

Chapter 8

Chronic Disease





Chronic Disease

Changes in public health over the 19th and 20th centuries – namely vaccinations, antibiotics, and hygiene practices – have led to the decline of infectious disease as the major cause of illness (1). In its place, as people now live longer, chronic disease has become the primary obstacle to good health (1). Chronic diseases and conditions—such as heart disease, stroke, cancer, type 2 diabetes, obesity, and arthritis—are among the most common, costly, and preventable health problems. The Centers for Disease Control and Prevention (CDC) estimates that each year 7 of 10 deaths are due to chronic diseases, and as of 2012, about half of all adults in the United States —117 million people—had one or more chronic health condition (2, 3).

By their very definition, chronic diseases are “managed” since cures are not available. Management practices extend life, therefore, chronic diseases continue to rise in prevalence. Methods of chronic disease management include medications, medical procedures, and lifestyle changes. Prevention is the key to reducing the burden of these diseases. To prevent chronic disease, people need opportunities to live a healthy lifestyle which includes, among other things, participating in adequate physical activity, eating a balanced diet, managing stress and limiting exposure to chronic stressors, refraining from tobacco use, and limiting alcohol consumption (4). Unfortunately, the modern environment is often not supportive of these healthy habits, encouraging sedentary behavior, overeating, and alcohol consumption.

Changing the environment to promote healthier behaviors requires strategic vision and planning. Implementing systems and policies that increase opportunities for physical activity, provide support to live tobacco free, and improve access to healthy foods, are strategies that have been used to create healthier environments. Systems and policies that address other social determinants by improving access to routine preventive medical care, and increasing educational and employment opportunities will also contribute to healthy environments. A healthier environment can support an individual’s choice to walk or bike instead of drive, to quit smoking, or to limit sugary beverage consumption. Ultimately, building healthier environments will encourage residents to live a healthy lifestyle, greatly improving their health and longevity.

In this section of the report, we closely examine indicators of the following chronic diseases: asthma, diabetes, heart disease, hypertension, and obesity.

Asthma

What is Asthma?

Asthma is a common respiratory disease characterized by episodes of coughing, wheezing, difficulty breathing, and chest tightness. These symptoms occur in response to triggers, which include allergens (e.g., mold, pet dander, dust mites, and cockroaches), certain chemicals, exposure to tobacco smoke, and infections. Although asthma is a long-term disease, the signs and symptoms can be minimized by avoiding triggers, adhering to prescribed medication, identifying and treating attacks early, and developing an asthma action plan with a health care provider (5). Findings from the 2015 Behavioral Risk Factor Surveillance System (BRFSS) indicate that approximately 9% of U.S. adults reported currently having asthma (6). Approximately 23% percent of U.S. high school students also reported having been told they have asthma in the 2015 Youth Risk Behavior Surveillance System (YRBSS) (7).

Populations at Risk

Inequities in asthma in the U.S. population are found across sex, race/ethnicity, and income. As data from the 2014 National Health Interview Survey shows, women are more likely to report having asthma than men. In children (less than 18 years of age), the relationship is reverse; boys are more likely to have asthma than girls (8). Black adults have higher asthma prevalence than White and Latino adults. Inequities in asthma are also found across social determinants including education and income. U.S. adults who do not finish high school are more likely to have asthma than adults who graduate from high school or college. Similarly, adults with an annual household income of \$75,000 or more are less likely to have asthma than adults with lower incomes (9). Smokers are more likely to have asthma than non-smokers (10). Obese adults are more likely to have asthma than adults in other weight categories (11).

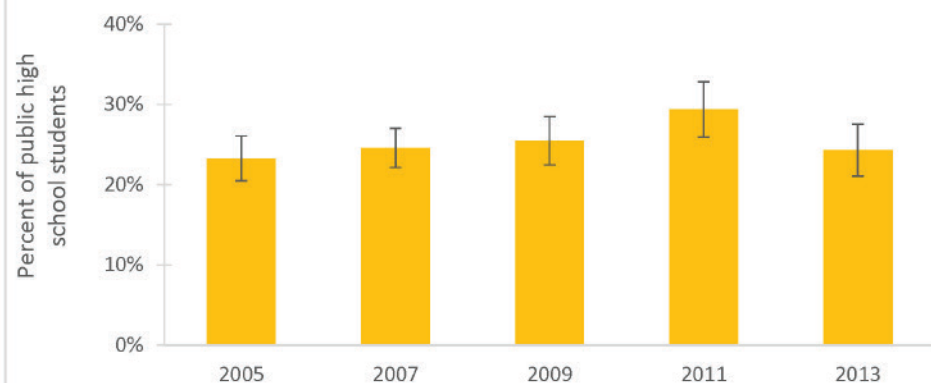
Prevention

Although asthma cannot be cured, it can be controlled by avoiding asthma triggers and seeking proper medical care. Continuous monitoring of the disease, patient education, and having a medical management plan is recommended (12). Creating healthy environments in homes and neighborhoods that reduce exposure to known triggers is vital to preventing symptoms of the disease.





Figure 8.1 Asthma Among Public High School Students by Year

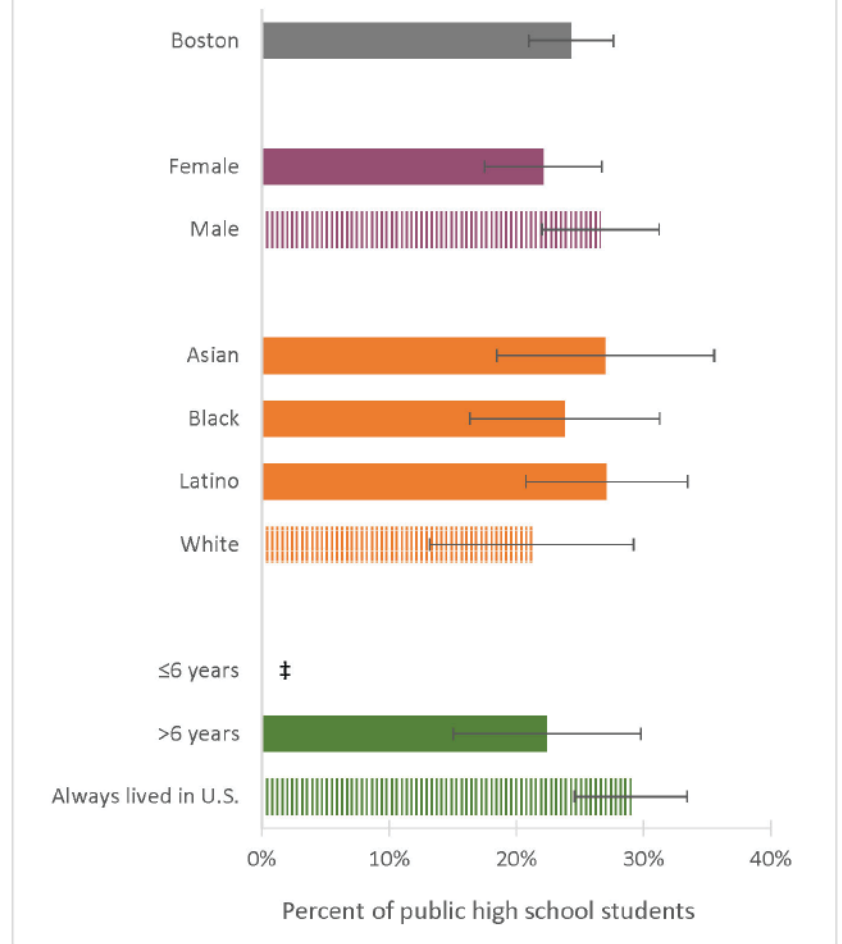


DATA SOURCE: Youth Risk Behavior Survey (2005, 2007, 2009, 2011, 2013), Centers for Disease Control and Prevention and Boston Public Schools

In 2013, 24% of Boston public high school students reported having asthma. There was no significant change in the percentage of students with asthma between 2005 and 2013.

In 2013, 24% of Boston public high school students had asthma. There were no significant differences by sex, race/ethnicity, or years lived in the United States.

Figure 8.2 Asthma Among Public High School Students by Selected Indicators, 2013

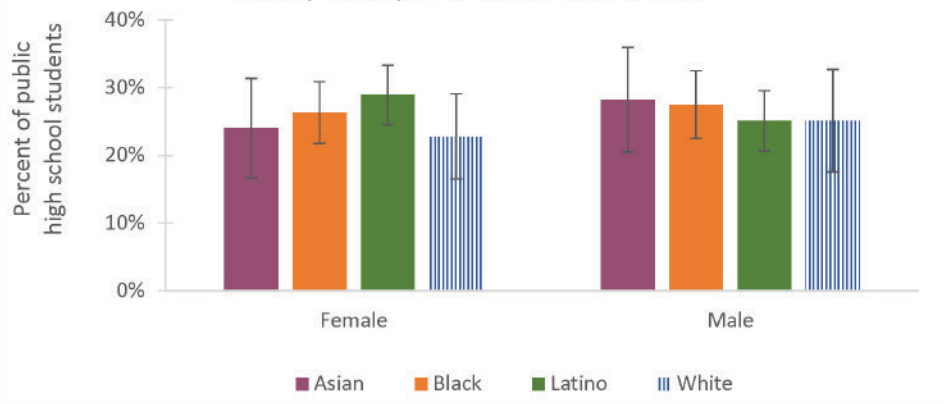


‡ Data not presented due to insufficient sample size

NOTE: Bars with patterns indicate the reference group for statistical testing within each selected indicator.

DATA SOURCE: Youth Risk Behavior Survey (2013), Centers for Disease Control and Prevention and Boston Public Schools

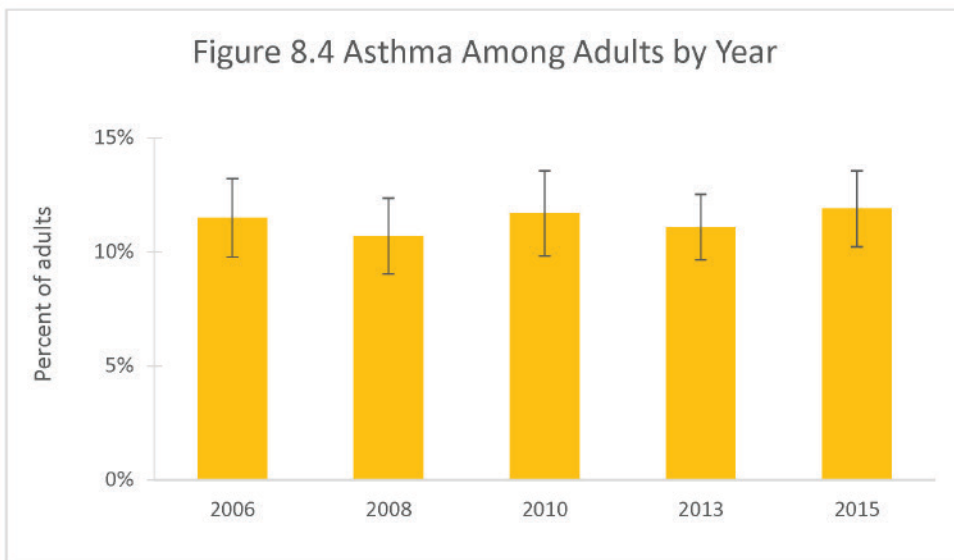
Figure 8.3 Asthma Among Public High School Students by Sex and Race/Ethnicity, 2009, 2011, and 2013 Combined



During 2009, 2011, and 2013 combined, there were no significant differences by race/ethnicity among female or male Boston public high school students.

NOTE: Bars with patterns indicate the reference group for statistical testing within each selected indicator.
 DATA SOURCE: Youth Risk Behavior Survey (2009, 2011, 2013), Centers for Disease Control and Prevention and Boston Public Schools

Figure 8.4 Asthma Among Adults by Year



In 2015, 12% of Boston adult residents reported having asthma. There was no significant change in the percentage of adults with asthma between 2006 and 2015.

DATA SOURCE: Boston Behavioral Risk Factor Survey (2006, 2008, 2010, 2013, 2015), Boston Public Health Commission

During 2013 and 2015 combined, 12% of Boston adult residents reported having asthma.

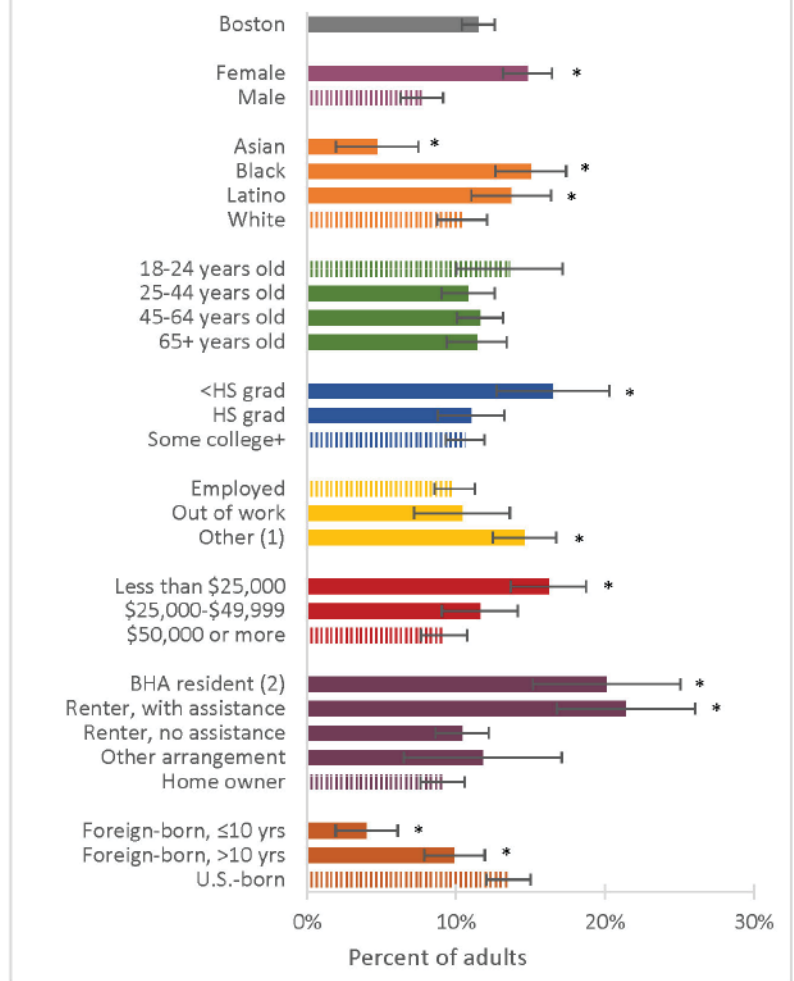
The percentage of adults with asthma was higher for the following groups:

- Females (15%) compared with males (8%)
- Black (15%) and Latino (14%) adults compared with White adults (10%)
- Adults with less than a high school diploma (17%) compared with adults with at least some college education (11%)
- Adults whose employment status was "other" (15%) compared with those who were employed (10%)
- Adults living in households with an annual income of less than \$25,000 (16%) compared with adults living in households with an annual income of \$50,000 or more (9%)
- Adults who were Boston Housing Authority residents (20%) and adults who received rental assistance (21%) compared with home owners (9%)

The percentage of adults with asthma was lower for the following groups:

- Asian adults (5%) compared with White adults (10%)
- Foreign-born adults who lived in the United States for 10 years or less (4%) and foreign-born adults who lived in the United States for over 10 years (10%) compared with adults who were born in the United States (14%)

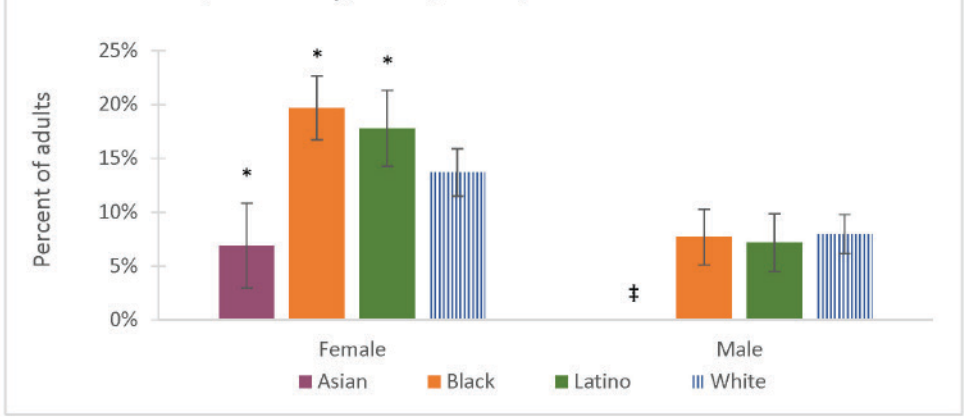
Figure 8.5 Asthma Among Adults by Selected Indicators, 2013 and 2015 Combined



* Statistically significant difference when compared to reference group
 (1) Includes homemakers, students, retirees, and those unable to work
 (2) Boston Housing Authority resident

NOTE: Bars with patterns indicate the reference group within each selected indicator.
 DATA SOURCE: Boston Behavioral Risk Factor Survey (2013, 2015), Boston Public Health Commission

Figure 8.6 Asthma Among Adults by Sex and Race/Ethnicity, 2010, 2013, and 2015 Combined



* Statistically significant difference when compared to reference group

‡ Data not presented due to insufficient sample size

NOTE: Bars with patterns indicate the reference group within each selected indicator.

