female rate (2.5 deaths per 100,000 population). From 2007 to 2008, the suicide rate for male Boston residents decreased 12%.



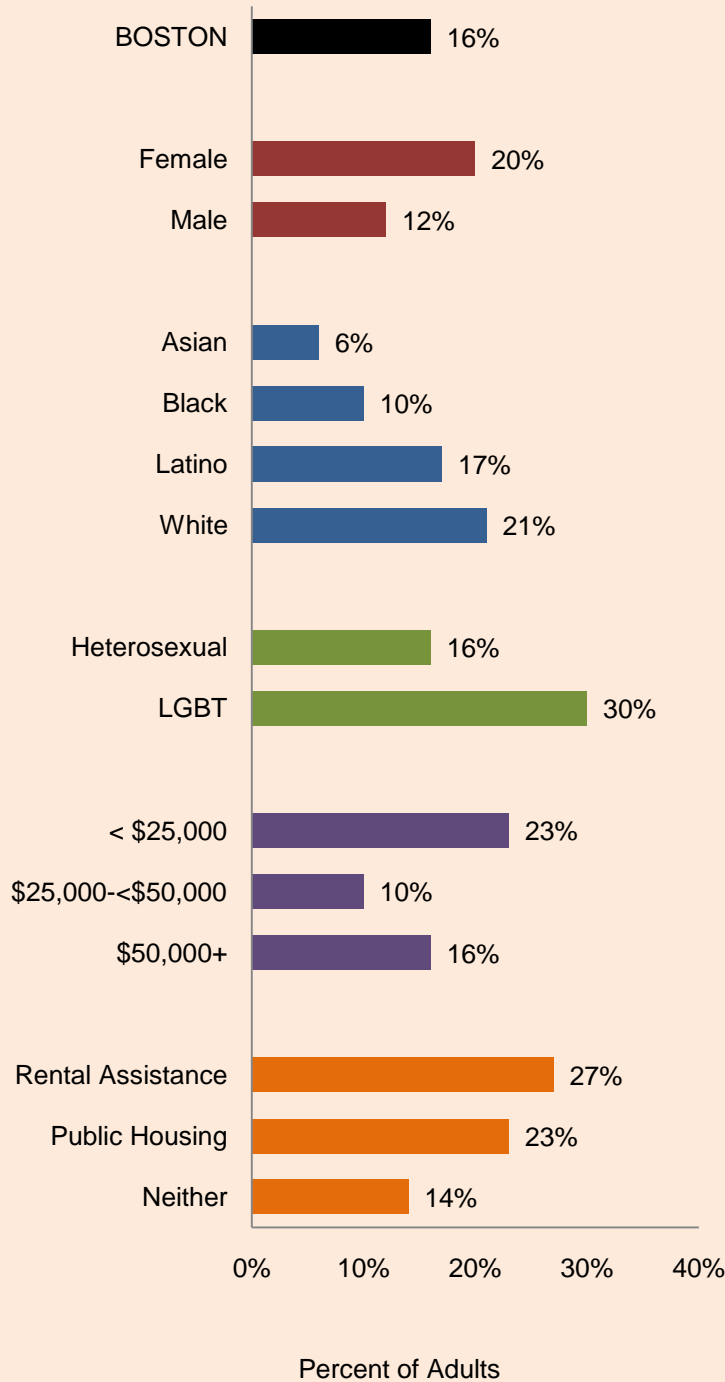
\*Includes Beacon Hill, Downtown, North End, and West End

†Includes Chinatown

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Back Bay had the highest average annual suicide rate among Boston neighborhoods and was 89% higher than the rate for Boston overall. South Boston had the second highest suicide rate among Boston neighborhoods and was 87% higher than the rate for Boston overall.

**Figure 12.15 Received Professional Counseling or Treatment for Sadness or Depression by Selected Indicators, 2008**



A higher percentage of females reported receiving professional counseling or treatment for sadness or depression during the past year compared to males.

Racial/ethnic minorities are often underserved by the mental health care system (7,10,11). Language barriers, cultural preferences, and medical insurance coverage present challenges in accessing care (7, 10).

Racial/ethnic differences in receiving professional counseling or treatment were observed in Boston. A higher percentage of White adults reported receiving professional treatment for sadness or depression compared to Black or Asian adults.

A higher percentage of adults with household income less than \$25,000 annually reported receiving professional treatment than adults with household income between \$25,000 and less than \$50,000; and household income greater than \$50,000 annually.

A higher percentage of adults who reported receiving rental assistance and adults who lived in public housing received professional help or counseling than adults neither receiving rental assistance nor residing in public housing.

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

## Summary: Mental Health

Although, the majority of Boston residents report good mental health, the survey data cited in this section depict persistent symptoms of sadness and depression among a substantial portion of Boston public high school students and persistent feelings of anxiety among adults.

Nearly 30% of Boston public high school students reported feeling sad or hopeless for two weeks straight or more during the past year. Boston public high school students who identified as lesbian, gay, and bisexual (LGB) are of particular concern because of the substantially higher percentages feeling sad or hopeless (43%), purposely hurting themselves (39%), seriously considering (28%) and attempted suicide (24%) compared to high school students who identified as heterosexual. However, LGB students were more likely to report visiting a school counselor, therapist, or psychologist during the past year.

Persistent disparities in mental health were observed by socioeconomic status. Boston adult residents in the highest household income category (\$50,000 and above annually) generally had lower percentages of self-reported symptoms while Boston residents with household incomes less than \$25,000 annually had higher percentages. In addition, a higher percentage of adults receiving public assistance or public housing reported these symptoms for all indicators compared to adults not receiving public assistance nor receiving public housing.

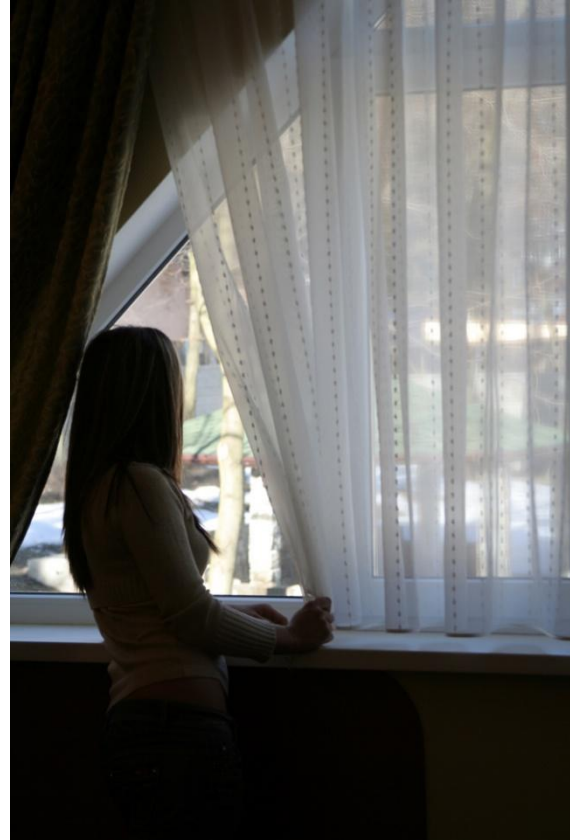
Differences in mental health were observed by race/ethnicity and gender. A higher percentage of poor mental health was reported among Black adult residents compared to White residents. Suicide rates were higher among Whites in comparison to Blacks and among males compared to females. There were no observed significant differences by sexual orientation for Boston adults.

Racial/ethnic disparities were observed in receiving professional counseling or

treatment for sadness or depression. A higher percentage of White residents received treatment compared to Black or Asian residents. Prior research has shown that language barriers, cultural preferences, and medical insurance coverage may present challenges in accessing care (7, 10).

Interestingly, a higher percentage of Boston residents with household income less than \$25,000 annually received treatment compared with those with higher income.

This section provided a description of indicators of mental health and patterns of treatment utilization among youth and adults. Disparities by sexual orientation, race/ethnicity, and socioeconomic status were highlighted and will serve to guide the provision of mental health services for people who are at greatest risk.



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## Notes and Data Analysis

**Figure 12.1**

NOTE: Survey question reads, “During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.2**

NOTE: Survey question reads, “During the past 12 months, how many times did you do something to purposely hurt yourself without wanting to die, such as cutting or burning yourself on purpose?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.3**

NOTE: Survey question reads, “During the past 12 months, did you ever seriously consider attempting suicide?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.4**

NOTE: Survey question reads, “During the past 12 months, how many times did you actually attempt suicide?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.5**

NOTE: Survey question reads, “During the past 30 days, did you go without eating for 24 hours or more (also called fasting) to lose weight or to keep from gaining weight?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.6**

NOTE: Survey question reads, “During the past 30 days, did you take any diet pills, powders, or liquids without a doctor’s advice to lose weight or to keep from gaining weight? (Do not include meal replacement products such as Slim Fast.)”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.7**

NOTE: Survey question reads, “During the past 30 days, did you vomit or take laxatives to lose weight or to keep from gaining weight?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.8**

NOTE: Survey question reads, “In the past 12 months, did you visit a school counselor, therapist, or psychologist because you were feeling bad or were having some emotional problems?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.9**

NOTE: Survey question reads, “During the past 30 days, for about how many days have you felt worried, tense or anxious?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.10**

NOTE: Survey question reads, “During the past 30 days, for about how many days have you felt sad, blue, or depressed?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.11**

NOTE: Survey question reads, “Now thinking about your mental health, which includes stress, depression, and problems with emotions, for about how many days during the past 30 days was your mental health not good?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.12**

NOTE: Data are shown as age-adjusted rates. Rates are not presented for Asians and Latinos due to the small number of suicides they incurred in each of the years shown. Rates for Blacks in 1999, 2002, and 2005 are not shown due to the small number of suicides in each of those years.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office



**Figure 12.13**

NOTE: Data are shown as age-adjusted rates. Rates are not presented for females in 2002 and 2007 due to the small number of suicides they incurred in these years.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.14**

NOTE: Data are shown as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 12.15**

NOTE: Survey question reads, “During the past year, have you received professional counseling or any kind of treatment, including medication, for sadness or depression?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

## Section 13: Substance Abuse

Substance abuse involves the excessive use of alcohol, illicit substances (e.g., marijuana, cocaine, heroin, methamphetamines, ecstasy), or the use of licit substances (e.g., prescription drugs such as Vicodin and OxyContin), in a non-prescribed manner to achieve an altered physiological state. There is a substantial increased risk of morbidity and mortality associated with alcohol and drug abuse (1). Because alcohol and drugs directly affect the central nervous system of the body, they can cause severe immediate consequences, including cardiac arrest and the loss of life. In addition, abuse of alcohol or other drugs over time can lead to physical and/or psychological dependence on these substances whereby the user continues to use the substance in order to satisfy intense cravings for the substance. An individual is said to have an addiction to a substance when the nature and intensity of the cravings for the substance contributes to a pattern of unhealthy or self-destructive decisions in order to satisfy the perceived need for the substance. As a result, people with addictions may sacrifice their physical health, relationships, jobs, morals and values in efforts to maintain access to the substance.

Individual-level risk factors such as socioeconomic status, family history, incarceration, and stressful life events (e.g., psychological distress, death of a loved one) are associated with drug use (2). Risk factors particularly salient among adolescents include high-risk behaviors and delinquent peer group associations (3). Increasingly, evidence suggests that social factors may contribute to one's decision to initiate drug use and shape substance use behavior (1). For example, the availability of supportive social networks or factors associated with neighborhood poverty may influence substance use behaviors. In addition, social factors may influence behaviors associated with recovery from addiction, including cessation, relapse, and treatment seeking.

Fortunately, effective treatment for drug and alcohol dependence exists. Treatment providers offer a wide array of services (e.g., behavioral therapy) and medications that aim to help the individual break his or her dependence on the substance. Drug and alcohol dependence treatment which addresses multiple aspects of an individual's life including medical and mental health services and follow-up options (e.g., community and family-based recovery support systems) are critical for achieving a drug free lifestyle (4).

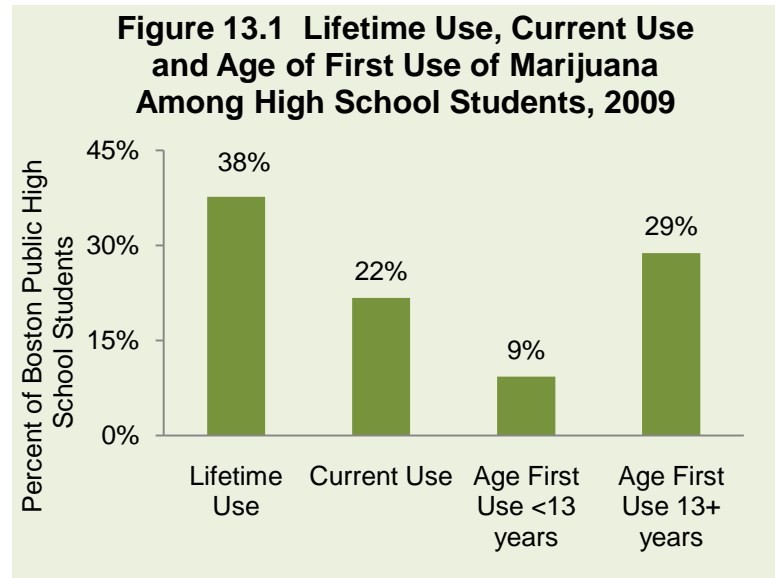
This section considers five types of indicators of substance abuse: youth drug use-related behaviors, perceptions of drug use within neighborhoods, admissions to publicly funded substance abuse treatment programs, hospitalizations due to substance abuse, and substance abuse mortality, which is defined as deaths in which alcohol or drugs are believed to play a causal role.



Marijuana is one of the most frequently used drugs reported among adolescents. Persistent use in early adolescence has been linked to high-risk sexual behaviors, regular use and dependence in adulthood, poor job and relationship outcomes, and the initiation of other illicit drugs (5).

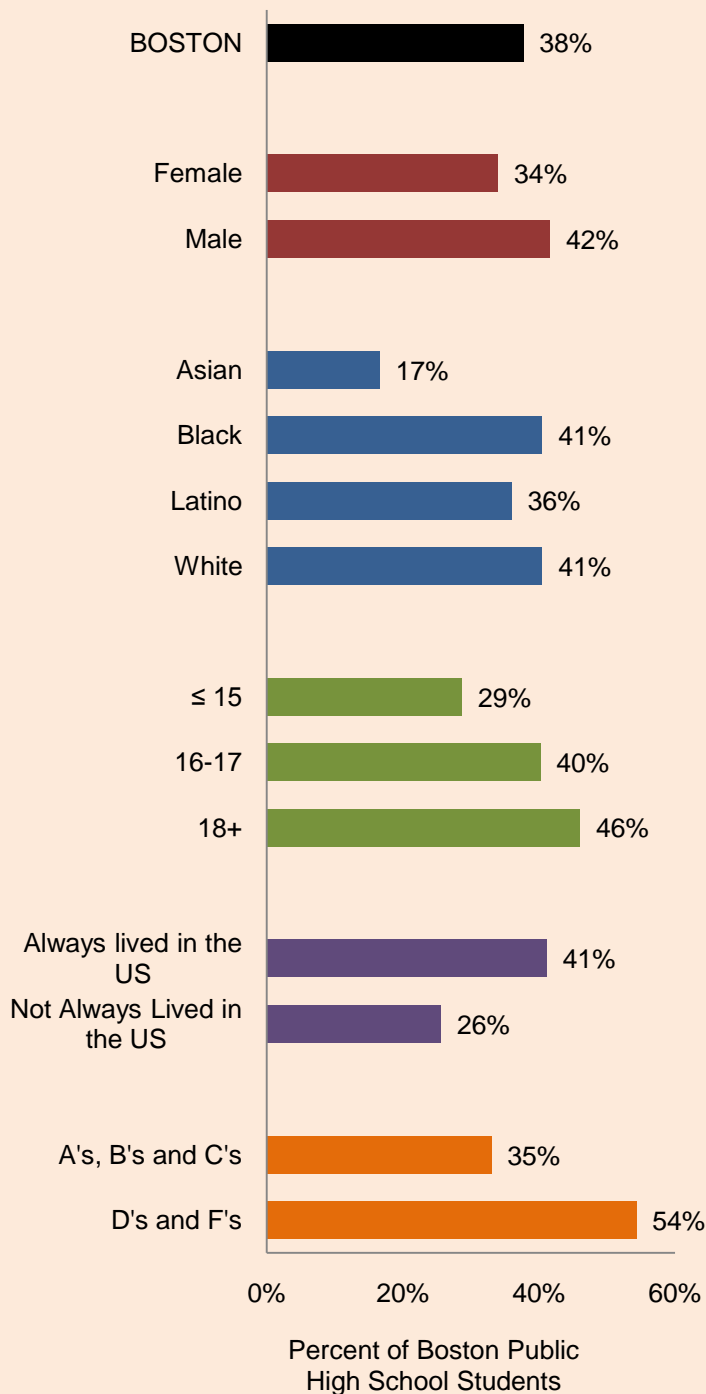
In 2009, more than one-third of Boston public high school students reported ever having used marijuana. About one in five students used marijuana within the past month.

Close to one in ten high school students have used marijuana before age 13 and three in ten students first used marijuana after age 12.



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

**Figure 13.2 Lifetime Marijuana Use Among High School Students by Selected Indicators, 2009**



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

National estimates suggest that, approximately one in five adolescents between the ages of 14-17 smoked marijuana (6).

In Boston, a higher percentage of male high school students reported ever having used marijuana compared to female students.

A lower percentage of Asian high school students reported having used marijuana compared to Black, Latino, and White students. The same percentage of Black and White students reported having used marijuana.

A higher percentage of older high school students (ages 16 and older) compared to those ages 15 or younger reported ever having used marijuana.

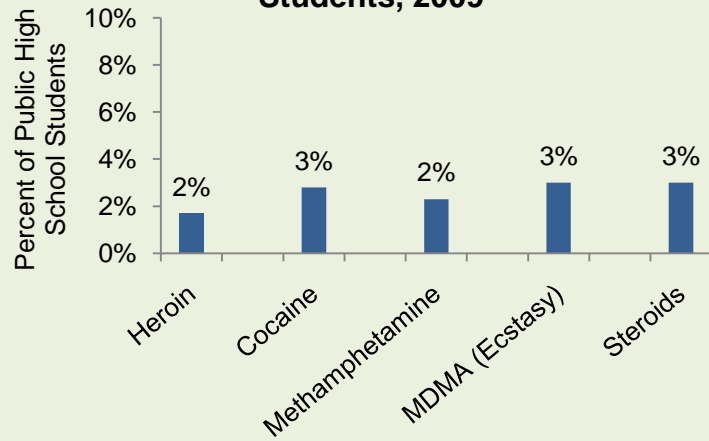
A higher percentage of students who have always lived in the US reported having used marijuana compared to students who have not always lived in the US.

Marijuana use in adolescence has been linked to poor educational outcomes (2). A lower percentage of students who usually get As, Bs, and Cs for grades reported ever having used marijuana compared to students who usually get grades of Ds and Fs.

Use of illicit drugs such as heroin, cocaine, methamphetamine, or non-medical use of prescription drugs is associated with illness, injury, disability and death (6).

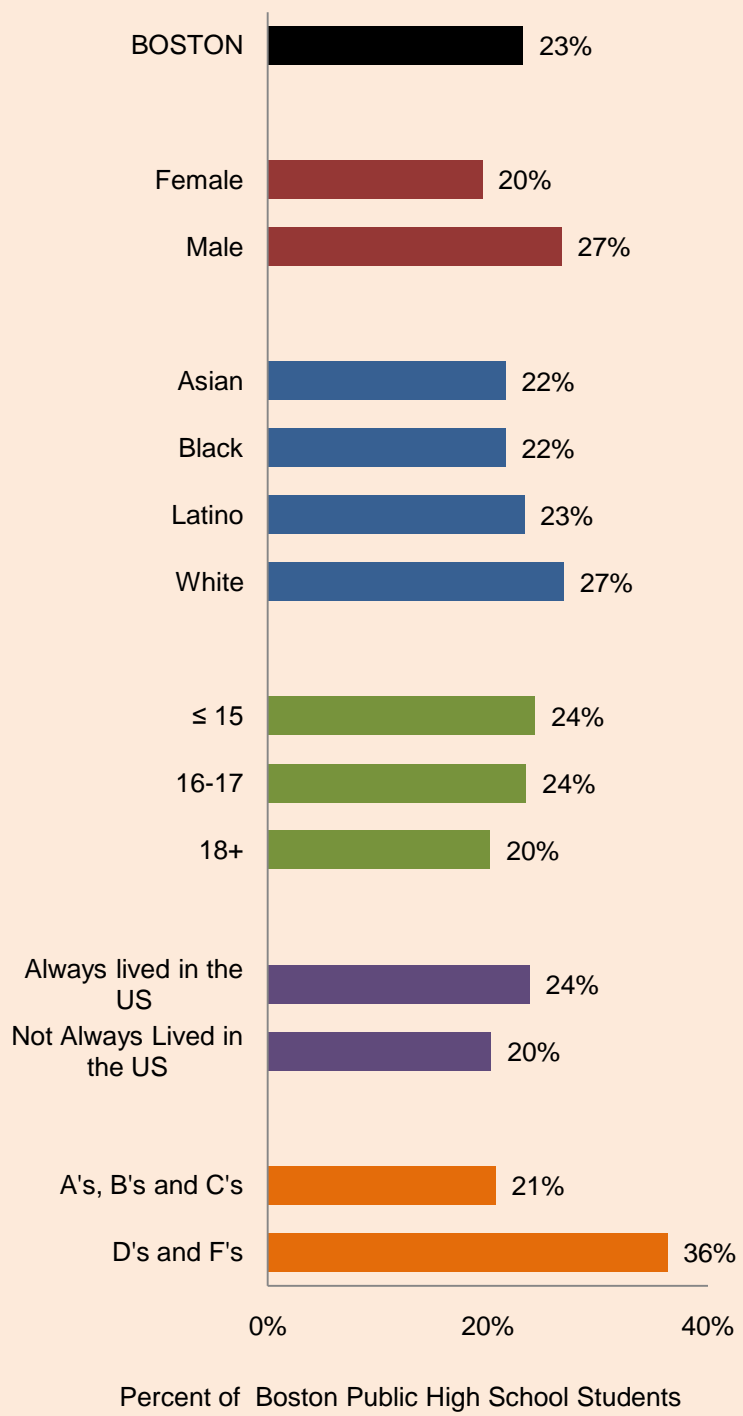
Compared to lifetime use of marijuana, the percentage of public high school students reporting lifetime use of other drugs is relatively low, ranging from 2% to 3%.

**Figure 13.3 Lifetime Use of Various Other Drugs Among High School Students, 2009**



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

**Figure 13.4 Offered Drugs at School During Past Year by Selected Indicators, 2009**



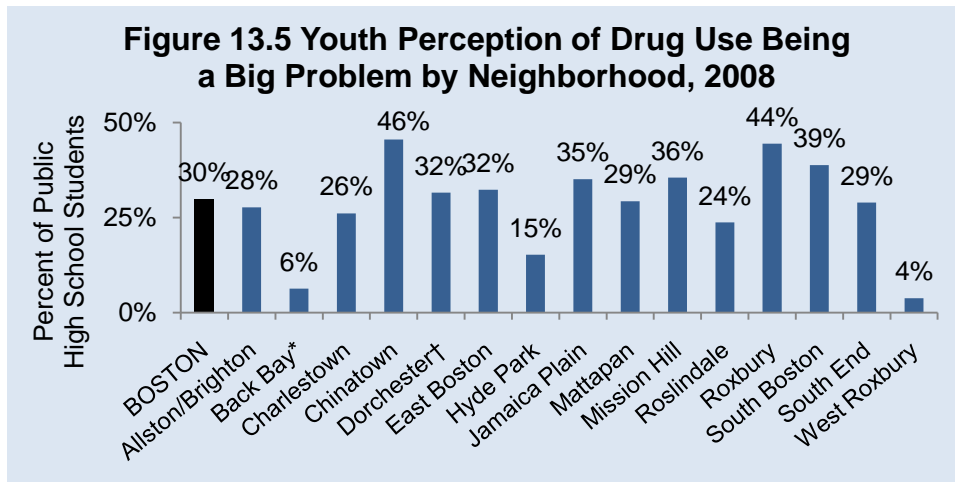
About one in four Boston public high school students reported having been offered, sold, or given an illegal drug on school property during the past year.