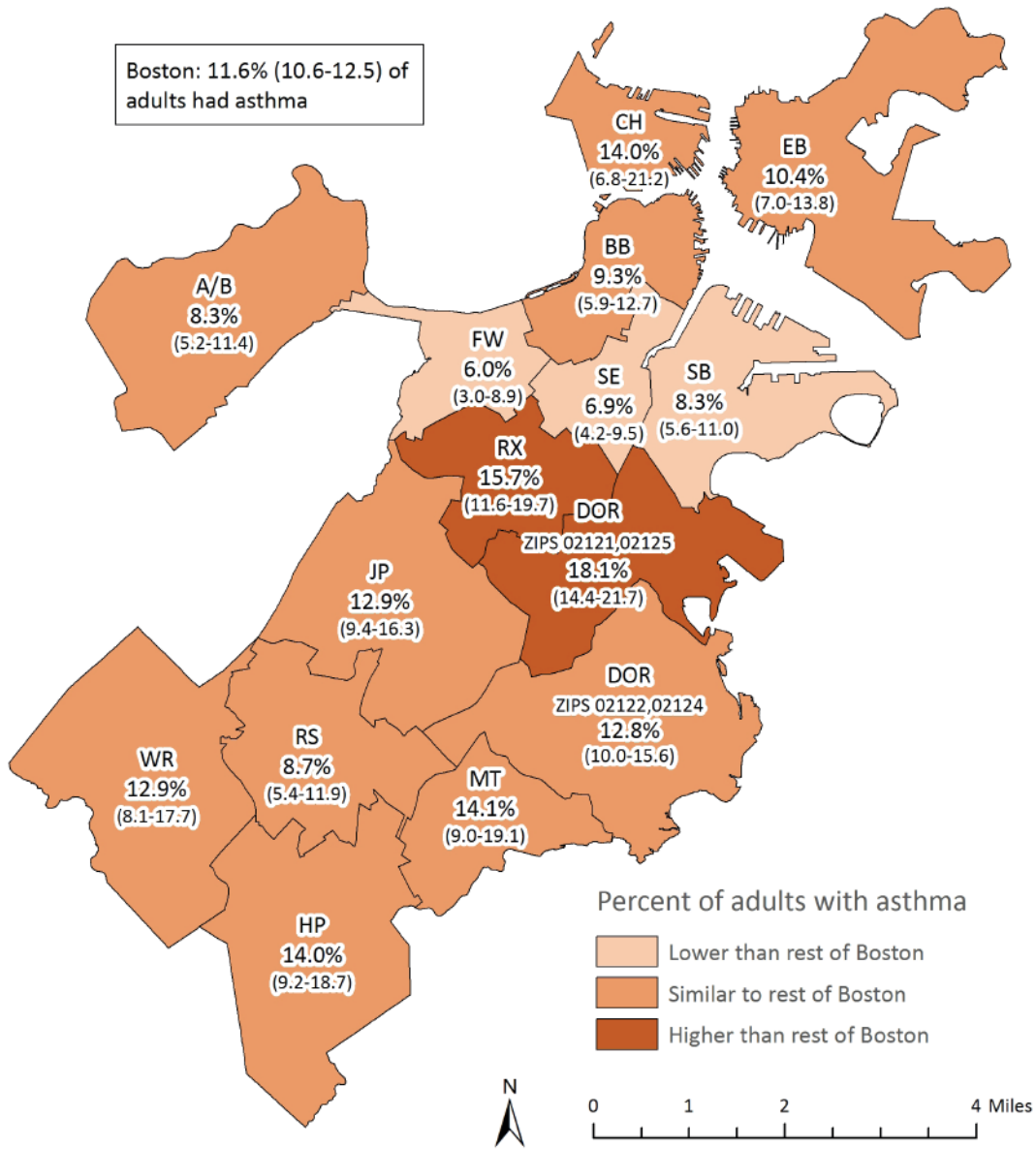
DATA SOURCE: Boston Behavioral Risk Factor Survey (2010, 2013, 2015), Boston Public Health Commission

During 2010, 2013, and 2015 combined, a higher percentage of Black (20%) and Latino (18%) Boston female adult residents and a lower percentage of Asian female adults (7%) had asthma compared with White female adults (14%).

Among male adults, there were no significant differences in the percentages of asthma by race/ethnicity when compared with White male adults.



Figure 8.7 Asthma Among Adults by Neighborhood, 2010, 2013, and 2015 Combined

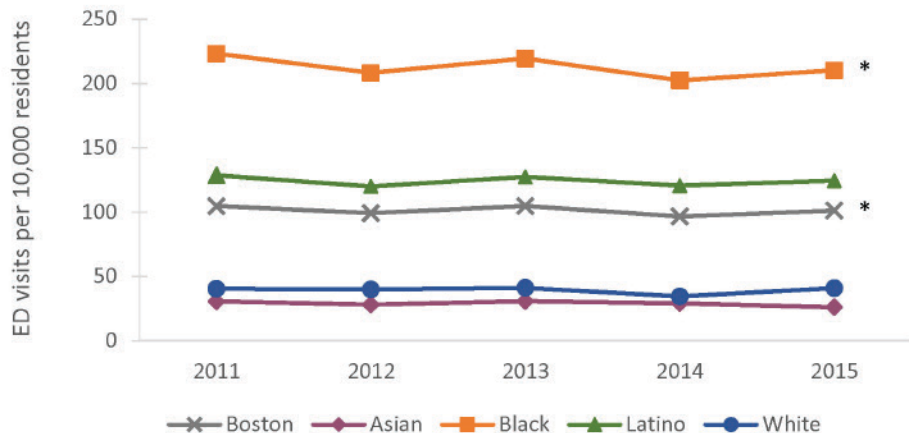


NOTE: "BB" includes the Back Bay, Beacon Hill, Downtown, the North End, and the West End. "SE" includes the South End and Chinatown.

DATA SOURCE: Boston Behavioral Risk Factor Survey (2010, 2013, 2015), Boston Public Health Commission

During 2010, 2013, and 2015 combined, the percentage of Boston adult residents with asthma was lower in Fenway, South Boston, and the South End compared with the rest of Boston. The percentage of adults with asthma was higher in Dorchester (02121, 02125) and Roxbury compared with the rest of Boston.

Figure 8.8 Asthma Emergency Department Visits† by Race/Ethnicity and Year, Boston



* Statistically significant change over time

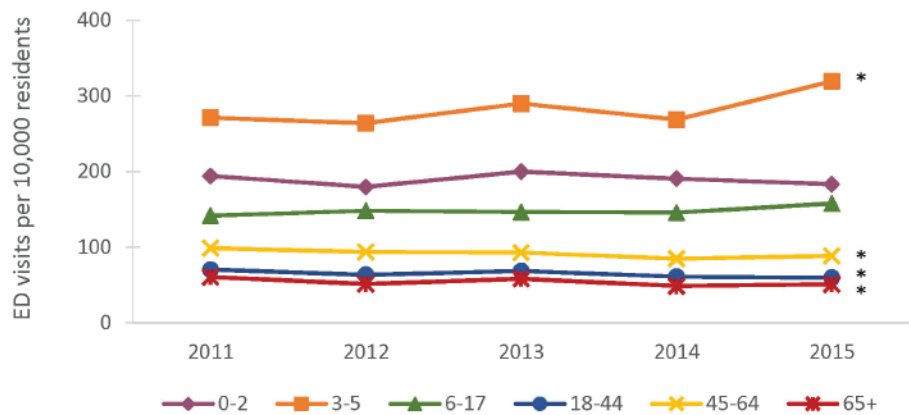
† Age-adjusted rates per 10,000 residents

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

In 2015, the rate of asthma emergency department (ED) visits in Boston was 101.2 per 10,000 residents. From 2011-2015, the rate of asthma ED visits decreased by 4% for Boston overall. The rate decreased by 6% for Black residents during the same time period.

In 2015, compared with White residents (41.0), the asthma ED visit rate was higher for Black (210.3) and Latino (124.4) residents and lower for Asian residents (26.0). The rate for Black residents was 5.1 times the rate for White residents and the rate for Latino residents was 3 times the rate for White residents. The rate for Asian residents was 37% lower than the rate for White residents.

Figure 8.9 Asthma Emergency Department Visits by Age and Year



* Statistically significant change over time

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

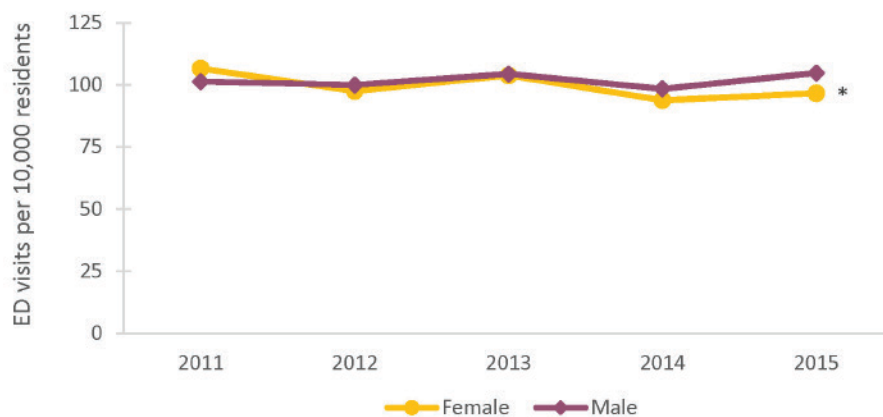
From 2011-2015, the asthma emergency department (ED) visit rate for Boston residents decreased by 14% for residents age 18-44, 12% for residents ages 45-64, and 15% for residents ages 65 and older. Residents ages 3-5 experienced a 15% increase in the rate of ED visits over the same time period.

In 2015, the asthma ED visit rate was lower for residents ages 65 and older (51.0) compared with those ages 18-44 (59.7). The rate was higher for all other age groups compared with those ages 18-44. The biggest difference was among 3-5 year olds (319.4) whose asthma ED visit rate was 5.4 times the rate of 18-44 year olds.

From 2011-2015, the asthma emergency department (ED) visit rate for Boston female residents decreased by 9%. There was no change over time for male residents.

In 2015, the asthma ED visit rate was 8% lower for females (96.7 ED visits per 10,000 residents) compared with males (104.8).

Figure 8.10 Asthma Emergency Department Visits† by Sex and Year



* Statistically significant change over time

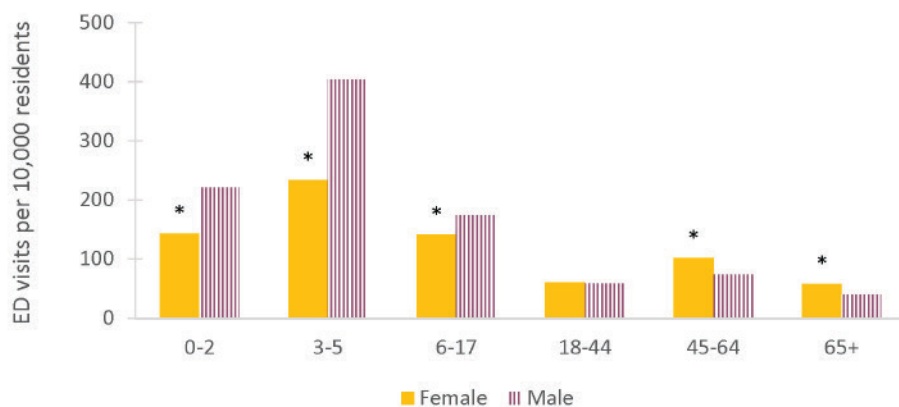
† Age-adjusted rates per 10,000 residents

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

In 2015, the rates for asthma emergency department (ED) visits varied by sex across age groups. The rate was highest among males ages 3-5 at 403.8 ED visits per 10,000 residents. Compared with males of the same age, the rates for females ages 0-2 (143.8), 3-5 (233.6), and 6-17 (141.4) were 35%, 42%, and 19% lower, respectively.

While the asthma ED visit rates were similar for males and females ages 18-44, the rates for females ages 45-64 (101.9) and 65 and older (58.2) were 38% and 43% higher, respectively, when compared with males of the same age.

Figure 8.11 Asthma Emergency Department Visits by Age and Sex, 2015

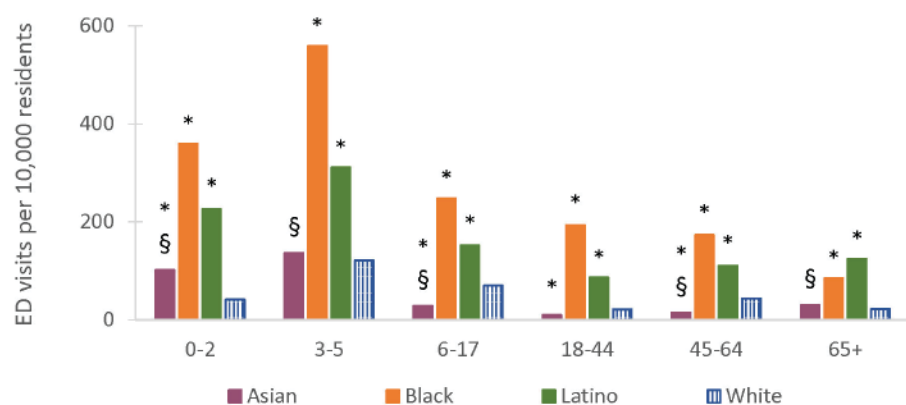


* Statistically significant difference when compared to reference group

NOTE: Bars with patterns indicate the reference group within each selected indicator.

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

Figure 8.12 Asthma Emergency Department Visits by Age and Race/Ethnicity, 2015



* Statistically significant difference when compared to reference group
 § Rates are based on 20 or fewer cases and should be interpreted with caution.

NOTE: Bars with patterns indicate the reference group within each selected indicator.

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

In 2015, Black residents ages 3-5 had the highest rate of asthma emergency department (ED) visits at 558.8 ED visits per 10,000 residents. Black and Latino residents in all age groups had higher rates compared with White residents.

The largest difference when compared to White residents occurred among Latino residents ages 65 and older (124.5) with a rate 5.6 times the rate of White residents of the same age group (22.4). For Black residents, the largest difference occurred among 18-44 year olds (193.0) with a rate approximately 9 times that of White residents of the same age group (21.4).

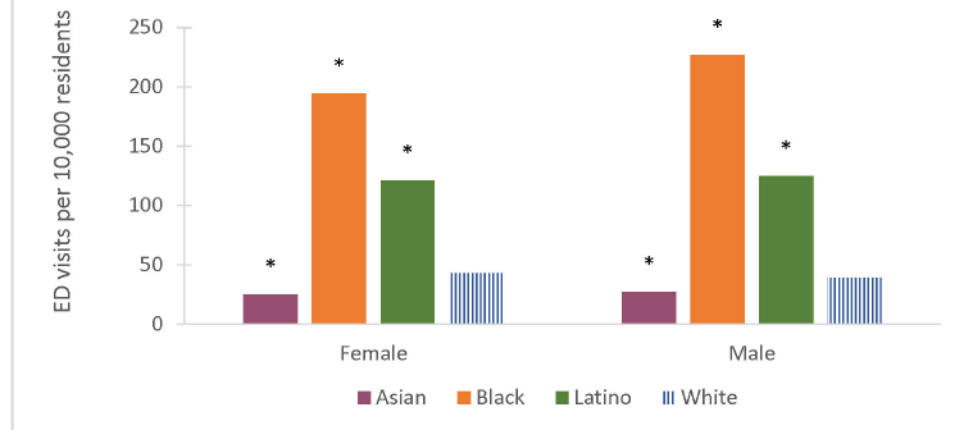
Asian residents ages 0-2 (102.5) had a rate of asthma ED visits 2.5 times higher than White residents of the same age group (41.3). For Asian residents ages 6-17 (28.9), 18-44 (9.7), and 45-64 (14.3), the rate was lower compared with White residents of the same age group.



In 2015, the asthma emergency department (ED) visit rate was lower for Asian female residents and higher for Black and Latino females compared with White females. The same was true for male residents. The rate was 41% lower for Asian females (25.2), 4.5 times higher for Black females (194.3), and 2.8 times higher for Latino females (121.2) compared with White females (42.9 ED visits per 10,000 residents).

The rate was 30% lower for Asian males (27.3), 5.9 times higher for Black males (227.1), and 3.2 times higher for Latino males (124.8) compared with White males (38.8).

Figure 8.13 Asthma Emergency Department Visits† by Sex and Race/Ethnicity, 2015



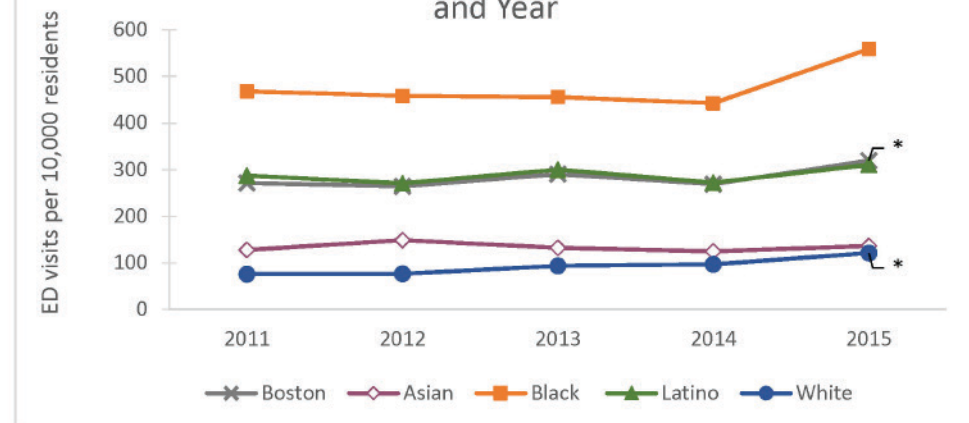
* Statistically significant difference when compared to reference group
 † Age-adjusted rates per 10,000 residents

NOTE: Bars with patterns indicate the reference group within each selected indicator.
 DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

In Boston from 2011-2015, the age-specific asthma emergency department (ED) visit rate for children ages 3-5 increased by 15%. There was also an increase of 62% for White children over the same time period.

In 2015, compared with White children (121.0), the rate of asthma ED visits was 4.6 times and 2.6 times higher for Black (558.8) and Latino (310.4) children, respectively.

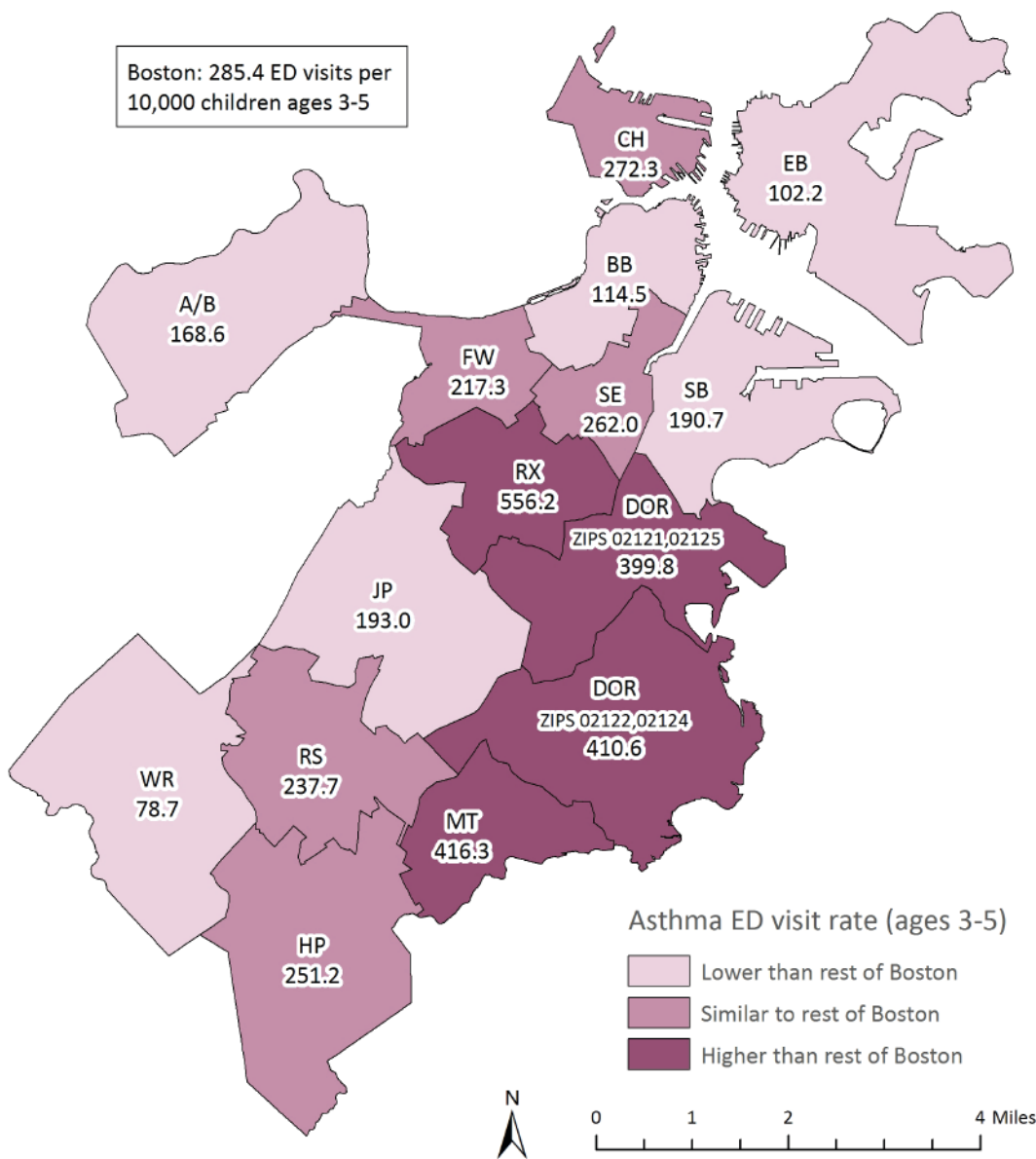
Figure 8.14 Asthma Emergency Department Visits Among 3- to 5-Year-Olds by Race/Ethnicity and Year



* Statistically significant change over time

NOTE: Hollowed-out symbols represent rates based on 20 or fewer cases and should be interpreted with caution.
 DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

Figure 8.15 Asthma Emergency Department (ED) Visits¹ Among 3- to 5-Year-Olds by Neighborhood, 2012-2015



¹ 4-year average annual rates per 10,000 children ages 3-5

NOTE: "BB" includes the Back Bay, Beacon Hill, Downtown, the North End, and the West End.
 "SE" includes the South End and Chinatown.

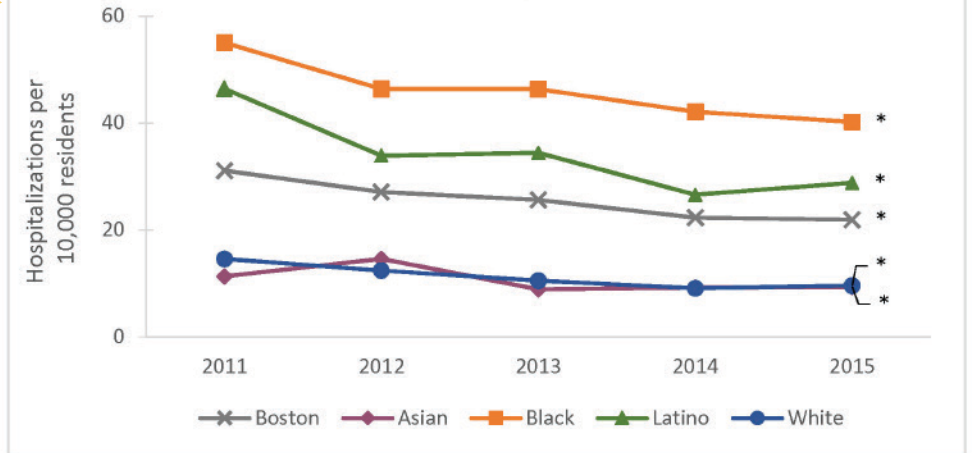
DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

For 2012-2015, the rate of asthma emergency department (ED) visits among children ages 3-5 was lower in Allston/Brighton, Back Bay, East Boston, Jamaica Plain, South Boston, and West Roxbury compared with the rest of Boston. The rate was higher in Dorchester (02121, 02125), Dorchester (02122, 02124), Mattapan, and Roxbury compared with the rest of Boston.

In 2015, the rate of asthma hospitalizations in Boston was 21.9 per 10,000 residents. From 2011-2015, the rate of asthma hospitalizations decreased by 31% for Boston overall. Over the same time period, the rate decreased by 29% for Asian residents, 26% for Black residents, 39% for Latino residents, and 38% for White residents.

Despite these decreases, the asthma hospitalization rates for Black (40.2) and Latino (28.8) residents in 2015 were approximately 4 times and 3 times the rate for White residents (9.6), respectively.

Figure 8.16 Asthma Hospitalizations† by Race/Ethnicity and Year



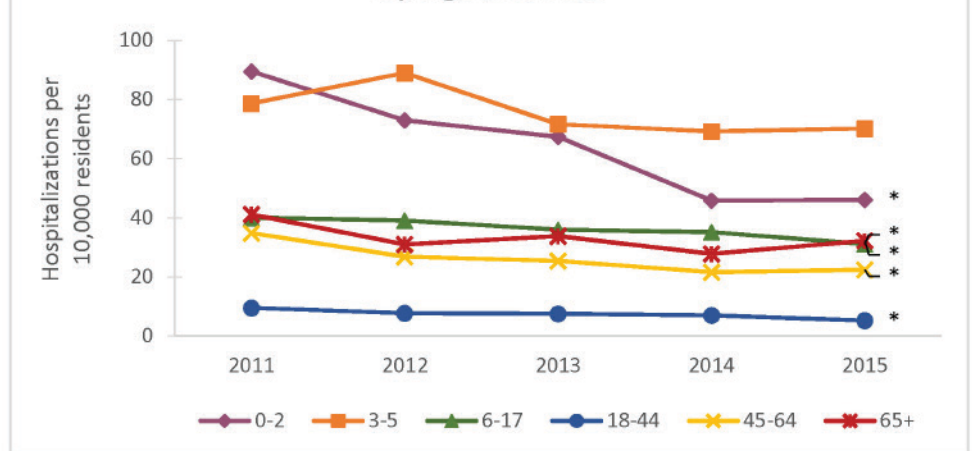
* Statistically significant change over time
 † Age-adjusted rates per 10,000 residents

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

From 2011-2015, the rate of asthma hospitalizations decreased for residents of all age groups except those ages 3-5. The rate decreased by 51% for those ages 0-2, by 21% for those ages 6-17, by 40% for those ages 18-44, by 37% for those ages 45-64, and by 22% for those ages 65 and older.

In 2015, the asthma hospitalization rate was higher for residents in all age groups compared with residents ages 18-44.

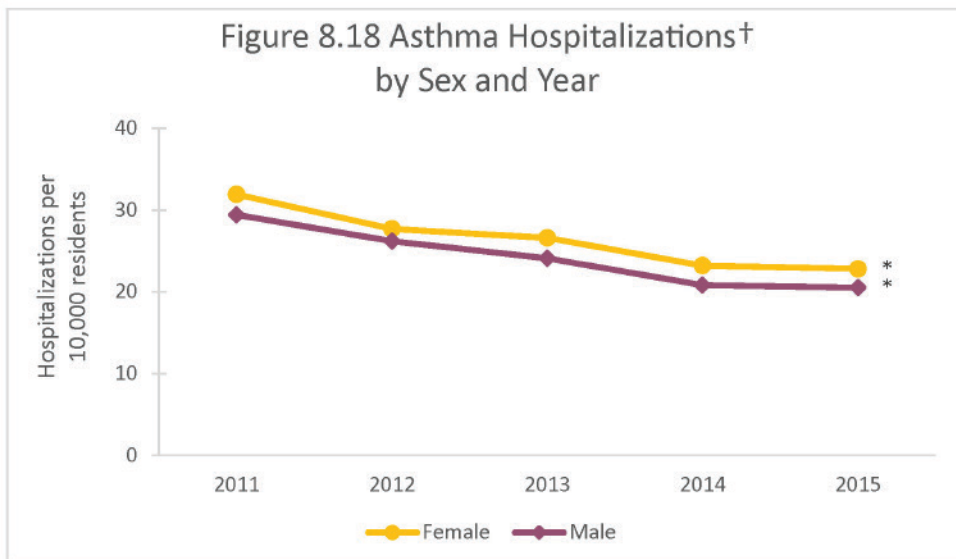
Figure 8.17 Asthma Hospitalizations by Age and Year



* Statistically significant change over time

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

Figure 8.18 Asthma Hospitalizations† by Sex and Year



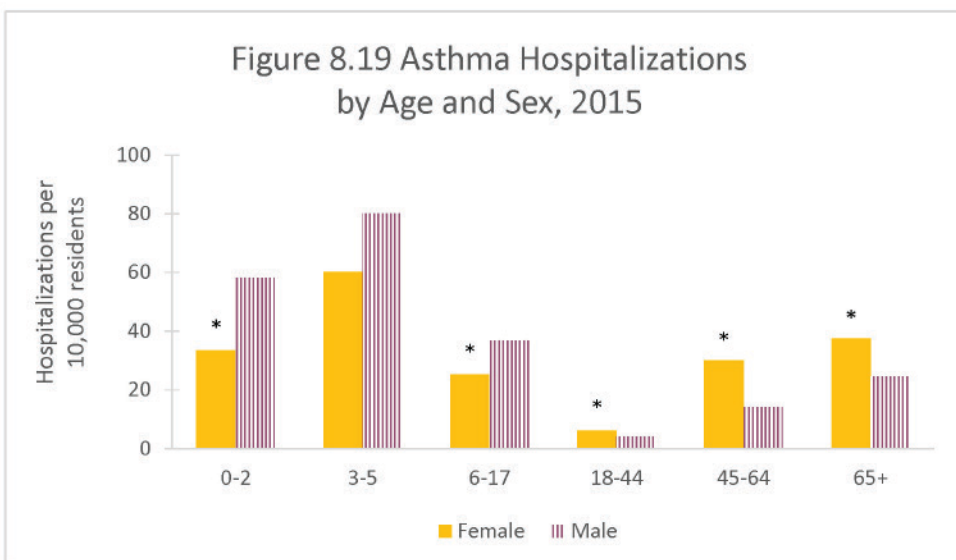
* Statistically significant change over time
 † Age-adjusted rates per 10,000 residents

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

From 2011-2015, the rate of asthma hospitalizations decreased by 29% for female residents and 32% for male residents.

In 2015, there was no significant difference in the rate of asthma hospitalizations between males and females.

Figure 8.19 Asthma Hospitalizations by Age and Sex, 2015



* Statistically significant difference when compared to reference group

NOTE: Bars with patterns indicate the reference group within each selected indicator.

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

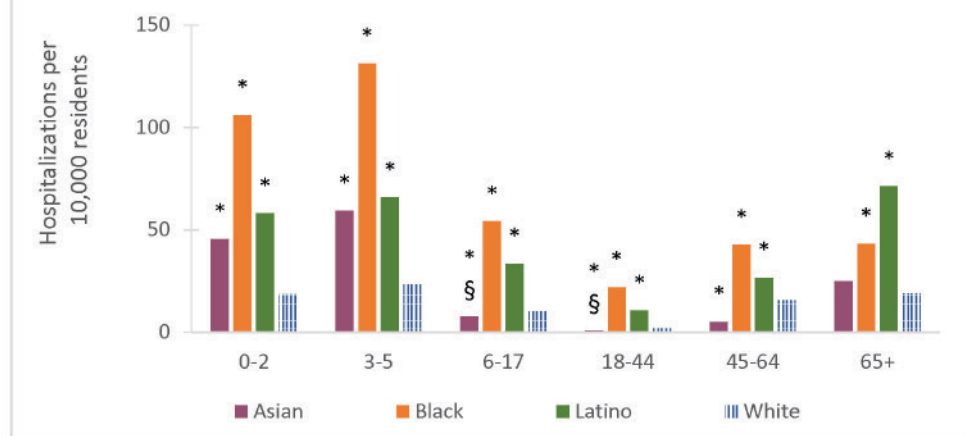
In 2015, the rate of asthma hospitalizations varied by sex across age groups. Compared with males of the same age, the rates for females ages 0-2 (33.5) and 6-17 (25.2) were 43% and 31% lower, respectively. The rates for females ages 18-44 (6.2) and 65 and older (37.6) were 51% and 53% higher, respectively, when compared with males of the same age. The asthma hospitalization rate for females ages 45-64 (30.1) was 2.1 times the rate for males of the same age (14.2).

For 2012-2015, Black residents ages 3-5 had the highest rate of asthma hospitalizations at 131.2 hospitalizations per 10,000 residents. Black and Latino residents in all age groups had higher asthma hospitalization rates compared with White residents.

The biggest difference when compared to White residents occurred among residents ages 18-44. The asthma hospitalization rates for Black (22.0) and Latino (10.6) residents were 10.3 and 5.0 times higher than the rate for White residents of the same age group (2.1), respectively.

The asthma hospitalization rates for Asian residents ages 0-2 (45.5) and 3-5 (59.4) were about 2.5 times the rates of White residents of the same age groups, 18.6 and 23.4, respectively. For Asian residents ages 6-17 (7.7), 18-44 (1.0), and 45-64 (5.1), the rates of asthma hospitalizations were lower compared with White residents, 10.2, 2.1 and 15.6, respectively.

Figure 8.20 Asthma Hospitalizations¹ by Age and Race/Ethnicity, 2012-2015

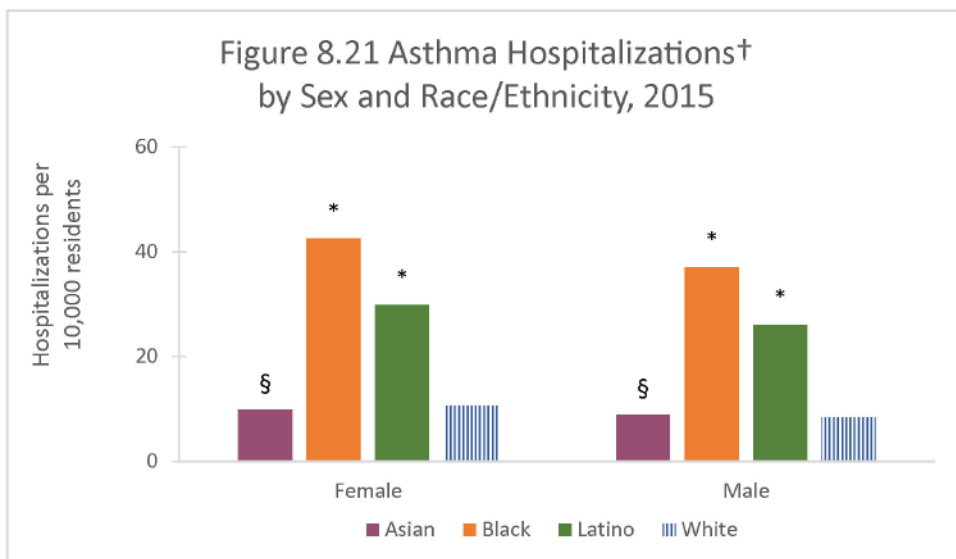


* Statistically significant difference when compared to reference group
 § Rates are based on 20 or fewer cases and should be interpreted with caution.
¹ 4-year average annual rates per 10,000 residents

NOTE: Bars with patterns indicate the reference group within each selected indicator.
 DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis



Figure 8.21 Asthma Hospitalizations† by Sex and Race/Ethnicity, 2015



* Statistically significant difference when compared to reference group
 † Age-adjusted rates per 10,000 residents
 § Rates are based on 20 or fewer cases and should be interpreted with caution.

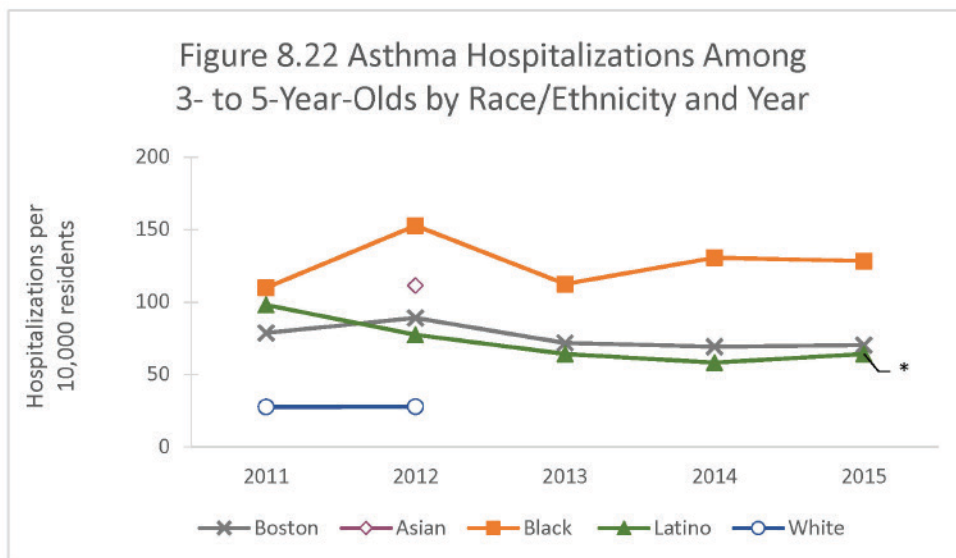
NOTE: Bars with patterns indicate the reference group within each selected indicator.
 DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

In 2015, the asthma hospitalization rate was higher for Black and Latino female residents compared with White female residents. The same was true for male residents.

The rate was 4 times higher for Black females (42.5) and 2.8 times higher for Latino females (29.8) compared with White females (10.6 hospitalizations per 10,000 residents).