A higher percentage of males were offered drugs compared to females.

Across racial/ethnic groups, age groups, and years in the US, statistically similar percentages of students reported being offered drugs in the past year.

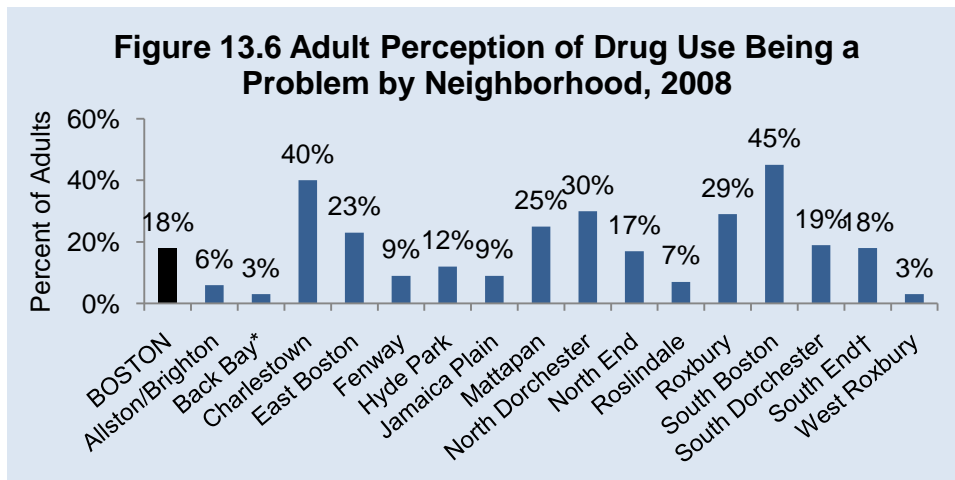
A higher percentage of students who reported usually receiving grades of Ds and Fs reported being offered drugs at school compared to students who reported usually receiving grades of As, Bs, and Cs.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)



\* Includes Beacon Hill, Downtown, North End, and West End  
 † North and South Dorchester combined  
 DATA SOURCE: Boston Youth Survey, 2008; Harvard Youth Violence Prevention Center through a Cooperative agreement with the Center for Disease Control and Prevention.

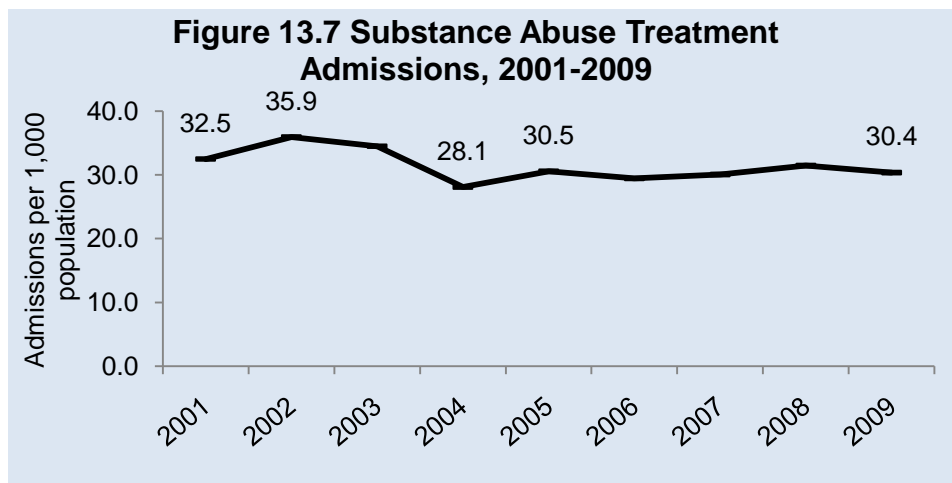
Compared to Boston youth overall, only Roxbury had a higher percentage of youth who reported drug use as a big problem in their neighborhood. Hyde Park and West Roxbury had a lower percentage of youth who reported drug use as a big problem compared to Boston overall. The percentages for Allston/Brighton, Back Bay, Chinatown, Dorchester, East Boston, Jamaica Plain, Mattapan, Mission Hill, Roslindale, South Boston, and the South End were all statistically similar to the Boston overall rate.



\*Includes Beacon Hill, Downtown, and the West End  
 †Includes Chinatown  
 DATA SOURCE: Boston Neighborhood Survey, 2008; Harvard Youth Prevention Center through a cooperative agreement with the Center for Disease Control and Prevention

Compared to Boston overall, a higher percentage of adults living in Charlestown, North Dorchester, Roxbury, and South Boston reported drug use as a big problem in their neighborhood. A lower percentage of adults living in Allston/Brighton, Back Bay, Roslindale, and West Roxbury reported drug use as a big problem in their neighborhood. All other neighborhood percentages were statistically similar to Boston overall.

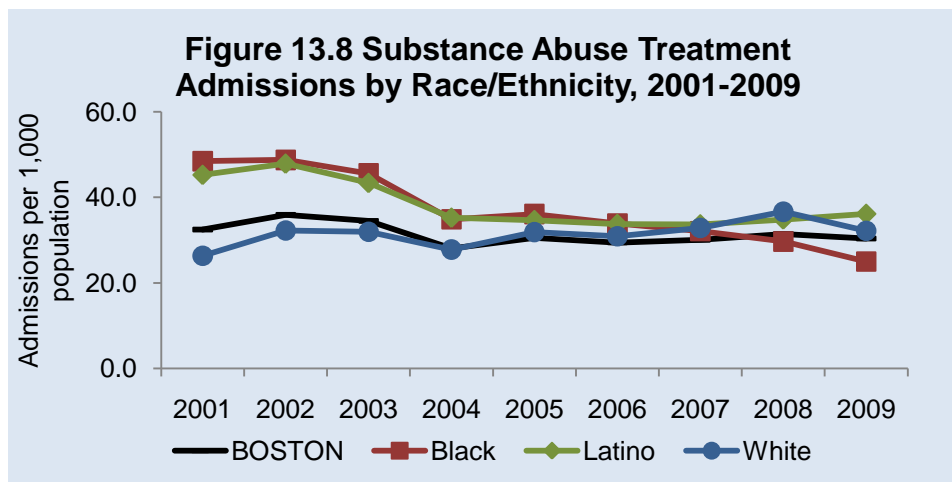




DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

Substance abuse treatment can help patients who are addicted to drugs to stop using drugs, avoid relapse, and recover their lives.

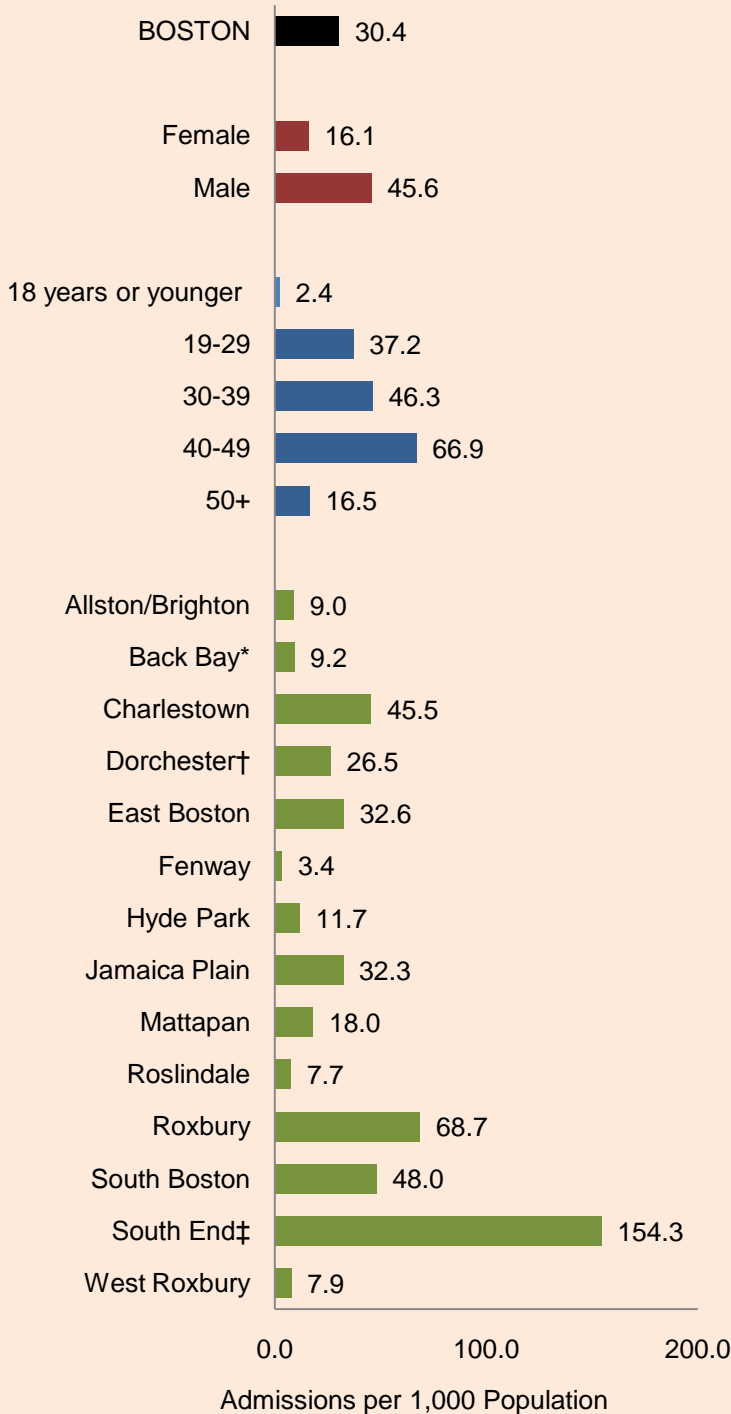
From 2005 to 2009, the rate of substance abuse treatment admissions has remained stable (30.4 admissions per 1,000 residents in 2009). The highest rate of substance abuse treatment admissions was seen in 2002 (35.9 admissions per 1,000 residents) while the lowest rate was in 2004 (28.1 admissions per 1,000 residents).



DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

From 2002 to 2004, substance abuse treatment admissions rates decreased for all three reported racial/ethnic groups. However from 2005 to 2009 the White and Latino rate remained stable, while the Black substance abuse treatment rate continued to fall. From 2002 to 2009, the Black treatment rate decreased nearly 50%.

**Figure 13.9 Substance Abuse Treatment Admissions by Selected Indicators, 2009**

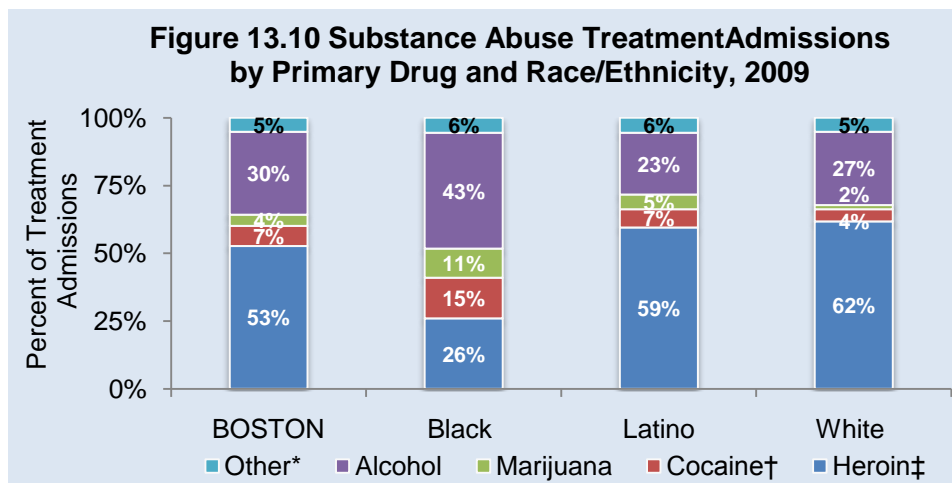


Among Boston residents, substance abuse treatment admissions varied by gender, age, and neighborhood.

In 2009, the substance abuse treatment rate for Boston overall was 30.4 admissions per 1,000 residents. The substance abuse treatment rate for males was approximately three times the rate for females. Adults ages 40 to 49 had the highest treatment rate among the age groups.

Six neighborhoods had a treatment rate higher than the overall Boston rate: Charlestown, East Boston, Jamaica Plain, Roxbury, South Boston, and the South End. The South End rate was five times the Boston overall rate. It is possible that numbers in the South End reflect a high concentration of adults living in shelters in this neighborhood.

\* Includes Beacon Hill, Downtown, North End, and West End  
 †North and South Dorchester combined  
 ‡Includes Chinatown  
 DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse



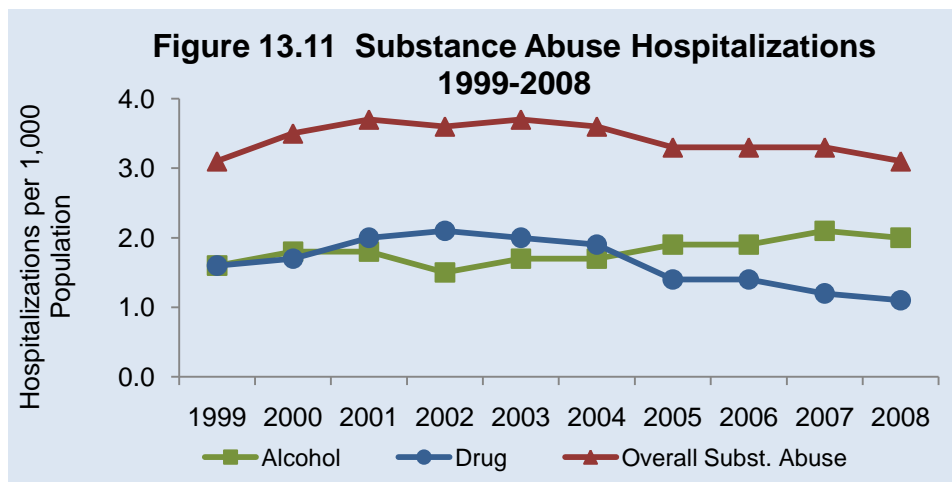
\*[Other/ unknown substances]

†[Powder and cocaine]

‡[Other opiates and synthetics]

DATA SOURCE: Massachusetts Department of Public Health, Bureau of Substance Abuse

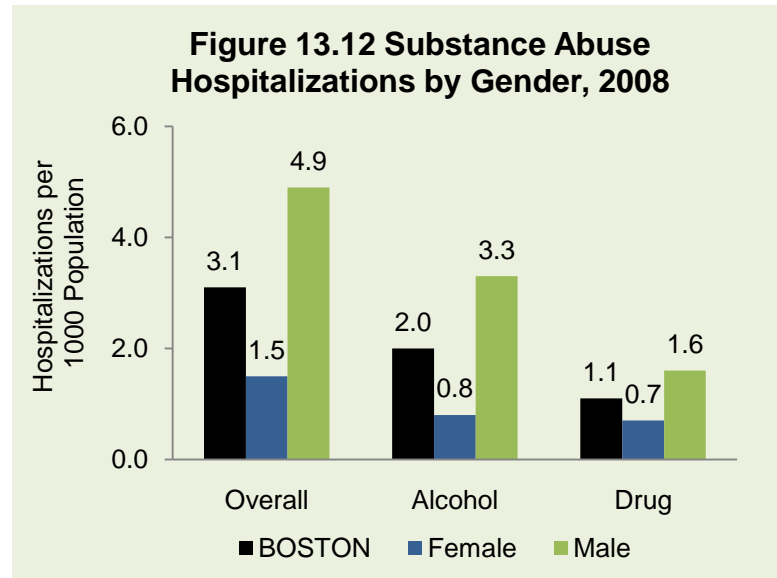
In 2009, Heroin was most often cited as the primary drug for substance abuse treatment admissions among White and Latino residents. Alcohol was cited most often for treatment admissions of Black residents. Substance abuse treatment admissions among Black residents show higher proportions of alcohol, cocaine and marijuana as the primary drug compared to their White and Latino counterparts.



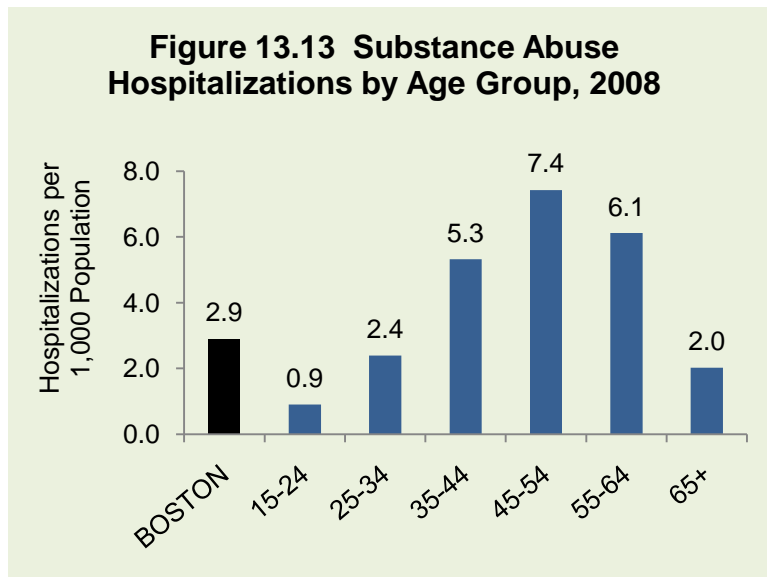
DATA SOURCE: Acute Care Hospital Case Mix Files, Massachusetts Division of Health Care Finance and Policy.

The overall substance abuse hospitalization rate rose slightly from 1999 to 2003 before settling back to the 1999 level by 2008. However, from 2002 to 2008 the drug abuse hospitalization rate decreased 48% while the alcohol abuse hospitalization rate increased 33%.

The male substance abuse hospitalization rates (overall, alcohol, and drug) were two to four times the corresponding female rates.

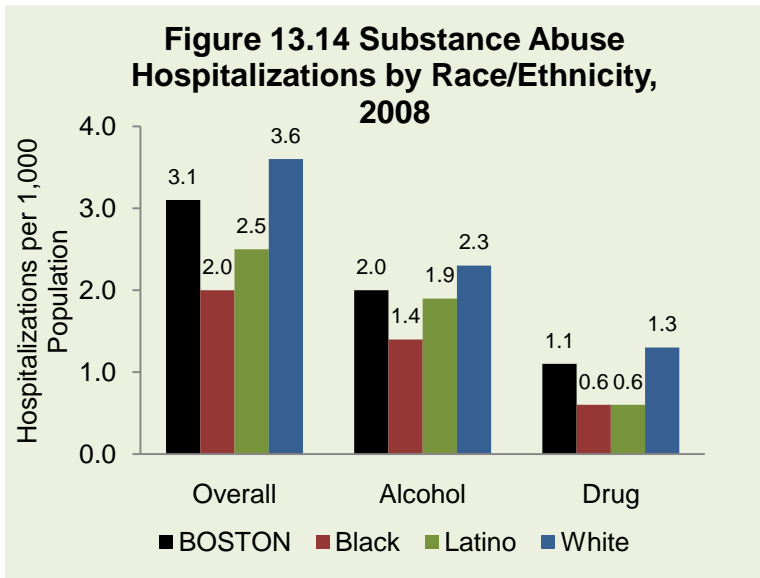


DATA SOURCE: Acute Care Hospital Case Mix Files, Massachusetts Division of Health Care Finance and Policy.



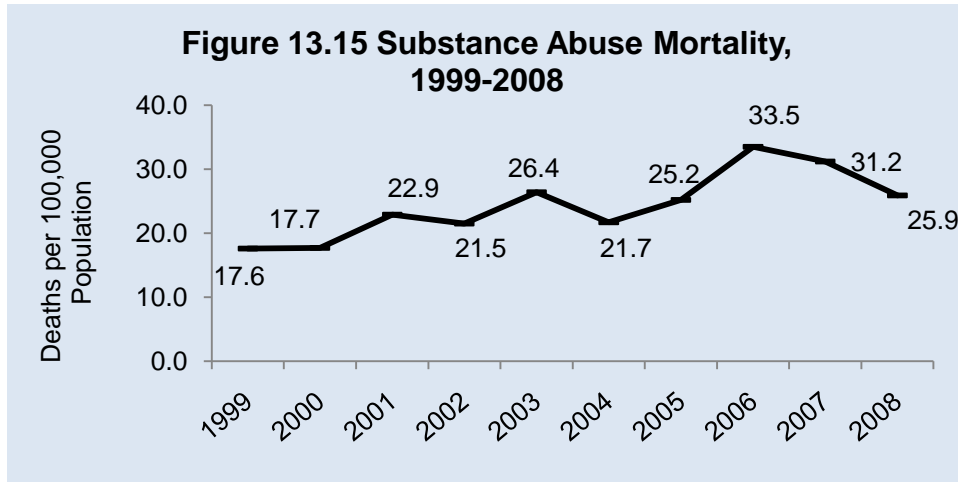
Adults ages 45 to 54 experienced the highest substance abuse hospitalization rate.

DATA SOURCE: Acute Care Hospital Case Mix Files, Massachusetts Division of Health Care Finance and Policy.



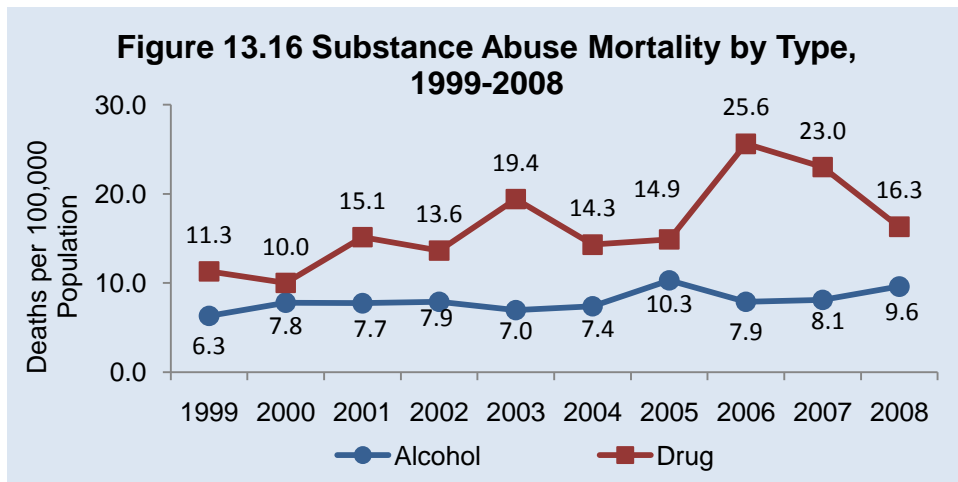
The overall substance abuse hospitalization rate for White residents was 80% higher than the rate for Black residents and 44% higher than the rate for Latino residents. The drug abuse hospitalization rate for White residents was more than twice the rate for Black and Latino residents.

DATA SOURCE: Acute Care Hospital Case Mix Files, Massachusetts Division of Health Care Finance and Policy.