The asthma hospitalization rate was 4.4 times higher for Black males (37.0) and 3.1 times higher for Latino males (26.1) compared with White males (8.4).

Figure 8.22 Asthma Hospitalizations Among 3- to 5-Year-Olds by Race/Ethnicity and Year



* Statistically significant change over time

NOTE: HOLLOWED-OUT symbols represent rates based on 20 or fewer cases and should be interpreted with caution. Rates are not presented due to a small number of cases for Asian residents for 2011 and 2013-2015 and for White residents for 2013-2015.

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

From 2011-2015, the age-specific asthma hospitalization rate decreased by 38% for Latino children ages 3-5. There was no change over this same time period for Boston overall or for Black children ages 3-5.

Diabetes

What is Diabetes?

Diabetes is a disease in which the body cannot effectively regulate its blood glucose (sugar) levels because it is unable to produce or use a hormone called insulin. Normally, insulin moves glucose from blood into cells where it is used as energy. In people with diabetes, there is excess glucose in the bloodstream which affects multiple organs, including the heart, kidneys, eyes, skin, and peripheral nerves. Symptoms of diabetes include frequent urination, excessive thirst, weight loss, fatigue, and increased susceptibility to infection. Poorly controlled diabetes may lead to debilitating complications including blindness, kidney damage, stroke, peripheral vascular disease, and heart disease including heart attack (13). Approximately 10% of U.S. adults reported ever having diabetes in 2015, and the rate of new diabetes cases among U.S. adults 20 years and older was 7.8 per 10,000 in 2012 (6, 14). There are three main categories of diabetes: type 1, type 2, and gestational diabetes. Type 2 diabetes accounts for 90-95% of most cases and occurs when the body becomes less sensitive to the insulin the pancreas produces, usually because of obesity. Type 1 diabetes occurs when the pancreas itself stops making enough insulin to regulate blood glucose levels (13). Gestational diabetes occurs later in pregnancy and increases the risk of complications for both the mother and the developing fetus if not controlled properly.

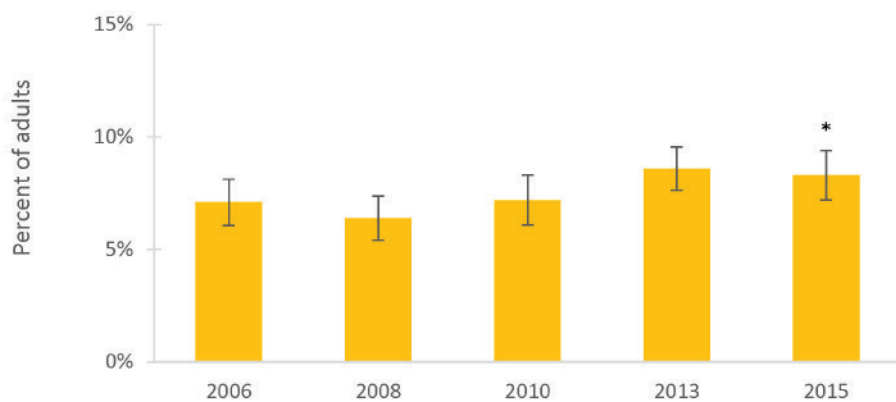
Populations at Risk

People who are overweight or obese are at highest risk of developing type 2 diabetes. Among U.S. adults, people of color are more likely to be diagnosed with type 2 diabetes compared with White adults. Having a close family member with diabetes is also a risk factor for developing type 2 diabetes (15). Socioeconomic disadvantage at the individual and neighborhood level is also associated with higher risk of developing type 2 diabetes (16, 17).

Prevention

Lifestyle changes can prevent or delay the onset of diabetes and help control diabetes once diagnosed. Eating a healthy diet, maintaining a healthy weight, exercising regularly, and avoiding smoking can help prevent diabetes (15, 18).

Figure 8.23 Diabetes Among Adults by Year



* Statistically significant change over time

DATA SOURCE: Boston Behavioral Risk Factor Survey (2006, 2008, 2010, 2013, 2015), Boston Public Health Commission

In 2015, 8% of Boston adult residents reported having diabetes. There was a significant increase in the percentage of adults with diabetes between 2006 and 2015.



During 2013 and 2015 combined, 9% of Boston adult residents reported having diabetes.

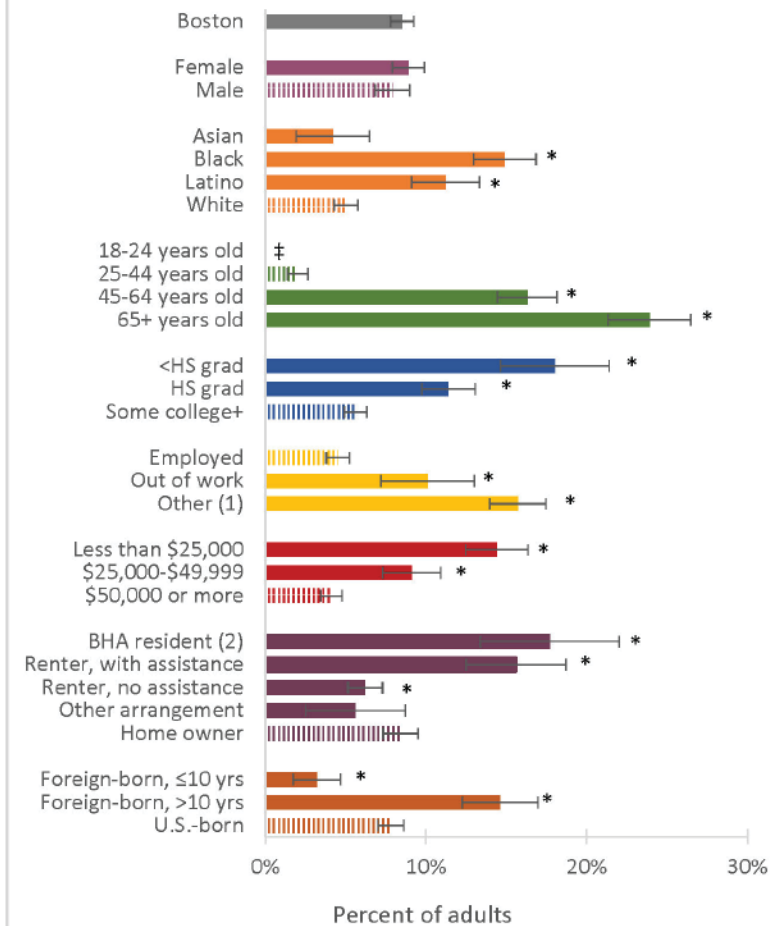
The percentage of adults with diabetes was higher for the following groups:

- Black (15%) and Latino (11%) adults compared with White adults (5%)
- Adults ages 45-64 (16%) or 65 and older (24%) compared with adults ages 25-44 (2%)
- Adults with less than a high school diploma (18%) and adults with a high school diploma (11%) compared with adults with at least some college education (6%)
- Adults who were out of work (10%) or whose employment status was "other" (16%) compared with adults who were employed (5%)
- Adults living in households with an annual income of less than \$25,000 (14%) or \$25,000-\$49,999 (9%) compared with adults living in households with an annual income of \$50,000 or more (4%)
- Adults who were Boston Housing Authority residents (18%) and renters who received rental assistance (16%) compared with adults who owned a home (8%)
- Foreign-born adults who lived in the United States for over 10 years (15%) compared with those who were born in the United States (8%)

The percentage of adults with diabetes was lower for the following groups:

- Adults who rented but did not receive rental assistance (6%) compared with adults who owned a home (8%)
- Foreign-born adults who lived in the United States for 10 years or less (3%) compared with those who were born in the United States (8%)

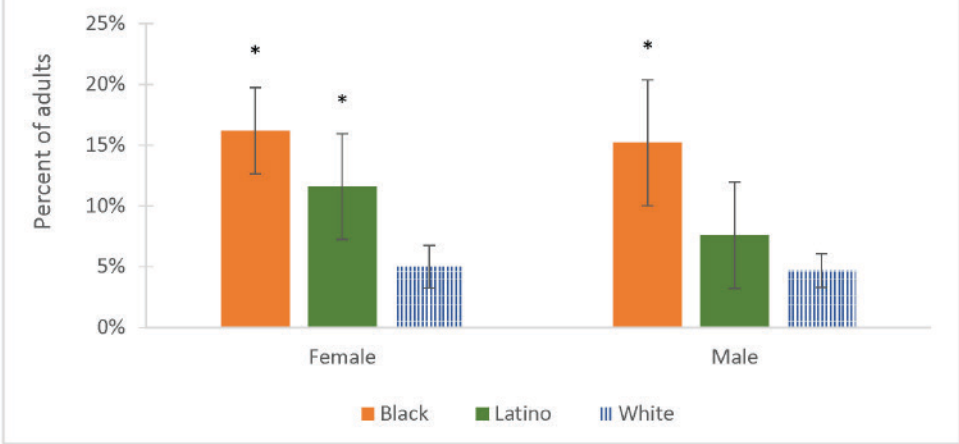
Figure 8.24 Diabetes Among Adults by Selected Indicators, 2013 and 2015 Combined



* Statistically significant difference when compared to reference group
 ‡ Data not presented due to insufficient sample size
 (1) Includes homemakers, students, retirees, and those unable to work
 (2) Boston Housing Authority resident

NOTE: Bars with patterns indicate the reference group within each selected indicator.
 DATA SOURCE: Boston Behavioral Risk Factor Survey (2013, 2015), Boston Public Health Commission

Figure 8.25 Diabetes Among Adults by Sex and Race/Ethnicity, 2015



In 2015, a higher percentage of Black (16%) and Latino (12%) female adults had diabetes compared with White females (5%). Similarly, a higher percentage of Black male adults (15%) had diabetes compared with White male adults (5%).

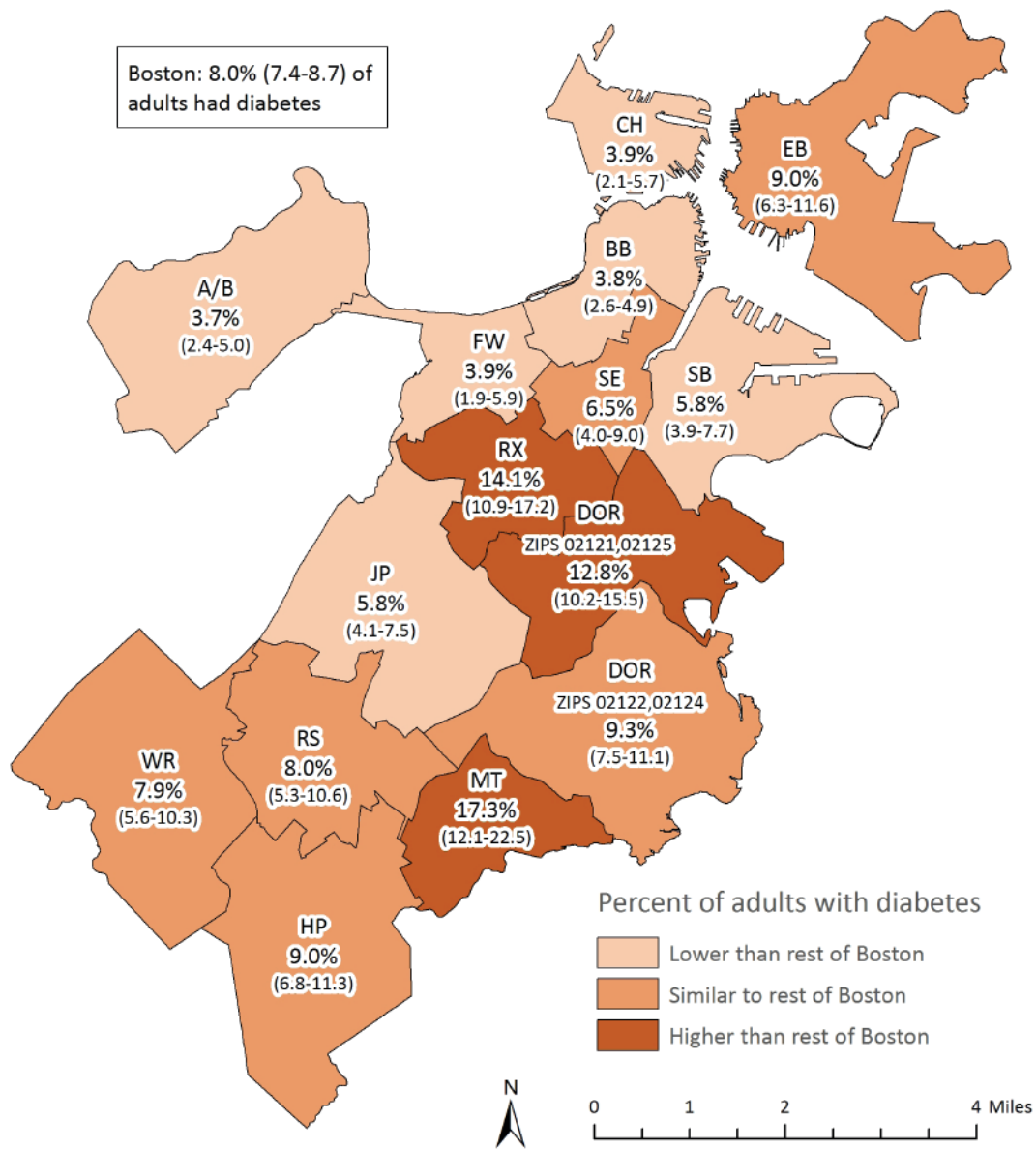
* Statistically significant difference when compared to reference group

NOTE: Bars with patterns indicate the reference group within each selected indicator. Data not presented due to insufficient sample size for Asian female and male residents.

DATA SOURCE: Boston Behavioral Risk Factor Survey (2015), Boston Public Health Commission



Figure 8.26 Diabetes Among Adults by Neighborhood, 2010, 2013, and 2015 Combined

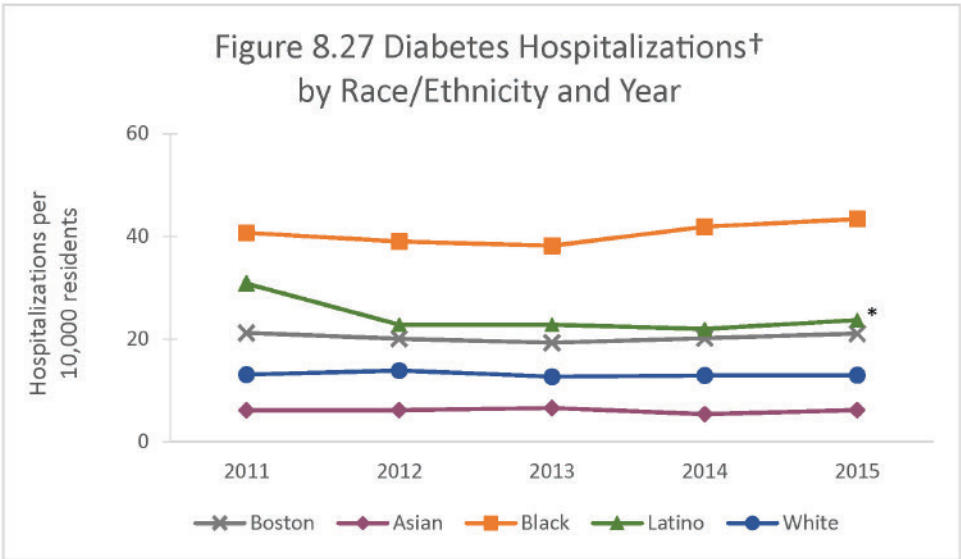


NOTE: "BB" includes the Back Bay, Beacon Hill, Downtown, the North End, and the West End.
 "SE" includes the South End and Chinatown.

DATA SOURCE: Boston Behavioral Risk Factor Survey (2010, 2013, 2015), Boston Public Health Commission

During 2010, 2013, and 2015 combined, the percentage of adult residents with diabetes was lower in Allston/Brighton, Back Bay, Charlestown, Fenway, Jamaica Plain, and South Boston compared with the rest of Boston. The percentage of adults with diabetes was higher in Dorchester (02121, 02125), Mattapan, and Roxbury compared with the rest of Boston.

Figure 8.27 Diabetes Hospitalizations† by Race/Ethnicity and Year

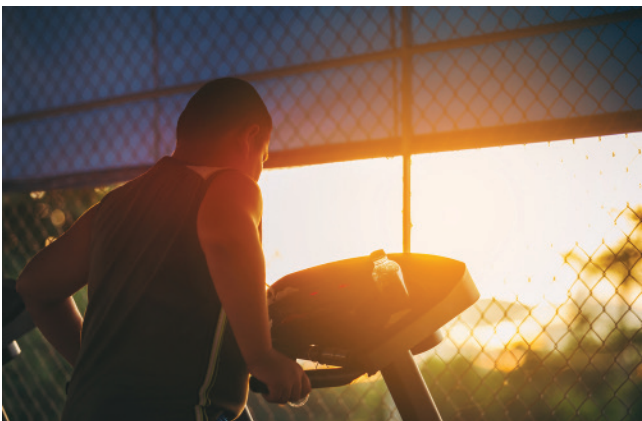


* Statistically significant change over time
 † Age-adjusted rates per 10,000 residents

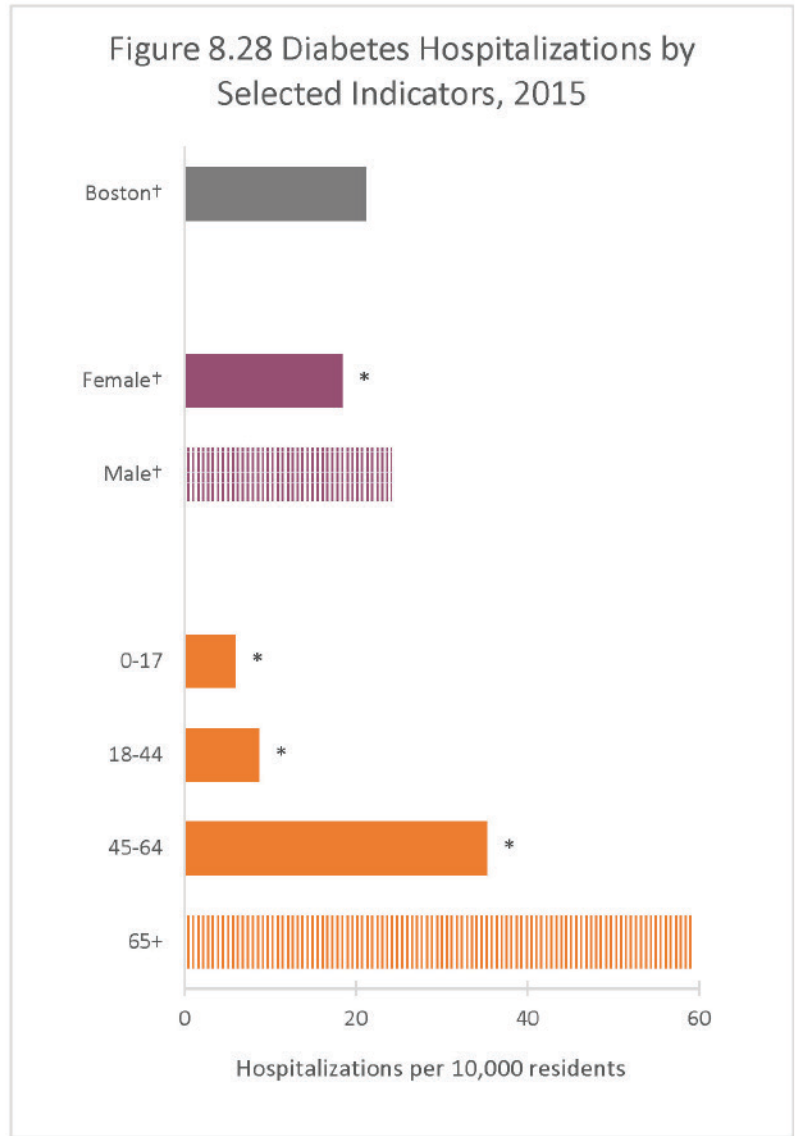
DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

In 2015, the rate of diabetes hospitalizations in Boston was 21.1 per 10,000 residents. From 2011-2015, the rate decreased by 21% for Latino residents.

In 2015, the rate of diabetes hospitalizations for Asian residents (6.2) was 52% lower than the rate for White residents (13.0) while the rate for Black residents (43.4) was more than 3 times higher than White residents. The rate for Latino residents (23.7) was 82% higher than the rate for White residents.



In 2015, the rate of diabetes hospitalizations for Boston was 21.1 hospitalizations per 10,000 residents. The rate was 24% lower for females (18.4) compared with males (24.1). The rate was lower for all age groups compared with those ages 65 and older (59.3).



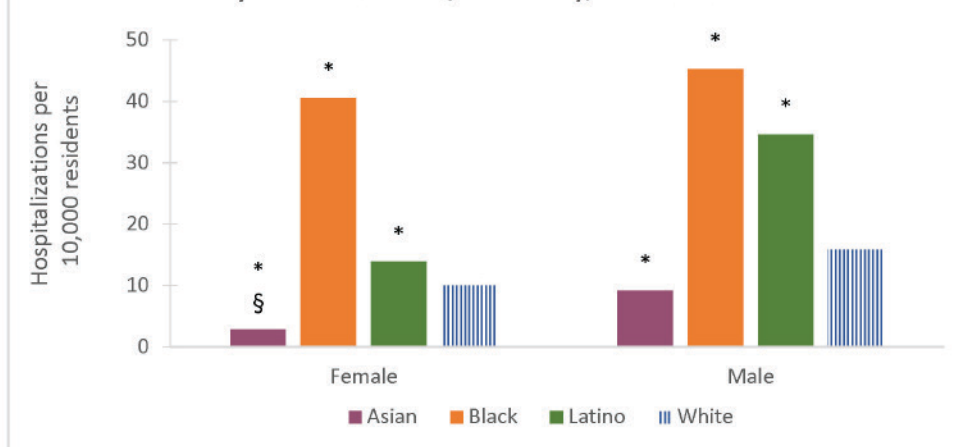
* Statistically significant difference when compared to reference group

† Age-adjusted rates per 10,000 residents

NOTE: Bars with patterns indicate the reference group within each selected indicator.

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

Figure 8.29 Diabetes Hospitalizations† by Sex and Race/Ethnicity, 2014-2015



* Statistically significant difference when compared to reference group

† 2-year average annual age-adjusted rates per 10,000 residents

§ Rates are based on 20 or fewer cases and should be interpreted with caution.

NOTE: Bars with patterns indicate the reference group within each selected indicator.

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

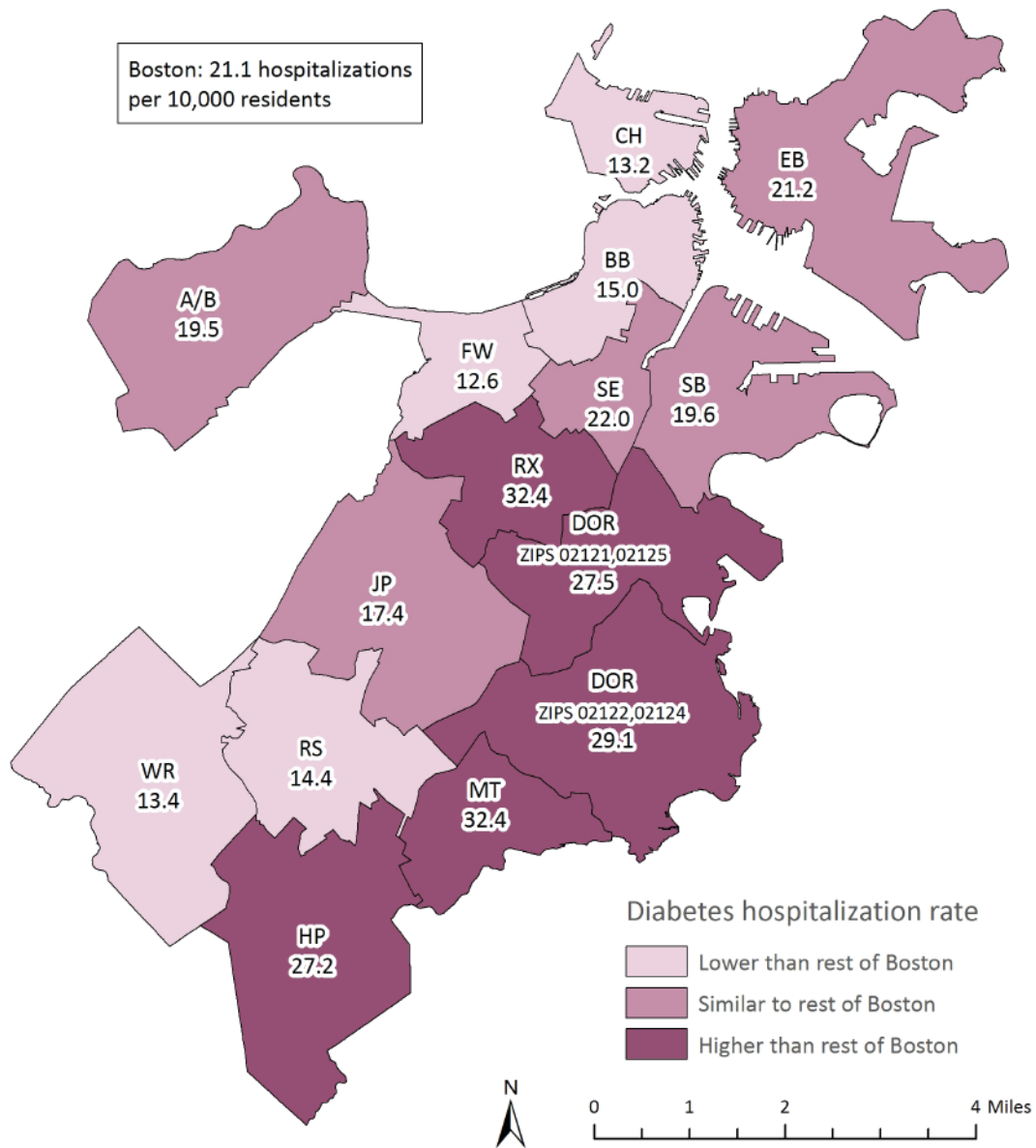
During 2014-2015, the diabetes hospitalization rate was higher for both Black and Latino female and male residents, and lower for Asian female and male residents compared with White female and male residents.

The diabetes hospitalization rate was 4.0 times higher for Black females (40.6), 39% higher for Latino females (13.9), and 72% lower for Asian females (2.9) compared with White females (10.0 hospitalizations per 10,000 residents).

The diabetes hospitalization rate was 2.9 times higher for Black males (45.3), 2.2 times higher for Latino males (34.6), and 42% lower for Asian males (9.2) compared with White males (15.9).



Figure 8.30 Diabetes Hospitalizations[†] by Neighborhood, 2015

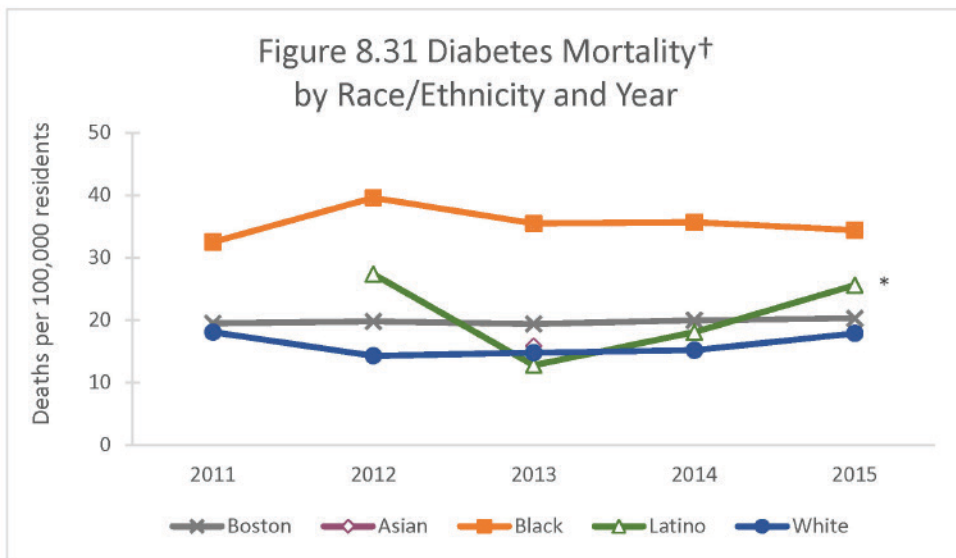


[†] Age-adjusted rates per 10,000 residents

NOTE: "BB" includes the Back Bay, Beacon Hill, Downtown, the North End, and the West End.
"SE" includes the South End and Chinatown.

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

In 2015, the rate of diabetes hospitalizations was lower in Back Bay, Charlestown, Fenway, Roslindale, and West Roxbury compared with the rest of Boston. The rate was higher in Dorchester (02121, 02125), Dorchester (02122, 02124), Hyde Park, Mattapan, and Roxbury compared with the rest of Boston.



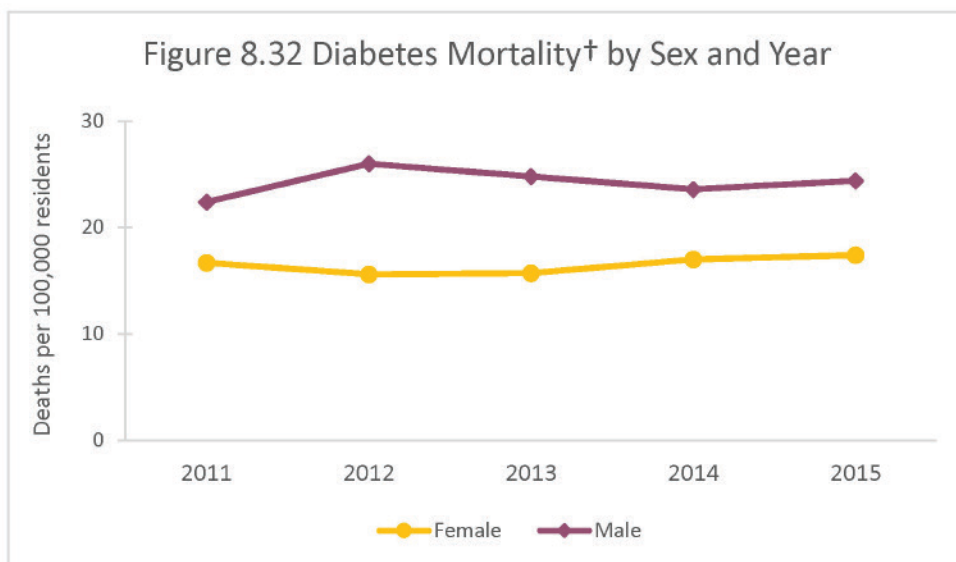
* Statistically significant change over time
 † Age-adjusted rates per 100,000 residents

NOTE: Hollowed-out symbols represent rates based on 20 or fewer cases and should be interpreted with caution. Rates are not presented due to a small number of cases for Asian residents for 2011-2012 and 2014-2015 and for Latino residents in 2011. Beginning in October 2014, the method for collecting race/ethnicity for mortality data changed. Interpret trends with caution.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health (data as of December 2016). Data may be updated as more information becomes available.

In 2015, there were 20.3 deaths per 100,000 Boston residents due to diabetes. Between 2011 and 2015, the diabetes mortality rate increased by 90% for Latino residents.

In 2015, compared with White residents (17.9), the diabetes mortality rate was 92% higher for Black residents (34.4).

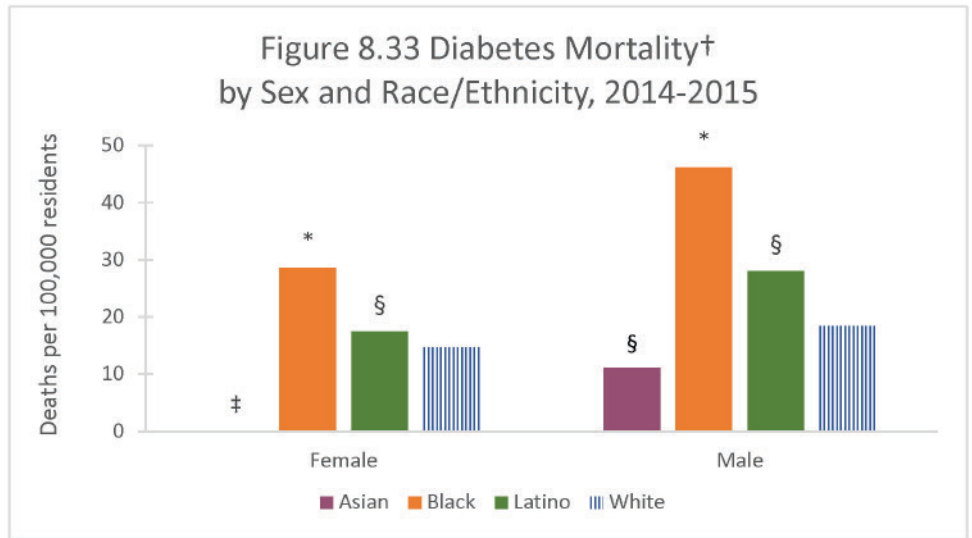


† Age-adjusted rates per 100,000 residents

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health (data as of December 2016). Data may be updated as more information becomes available.

Between 2011 and 2015, there were no significant changes in the diabetes mortality rates for either males or females. In 2015, there was no difference in the diabetes mortality rate by sex.

For 2014-2015, the mortality rate for diabetes was 94% higher for Black female residents (28.6 deaths per 100,000 residents) compared with White females (14.7). The rate for Black males (46.2) was 2.5 times that of White males (18.4).



* Statistically significant difference when compared to reference group

† 2-year average annual age-adjusted rates per 100,000 residents

‡ Rates not presented due to a small number of cases

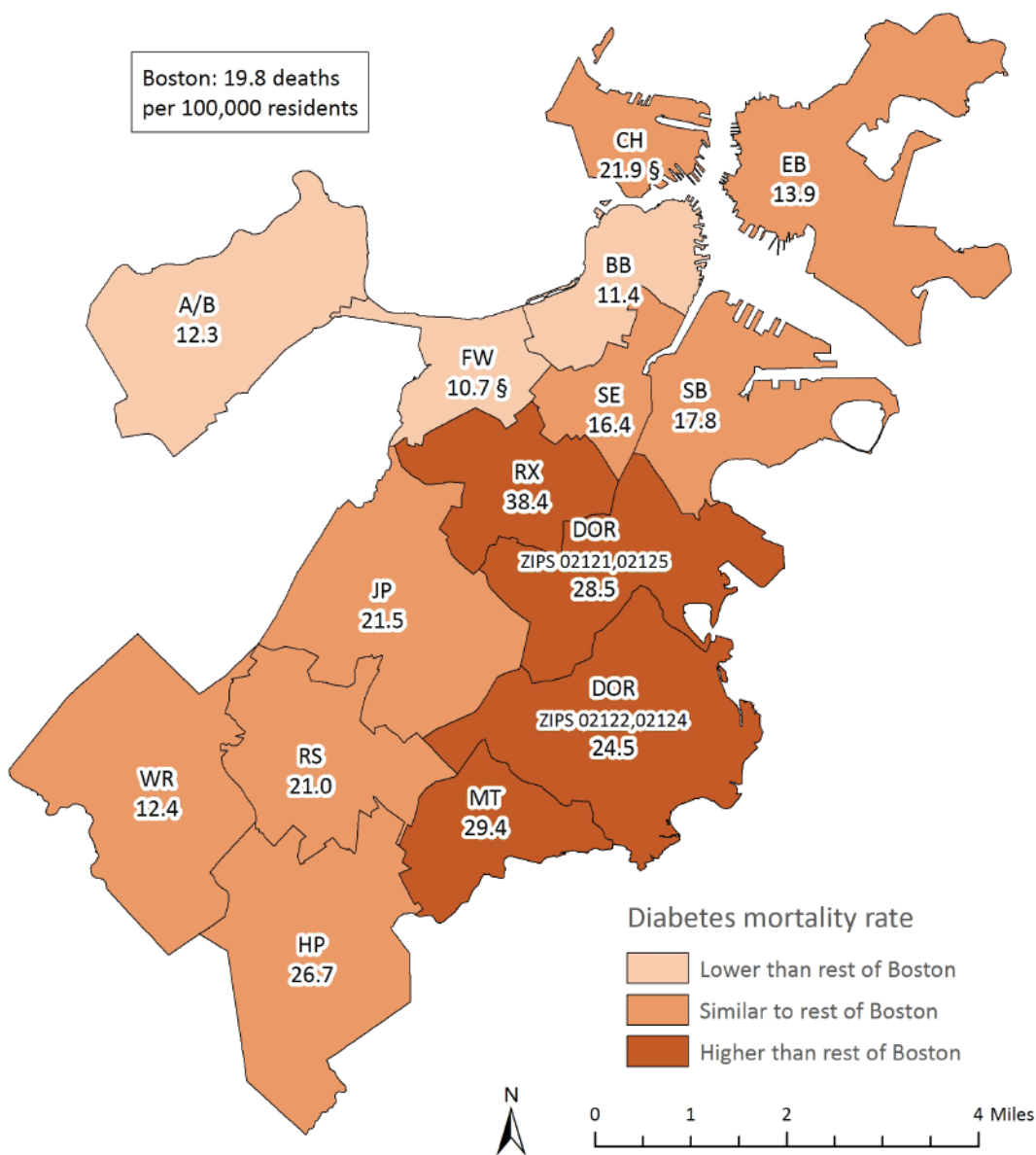
§ Rates are based on 20 or fewer cases and should be interpreted with caution.