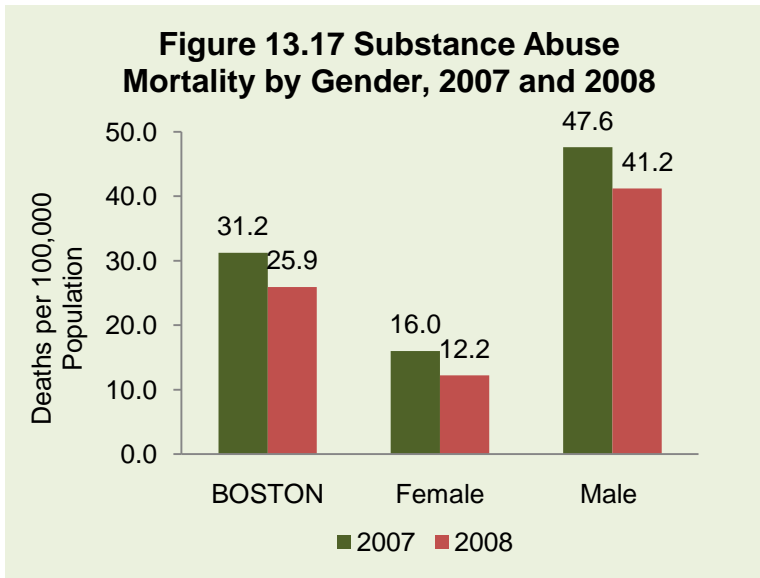
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

After peaking in 2006 at 33.5 deaths per 100,000 population, the substance abuse age-adjusted mortality rate decreased 23% from 2006 to 2008.



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

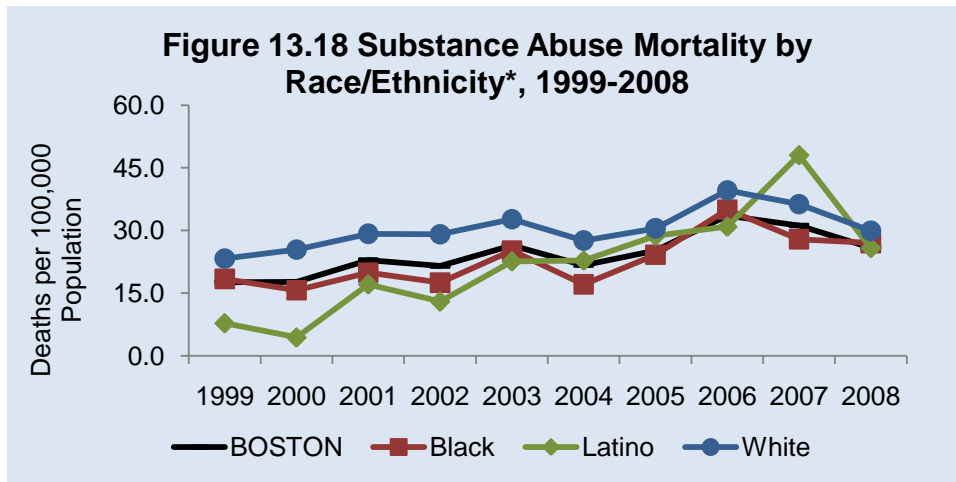
The recent decline in the overall substance abuse mortality rate was attributable to a decrease in the number of drug abuse deaths. After peaking in 2006, the drug-related mortality rate decreased 36% from 2006 to 2008. The alcohol-related mortality rate has been fairly stable from 2000 to 2008.



In both 2007 and 2008, the male substance abuse mortality rate was approximately three times the female rate.

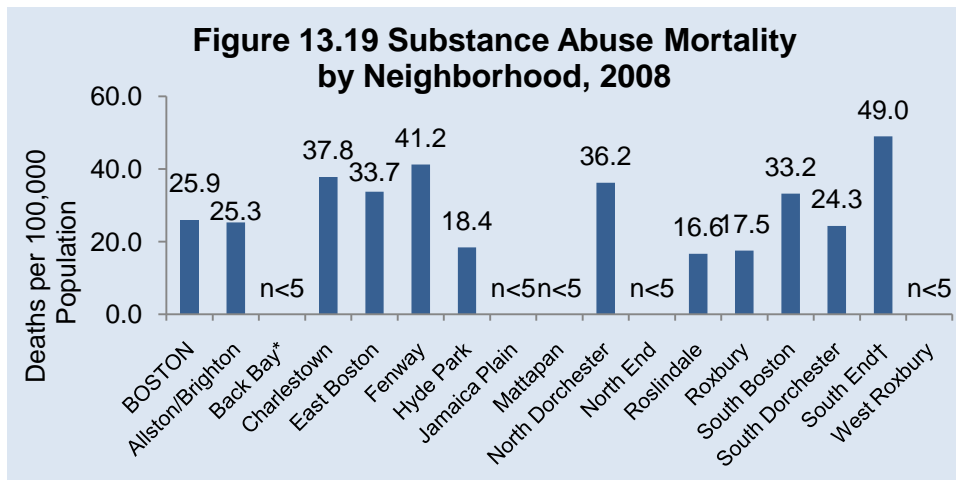
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health





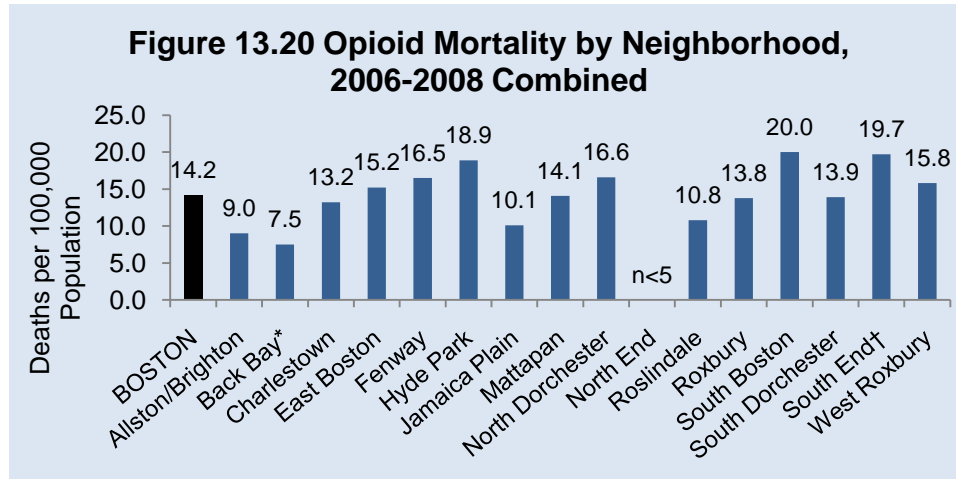
\* Too few Asians to calculate rate.  
 DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

In 2008, the substance abuse mortality rate was similar among racial/ethnic groups. From 2007 to 2008, the Latino rate decreased 46% but was still three times the level observed in 1999. From 2006 to 2008, the Black and White substance abuse mortality rates declined 23% and 24%, respectively.



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health  
 \*Includes Beacon Hill and the West End  
 †Includes Chinatown

In 2008, the South End had the highest substance abuse mortality rate at 49.0 deaths per 100,000 population among Boston neighborhoods. In addition to the South End, Charlestown, East Boston, Fenway, North Dorchester, and South Boston had a substance abuse mortality rate greater than the Boston overall rate.



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health  
 \*Includes Beacon Hill, Downtown, and the West End  
 †Includes Chinatown

During 2006 to 2008, South Boston had the highest average annual opioid mortality rate at 20.0 deaths per 100,000 population among Boston neighborhoods. In addition to South Boston, six neighborhoods had an opioid mortality rate higher than the Boston rate: East Boston, Fenway, Hyde Park, North Dorchester, South End, and West Roxbury.

## Summary: Substance Abuse

Although substance abuse continues to adversely impact Boston residents regardless of age, gender, race/ethnicity, and country of origin, the data presented in this section show some differences across various demographic groups within substance abuse indicators.

Drug use among teens is considered a risk factor for poorer health and general well-being outcomes. One in four Boston public high school students report being offered drugs while on school property during the past year. Higher percentages of male students were offered drugs while on school property and used marijuana compared to female students. Thirty-eight percent of Boston public high school students have used marijuana. About one in five used marijuana during the past month. Close to one in ten students used marijuana before age 13. A higher percentage of students who have always lived in the US compared to those who have lived outside of the US reported that they had used marijuana. Students who reported usually receiving Ds and Fs for grades reported at higher percentages being offered drugs and using marijuana compared to students who reported receiving As, Bs, and Cs. Lifetime use of other drugs (e.g., heroin, cocaine, methamphetamine) ranged between 2% and 3%.

Overall, Boston males accessed the treatment system, were hospitalized due to substance abuse, and died as a consequence of substance abuse at rates at least three times those for females. In general, the highest rates of treatment admissions, hospitalizations, and substance abuse mortality were experienced by adults in their 30s, 40s, and 50s. Though younger adults misuse drugs and alcohol, the most severe consequences are often experienced after years of prolonged abuse.

Substance abuse treatment admissions varied by race/ethnicity. From 2002 to 2009, both the Black and Latino substance abuse treatment rates decreased by 50% and 25%,

respectively. In 2009, the Latino substance abuse treatment rate was highest among racial/ethnic groups. Furthermore, there were racial/ethnic differences in primary drug cited at the onset of treatment. The majority of Latino and White treatment admissions cited heroin as their primary drug, whereas Black residents seeking treatment cited alcohol most often.

From 2006 to 2008, the substance abuse age-adjusted mortality rate decreased 23%, and the drug-related age-adjusted mortality rate decreased by 36%. In 2008, the substance abuse mortality rate among White residents was slightly higher in comparison to other racial/ethnic groups. From 2007 to 2008, the Latino substance abuse mortality rate decreased 46%. From 2006 to 2008, the Black and White substance abuse mortality rates declined 23% and 24%, respectively.

Among Boston neighborhoods, differences in the substance abuse indicators were observed. The substance abuse treatment rates for Charlestown, East Boston, Jamaica Plain, Roxbury, South Boston and the South End were higher than for Boston overall. Four of these six were among the neighborhoods with substance abuse mortality rates that exceeded the rate for Boston overall: Charlestown, East Boston, South Boston, and the South End. Fenway and North Dorchester also had a substance abuse mortality rate that exceeded Boston's.

The data summarized in this section demonstrate that drug and alcohol abuse can lead to devastating health consequences among individuals of all demographic groups.



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## Notes and Data

### Figure 13.1

NOTE: Survey questions read, “During your life, how many times have you used Marijuana?” “During the past 30 days, how many times did you use marijuana?” “How old were you when you tried Marijuana for the first time?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.2

NOTE: Survey question reads, “During your life, how many times have you used Marijuana?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.3

NOTE: Survey questions read, “During your life, how many times have you used any form of cocaine including powder, crack or freebase?” “During your life, how many times have you used heroin (also called smack, junk, or China White)?” “During your life, how many times have you used methamphetamines (also called speed, crystal, crank or ice)?” “During your life, how many times have you used ecstasy (also called MDMA)?” “During your life, how many times have you taken steroid pills or shots without a doctor’s prescription?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.4

NOTE: Survey question reads, “During the past 12 months, has anyone offered, sold, or given you an illegal drug on school property?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.5

NOTE: Survey question reads, “Thinking about your neighborhood, how much of a problem is people using or being addicted to drugs?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.6

NOTE: Survey question reads, “Thinking about your neighborhood, how much of a problem is people using or being addicted to drugs?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.7

NOTE: An individual client may have more than one admission per year. The data shown are for fiscal years July 2000-June 2009

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.8

NOTE: Data for Asians was unavailable. An individual client may have more than one admission per year. The data shown are for fiscal years July 2000-June 2009

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.9

NOTE: An individual client may have more than one admission per year.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.10

NOTE: An individual client may have more than one admission per year.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.11

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.12

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

### Figure 13.13

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 13.14**

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 13.15**

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 13.16**

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 13.17**

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 13.18**

NOTE: Data are presented as age-adjusted rates. There were too few substance abuse deaths among Asians to permit the presentation of rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 13.19**

NOTE: Data are presented as age-adjusted rates. There were too few substance abuse deaths among residents of Back Bay, Jamaica Plain, Mattapan, the North End, and West Roxbury to permit presentation of rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 13.20**

NOTE: Data are presented as age-adjusted rates. There were too few opioid abuse deaths among residents of the North End to permit presentation of rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office





## Section 14: Violence

Violence is widely recognized as a major public health issue in addition to being a criminal justice problem. The fatal and non-fatal outcomes resulting from violent victimization and perpetration have a negative impact on individual and community health.

The Federal Bureau of Investigation and other law enforcement agencies categorize violent crime into four groups: murder and non-negligent manslaughter, forcible rape, robbery, and aggravated assault (1). Violence-related behaviors that may cause physical and emotional harm include carrying a weapon, physical fighting, harassment, and bullying. Violence can occur in a variety of social contexts ranging from the home, school, work, neighborhood, and electronically via the internet. The scope of violence includes domestic violence, child and elder abuse, and teen dating violence.

Victimization, stress, anxiety, and fear of living in a violence prone neighborhood all affect health. The economic toll of violence is enormous ranging from years of potential life lost, increases in health care-related costs, decreases in property values, and the disruption of social services (2).

A number of factors can increase the risk of engaging in violence. History of violent victimization and involvement, substance use, and emotional distress are key risk factors. Contextual and situational risk factors for violence include family stress, access to guns, media depictions of violent behavior, low levels of community participation, and neighborhood poverty (3). Additional risk factors specific to youth include poor educational performance and negative peer group associations (e.g., involvement in gang) (4).

Nationwide, there continues to be great concern about the high and increasing levels of violence among youth and young adults, especially those in the 10-24 age group.

According to the Centers for Disease Control and Prevention (CDC), in 2009, violent crime was the second leading cause of death among this age group (2). In 2007, over 668,000 youths were treated in emergency departments for injuries sustained from violence.

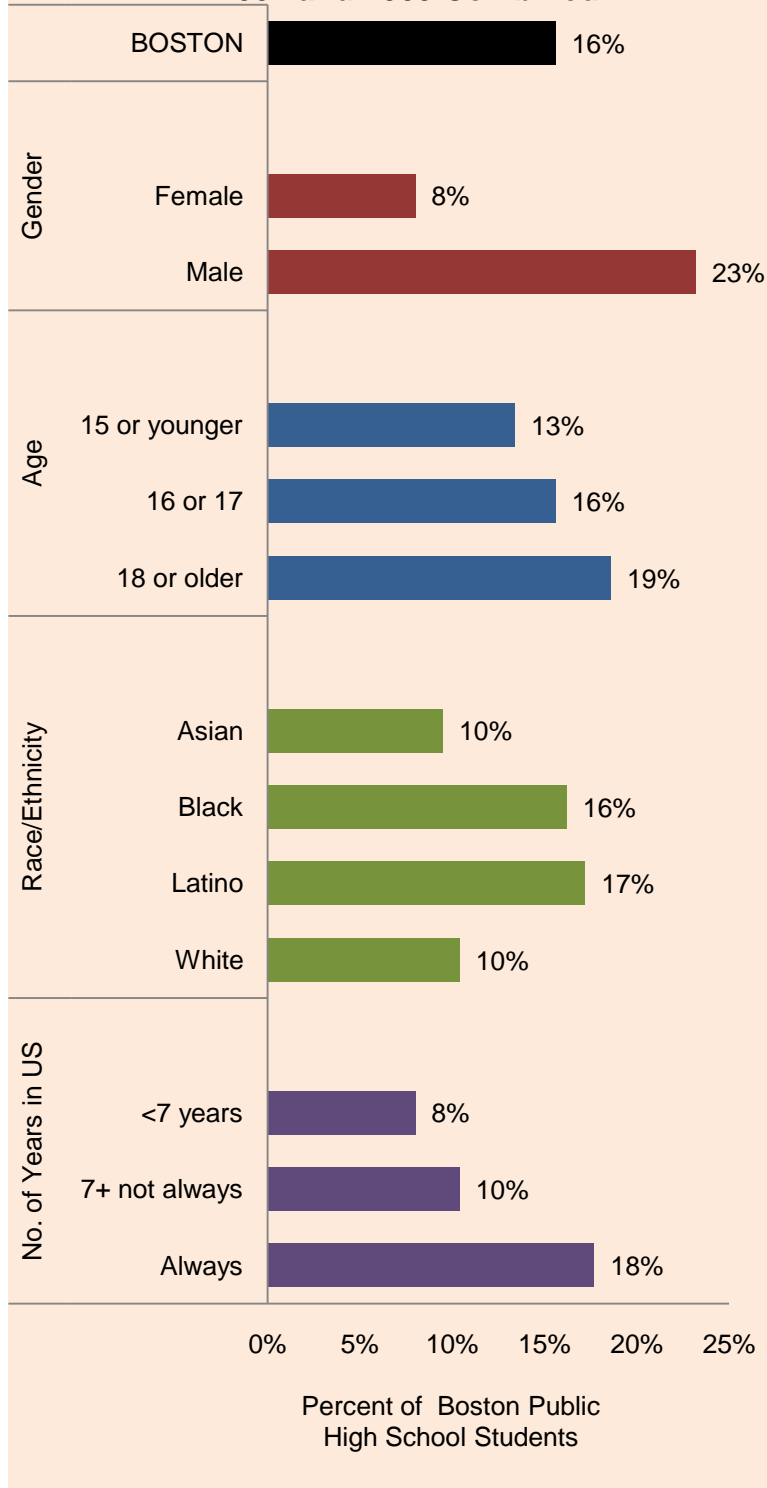
Homicide is the leading cause of death among Black males ages 10-24 (5). Although Blacks make up 13% of the total US population, they account for 48% of murder victims whose race was known in 2008 (1).

The role of firearms in violence victimization and perpetration is of particular importance. Firearms account for approximately 67% of all homicides. In 2006, almost 6,000 youth were murdered. The majority of them (84%) were killed by a firearm (5). National estimates report that youth are carrying firearms and have easier access to firearms than in the recent past (6).

Prevention strategies targeting families, schools, and neighborhoods have been developed including: the creation of coalitions of religious and community leaders; efforts to improve communication and relationships between police and the communities; creation of neighborhood crime watch programs; establishing after school programs and other places for youth to safely 'hang out'; the incorporation of conflict resolution programs into school curricula; gun buy-back programs; and increased presence of police in high crime areas. New violence prevention strategies continue to be developed and implemented especially those that target youth and younger adults.

This section provides information on non-fatal and fatal violence victimization, violence-related behaviors, and perceptions of violence among Boston youth and adults.

**Figure 14.1 Carried a Weapon Within Past Month by Selected Indicators, 2007 and 2009 Combined**



Weapon carrying is often motivated by the perceived need to protect oneself. However, these same weapons are used to inflict violence upon others.

Sixteen percent of Boston public high school students reported carrying a weapon such as a (gun, knife or club) during the past month.

A higher percentage of male high school students reported carrying a weapon during the past month than female high school students.

Across age groups, statistically similar percentages of high school students reported carrying a weapon during the past month.

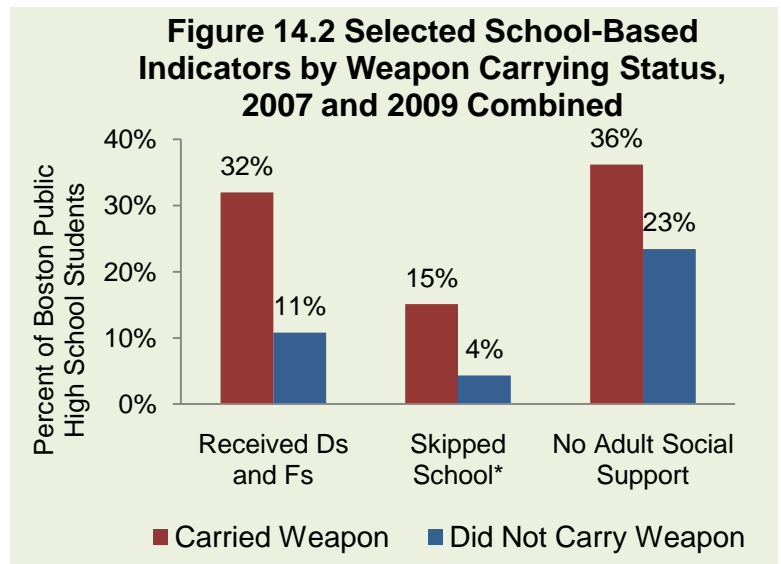
Higher percentages of Black and Latino students reported weapon carrying than White and Asian students.

A higher percentage of high school students who have always lived in the US reported carrying a weapon during the past month compared to students who lived outside of the US during part of their lifetime.

DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

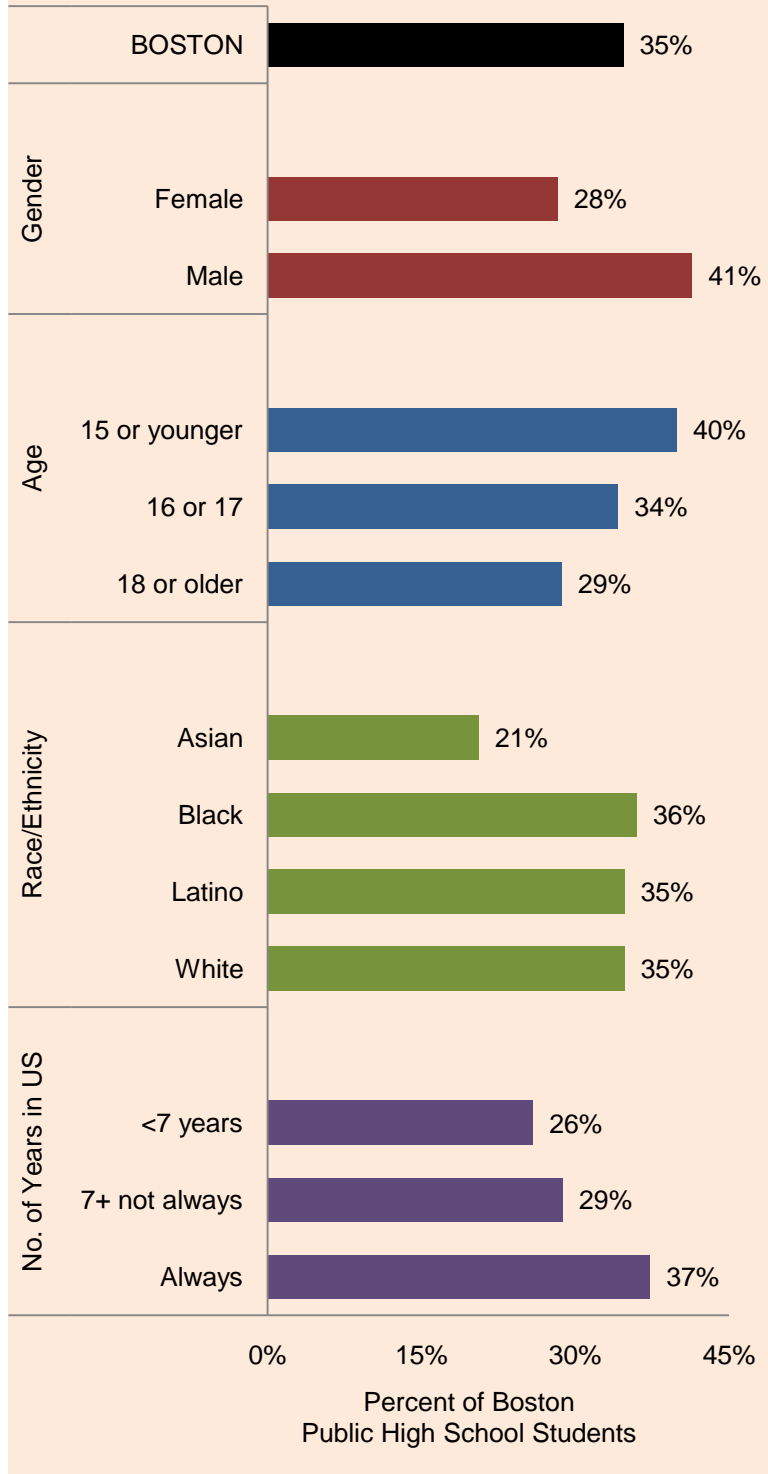
Many behaviors related to violence like weapon carrying are often associated with poor academic achievement and truancy (e.g., school attendance problems) (4). Supportive relationships with adults play a role in the positive development of children and youth and may diminish the likelihood of involvement in violent behaviors.