NOTE: Bars with patterns indicate the reference group within each selected indicator.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health (data as of December 2016). Data may be updated as more information becomes available.



Figure 8.34 Diabetes Mortality[†]
by Neighborhood, 2011-2015



[†] 5-year average annual age-adjusted rates per 100,000 residents

[§] Rates are based on 20 or fewer cases and should be interpreted with caution.

NOTE: "BB" includes the Back Bay, Beacon Hill, Downtown, the North End, and the West End.
"SE" includes the South End and Chinatown.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health (data as of December 2016). Data may be updated as more information becomes available.

For 2011-2015, the mortality rate for diabetes was lower for Allston/Brighton, Back Bay, and Fenway compared with the rest of Boston. The rates for Dorchester (02121, 02125), Dorchester (02122, 02124), Mattapan, and Roxbury were higher compared with the rest of Boston.



Heart Disease

What is Heart Disease?

Heart disease is an umbrella term that covers several conditions related to the heart, including coronary artery disease, arrhythmias, and heart failure. The most common type of heart disease in the U.S. is coronary artery disease (CAD) (19). CAD is caused by cholesterol deposits that build up in the blood vessels that supply the heart with blood. As these deposits accumulate over time, the blood vessels narrow and blood flow is reduced. Symptoms of heart disease depend on the specific condition, but worrisome symptoms include heaviness or pressure in the chest, shortness of breath, and feeling weak or lightheaded (19). According to findings from the 2013-2014 National Health Interview Survey, 11.5% of U.S. adults reported ever having heart disease (20). The age-adjusted mortality rate for CAD was estimated at 102.6 per 100,000 in 2013 (21).

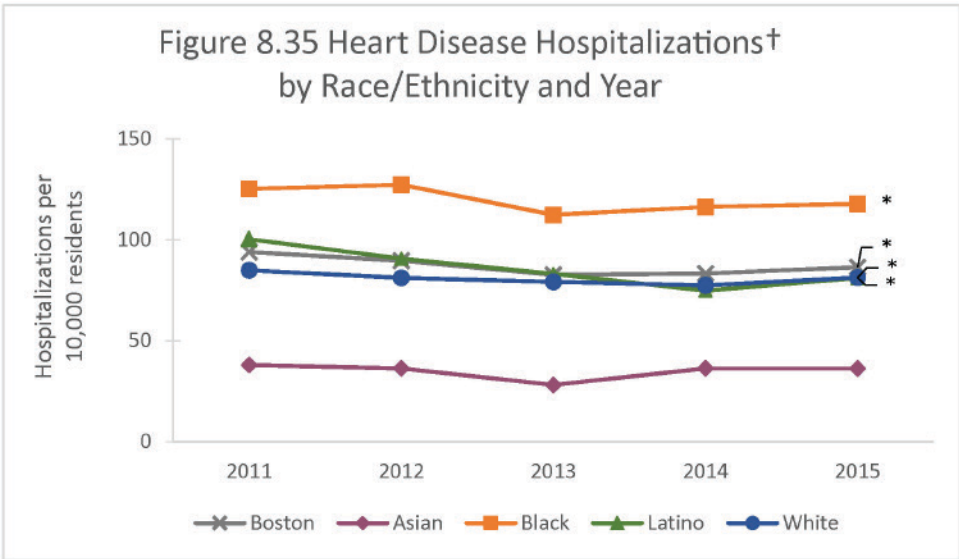
Populations at Risk

Heart disease is the leading cause of death for Black, Latino, and White individuals in the U.S., and it is the second leading cause of death for Asian individuals. In Boston, it is the second leading cause of death for these groups; for more information see Chapter 15: Death. Nearly half of Americans have at least one of the three key risk factors for developing CAD: high blood pressure, high LDL cholesterol, or cigarette smoking (19). Other risk factors include diabetes, overweight/obesity, diet with few fruits and vegetables, physical inactivity, and excessive alcohol use (19). Educational attainment and household income are inversely related with CAD (22).

Prevention

Lowering blood pressure, quitting smoking, exercising regularly, and maintaining a healthy diet can help reduce the risk of developing heart disease (19).

Figure 8.35 Heart Disease Hospitalizations† by Race/Ethnicity and Year



* Statistically significant change over time
 † Age-adjusted rates per 10,000 residents

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

In 2015, the rate of heart disease hospitalizations in Boston was 86.5 per 10,000 residents. From 2011-2015, the rate decreased by 9%. The rate also decreased by 8% for Black residents, 22% for Latino residents, and 5% for White residents over the same time period.

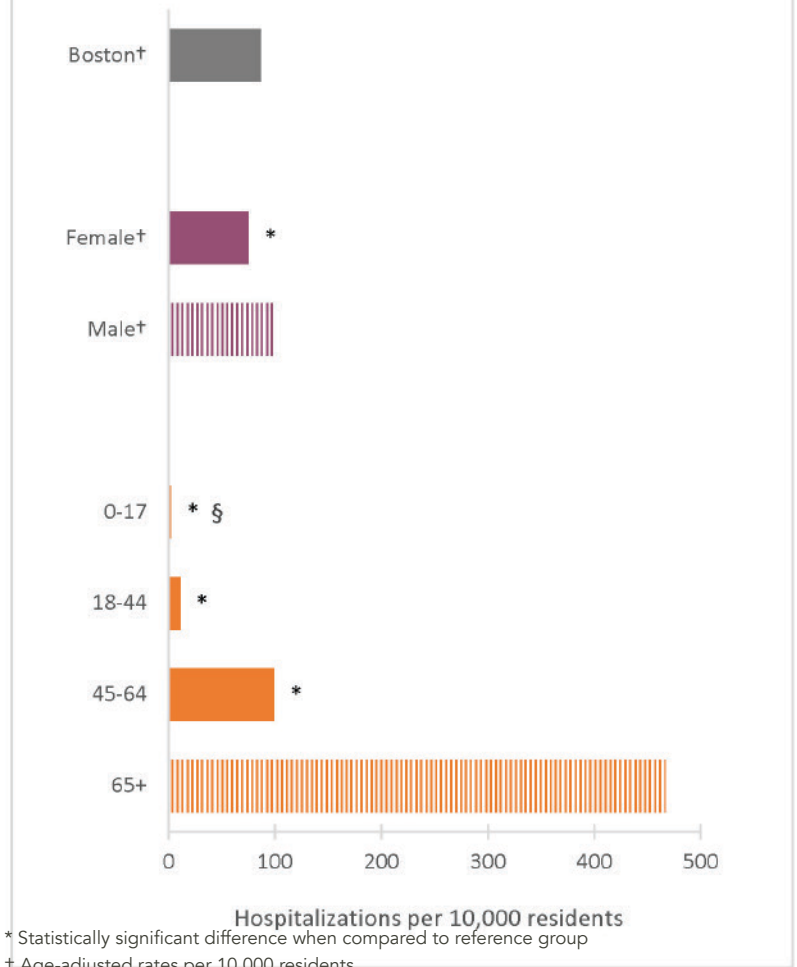
In 2015, the heart disease hospitalization rate for Asian residents (36.3) was 55% lower than the rate for White residents (81.3) while the rate for Black residents (117.8) was 45% higher than the rate for White residents.



In 2015, the rate of heart disease hospitalizations for Boston was 86.5 hospitalizations per 10,000 residents.

The rate was 26% lower for females (74.8) compared with males (100.9). The rate was lower for all age groups compared with those ages 65 and older (467.2).

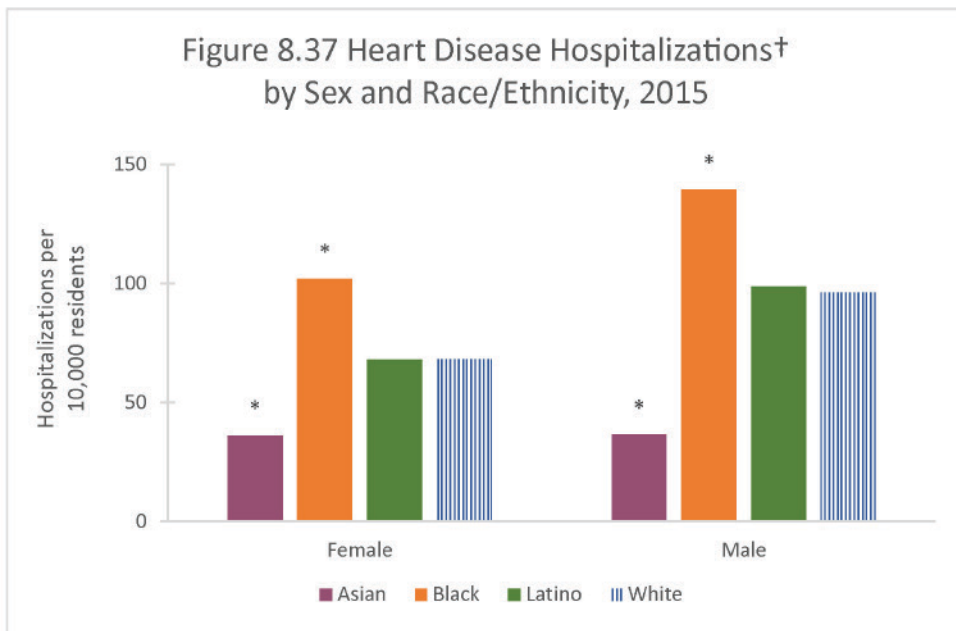
Figure 8.36 Heart Disease Hospitalizations by Selected Indicators, 2015



* Statistically significant difference when compared to reference group
 † Age-adjusted rates per 10,000 residents
 § Rates are based on 20 or fewer cases and should be interpreted with caution.

NOTE: Bars with patterns indicate the reference group within each selected indicator.
 DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

Figure 8.37 Heart Disease Hospitalizations† by Sex and Race/Ethnicity, 2015



* Statistically significant difference when compared to reference group
 † Age-adjusted rates per 10,000 residents

NOTE: Bars with patterns indicate the reference group within each selected indicator.

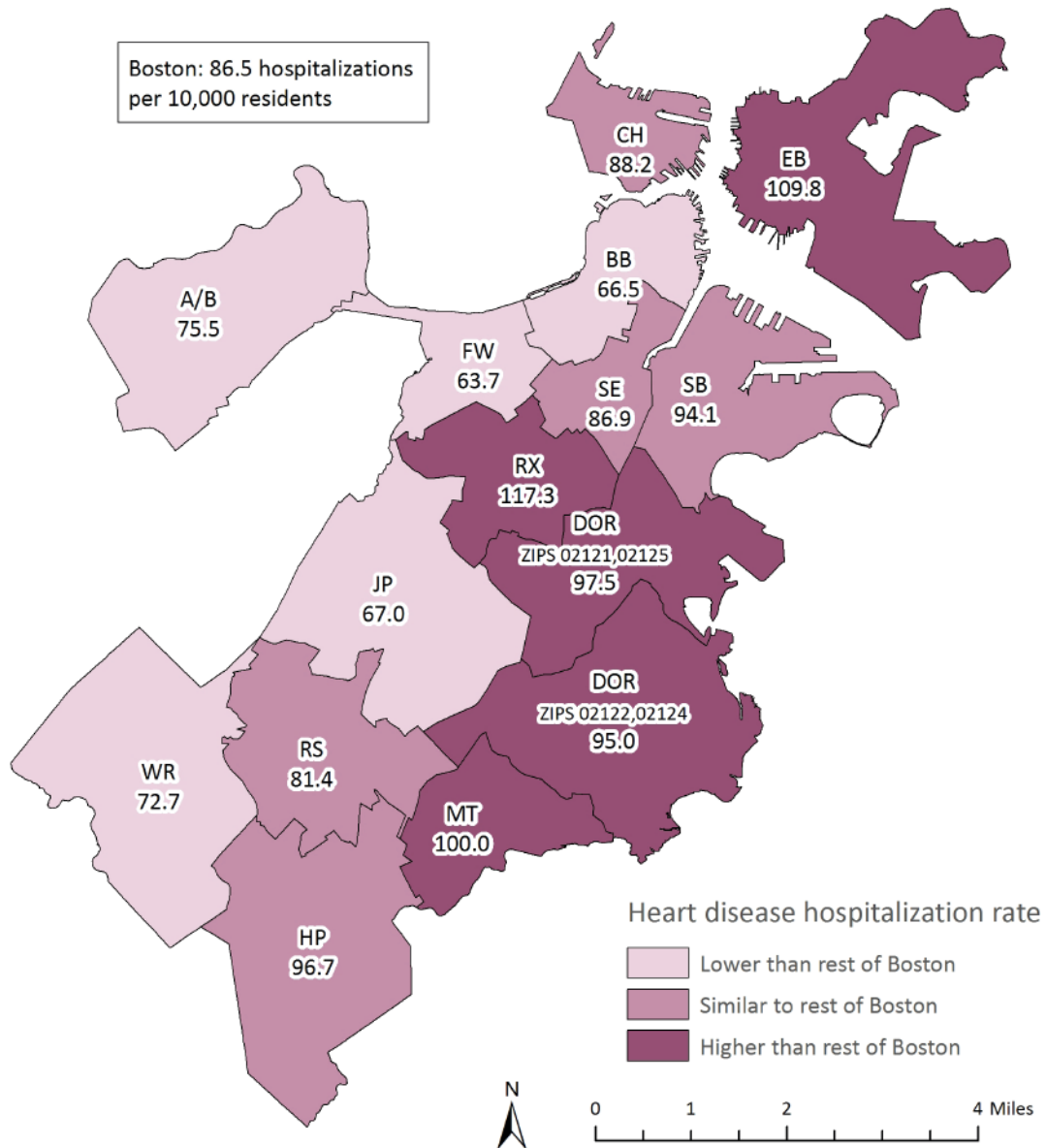
DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

In 2015, the heart disease hospitalization rate was higher for both Black females and males, and lower for Asian females and males compared with White females and males.

The heart disease hospitalization rate was 49% higher for Black females (102.0) and 47% lower for Asian females (36.2) compared with White females (68.3 hospitalizations per 10,000 residents). The rate was 45% higher for Black males (139.5) and 62% lower for Asian males (36.5) compared with White males (96.2).



Figure 8.38 Heart Disease Hospitalizations[†]
by Neighborhood, 2015



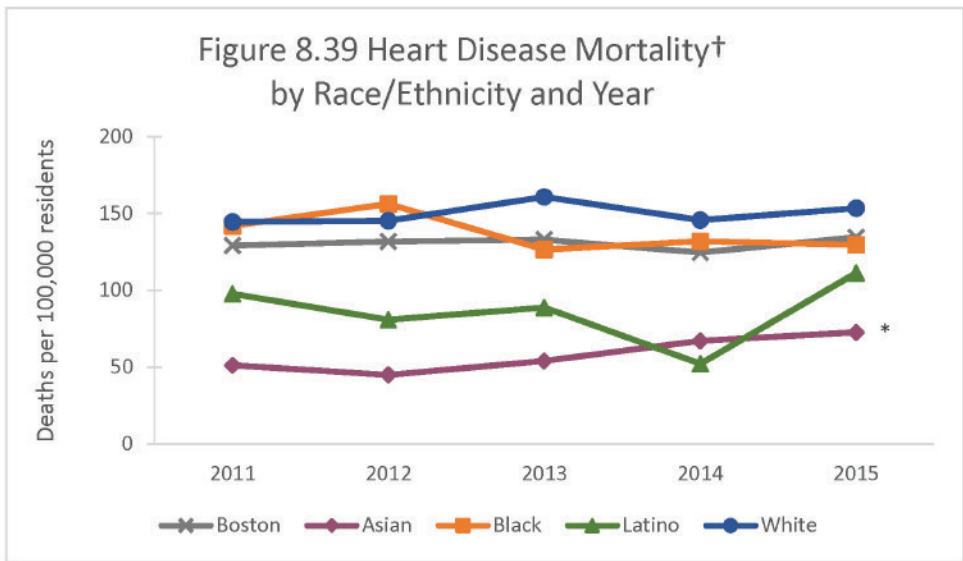
[†] Age-adjusted rates per 10,000 residents

NOTE: "BB" includes the Back Bay, Beacon Hill, Downtown, the North End, and the West End.
"SE" includes the South End and Chinatown.

DATA SOURCE: Acute hospital case-mix databases, Massachusetts Center for Health Information and Analysis

In 2015, the rate of heart disease hospitalizations was lower in Allston/Brighton, Back Bay, Fenway, Jamaica Plain, and West Roxbury compared with the rest of Boston. The rate was higher in Dorchester (02121, 02125), Dorchester (02122, 02124), East Boston, Mattapan, and Roxbury compared with the rest of Boston.

Figure 8.39 Heart Disease Mortality† by Race/Ethnicity and Year



* Statistically significant change over time
 † Age-adjusted rates per 100,000 residents

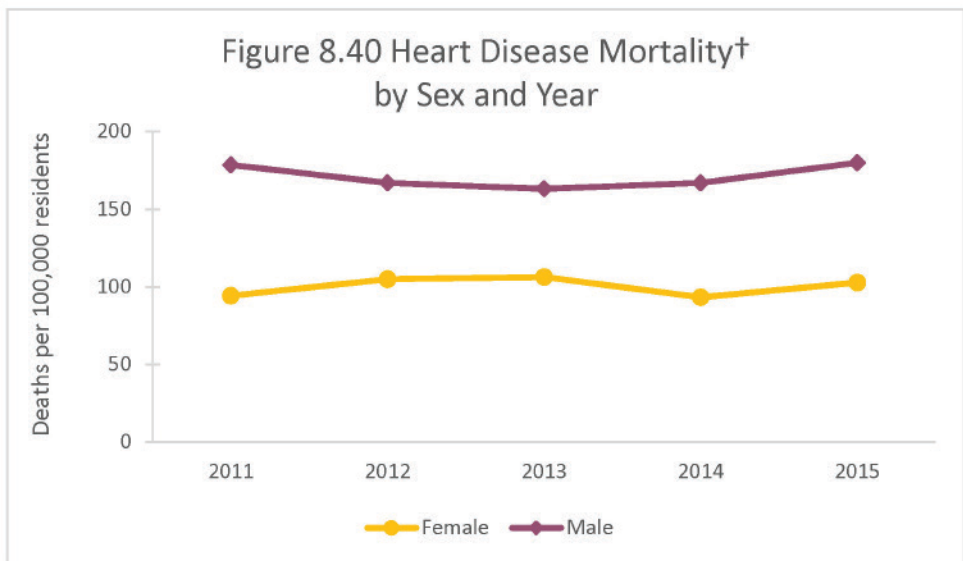
NOTE: Beginning in October 2014, the method for collecting race/ethnicity for mortality data changed. Interpret trends with caution.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health (data as of December 2016). Data may be updated as more information becomes available.

In 2015, there were 134.5 deaths per 100,000 Boston residents due to heart disease. Between 2011 and 2015, the heart disease mortality rate increased by 57% among Asian residents.

Compared with White residents (153.5), the heart disease mortality rate was 53% lower for Asian residents (72.7) and 28% lower for Latino residents (111.3).

Figure 8.40 Heart Disease Mortality† by Sex and Year



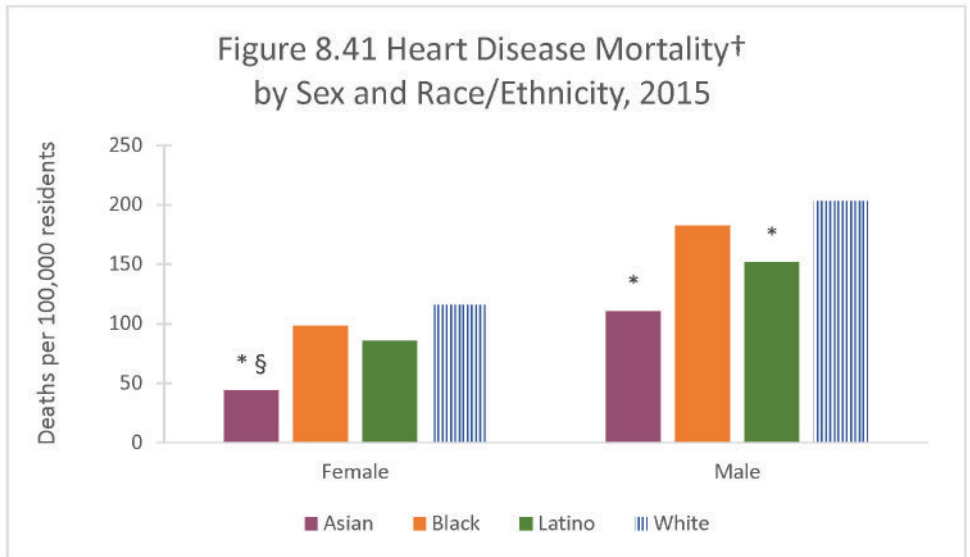
† Age-adjusted rates per 100,000 residents

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health (data as of December 2016). Data may be updated as more information becomes available.

Between 2011 and 2015, there were no significant changes in the heart disease mortality rates for either male or female residents.

In 2015, the heart disease mortality rate was 43% lower for females (102.6 deaths per 100,000 residents) compared with males (179.9).

In 2015, the heart disease mortality rate was 62% lower for Asian female residents (44.0 deaths per 100,000 residents) compared with White females (115.7). The rate was 45% lower for Asian male residents (110.7) and 25% lower for Latino males (151.7) compared with White males (202.9).



* Statistically significant difference when compared to reference group

† Age-adjusted rates per 100,000 residents

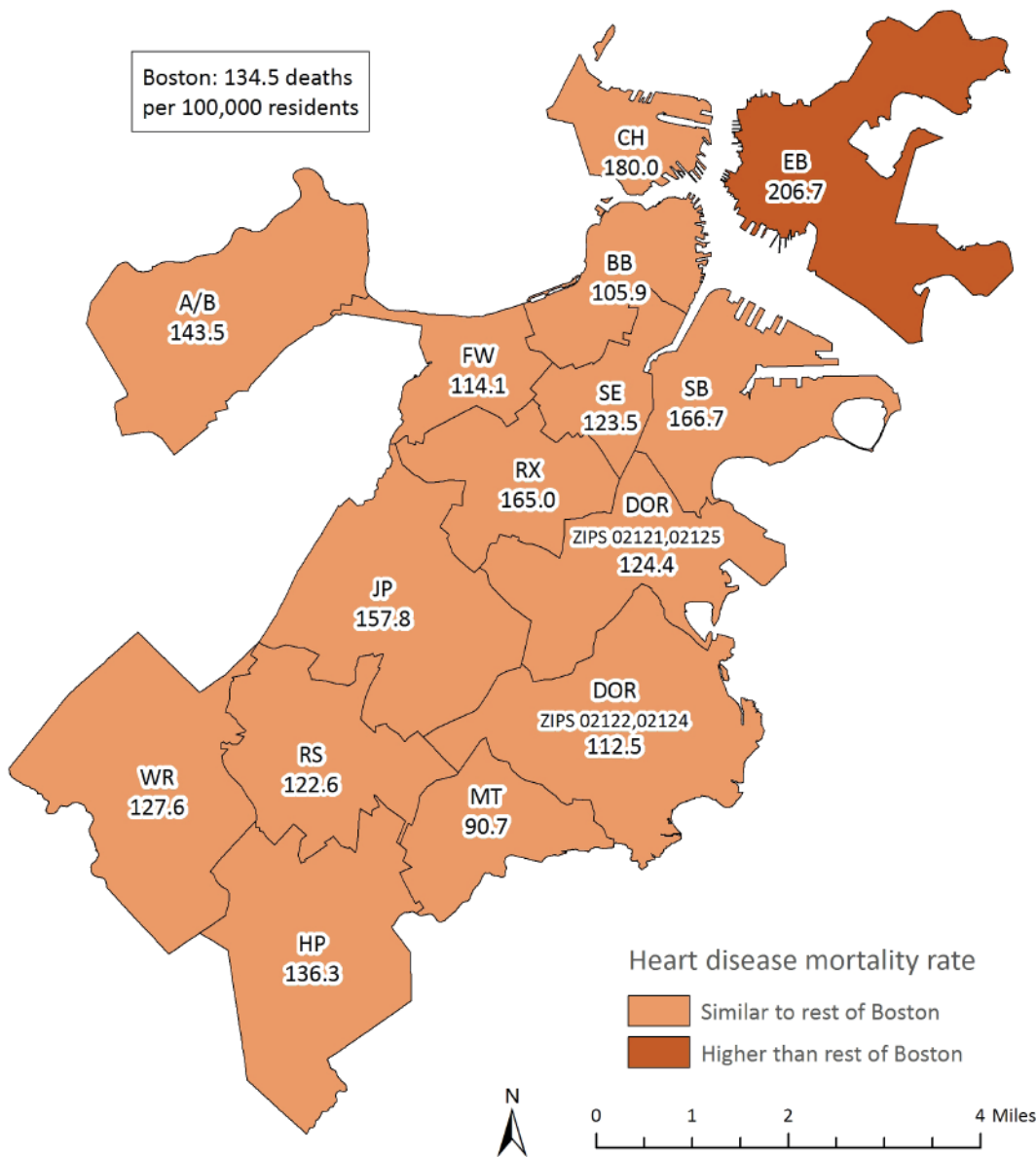
§ Rates are based on 20 or fewer cases and should be interpreted with caution.

NOTE: Bars with patterns indicate the reference group within each selected indicator.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health (data as of December 2016). Data may be updated as more information becomes available.



Figure 8.42 Heart Disease Mortality[†] by Neighborhood, 2015



[†] Age-adjusted rates per 100,000 residents

NOTE: "BB" includes the Back Bay, Beacon Hill, Downtown, the North End, and the West End. "SE" includes the South End and Chinatown.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health (data as of December 2016). Data may be updated as more information becomes available.

In 2015, East Boston had a higher heart disease mortality rate compared with the rest of Boston.

Hypertension

What is Hypertension?

Hypertension is another word for high blood pressure. As blood is pumped throughout the body, it generates a force against the walls of the blood vessels that carry it. This force is known as blood pressure. A healthy person's blood pressure varies with age and sex, and also fluctuates within a normal range throughout the day (23).

Blood pressure is recorded as two numbers: the higher number is called systolic pressure and the lower number is called diastolic pressure. Normal values for systolic pressure are less than 120 mmHg and for diastolic pressure are less than 80 mmHg (23). This is also written as 120/80 mmHg. The 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 (or 140/90 mmHg) (23). A person with high blood pressure may not have any signs or symptoms until they develop a serious health complication. Complications such as heart disease, heart attack, stroke, heart failure, kidney disease, and peripheral artery disease can be prevented through early diagnosis and management of blood pressure (23). The prevalence of U.S. adults with hypertension during 2015 was approximately 31% (24).

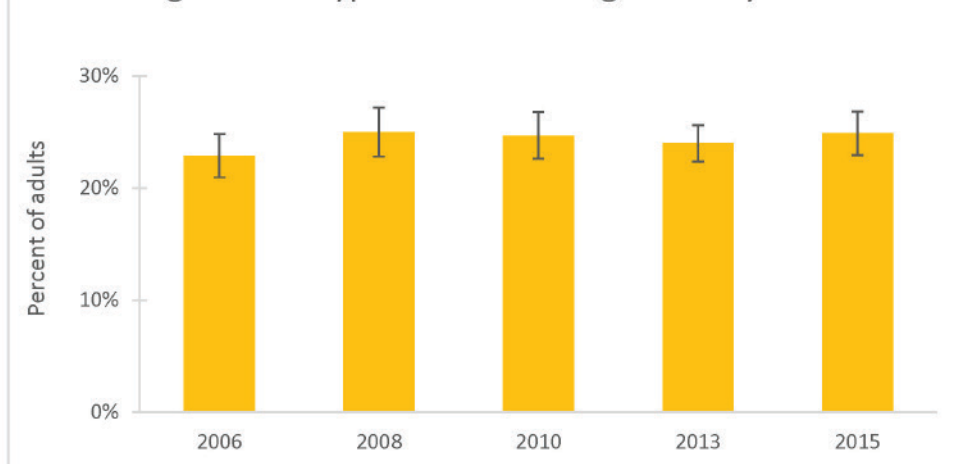
Populations at Risk

Compared to White individuals, Black individuals have a higher prevalence of high blood pressure. High blood pressure is also associated with increasing age. Pre-hypertension (blood pressure above the normal range but below the hypertensive range) and diabetes also increase the risk of developing high blood pressure. Family history of hypertension is another important risk factor, especially when combined with smoking and a diet high in sodium (23). Higher levels of educational attainment and family income, and higher status occupations, are also shown to be protective factors (25, 26).

Prevention

Maintaining a healthy lifestyle is the key to keeping blood pressure normal. Eating a healthy diet, which includes fruits and vegetables and is low in sodium, engaging in regular physical activity, maintaining a healthy weight, avoiding tobacco and excess alcohol consumption, and controlling diabetes can help to maintain a healthy blood pressure. Engaging in stress management and/or stress reduction, and limiting exposure to chronic stressors, may also help with control of blood pressure and prevention of hypertension (27, 28). In addition, regular check-ups with a health care provider can help detect hypertension before complications develop (23).

Figure 8.43 Hypertension Among Adults by Year



DATA SOURCE: Boston Behavioral Risk Factor Survey (2006, 2008, 2010, 2013, 2015),
Boston Public Health Commission

In 2015, 25% of Boston adult residents reported having hypertension. There was no significant change in the percentage of adults with hypertension between 2006 and 2015.

Hypertension Among Adults

Healthy People 2020 Target: 26.9%

US median 2015: 30.9%

MA 2015: 29.6% (28.4-30.9)

Boston 2015: 24.9% (23.0-26.9)

In 2015, 25% of Boston adult residents reported having hypertension.

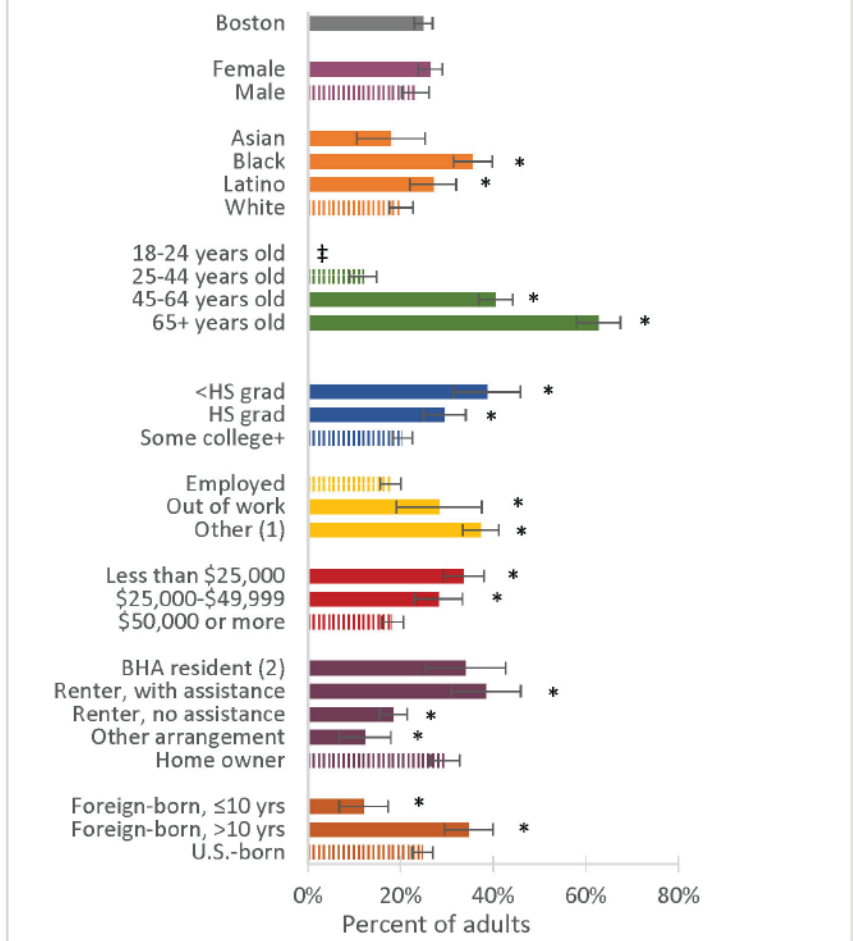
The percentage of hypertension was higher for the following groups:

- Black (36%) and Latino (27%) adults compared with White adults (20%)
- Adults ages 45-64 (41%) or 65 and older (63%) compared with adults ages 25-44 (12%)
- Adults with less than a high school diploma (39%) and adults with a high school diploma (30%) compared with those with at least some college education (20%)
- Adults who were out of work (28%) or whose employment status was "other" (37%) compared with adults who were employed (18%)
- Adults living in households with an annual income of less than \$25,000 (34%) and those with an income of \$25,000-\$49,999 (28%) compared with adults living in households with an annual income of \$50,000 or more (18%)
- Adults who received rental assistance (38%) compared with home owners (30%)
- Foreign-born adults who lived in the United States for over 10 years (35%) compared with those who were born in the United States (25%)

The percentage of hypertension was lower for the following groups:

- Adults who rented but did not receive rental assistance (18%) and those with other housing arrangements (12%) compared with homeowners (30%)
- Foreign-born adults who lived in the United States for 10 years or less (12%) compared with those who were born in the United States (25%)

Figure 8.44 Hypertension Among Adults by Selected Indicators, 2015



* Statistically significant difference when compared to reference group

‡ Data not presented due to insufficient sample size

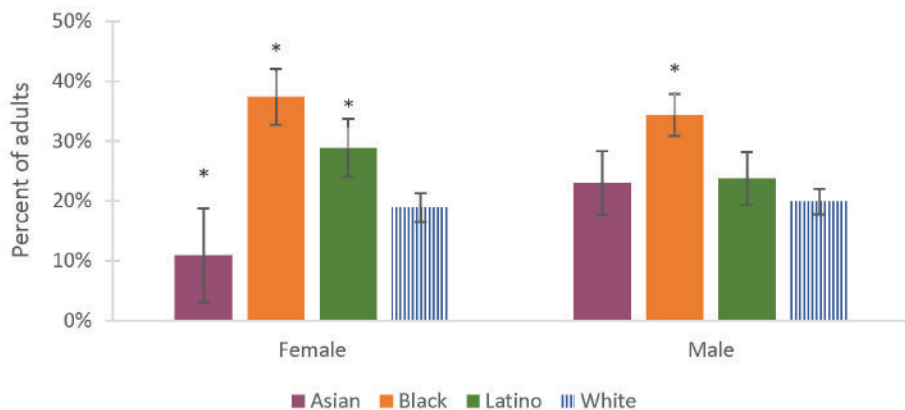
(1) Includes homemakers, students, retirees, and those unable to work

(2) Boston Housing Authority resident

NOTE: Bars with patterns indicate the reference group within each selected indicator.

DATA SOURCE: Boston Behavioral Risk Factor Survey (2015), Boston Public Health Commission

Figure 8.45 Hypertension Among Adults by Sex and Race/Ethnicity, 2013 and 2015 Combined



During 2013 and 2015 combined, a higher percentage of Black (37%) and Latino (29%) female adult residents and a lower percentage of Asian female adults (11%) had hypertension compared with White females (19%). A higher percentage of Black male adults (34%) had hypertension compared with White males (20%).