Compared to public high school students who didn't carry a weapon during the past month, higher percentages of students who carried a weapon also reported getting mostly Ds or Fs for grades during the past year, skipping school due to safety concerns during the past month, and having no in-school adult social support.



\* Respondents reported skipping school 1+ days during the past month due to safety concerns.  
 DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

**Figure 14.3 Physical Fight Within the Past Year by Selected Indicators, 2007 and 2009 Combined**



Physical fighting is a common form of violence among adolescents and it is a major cause of injuries and homicides (7).

Among Boston public high school students, 35% reported being in a physical fight during the past year.

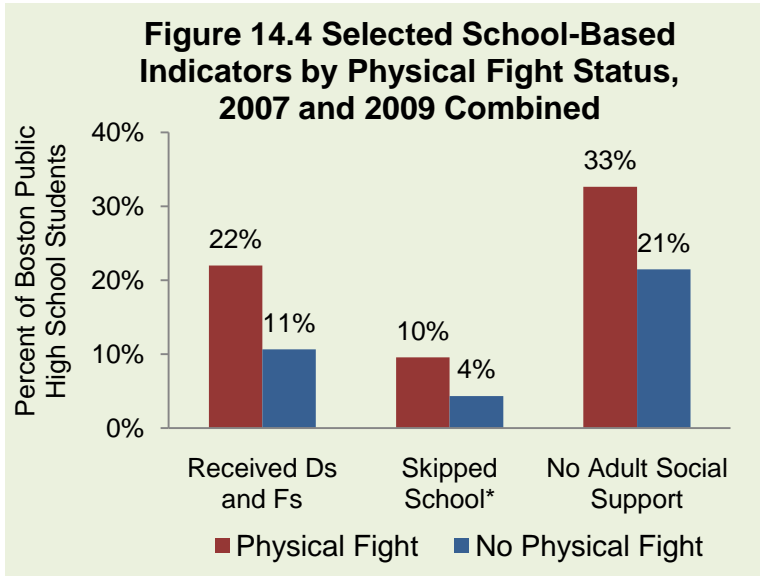
A higher percentage of physical fighting is reported among male high school students than female high school students.

Compared to students ages 18 and over, a higher percentage of students ages 15 or younger reported being in a physical fight during the past year.

A lower percentage of Asian high school students compared to Black, Latino, and White high school students reported being in a physical fight during the past year.

A higher percentage of high school students who have always lived in the US reported being in a physical fight during the past year compared to students who lived outside of the US during part of their lifetime.

DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)



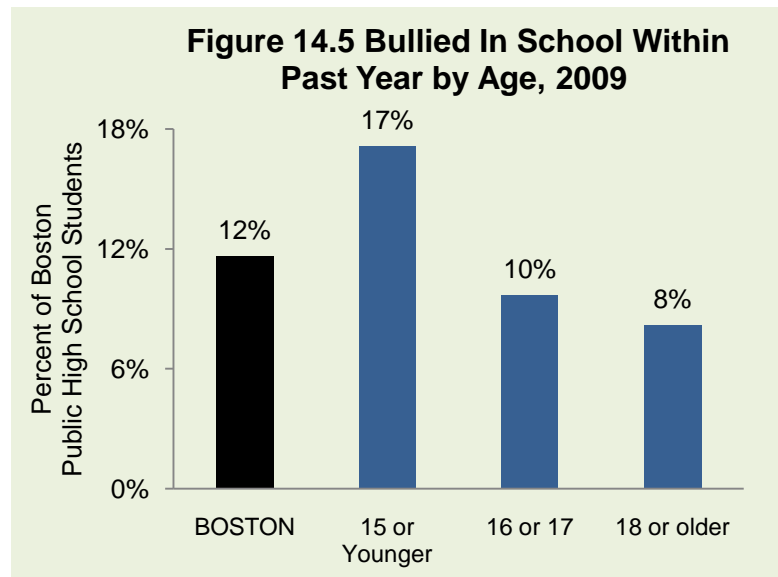
Compared to public high school students who weren't involved in a physical fight during the past year, higher percentages of students who were involved in a physical fight also reported getting mostly Ds or Fs for grades during the past year, skipping school due to safety concerns during the past month, and having no in-school adult social support.

\* Respondents reported skipping school 1+ days during the past month due to safety concerns.  
 DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

Bullying is defined as a “specific form of aggression which is intentional, repeated and involves a disparity of power between the victim and the perpetrators” (8). It is known to affect school academic achievement and the psychological well-being of the victims and perpetrators (8).

In 2009, more than 10% of high school students reported being bullied at school during the past year.

A higher percentage of students ages 15 or younger reported being bullied compared to students in the older age groups.

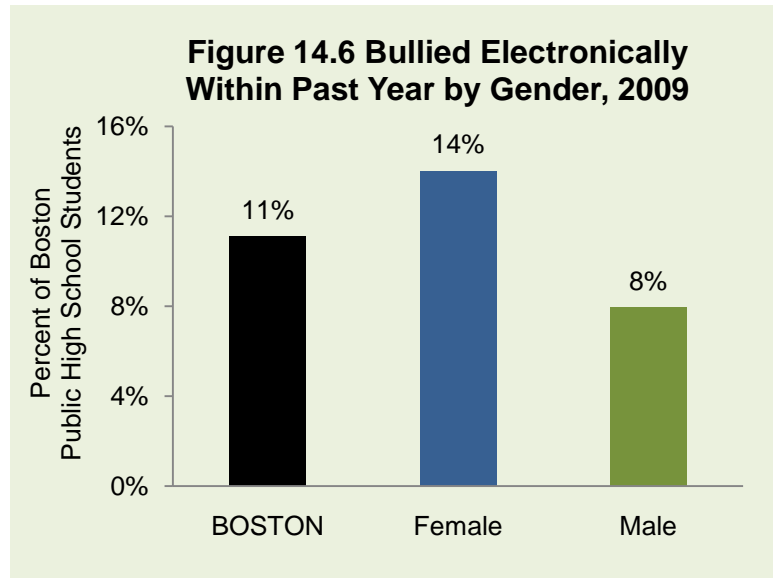


DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

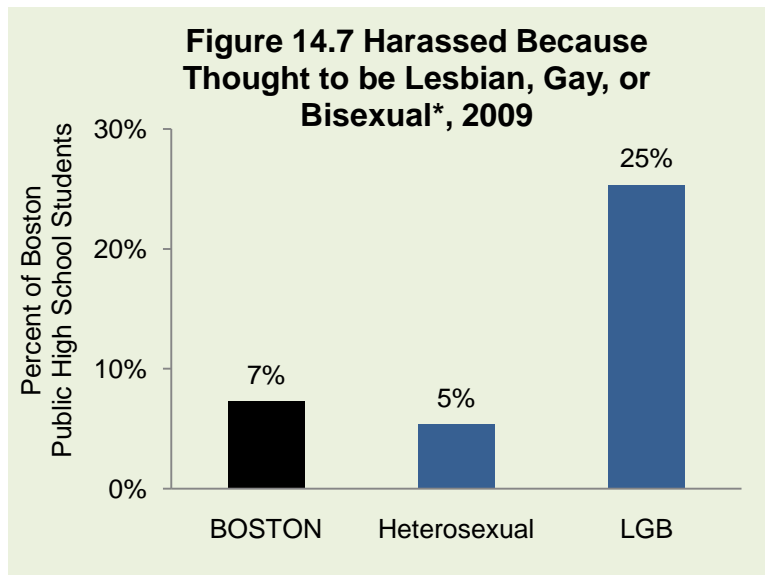
The expansion of electronic media has provided an avenue for youth to indirectly bully others by harassing them or threatening them through email messages, chat rooms, instant messaging or text messages. Cyber bullying, as it is often called, can lead to the same emotional and psychological distress as traditional face-to-face bullying.

In 2009, more than 10% of Boston public high school students reported being bullied electronically during the past year.

A higher percentage of female students reported being bullied electronically compared to male students.



DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)



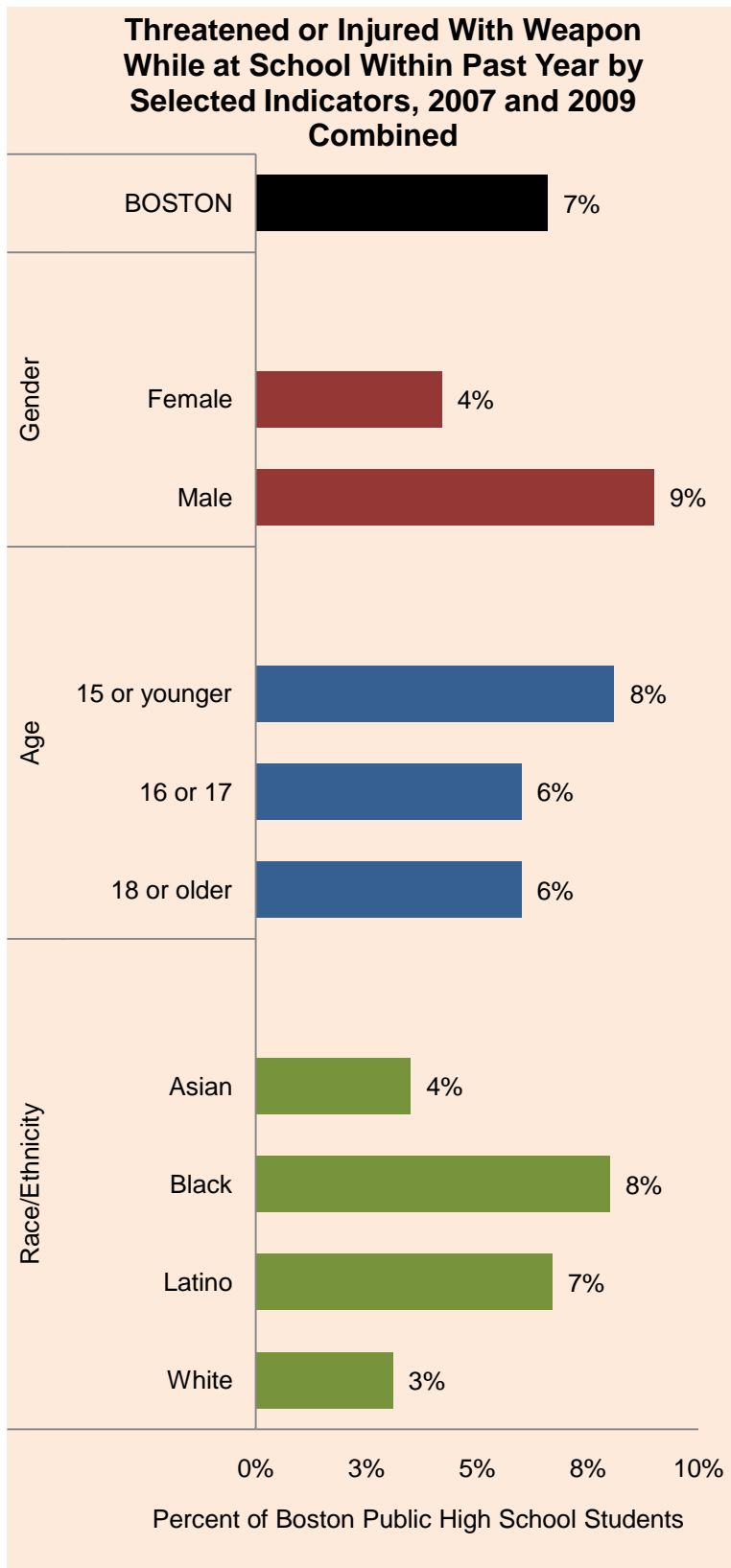
DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

\*These data includes those students who were 'not sure' of their sexual orientation.

Students who self-identify as lesbian, gay, or bisexual (LGB) are often singled out and harassed because of their sexual orientation.

In 2009, 7% of Boston public high school students reported being harassed during the past year because someone thought they were LGB.

A higher percentage of LGB students reported being harassed because of perceived sexual orientation during the past year in comparison to heterosexual students.



Unchecked bullying and harassment can often lead to direct threats of physical harm and even bodily injury as a result of physical assaults.

Seven percent of high school students reported being threatened or injured with a weapon such as a gun, knife, or club while on school property during the past year.

A higher percentage of male high school students than female high school students reported being threatened or injured with a weapon while on school property during the past year.

Across age groups, statistically similar percentages of high school students reported being threatened or injured with a weapon while on school property.

Higher percentages of Black and Latino high school students compared to White high school students reported being threatened or injured with a weapon while on school property.

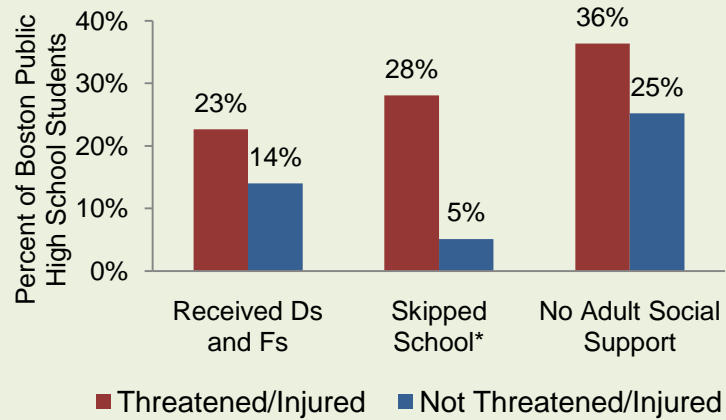
DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)



Higher percentages of students who were threatened or injured with a weapon while at school during the past year also reported skipping school due to safety concerns during the past month and having no in-school adult social support.

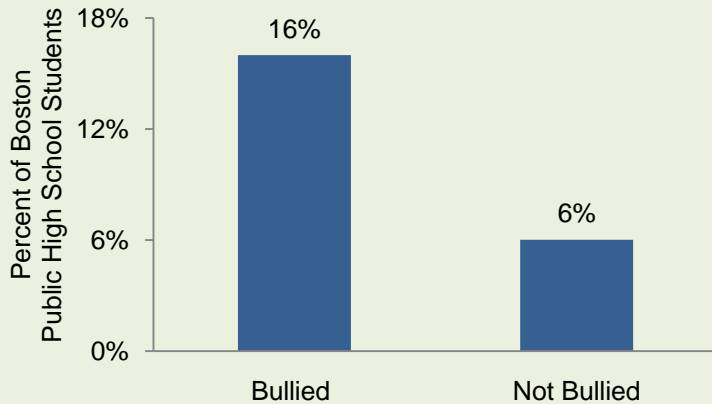
There was no significant difference in the percentage of students getting mostly Ds or Fs for grades during the past year.

**Figure 14.9 Selected School-Based Indicators by Threatened/Injured Status, 2007 and 2009 Combined**



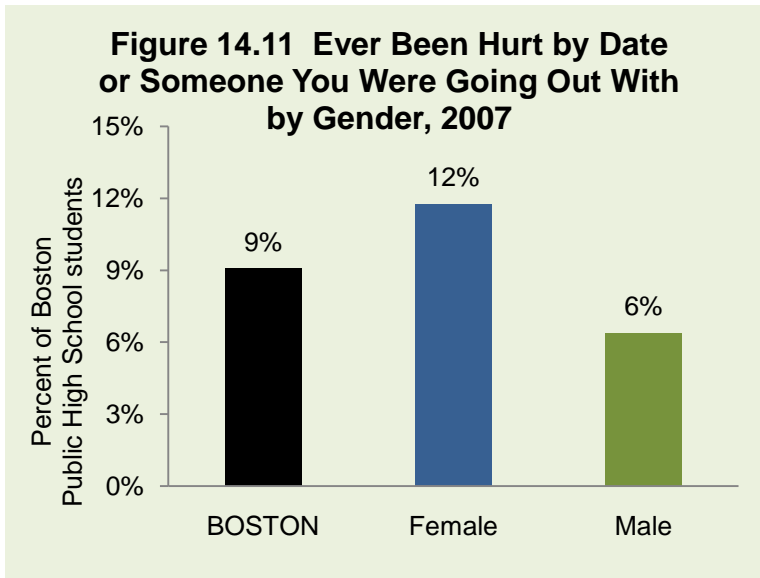
\*Respondents reported skipping school 1+ days during the past month due to safety concerns.  
 DATA SOURCE: Youth Risk Behavior Survey 2007 and 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

**Figure 14.10 Threatened or Injured at School With Weapon by Having Been Bullied at School, 2009**



In 2009, a higher percentage of high school students who were bullied at school reported being threatened or injured with a weapon while on school property during the past year compared to students who were not bullied.

DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)



Teen dating violence is a serious public health issue.

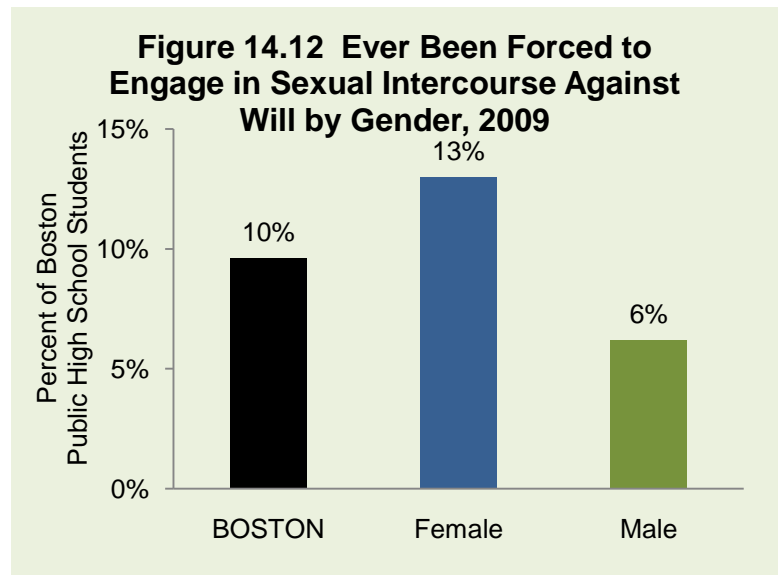
National estimates from 2007 suggest that 1 in 10 students report being physically hurt by a boyfriend or girlfriend during the past 12 months (5).

In 2007, a higher percentage of female Boston public high school students reported ever being physically hurt by a date compared to male students.

DATA SOURCE: Youth Risk Behavior Survey 2007, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

In 2009, one in ten Boston public high school students reported they had been being physically forced to engage in sexual intercourse during their lifetime.

A higher percentage of female students compared to male students reported being forced into having sexual intercourse.



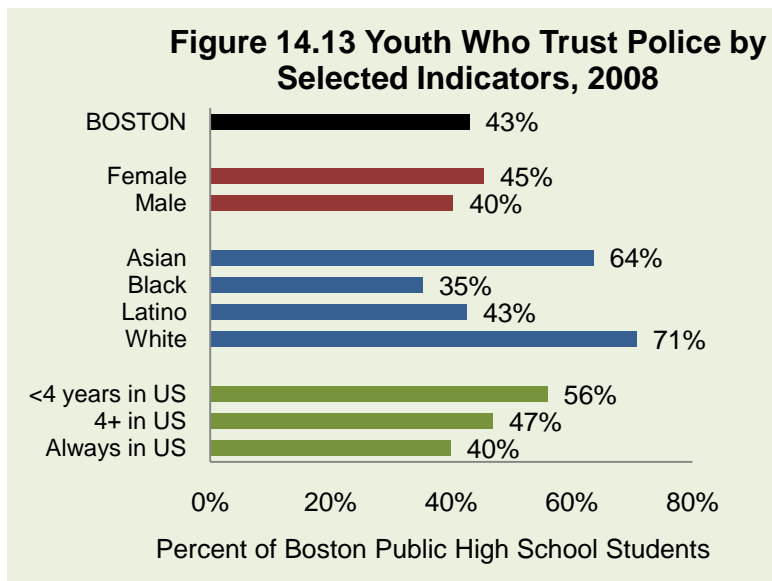
DATA SOURCE: Youth Risk Behavior Survey 2009, Youth Risk Behavior Surveillance System (YRBSS), Centers for Disease Control and Prevention (CDC)

In 2008, 43% of high school students reported trusting police.

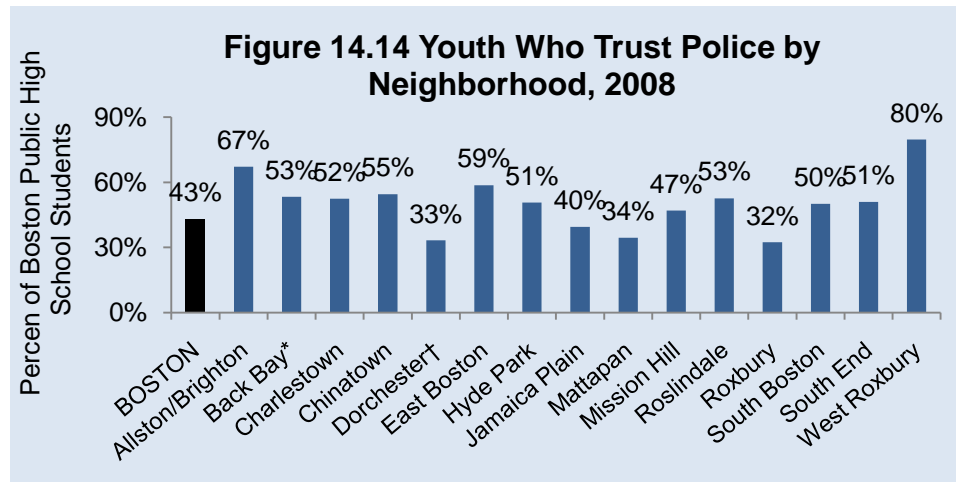
A higher percentage of female students reported trusting the police compared to male students.

Higher percentages of Asian and White students reported trusting police compared to Black and Latino students.

A lower percentage of students who have always lived in the US reported trusting police compared to students who have lived outside of the US.

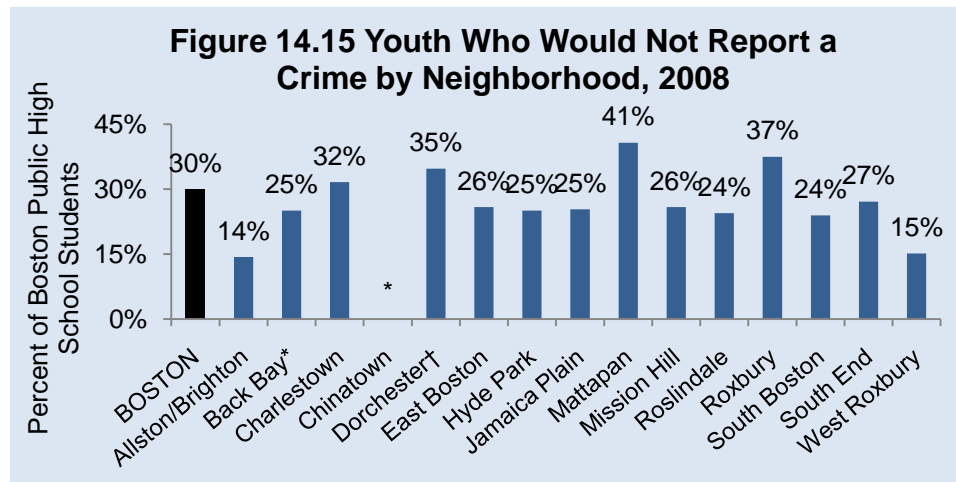


DATA SOURCE: Boston Youth Survey, 2008; Harvard Youth Violence Prevention Center through a Cooperative agreement with the Center for Disease Control and Prevention



\*Includes Beacon Hill, Downtown, and the West End  
 † North and South Dorchester combined  
 DATA SOURCE: Boston Youth Survey, 2008; Harvard Youth Violence Prevention Center through a Cooperative agreement with the Center for Disease Control and Prevention.

In 2008, a lower percentage of high school students residing in Dorchester (33%), Mattapan (34%), and Roxbury (32%) reported trusting police compared to Boston overall.



\*Too few respondents to permit calculation of point estimate  
 \*Includes Beacon Hill, Downtown, and the West End  
 † North and South Dorchester combined  
 DATA SOURCE: Boston Youth Survey, 2008; Harvard Youth Violence Prevention Center through a Cooperative agreement with the Center for Disease Control and Prevention

In some communities, there are strong community norms regarding ‘snitching’, providing information about crimes to the police or other authority figures, that may prevent youth and adults from reporting crimes. In 2008, a higher percentage of students residing in Dorchester (35%) and Mattapan (41%) compared to students in Boston overall reported that they would not report a crime to an adult or authorities. The percentages for Roxbury and Charlestown were statistically similar to Boston overall.

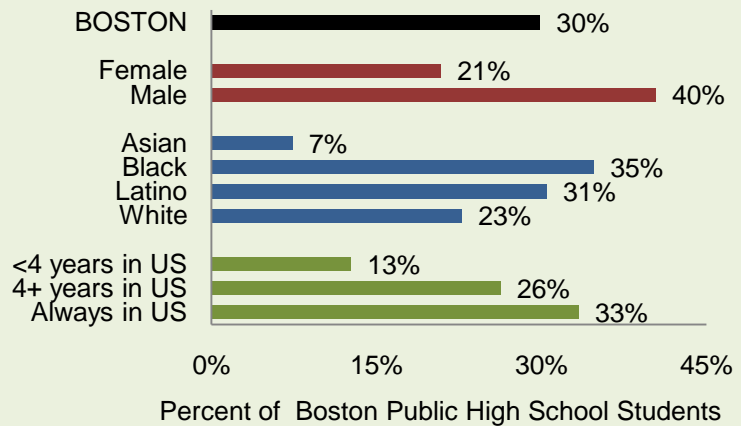
In Boston, 30% of public high school students indicated that if they witnessed a crime they would not report it to adults or authorities.

A higher percentage of male students than female students would not report a crime.

Higher percentages of Black and Latino students would not report a crime compared to White and Asian students.

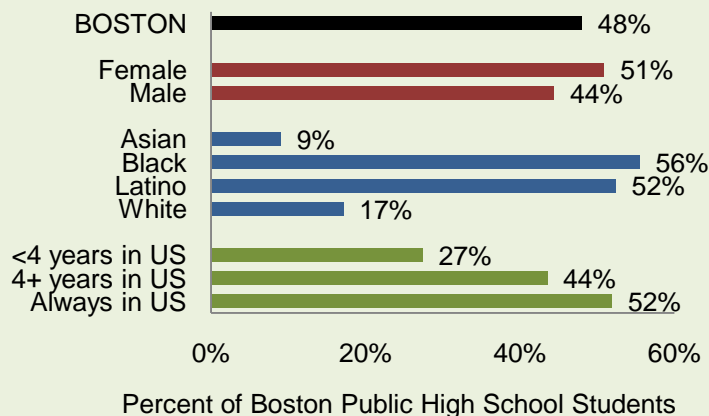
A higher percentage of students who have always lived in the US would not report a crime compared to those who have lived outside the US.

**Figure 14.16 Youth Who Would Not Report a Crime by Selected Indicators 2008**



DATA SOURCE: Boston Youth Survey, 2008; Harvard Youth Violence Prevention Center through a Cooperative agreement with the Center for Disease Control and Prevention

**Figure 14.17 Ever Had Close Family Member or Friend Killed by Selected Indicators , 2008**



DATA SOURCE: Boston Youth Survey, 2008; Harvard Youth Violence Prevention Center through a Cooperative agreement with the Center for Disease Control and Prevention

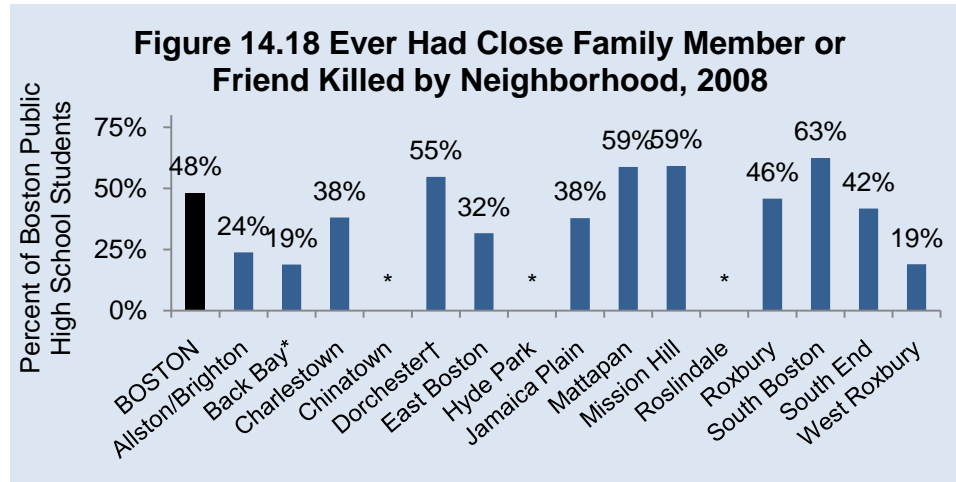
Many youth are indirectly affected by violence as a result of having either a close family member or friend killed.

Nearly half of all Boston high school students reported having a close family member or friend killed by violence.

A higher percentage of female students compared to male students reported having a friend or family member killed.

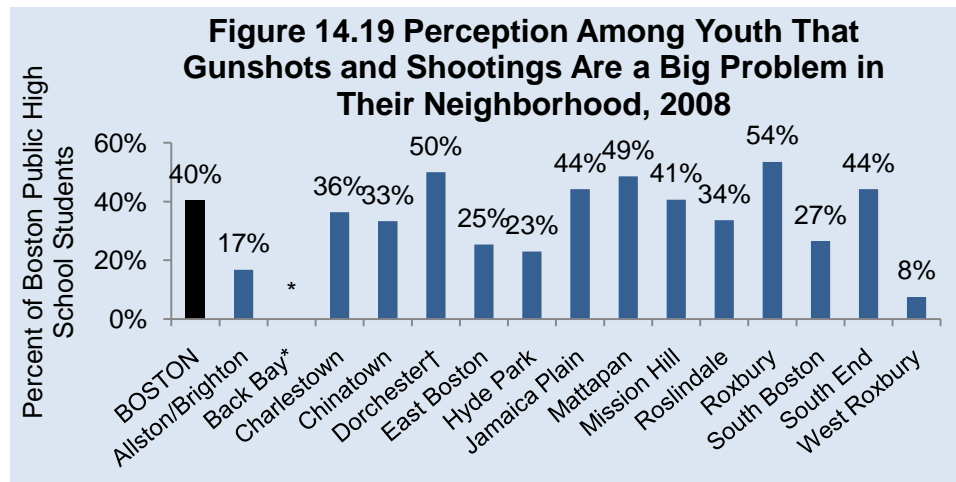
Higher percentages of Black and Latino students compared to Asian and White students reported having a close friend or family member killed by violence.

A higher percentage of youth who have always lived in the US reported having a close friend or family member killed by violence compared to those who have not always lived in the US.



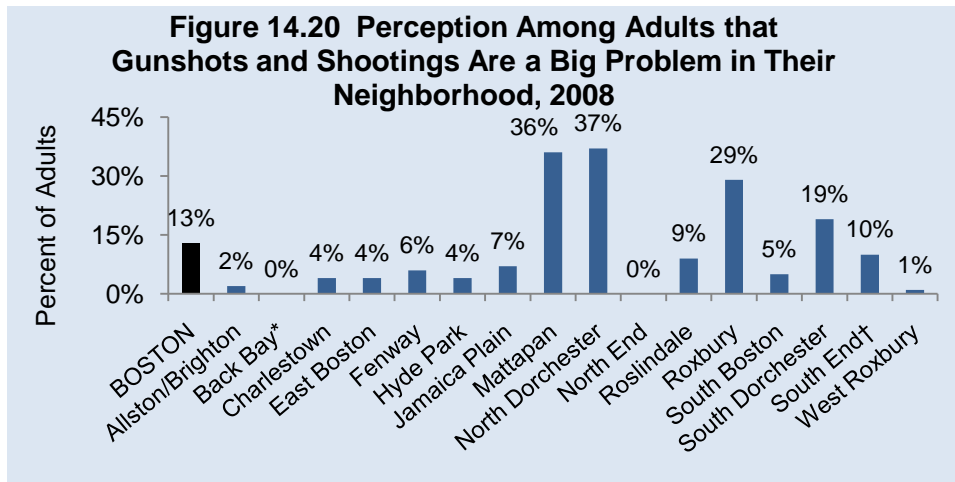
\*Too few respondents to permit calculation of point estimate  
 \*Includes Beacon Hill, Downtown, and the West End  
 † North and South Dorchester combined  
 DATA SOURCE: Boston Youth Survey, 2008; Harvard Youth Violence Prevention Center through a Cooperative agreement with the Center for Disease Control and Prevention

Higher percentages of students in Dorchester, Mission Hill, and South Boston reported having a close family member or friend killed compared to Boston overall. The percentage in Mattapan was statistically similar to Boston overall.



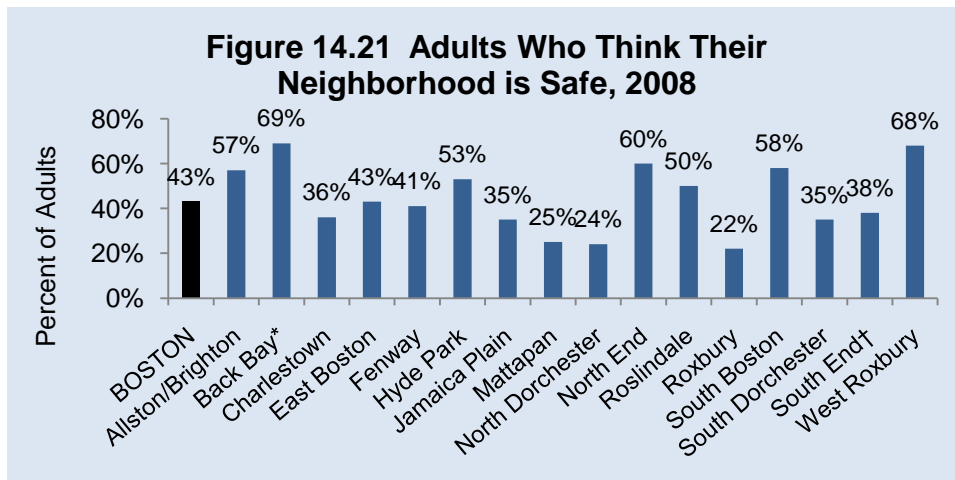
\*Too few respondents to permit calculation of point estimate  
 \*Includes Beacon Hill, Downtown, and the West End  
 † North and South Dorchester combined  
 DATA SOURCE: Boston Youth Survey, 2008; Harvard Youth Violence Prevention Center through a Cooperative agreement with the Center for Disease Control and Prevention

Among Boston high school students, 40% reported gunshots, shootings, and gun violence were a big problem in their neighborhood. A higher percentage of high school students from Roxbury (54%) compared to Boston overall reported gunshots, shootings, and gun violence were a big problem. Percentages for Dorchester, Jamaica Plain, Mattapan, Mission Hill, and the South End were statistically similar to Boston overall.



\*Includes Beacon Hill, Downtown, and the West End  
 † Includes Chinatown  
 DATA SOURCE: Boston Neighborhood Survey, 2008; Harvard Youth Prevention Center through a cooperative agreement with the Center for Disease Control and Prevention

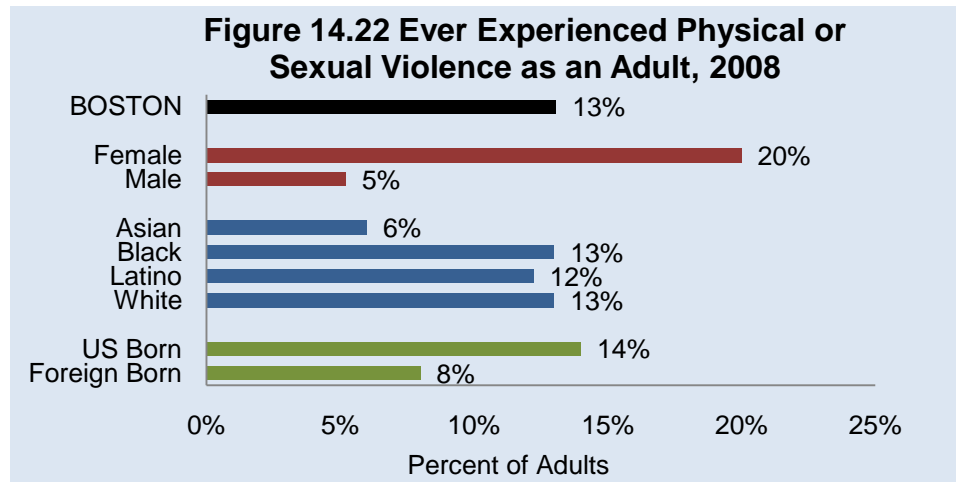
Overall, 13% of adult Boston residents reported gunshots and shootings were a big problem in their neighborhood. A higher percentage of adults in Mattapan, North Dorchester, and Roxbury compared to Boston overall, reported gunshots and shootings were a big problem in their neighborhood. Although 19% of adults residing in South Dorchester reported gunshots and shooting were a big problem, the percentage is statistically similar to Boston overall.



\*Includes Beacon Hill, Downtown, and the West End  
 † Includes Chinatown  
 DATA SOURCE: Boston Neighborhood Survey, 2008; Harvard Youth Prevention Center through a cooperative agreement with the Center for Disease Control and Prevention

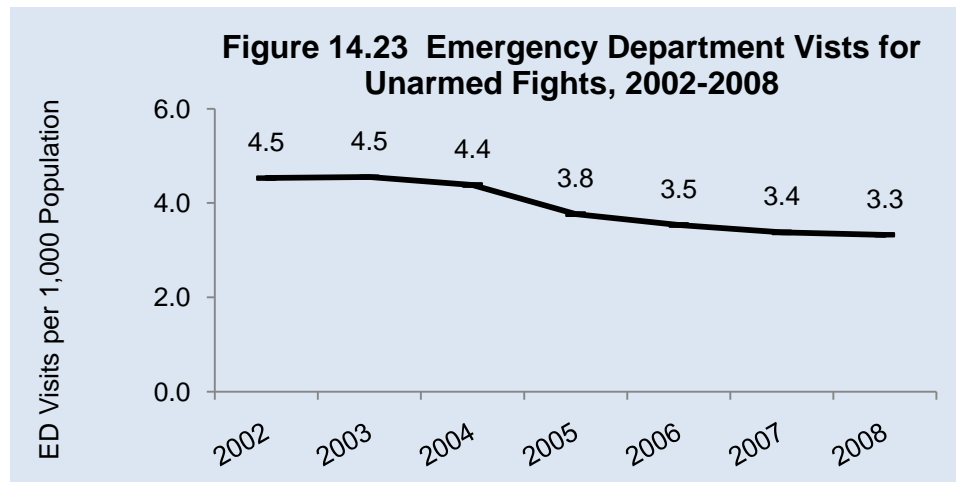
Among Boston adults, 43% consider their neighborhood safe. A lower percentage of adults in Mattapan (25%), North Dorchester (24%), and Roxbury (22%) compared to Boston overall believe their neighborhood is very safe. Percentages for Charlestown, Fenway, Jamaica Plain, South Dorchester, and the South End were statistically similar to Boston overall.





DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

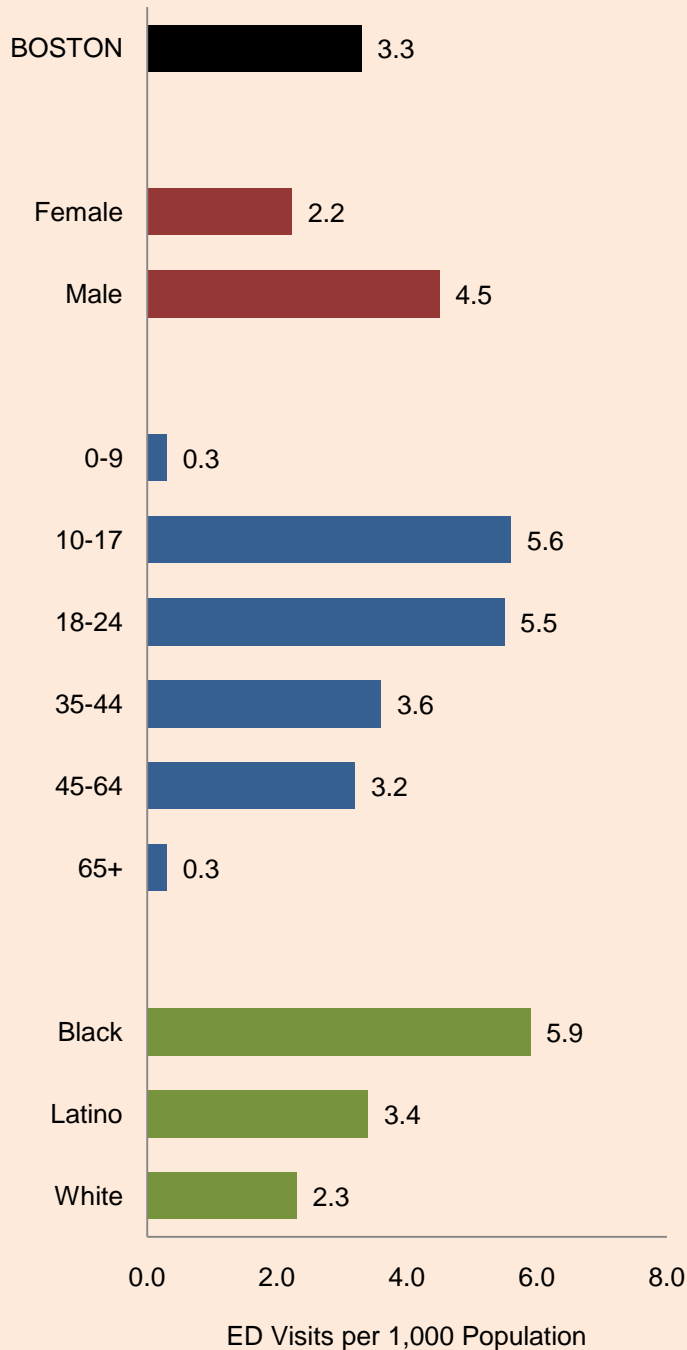
Approximately 13% of Boston adults reported experiencing physical or sexual violence as an adult. A higher percentage of females reported experiencing physical or sexual violence as an adult compared to males. A lower percentage of Asian adults experienced physical or sexual violence compared to White adults. A higher percentage of US born adults experienced physical or sexual violence compared to those born outside of the US.



DATA SOURCE: Emergency Department Visit Data Base, Massachusetts Division of Health Care Finance and Policy

Often unarmed fights cause injuries that require medical attention. The rate of emergency department visits due to unarmed fights decreased 27% from 2002 to 2008.

**Figure 14.24 Emergency Department Visits for Unarmed Fights by Selected Indicators, 2008**

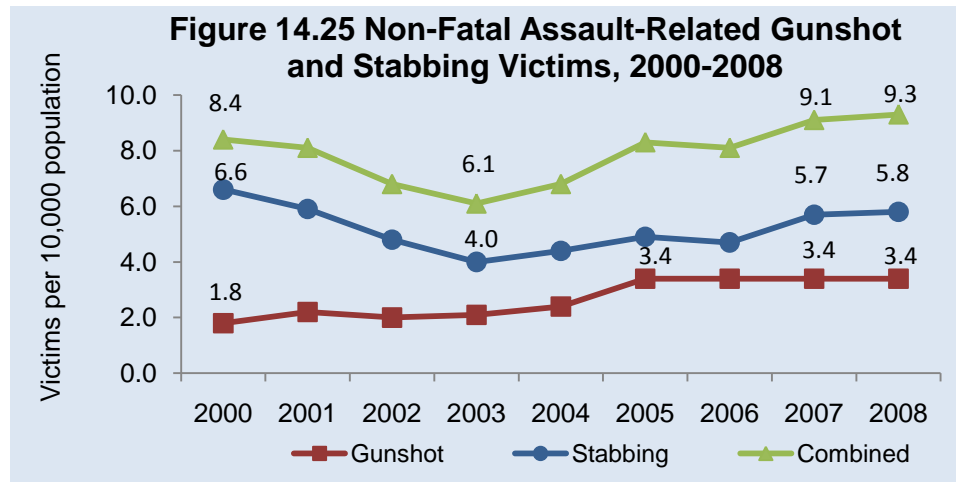


In 2008, the male rate of emergency department (ED) visits due to unarmed fights was more than twice the female rate.

Among all age groups, Boston residents ages 10 to 17 had the highest ED visit rate due to unarmed fights. The rate for residents ages 18 to 24 was similar to the rate for residents ages 10 to 17.

Emergency department visits varied by race/ethnicity. Blacks had the highest ED visit rate for unarmed fights. The rate for Black residents was three times the rate for White residents and two times the rate for Latino residents.

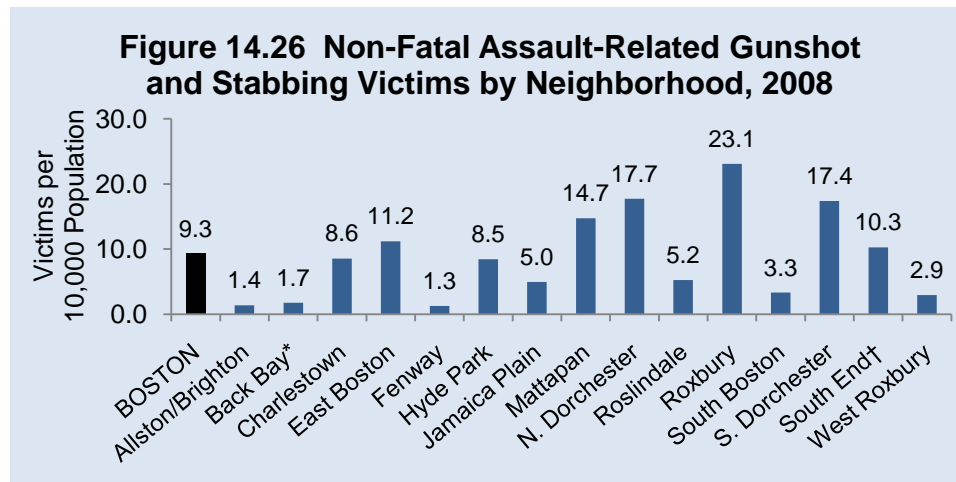
DATA SOURCE: Emergency Department Visit Data Base, Massachusetts Division of Health Care Finance and Policy



DATA SOURCE: Weapon Related Injuries, Massachusetts Department of Public Health, Weapon Related Injury Surveillance System (WRISS)

From 2007 to 2008, the combined rate of non-fatal assault-related gunshot and stabbing victims was stable.

The rate of gunshot victims increased 89% from 2000 to 2005 and then was stable at 3.4 victims per 10,000 population from 2005 to 2008. The rate of stabbing victims decreased 39% from 2000 to 2003 and then increased 45% from 2003 to 2008.



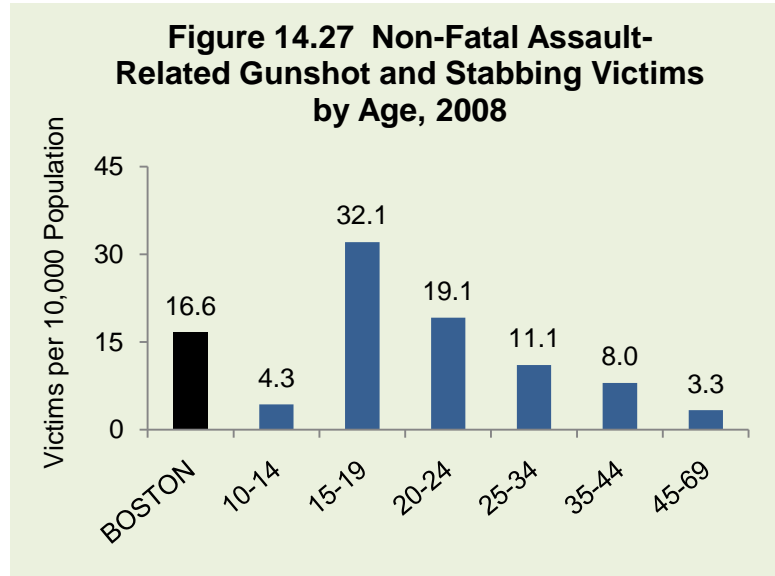
\*Includes Beacon Hill, Downtown, and the West End

† Includes Chinatown

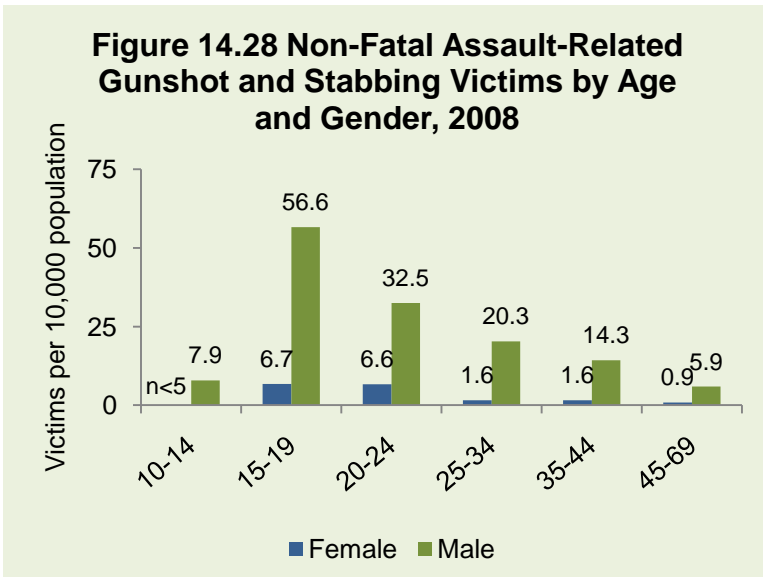
DATA SOURCE: Weapon Related Injuries, Massachusetts Department of Public Health, Weapon Related Injury Surveillance System (WRISS)

At nearly two and a half times the rate for Boston overall, Roxbury had the highest rate of non-fatal assault-related gunshot and stabbing victims among Boston neighborhoods. Five additional neighborhoods had a rate higher than the Boston overall rate: East Boston; Mattapan; North Dorchester; South Dorchester; and the South End.

Teens ages 15 to 19 and young adults ages 20 to 24 had the highest rates of non-fatal assault-related gunshot and stabbing wounds across the age groups.



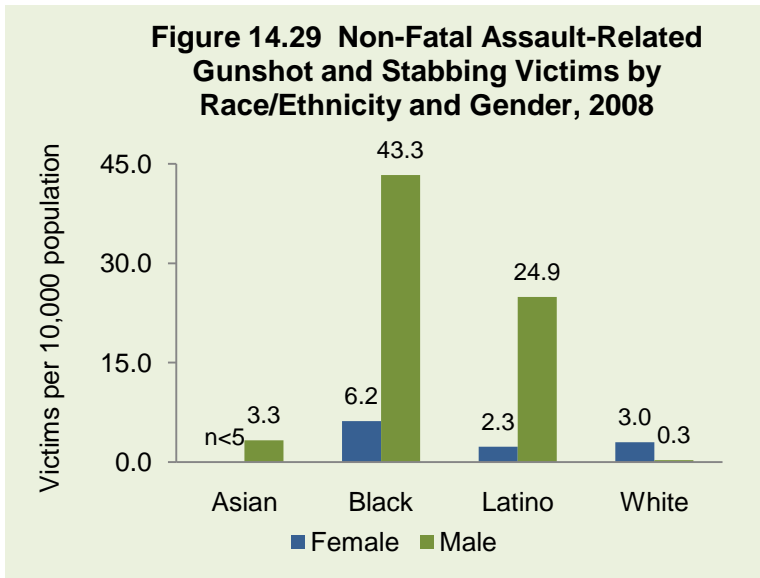
DATA SOURCE: Weapon Related Injuries, Massachusetts Department of Public Health, Weapon Related Injury Surveillance System (WRISS)



Males are disproportionately affected by non-fatal assault related gunshot and stabbing wounds.

Across all age groups, males had higher rates of non-fatal assault-related gunshot and stabbing wounds than females

DATA SOURCE: Weapon Related Injuries, Massachusetts Department of Public Health, Weapon Related Injury Surveillance System (WRISS)

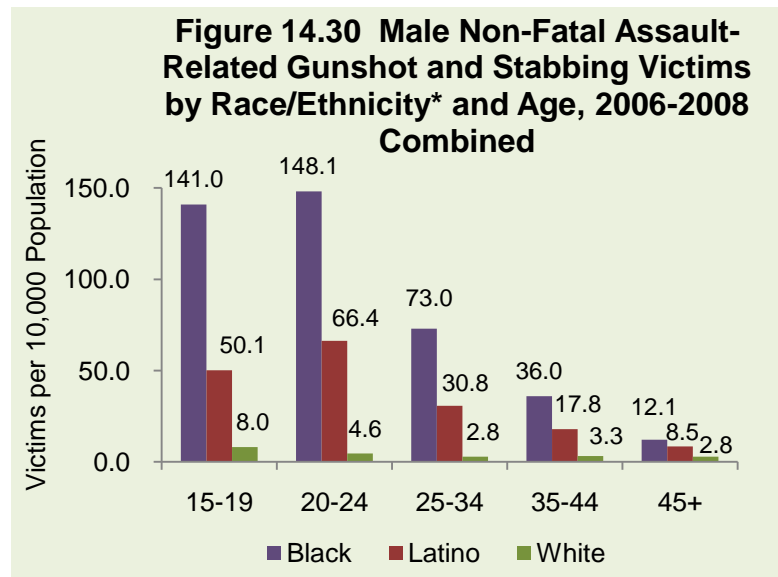


Black and Latino males had the highest rates of non-fatal assault-related gunshot and stabbing wounds. The rate for Black males was more than fourteen times the rate for White males.

Black females had the highest rate of non-fatal assault-related gunshot and stabbing injuries among females. The Black female rate was more than twenty times the White female rate.

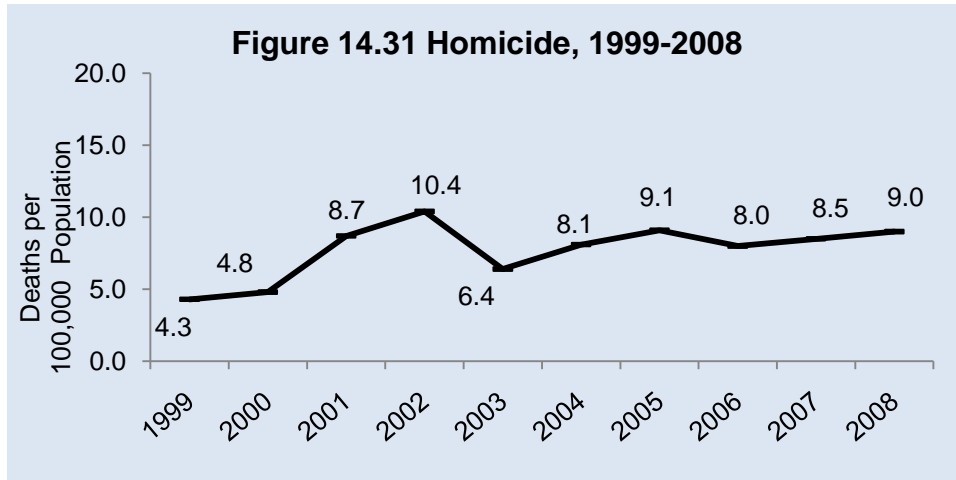
DATA SOURCE: Weapon Related Injuries, Massachusetts Department of Public Health, Weapon Related Injury Surveillance System (WRISS)

Black males under the age of 24 had extremely high non-fatal assault related gunshot and stabbing victim rates in comparison to their White and Latino counterparts. The rate for Black males ages 20 to 24 was more than thirty-two times the rate for White males of the same age group. The rates for Black males were highest across all age groups. The rates for Latino males across all age groups were substantially higher than the rates for White males as well.



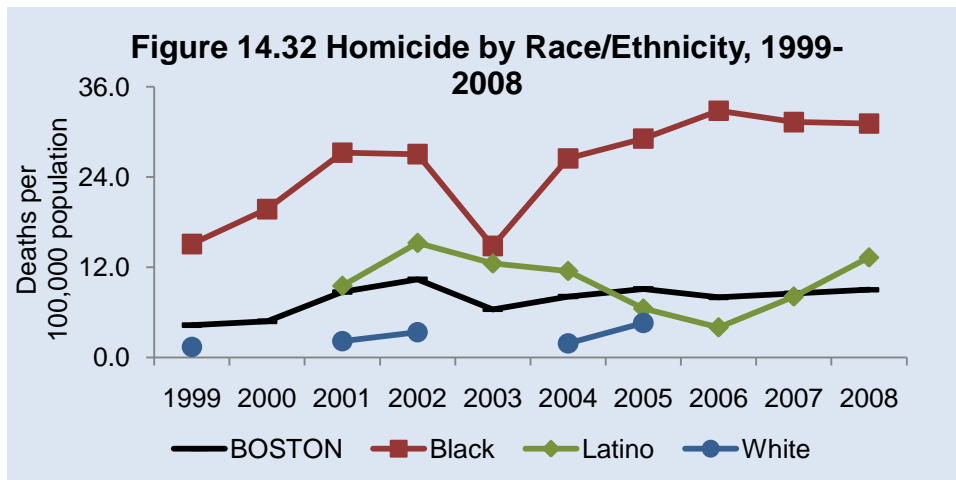
\*Insufficient sample size for Asians

DATA SOURCE: Weapon Related Injuries, Massachusetts Department of Public Health, Weapon Related Injury Surveillance System (WRISS)



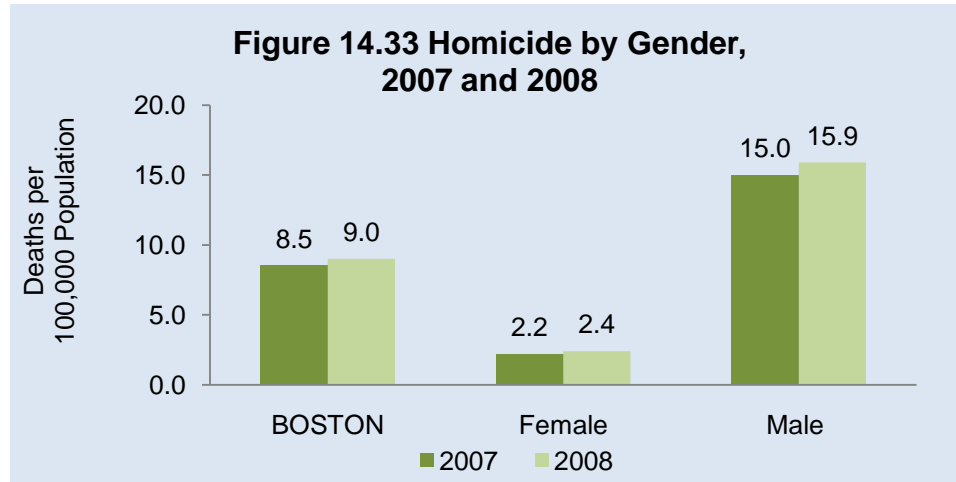
DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

From 2007 to 2008, the age-adjusted homicide rate increased slightly by 6%. The number of homicides in 2008 remained more than double the number in 1999 (data not shown).



\*Rates are not presented for Asians due to their small number of homicides.  
 †Rates are not presented for Latinos in 1999 and 2000 and for Whites in 2003, 2006, 2007 and 2009 due to their small number of homicides.  
 DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

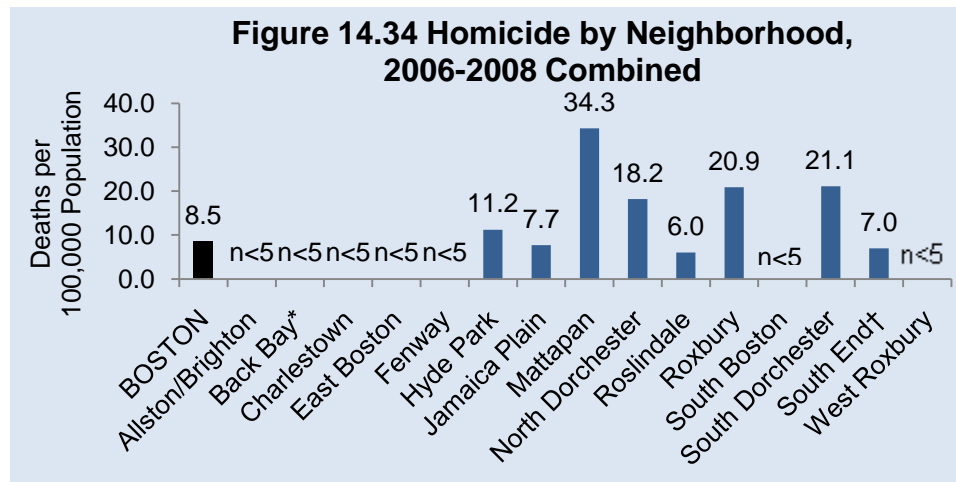
The rate of homicide was highest for Black residents in each year from 1999 to 2008. Latino residents had the second highest rate and Whites had the lowest rate during these years.



DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

In 2008, 90% of all homicide victims were males. The homicide rate for males was more than six times the rate for females.

The homicide rate for both males and females was stable from 2007 to 2008.



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

In 2006-2008, five neighborhoods had an average annual age adjusted homicide rate higher than the Boston overall rate: Hyde Park, Mattapan, North Dorchester, Roxbury, and South Dorchester. Mattapan’s homicide rate was four times the Boston rate and highest among all neighborhoods.



## Summary: Violence

Violence indicators for Boston reveal patterns similar to the U.S. and other large urban cities. High school student involvement in violence-related behaviors and victimization continues to be a problem. Young males of color and low-income communities are disproportionately affected by violence.

Approximately 16% of students reported carrying a weapon during the past month, 35% of high school students reported being in a physical fight within the past year, and 9% of high students reported ever being physically hurt by a date. Twelve percent of Boston high school students reported being a victim of bullying while on school property, 11% reported being bullied electronically, and 7% reported being threatened or injured with a weapon while at school during the past year.

Violence perpetration and victimization not only increases the risk of immediate physical and emotional injury but is related to poor academic achievement and truancy. Nearly half of all public high school students have been indirectly affected by violence, reporting that a close family member or friend was killed.

The combined rate of non-fatal assault-related gunshot and stabbing victims was stable from 2007 to 2008. The rate of gunshot victims did not change from 2005 to 2008. In 2008 as in previous years, young Black and Latino males were gunshot and stabbing victims at much higher rates than White males. The rate for Black males ages 20 to 24 was more than thirty-two times the rate for White males of the same age group.

Homicide remains a leading contributor to racial/ethnic health differences in life expectancy among Black, Latino, and White males, especially among those between the ages of 15-24 (9). In recent years, the homicide rate has remained fairly stable in Boston. Black residents, however, have consistently experienced significantly higher homicides rates than the other racial ethnic groups.

Perceptions of violence and the distribution of violence varied from neighborhood to neighborhood, but within neighborhoods perception often matched experience. A higher percentage of residents of Mattapan, North and South Dorchester, and Roxbury perceived gunshots and shootings as a big problem in their neighborhoods. These neighborhoods had the highest homicide and non-fatal gunshot and stabbing rates as well.

Violence is a public health issue that continues to affect the health and well-being of Boston residents. Comprehensive primary prevention efforts aimed at preventing and protecting against violence should target individuals, families, schools, and neighborhoods.



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## Notes and Data Analysis

**Figure 14.1**

NOTE: Survey question reads, “During the past 30 days, on how many days did you carry a weapon such as gun, knife or club?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.2**

NOTE: Survey question reads, “During the past 30 days, on how many days did you carry a weapon such as gun, knife or club?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.3**

NOTE: Survey question reads, “During the past 12 months, how many times were you in a physical fight?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.4**

NOTE: Survey question reads, “During the past 12 months, how many times were you in a physical fight?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.5**

NOTE: Survey question reads, “During the past 12 months, have you ever been bullied on school property?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.6**

NOTE: Survey question reads, “During the past 12 months, have you ever been electronically such as through email, chat rooms, instant messaging, websites or text messaging?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.7**

NOTE: Survey question reads, “During the past 12 months, have you ever been harassed because someone thought you were gay, lesbian or bisexual?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.8**

NOTE: Survey question reads, “During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club on school property?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.9**

NOTE: Survey question reads, “During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club on school property?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.10**

NOTE: Survey question reads, “During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club on school property?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.11**

NOTE: Survey question reads, “Have you ever been hurt physically by a date or someone you were going out with? (Include being hurt by being shoved, slapped, hit, or forced into any sexual activity)?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.12**

NOTE: Survey question reads, “Have you ever been physically forced to have sexual intercourse when you did not want to?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.13**

NOTE: Survey question reads, "In general, how much do you trust police in your community/neighborhood?"  
DATA ANALYSIS: Harvard Youth Violence Prevention Center

**Figure 14.14**

NOTE: Survey question reads, "In general, how much do you trust police in your community/neighborhood?"  
DATA ANALYSIS: Harvard Youth Violence Prevention Center

**Figure 14.15**

NOTE: Survey question reads, "If you witnessed a crime, would you tell any adults or authorities?"  
DATA ANALYSIS: Harvard Youth Violence Prevention Center

**Figure 14.16**

NOTE: Survey question reads, "If you witnessed a crime, would you tell any adults or authorities?"  
DATA ANALYSIS: Harvard Youth Violence Prevention Center

**Figure 14.17**

NOTE: Survey question reads, "In your entire lifetime, have any close family members or close friends of yours been killed by violence, like being shot, stabbed, or beaten to death (do not include those include in war)?"  
DATA ANALYSIS: Harvard Youth Violence Prevention Center

**Figure 14.18**

NOTE: Survey question reads, "In your entire lifetime, have any close family members or close friends of yours been killed by violence, like being shot, stabbed, or beaten to death (do not include those include in war)?"  
DATA ANALYSIS: Harvard Youth Violence Prevention Center

**Figure 14.19**

NOTE: Survey question reads, "Thinking about your neighborhood, how much of a problem is gunshots, shootings and gun violence?"  
DATA ANALYSIS: Harvard Youth Violence Prevention Center

**Figure 14.20**

NOTE: Survey question reads, "Thinking about your neighborhood, how much of a problem is gunshots, shootings and gun violence?"  
DATA ANALYSIS: Harvard Youth Violence Prevention Center

**Figure 14.21**

NOTE: Survey question reads, "Do you consider your neighborhood very safe, somewhat safe or not safe?"  
DATA ANALYSIS: Harvard Youth Violence Prevention Center

**Figure 14.22**

NOTE: Survey question reads, "During your lifetime as an adult, in other words since turning 18 years old, have you experienced any physical or sexual violence?"  
DATA ANALYSIS: Harvard Youth Violence Prevention Center

**Figure 14.23**

NOTE: Data are presented as age-adjusted rates.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.24**

NOTE: Data are presented as age specific rates.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.25**

NOTE: Data are presented as age-adjusted rates.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.26**

NOTE: Data are presented as crude rates.  
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.27**

NOTE: Data are presented as age-specific rates. These data do not include persons whose age was not reported, except in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.28**

NOTE: Data are presented as age-specific rates. These data do not include persons whose age and gender was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.29**

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.30**

NOTE: Data are presented as age specific rates. These data do not include persons whose age and race/ethnicity was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.31**

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.32**

NOTE: Data are presented as age-adjusted rates. These data do not include persons whose race/ethnicity was not reported or was "Other" except in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.33**

NOTE: Data are presented as age-adjusted rates. These data do not include persons whose gender was not reported, except in the Boston overall rate.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 14.34**

NOTE: Data are presented as age-adjusted rates.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

## Section 15: Cancer

Cancer is caused by changes in genes that control cell growth and death. The American Cancer Society describes cancer as follows:

“Cancer occurs when cells in a part of the body begin to grow out of control. Normal cells divide and grow in an orderly fashion, but cancer cells do not. They continue to grow and crowd out normal cells. Although there are many kinds of cancer, they all have in common this out-of-control growth of cells.”

The risk of cancer (including incidence, survival, and mortality) is influenced by biological, behavioral, social, and environmental factors. Age, gender, and genetics are prominent biological factors. The risk for cancer tends to increase with age, where most cancers are diagnosed in individuals ages 55 or over (1). Overall, cancer death rates are higher for males in comparison to females. Individuals with a family history of cancer are at a higher risk of developing cancer. Additionally, certain viruses, such as human papillomavirus (HPV), hepatitis B, hepatitis C, and human immunodeficiency virus (HIV) can also increase one’s risk of certain cancers (2).

Race and ethnicity, are also associated with cancer risk. White females have the highest incidence rate for breast cancer, however Black females have the highest breast cancer mortality rate (3).

Behavioral factors such as tobacco use, excessive alcohol intake, poor dietary habits, and physical inactivity are associated with higher risk of cancer. Environmental factors including prolonged exposure to ultraviolet rays from the sun and tanning beds, and environmental toxins may additionally increase one’s risk. Neighborhood environment may play a role in shaping behavioral and environmental exposures to cancer risk.

Receiving and having access to regular medical care and culturally appropriate services are essential components of effective

cancer prevention strategies. Screening is a test or procedure used to look for cancer prior to the development of symptoms. Screening could help detect cancer at an early stage, at which point it may be easier to treat (4). Research shows that screening for cervical and colorectal cancers as recommended may prevent these diseases by finding precancerous lesions so they can be treated before they become cancerous (5). Moreover, screening can also help to detect cancer at an early and treatable stage. Additionally, vaccines are increasingly becoming an important strategy in reducing the risk of cancer. The HPV vaccine helps to prevent most cervical cancers and the hepatitis B vaccine can help to reduce the risk of liver cancer (5).

Cancer is the leading cause of death among Boston residents, responsible for more deaths than heart disease, stroke, or injuries. This section presents data about self-reported cancer screening behaviors, and leading causes of cancer death (i.e., cancer mortality).



## What is Breast Cancer?

Breast Cancer is a disease of uncontrolled cell growth in the breast tissue of both women and men (6).

## Risk Factors for Breast Cancer:

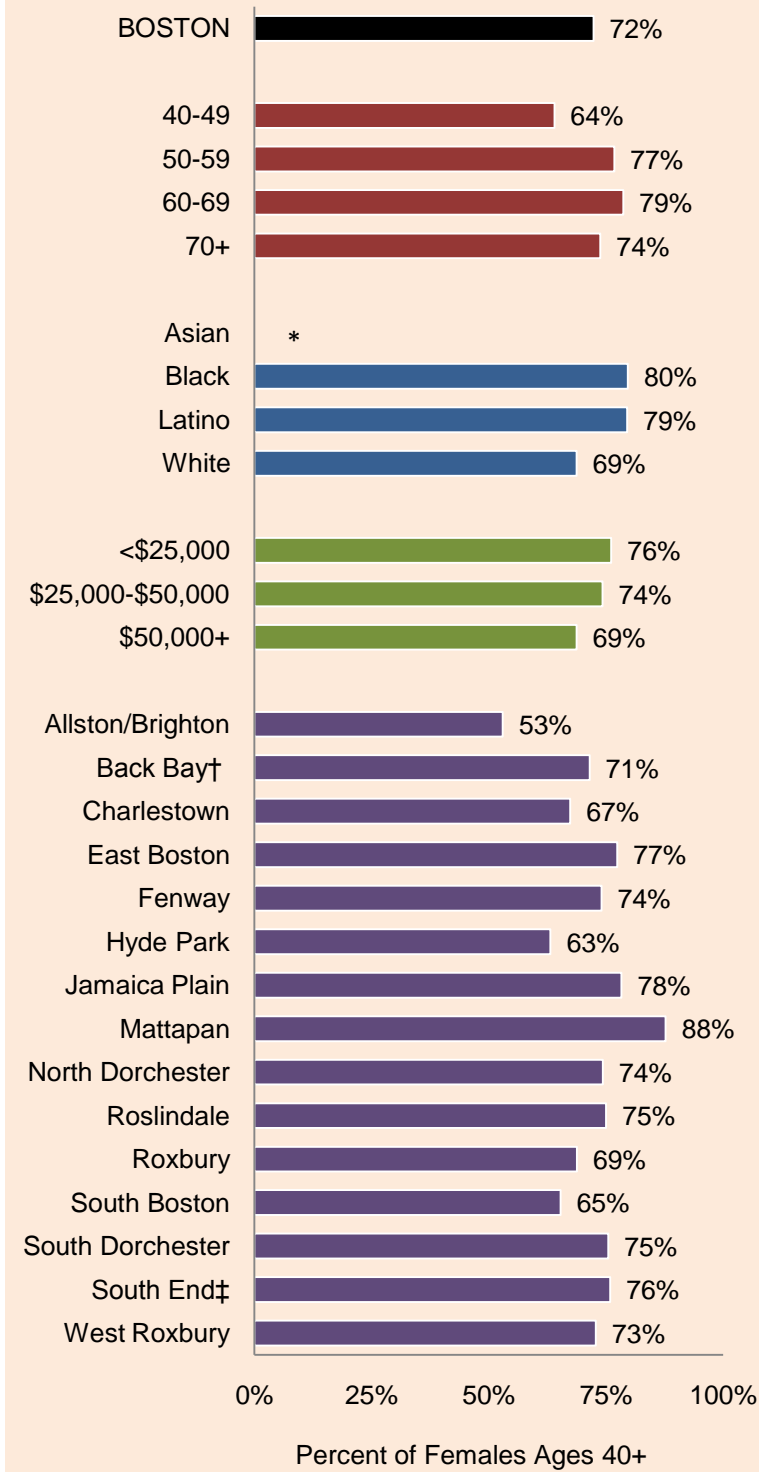
White women are at increased risk of getting breast cancer; however, Black women are more likely to die from breast cancer than women of other racial/ethnic groups. Other risk factors include older age, early age at menarche (first menstruation), older age at first birth or never having given birth, a mother or sister with breast cancer, radiation therapy to the breast/chest, taking hormones such as estrogen and progesterone, obesity, and drinking alcohol (7)

## American Cancer Society breast cancer screening recommendations:

A mammogram is an x-ray of each breast used to look for cancer. Yearly mammograms are recommended for women beginning at age 40. A clinical breast exam (CBE) should be given every 3 years for women in their 20s and 30s and annually for women ages 40 and over (6)



**Figure 15.1 Mammogram within the Past Year by Selected Indicators, 2008**



\*Insufficient sample size for Asians

†Includes Beacon Hill, Downtown, North End and the West End

‡Includes Chinatown

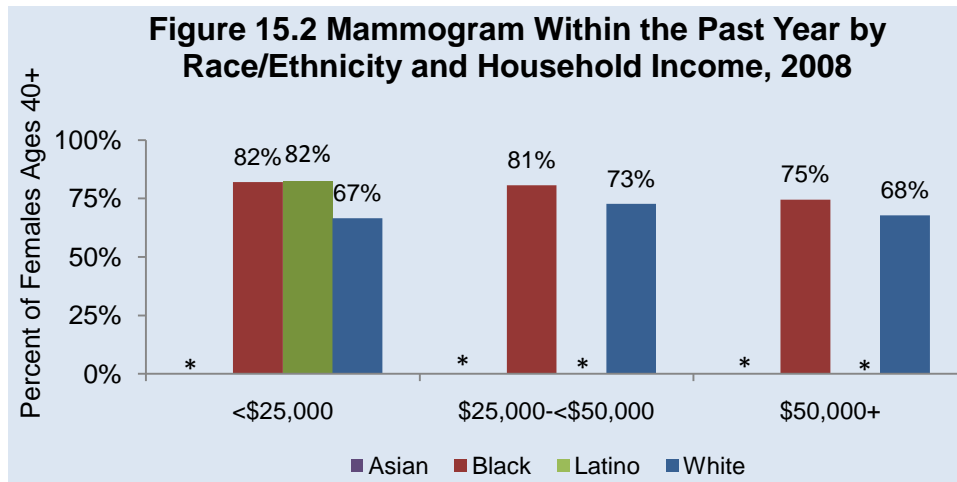
DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2008, among Boston women over age 40, 72% reported having a mammogram in the past year.

A higher percentage of Black women ages 40 and over reported having a mammogram during the past year compared to White women ages 40 and over. Although Black women have a higher reported percentage of mammograms, Black women have a higher breast cancer mortality rate (see Figure 15.16).

The percentage of women ages 40 and over who received a mammogram during the past year varied across Boston neighborhoods. A lower percentage of women ages 40 and older living in Allston/Brighton reported having a mammogram in the past year compared to Boston residents overall. A higher percentage of women ages 40 and older living in Mattapan reported having a mammogram compared to Boston overall. Among the other Boston neighborhoods, the percentage of women who reported having a mammogram was similar to Boston overall.

Among Boston women ages 40 and older who did not receive a mammogram various reasons were cited for not receiving the test: 48% reported it was a low priority, 14% stated a doctor had not recommended one, 8% reported fear, and 4% identified cost concerns or lack of adequate insurance (data not shown).



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2008, a higher percentage of Black and Latino females ages 40 and older with a household income of less than \$25,000 reported mammography screening during the past year in comparison to White females in the same income category.

There were no significant differences in having a mammogram between Black and White women with household incomes of \$25,000 or more.

## What is Cervical Cancer?

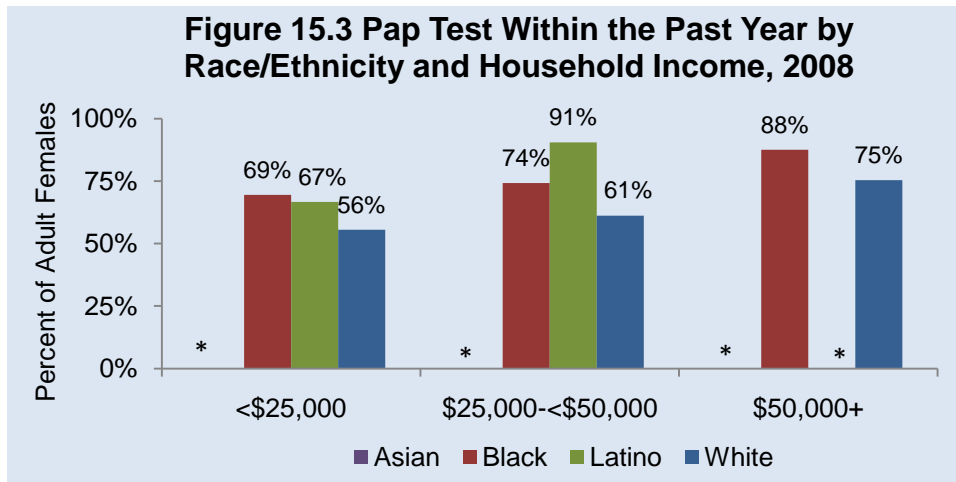
The cervix is the lower end of the uterus and leads to the vagina. Cervical cancer is a disease in which cancer cells develop in the cervix (8).

## Risk Factors for Cervical Cancer:

Human papillomavirus (HPV) is the major risk factor for the development of cervical cancer. Additional risk factors include having many sexual partners, having one's first sexual intercourse at a young age, and smoking cigarettes (8).

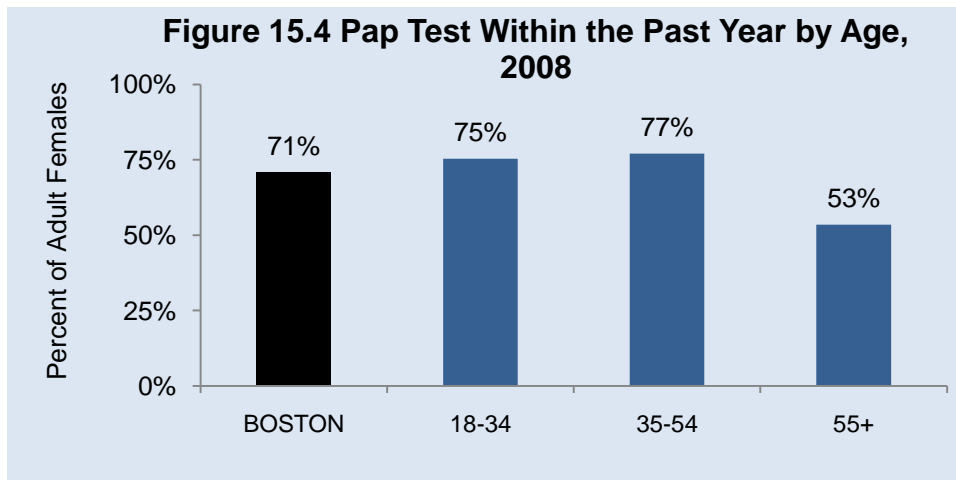
## American Cancer Society cervical cancer screening recommendations:

A Papanicolaou test, also called Pap test or Pap smear, is used to screen for cervical cancer. It can detect cervical cancer or changes in the cervix that may lead to cancer. All women should begin cervical cancer screening within 3 years after they begin having vaginal intercourse, but no later than when they are 21 years old. Screening should be done every year with the regular Pap test or every 2 years using the newer liquid-based Pap test. Beginning at age 30, women who have had 3 normal Pap test results in a row may get screened every 2 to 3 years. Another reasonable option for women over 30 is to get screened every 3 years with either the conventional or liquid-based Pap test, plus the human papillomavirus (HPV) test (6).



\*Insufficient sample sizes for Asians and Latinos in income categories presented  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

The percentage of Black, Latino, and White females ages 18 and older with household income less than \$25,000 a year who reported having a Pap test during the past year was statistically similar. A higher percentage of Latino females 18 and older with household income between \$25,000 and \$50,000 reported having a Pap test during the past year in comparison to White females. A higher percentage of Black females 18 and older with household incomes of \$50,000 a year or more reported having a Pap test during the past year in comparison to White females in the same income category.



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2008, a lower percentage of Boston women ages 55 and older reported having a Pap test during the past year in comparison to women ages 18-34 and women ages 35-54 years old.

Screening guidelines for when women should stop having a Pap test vary. Guidelines recommended by the American Cancer Society for cervical cancer call for discontinuing a Pap test when women reach age 70 or older, given the absence of 3 or more consecutive positive Pap tests and the absence of abnormal Pap tests at least 10 years prior. Some exceptions apply to this screening guideline (9).

## What is Prostate Cancer?

The prostate is a gland in the male reproductive tract that produces fluid that makes up part of semen. Prostate cancer is a disease in which cancerous cells develop in the prostate (10).

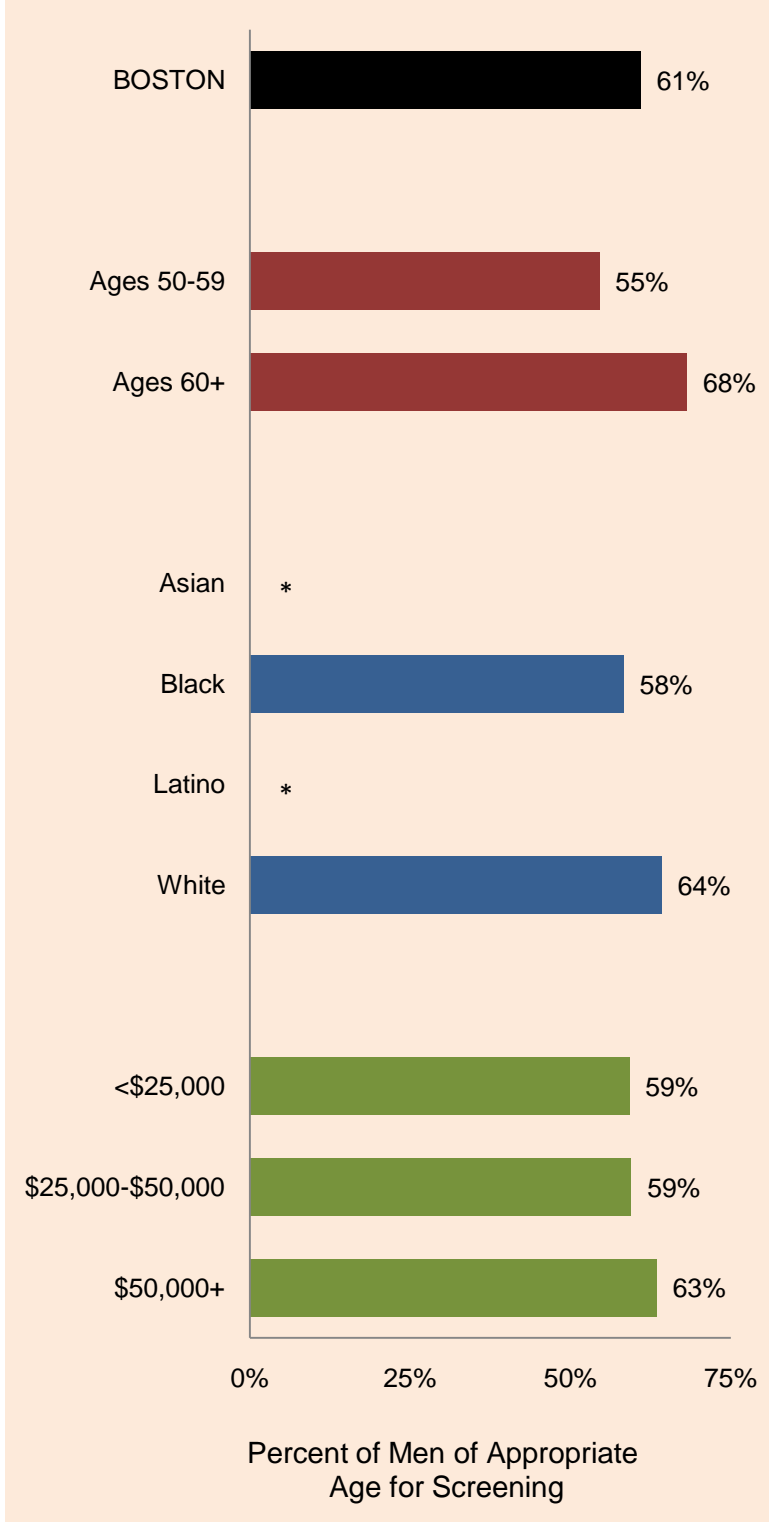
### Risk Factors for Prostate Cancer:

Black men are at increased risk for prostate cancer. Additional risk factors for prostate cancer include being 50 years of age or older, having a brother, son, or father who had prostate cancer, eating a diet high in fat, and drinking alcoholic beverages (10).

### American Cancer Society prostate cancer screening recommendations:

The prostate-specific antigen (PSA) blood test and digital rectal examination (DRE) should be given to non-Black men ages 50 and over and Black men ages 45 and over on an annual basis. Men with a family member who had prostate cancer or who are heavy alcohol drinkers should begin testing at a younger age (10).

**Figure 15.5 Prostate-Specific Antigen Test Within the Past Year, 2008**



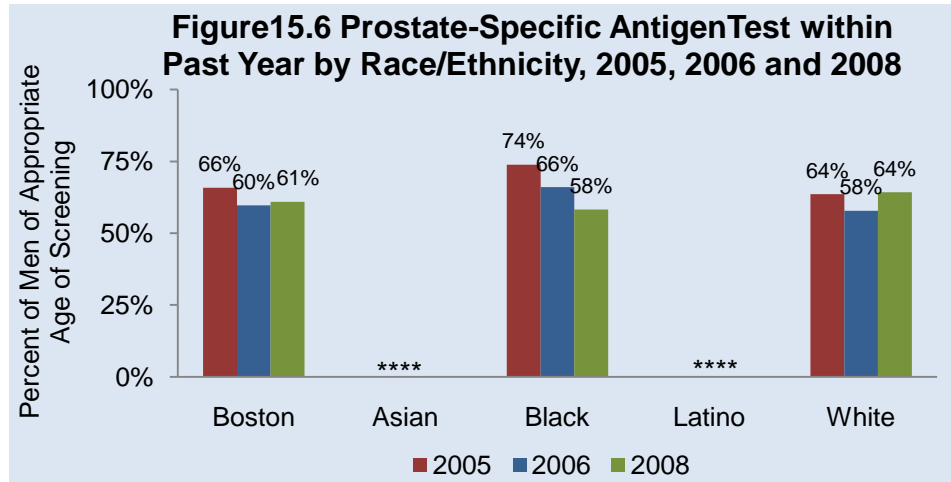
In 2008, three out of five Boston male adults ages 50 and older (ages 45 and over for Black men) reported having a prostate specific antigen test (PSA) during the past year.

A lower percentage of Boston males ages 50-59 reported having a PSA test during the past year in comparison to males ages 60 or older.

The percentage of Black males ages 45 and older and White male adults ages 50 and older who reported having a PSA test in the last year was statistically similar.

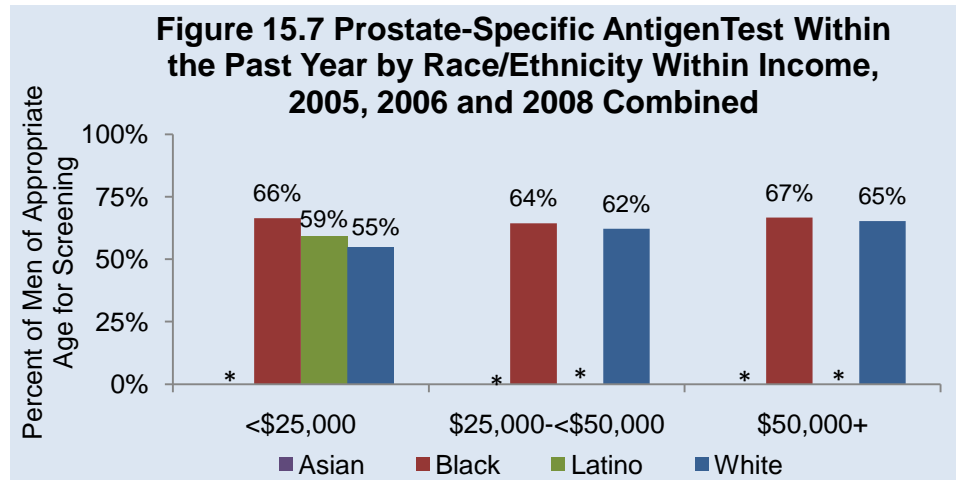
Across household income groups, a statistically similar percentage of male adults ages 50 and older (ages 45 and over for Black men) reported having a PSA test during the past year.

\*Insufficient sample size for Asians and Latinos  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission



\*Insufficient sample size for Asians and Latinos for each of the years presented  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

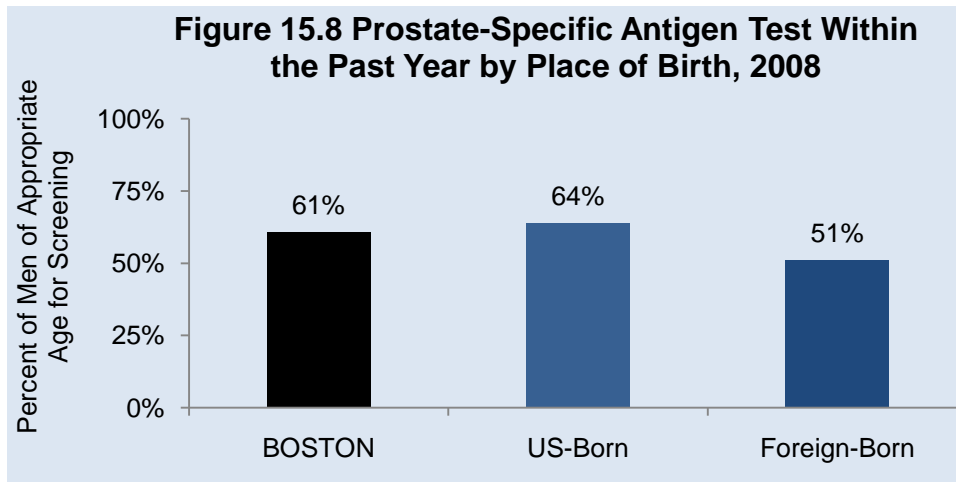
The percentage of Black males ages 45 and over and White males ages 50 and over who reported having a PSA test in the last year was similar in 2005, 2006 and 2008. Within these two racial/ethnic groups, more than half of the men reported having a PSA test during the past year.



\*Insufficient sample sizes for Asians and Latinos in income categories presented  
 DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

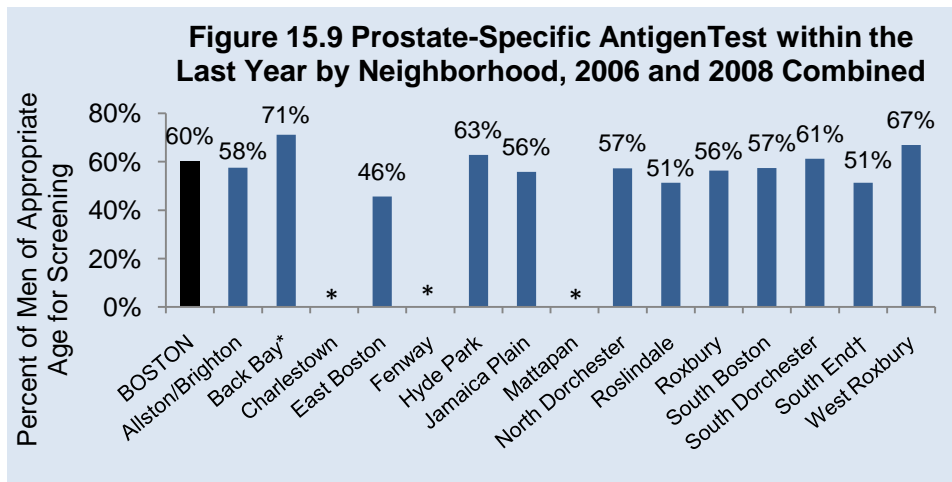
In 2005, 2006, and 2008 combined, the percentage of Black males ages 45 and over and Latino and White males ages 50 and over with household incomes under \$25,000 who reported having a PSA test during the past year was statistically similar. Across other household income groups, statistically similar percentages of Black and White males reported having a PSA.





DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

A statistically similar percentage of males ages 50 and over (45 and over for Black men) born in the United States compared to those not born in the United States reported having a PSA during the past year.



\*Insufficient sample size

DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

In 2006 and 2008 combined, a lower percentage of Roslindale and South End male adults ages 50 and older (ages 45 and over for Black men) reported having a PSA during the past year compared to Boston overall. Percentages for all other neighborhoods were statistically similar to Boston overall.

### What is Colorectal Cancer?

The colon, also known as the large intestine, and the rectum are parts of the digestive tract. The colon is the first several feet of the large intestine. The last few inches of the large intestine are the rectum and anus. Colorectal cancer is a disease in which cancer cells form in the colon or rectum (11).

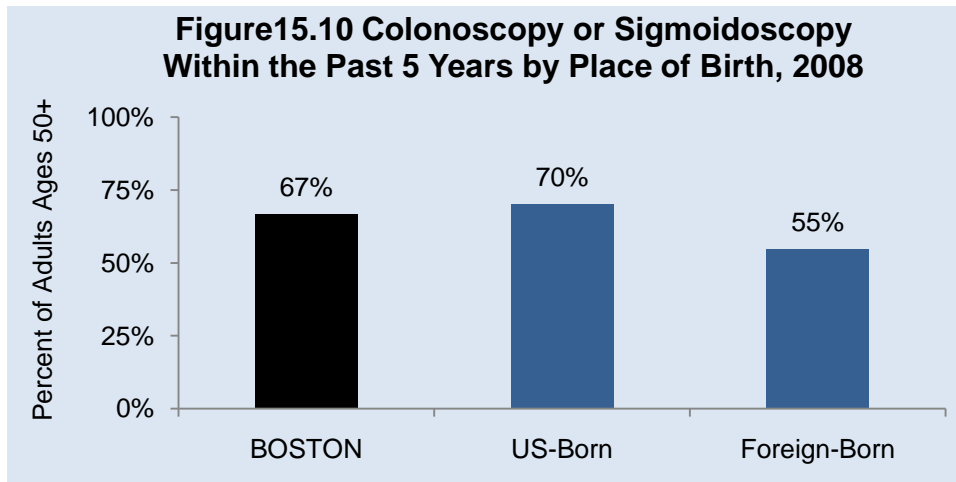
### Risk Factors for Colorectal Cancer:

Risk factors for colon cancer are age (specifically being older than age 50) or a personal history of colon cancer or cancer of ovary, breast or uterus, polyps in the colon or rectum, Crohns disease, or Ulcerative colitis. Other risk factors include having a parent, sibling or child with colorectal cancer or colonic polyps, or having certain conditions such as familial adenomatous polyposis (FAP) (11).

Tests that Find Polyps and Cancer (Preferred)	Tests that Mainly Find Cancer
Flexible sigmoidoscopy every 5 years	fecal occult blood test (FOBT) every year
Colonoscopy every 10 years	fecal immunochemical test (FIT) every year
Double contrast barium enema every 5 years	stool DNA test (sDNA), interval uncertain
CT colonography (virtual colonoscopy) every 5 years	

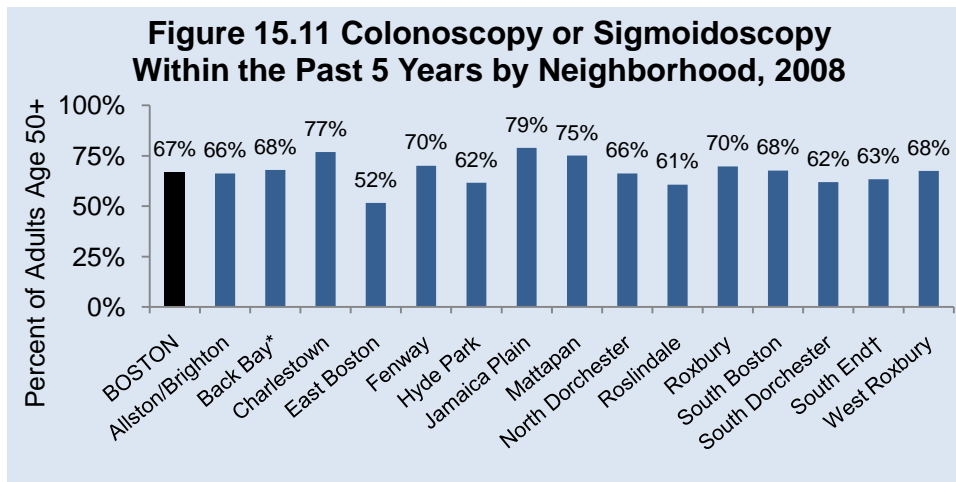
### American Cancer Society colorectal cancer screening recommendations:

There are many tests that check for colon and rectal cancer. It is recommended that men and women ages 50 and older should be screened with one of the following tests in the time interval specified above. Individuals should talk to their doctor to identify the most appropriate test (6).



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

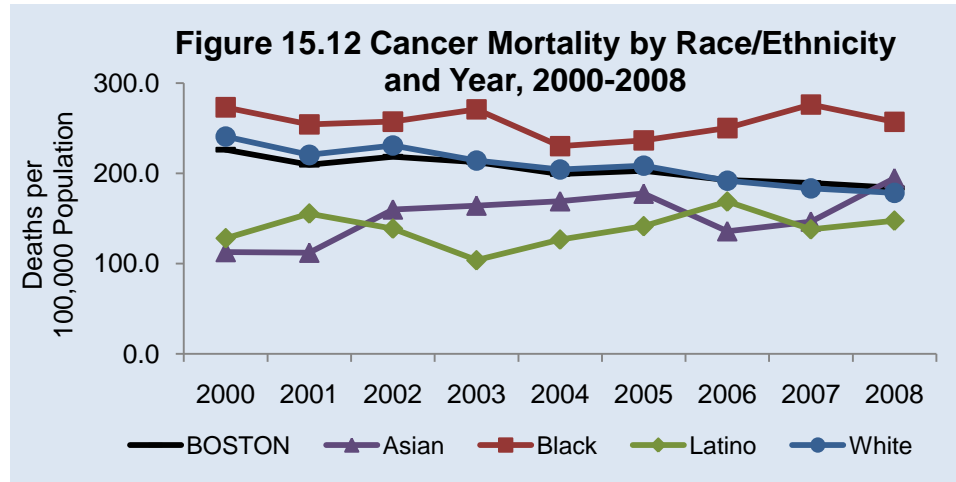
In 2008, two-thirds of Boston adults ages 50 and older reported having a colonoscopy or sigmoidoscopy during the past five years. A lower percentage of foreign-born Boston residents reported having a colonoscopy or sigmoidoscopy screening during the past five years in comparison to US-born Boston residents.



DATA SOURCE: Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System (BBRFSS), Boston Public Health Commission

Across all Boston neighborhoods at least half of the adults ages 50 and over reported having a colonoscopy screening during the past five years.

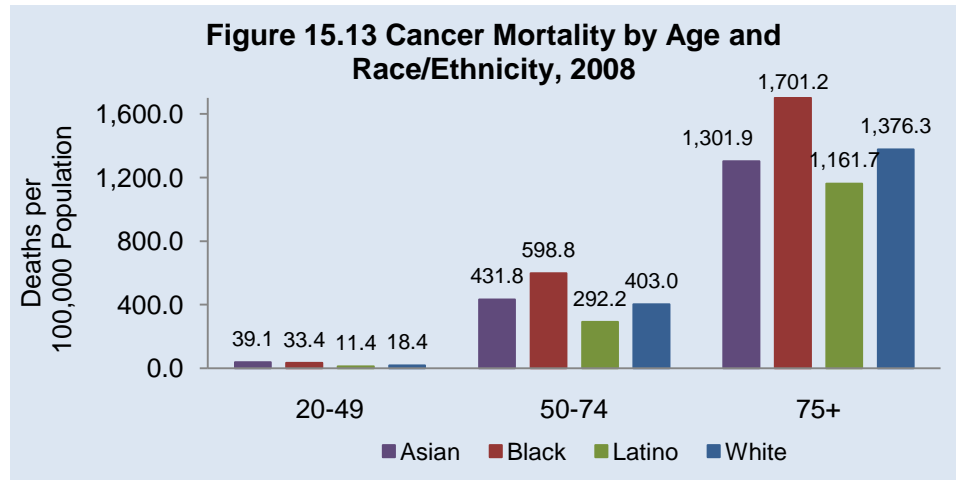
Compared to Boston overall, a lower percentage of East Boston adults and a higher percentage of Jamaica Plain adults received a colonoscopy or sigmoidoscopy within the past five years.



DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

From 2000 to 2008, Boston’s Black residents had the highest age-adjusted cancer mortality rate among all racial/ethnic groups.

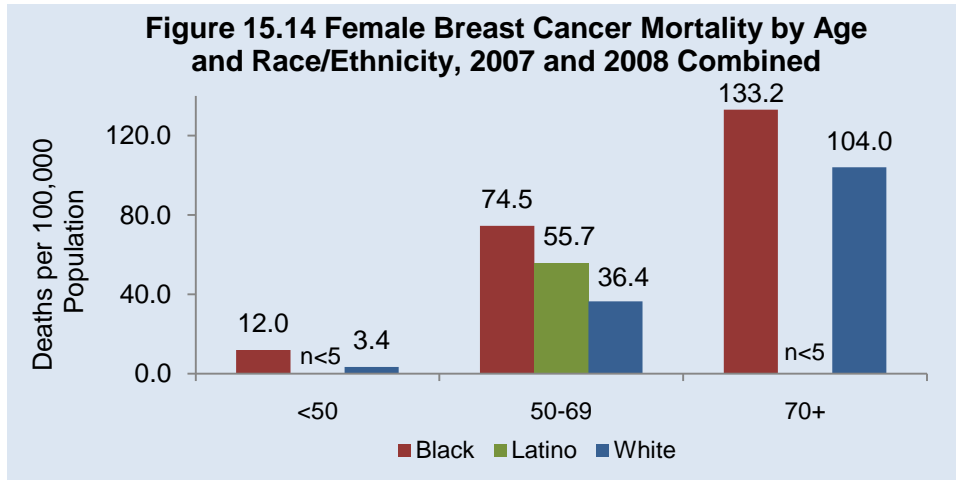
Between 2006 and 2008, the Asian age-adjusted cancer mortality rate increased 43% to the highest level in nine years of reported data.



DATA SOURCE: Boston Resident Deaths, Massachusetts Department of Public Health

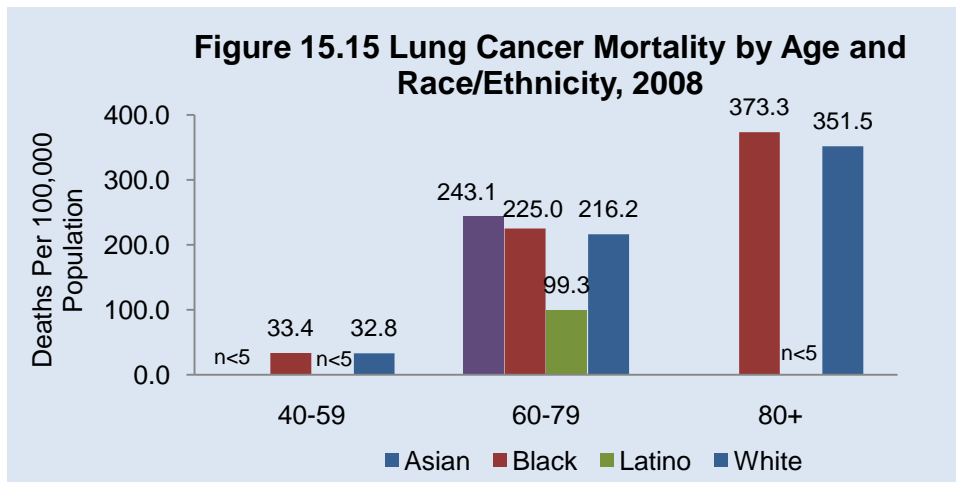
Boston residents ages 75 and older had the highest age-specific cancer mortality rates by racial ethnic group.

Within age groups, Blacks had the highest cancer mortality rate among residents ages 50 to 74 and residents ages 75 and older. Asians had the highest cancer mortality rate among residents ages 20 to 49.



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

In 2007 and 2008 combined, Black women had the highest average annual age-specific breast cancer mortality rate within each age group. There were no breast cancer deaths among Asian women for the age groups presented.



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

The highest age-specific rates of lung cancer mortality were among Black and White residents ages 80 and over.

**Figure 15.16 Cancer Mortality by Leading Types of Cancer, 2006-2008**

Cancer	Count	Rate
<b>2006</b>		
Lung	255	52.9
Prostate	49	28.0
Female breast	78	27.9
Colorectal	97	19.5
Pancreas	53	10.9
Leukemia	40	8.1
Ovary	22	7.9
Liver	34	7.1
Non-hodgkins lymphoma	34	6.9
Stomach	23	4.6
<b>All cancers</b>	<b>944</b>	<b>192.7</b>
<b>2007</b>		
Lung	229	47.4
Prostate	56	32.2
Female breast	55	19.2
Colorectal	84	17.1
Pancreas	59	12.0
Cancer Liver	42	8.6
Non-Hodgkins Lymphoma	37	7.3
Cancer Esophagus	32	6.6
Leukemia	33	6.4
Cancer Stomach	28	5.7
Cancer Bladder	24	4.8
<b>All cancers</b>	<b>930</b>	<b>189.5</b>
<b>2008</b>		
Lung	226	46.8
Prostate	48	28.8
Female breast	66	22.7
Colorectal	105	21.5
Pancreas	69	14.1
Cancer Liver	47	9.6
Leukemia	32	6.3
Non-Hodgkins Lymphoma	30	6.0
Cancer Bladder	25	5.1
Ovary	24	4.9
Cancer Stomach	18	3.6
<b>All cancers</b>	<b>927</b>	<b>189.1</b>

The ten leading causes of cancer deaths between 2006 and 2008 among Boston residents were similar from year to year. Age-adjusted cancer mortality rates were highest for lung, prostate, female breast, and colorectal cancer for all three years.

Rates for lung cancer decreased 12% between 2006 and 2008, while female breast cancer decreased 19%. Although the rate for prostate cancer remained nearly the same between 2006 and 2008 it increased from 2006 to 2007. Rates for colorectal cancer increased 10% between 2006 and 2008.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

**Figure 15.17 Leading Types of Cancer Mortality by Race/Ethnicity, 2006-2008**

<b>Asian</b>	<b>Count</b>	<b>Rate</b>
<b>2006</b>		
Lung	9	30.5
Liver	8	25.1
Colorectal	5	16.3
<b>All cancer</b>	<b>41</b>	<b>135.9</b>
<b>2007</b>		
Lung	10	35.1
Liver	7	24.5
<b>All cancer</b>	<b>43</b>	<b>146.6</b>
<b>2008</b>		
Lung	16	51.2
Colorectal	9	30.4
Liver	8	24.5
<b>All cancer</b>	<b>60</b>	<b>194.6</b>

Lung cancer has been the leading type of cancer mortality among Boston’s Asian residents each year from 2006 to 2008.

The all-cancer age-adjusted mortality rate for Boston’s Asian population increased 43% from 2006 to 2008.

<b>Black</b>	<b>Count</b>	<b>Rate</b>
<b>2006</b>		
Lung	56	57.2
Prostate	13	49.2
Female breast	28	43.2
Colorectal	29	32
Ovary	7	11.6
<b>All cancer</b>	<b>246</b>	<b>250.2</b>
<b>2007</b>		
Prostate	20	80.5
Lung	55	57.5
Female Breast	22	33.9
Pancreas	23	24.9
Colorectal	18	20
<b>All cancer</b>	<b>259</b>	<b>276.3</b>
<b>2008</b>		
Prostate	19	72.7
Lung	50	51.3
Female Breast	24	40.0
Colorectal	30	31.4
Pancreas	24	26.0
<b>All cancer</b>	<b>248</b>	<b>257.0</b>

From 2006 to 2008, prostate, lung and female breast cancer were the top three leading types of cancer mortality among Boston’s Black residents.

In 2006, lung cancer was the leading type of cancer mortality among Black residents. In 2007 and 2008, prostate cancer was the leading type of cancer mortality.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

**Figure 15.17 Leading Types of Cancer Mortality by Race/Ethnicity, 2006-2008 (continued)**

<b>Latino</b>	<b>Count</b>	<b>Rate</b>
<b>2006</b>		
Female Breast	5	32.0
Pancreas	7	19.5
Lung	5	14.5
<b>All cancer</b>	<b>47</b>	<b>168.6</b>
<b>2007</b>		
Lung	9	31.3
Colorectal	5	15.6
<b>All cancer</b>	<b>42</b>	<b>137.9</b>
<b>2008</b>		
Lung	7	22.3
Liver	6	19.6
Female Breast	5	17.5
<b>All cancer</b>	<b>43</b>	<b>147.5</b>

Lung cancer was the leading type of cancer mortality among Boston Latino residents in 2008, claiming 22.3 lives per 100,000 population.

<b>White</b>	<b>Count</b>	<b>Rate</b>
<b>2006</b>		
Lung	185	60.7
Prostate	30	24.6
Female Breast	43	24.3
Colorectal	60	18.4
Pancreas	34	10.9
<b>All cancer</b>	<b>607</b>	<b>191.8</b>
<b>2007</b>		
Lung	155	50.5
Prostate	33	27.0
Colorectal	56	17.4
Female Breast	31	16.3
Pancreas	33	10.0
<b>All cancer</b>	<b>582</b>	<b>183.4</b>
<b>2008</b>		
Lung	152	48.3
Prostate	26	22.2
Female Breast	37	19.8
Colorectal	62	19.2
Pancreas	38	11.9
<b>All cancer</b>	<b>570</b>	<b>178.4</b>

Lung, prostate, female breast, colorectal and pancreas were the top five leading types of cancer mortality among Boston White residents from 2006 to 2008. The age-adjusted mortality rate for lung and prostate cancer decreased from 2007 to 2008 (4% and 18%, respectively); however during the same time period the age-adjusted mortality rate for female breast and colorectal cancer increased (21% and 10% respectively).

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health



**Figure 15.18 Leading Types of Cancer Mortality by Gender, 2006-2008**

BOSTON MALES			BOSTON FEMALES		
Cancer	Count	Rate	Cancer	Count	Rate
<b>2006</b>			<b>2006</b>		
Lung	138	71.3	Lung	117	41.2
Prostate	49	28.6	Breast	78	27.9
Colorectal	42	21.5	Colorectal	55	17.9
Liver	27	12.9	Pancreas	33	11.2
Leukemia	22	10.9	Ovary	22	7.9
<b>All cancers</b>	<b>454</b>	<b>238.8</b>	<b>All cancers</b>	<b>490</b>	<b>167.3</b>
<b>2007</b>			<b>2007</b>		
Lung	118	60.4	Lung	111	38.4
Prostate	56	32.2	Breast	55	19.2
Colorectal	38	19.5	Colorectal	46	14.7
Liver	29	14.5	Pancreas	39	12.6
Esophagus	23	11.4	Uterine	15	5.1
<b>All cancers</b>	<b>472</b>	<b>248.3</b>	<b>All cancers</b>	<b>458</b>	<b>154.5</b>
<b>2008</b>			<b>2008</b>		
Lung	129	67.3	Lung	97	34.0
Prostate	48	28.8	Breast	66	22.7
Colorectal	56	28.5	Colorectal	49	15.8
Pancreas	32	17.2	Pancreas	37	12.3
Liver	35	17.1	Ovary	24	8.2
<b>All cancers</b>	<b>467</b>	<b>243.3</b>	<b>All cancers</b>	<b>460</b>	<b>154.7</b>

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

In 2008, the male cancer mortality rate was 1.5 times the female rate. Lung cancer was the leading type of cancer mortality for Boston males and females for each year from 2006 to 2008. The age-adjusted lung cancer mortality rate decreased 11% for females and increased 11% for males from 2007 to 2008.

## Summary: Cancer

Cancer is the leading cause of death worldwide. The World Health Organization estimates that cancer was responsible for 7.4 million deaths in 2004 (the most recent year for which data were available). This represented 13% of all deaths worldwide (12). Preliminary death data from the National Vital Statistics Report indicate that there were 560,187 cancer deaths in the US in 2007 (13).

In 2008, cancer was the leading cause of death among Boston residents with an age-adjusted mortality rate of 183.9 deaths per 100,000 population. This was 16 % higher than the Healthy People 2010 target of no more than 158.6 deaths per 100,000 population (14). The leading types of cancer deaths among Boston residents between 2006 and 2008 were similar from year to year—lung, prostate, female breast, and colorectal cancer (data not shown).

In 2008, cancer mortality rates varied among gender and race/ethnicity. The overall age-adjusted cancer mortality rate for Boston males was 1.5 times the rate for females. In 2008, the rate among Black residents (257.0 cancer deaths per 100,000) was 1.3 times the Asian rate, 1.7 times the Latino rate, and 1.4 times the White rate. The age-adjusted rates of three leading types of cancer mortality (lung, prostate, female breast) were highest among Black residents. Recent research suggests that the higher rate of cancer mortality among Blacks in comparison to other racial/ethnic groups may reflect patterns of bias in access to treatment and the chronic stress associated with racism (15).

Although cancer remains the leading cause of death in Boston, there are many steps related to behavior that residents can take to minimize their risk, such as refraining from the use of tobacco products, maintaining a healthy weight, and engaging in regular physical exercise. However, other actions are needed that require individuals,

communities, local agencies, health professionals, and policy makers to work together on issues pertaining to:

- Availability of timely medical coverage once a diagnosis of cancer is made so that no one with cancer goes without treatment because they are uninsured or underinsured;
- Availability of culturally appropriate cancer education related to prevention, screening, and treatment;
- Identification of bias in the treatment of cancer;
- The need for more research to assess the long-term effects of high levels of exposure to environmental hazards which may increase cancer risks for the Boston population. According to national research, Blacks, Latinos, and low-income groups have been found to be disproportionately exposed to higher levels of environmental hazards such as industrial, waste-treatment, or waste-disposal sites (16);
- The need for more research to assess the impact of chronic stress associated with racism on cancer morbidity and mortality.



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## Notes and Data Analysis

**Figure 15.1**

NOTE: Survey question reads, “How long has it been since you had your last mammogram?” This question was asked of females ages 40 and over. Neighborhood level data do not include individuals whose neighborhood of residence was not reported.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.2**

NOTE: Survey question reads, “How long has it been since you had your last mammogram?” This question was asked of females age 40 and over.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.3**

NOTE: Survey question reads, “How long has it been since you had your last Pap test?” This question was asked of females ages 18 and over.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.4**

NOTE: Survey question reads, “How long has it been since you had your last Pap test?” This question was asked of females ages 18 and over.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.5**

NOTE: Survey question reads, “How long has it been since you had your last PSA test?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.6**

NOTE: Survey question reads, “How long has it been since you had your last PSA test?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.7**

NOTE: Survey question reads, “How long has it been since you had your last PSA test?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.8**

NOTE: Survey question reads, “How long has it been since you had your last PSA test?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.9**

NOTE: Survey question reads, “How long has it been since you had your last PSA test?”

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.10**

NOTE: Survey question reads, “How long has it been since you had your last sigmoidoscopy or colonoscopy?” This question was asked of those ages 50 and over.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.11**

NOTE: Survey question reads, “How long has it been since you had your last sigmoidoscopy or colonoscopy?” This question was asked of those ages 50 and over. These data do not include individuals whose neighborhood of residence was not reported, except in the Boston overall percentage.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.12**

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population. These data do not include persons of other or unknown race/ethnicity.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.13**

NOTE: Data are presented as age-specific rates. The rates shown are deaths per 100,000 population. These data do not include persons of other or unknown race/ethnicity.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.14**

NOTE: Data are presented as age-specific rates. The rates shown are deaths per 100,000 population. These data do not include persons of other or unknown race/ethnicity.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.15**

NOTE: Data are presented as age-specific rates. The rates shown are deaths per 100,000 population. These data do not include persons of other or unknown race/ethnicity.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.16**

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population. DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.17**

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population. These data do not include persons of other or unknown race/ethnicity.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

**Figure 15.18**

NOTE: Data are presented as age-adjusted rates. The rates shown are deaths per 100,000 population. These data do not include persons of unknown gender.

DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