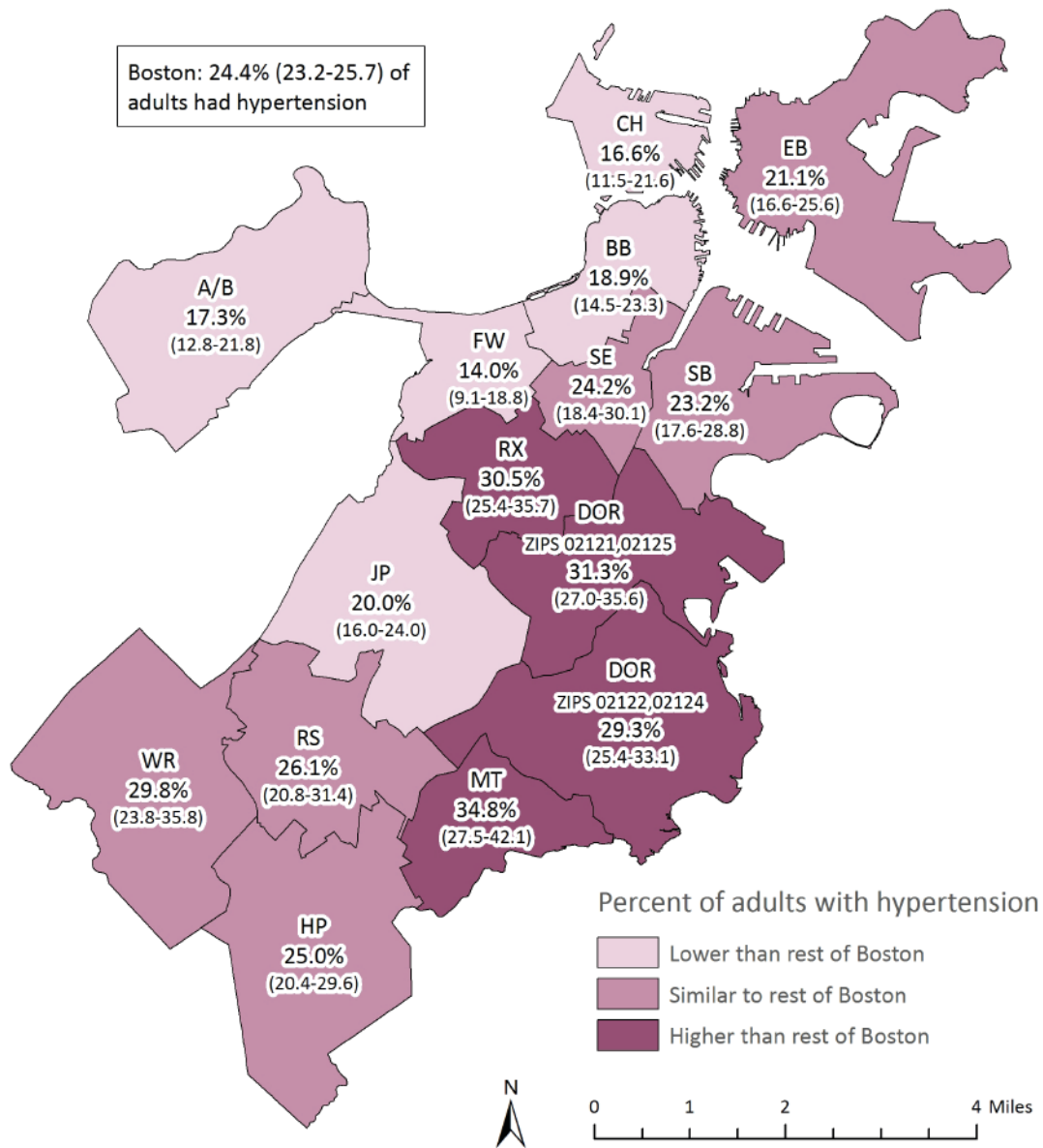
* Statistically significant difference when compared to reference group

NOTE: Bars with patterns indicate the reference group within each selected indicator.

DATA SOURCE: Boston Behavioral Risk Factor Survey (2013, 2015), Boston Public Health Commission



Figure 8.46 Hypertension Among Adults by Neighborhood, 2013 and 2015 Combined



NOTE: "BB" includes the Back Bay, Beacon Hill, Downtown, the North End, and the West End.
 "SE" includes the South End and Chinatown.

DATA SOURCE: Boston Behavioral Risk Factor Survey (2013, 2015), Boston Public Health Commission

During 2013 and 2015 combined, the percentage of adult residents with hypertension was lower in Allston/Brighton, Back Bay, Charlestown, Fenway, and Jamaica Plain compared with the rest of Boston. The percentage of adults with hypertension was higher in Dorchester (02121, 02125), Dorchester (02122, 02124), Mattapan, and Roxbury compared with the rest of Boston.

Overweight and Obesity

What is Overweight and Obesity?

Overweight and obesity are categories of weight based on body mass index (BMI), which is a tool for comparing the weights of people of different heights (29). Obesity and being overweight occur when a person consumes more calories than they use. This surplus of calories leads to excess fat being stored in the body (30). For adults, BMI is calculated using a standard formula that incorporates an individual's height and weight. A BMI between 25.0 and 29.9 is classified as overweight and a BMI of 30 or higher is classified as obese. Being overweight or obese is a risk factor for many chronic diseases including coronary artery disease, type 2 diabetes, hypertension, cancer, sleep apnea and other respiratory problems, and liver and gallbladder disease (29). According to the 2015 BRFSS, approximately 36% and 30% of U.S. adults are overweight and obese, respectively (6).

For children and adolescents (2-19 years), weight categories are determined using an age and sex-specific percentile for BMI. The percentile indicates where the BMI falls relative to children or adolescents of the same sex and age. Youth with a BMI between the 85th and 95th percentile are considered overweight and those at the 95th percentile or higher are considered obese. Findings from the 2015 YRBSS indicates that approximately 14% of U.S. high school students are obese (7).

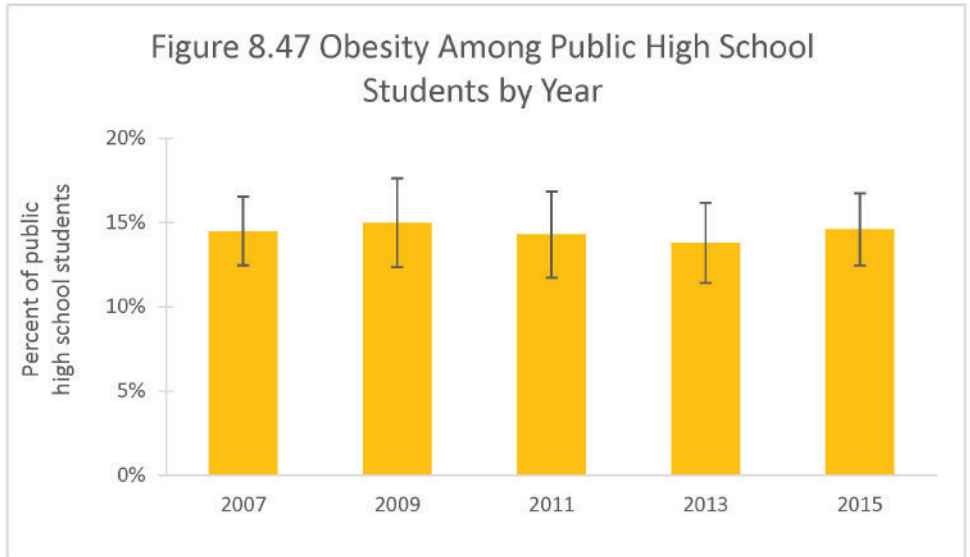
Populations at Risk

Inequities in obesity prevalence are observed in the U.S. adult population across race/ethnicity and socioeconomic status. Findings from the 2011-2012 National Health and Nutrition Examination Survey indicate that among adults 20 years and older, Black and Latino adults had a significantly higher prevalence of obesity compared with White adults and with Asian adults, who had the lowest obesity prevalence (31). The association between obesity and socioeconomic status is more complex. There is no significant relationship observed between obesity and education among men. Among women, however, those with college degrees are less likely to be obese compared with less educated women (32). Many lifestyle factors also play a role including physical inactivity, overeating, sleep deprivation, social influences, and some medications (29). Any environment that makes these factors more difficult to control increases the risk of obesity (33).

Prevention

Adopting health-promoting behaviors that combine regular physical activity and a balanced diet may help maintain or reduce an individual's weight (29). Public systems and policies that address education, income support, transportation, environment, public safety, and housing will also contribute to creating environments that promote healthy behaviors.

In 2015, 15% of Boston public high school students were obese. There was no significant change in the percentage of students who were obese between 2007 and 2015.



DATA SOURCE: Youth Risk Behavior Survey (2007, 2009, 2011, 2013, 2015), Centers for Disease Control and Prevention and Boston Public Schools



Figure 8.48 Obesity Among Public High School Students by Selected Indicators, 2015



* Statistically significant difference when compared to reference group

NOTE: Bars with patterns indicate the reference group within each selected indicator.
 DATA SOURCE: Youth Risk Behavior Survey (2015), Centers for Disease Control and Prevention and Boston Public Schools

In 2015, 15% of Boston public high school students were obese.

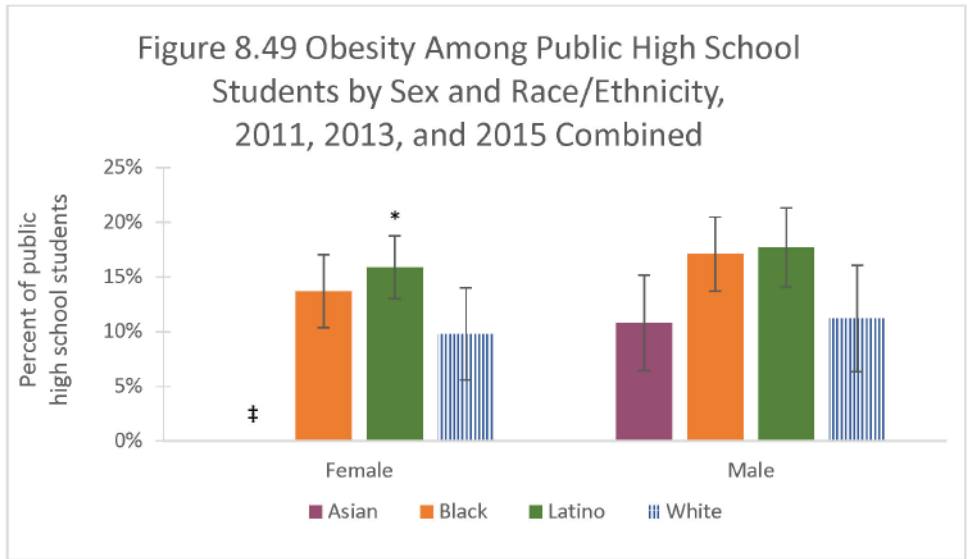
The percentage of obesity was higher for the following groups:

- Black students (17%) compared with White students (10%)

The percentage of obesity was lower for the following groups:

- Females (12%) compared with males (17%)
- Foreign-born students who lived in the United States for six years or fewer (7%) compared with students who have always lived in the United States (16%)

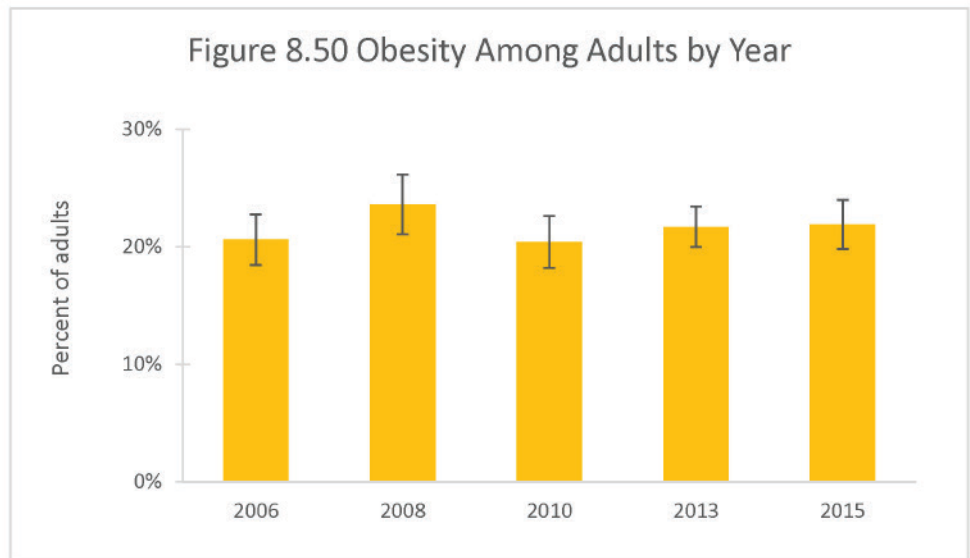
During 2011, 2013, and 2015 combined, a higher percentage of Latina female students (16%) were obese compared with White females (10%). Among male students, there were no significant differences in the percentage of obesity by race/ethnicity.



* Statistically significant difference when compared to reference group
 ‡ Data not presented due to insufficient sample size

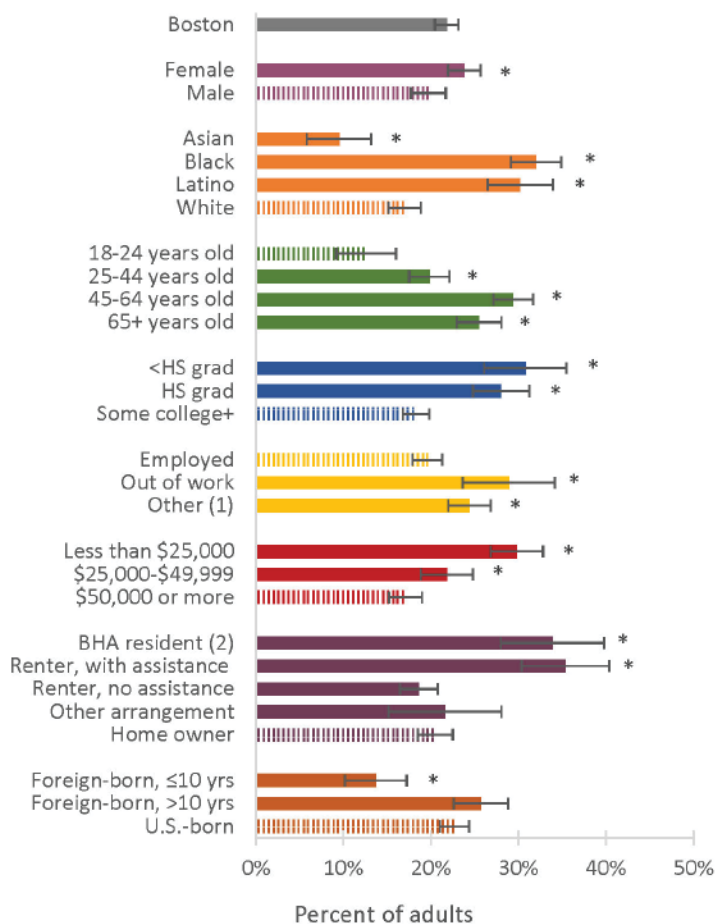
NOTE: Bars with patterns indicate the reference group within each selected indicator.
 DATA SOURCE: Youth Risk Behavior Survey (2011, 2013, 2015), Centers for Disease Control and Prevention and Boston Public Schools

In 2015, 22% of Boston adult residents were obese. There was no significant change in the percentage of adults who were obese between 2006 and 2015.



DATA SOURCE: Boston Behavioral Risk Factor Survey (2006, 2008, 2010, 2013, 2015), Boston Public Health Commission

Figure 8.51 Obesity Among Adults by Selected Indicators, 2013 and 2015 Combined



* Statistically significant difference when compared to reference group

(1) Includes homemakers, students, retirees, and those unable to work

(2) Boston Housing Authority resident

NOTE: Bars with patterns indicate the reference group within each selected indicator.

DATA SOURCE: Boston Behavioral Risk Factor Survey (2013, 2015), Boston Public Health Commission

During 2013 and 2015 combined, 22% of Boston adult residents were obese.

The percentage of obesity was higher for the following groups:

- Females (24%) compared with males (20%)
- Black (32%) and Latino (30%) adults compared with White adults (17%)
- Adults ages 25-44 (20%), 45-64 (29%), or 65 and older (26%) compared with adults ages 18-24 (13%)
- Adults with less than a high school diploma (31%) and those with a high school diploma (28%) compared with adults with at least some college education (18%)
- Adults who were out of work (29%) or whose employment status was "other" (24%) compared with adults who were employed (20%)
- Adults living in households with an annual income of less than \$25,000 (30%) or \$25,000-\$49,999 (22%) compared with adults living in households with an annual income of \$50,000 or more (17%)
- Adults who were Boston Housing Authority residents (34%) and those who received rental assistance (35%) compared with adults who owned a home (21%)

The percentage of obesity was lower for the following groups:

- Asian adults (10%) compared with White adults (17%)
- Foreign-born adults who lived in the United States for 10 years or less (14%) compared with adults who were born in the United States (23%)

Obesity Among Adults

Healthy People 2020 Target: 30.5%

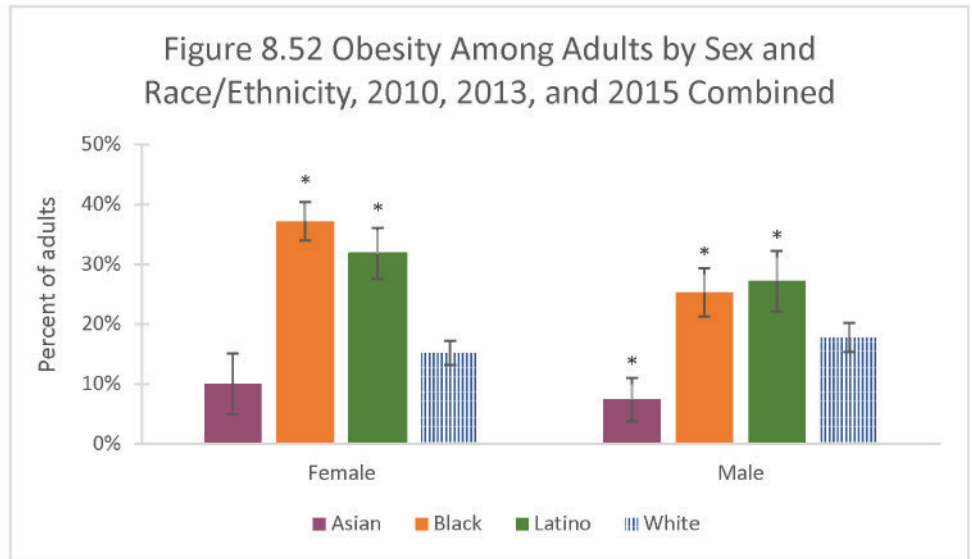
US median 2015: 29.8%

MA 2015: 24.3% (23.0-25.5)

Boston 2015: 21.9% (19.9-24.0)

During 2010, 2013, and 2015 combined, a higher percentage of Black (37%) and Latino (32%) female adult residents were obese compared with White females (15%).

A higher percentage of Black (25%) and Latino (27%) male adult residents and a lower percentage of Asian males (7%) were obese compared with White males (18%).



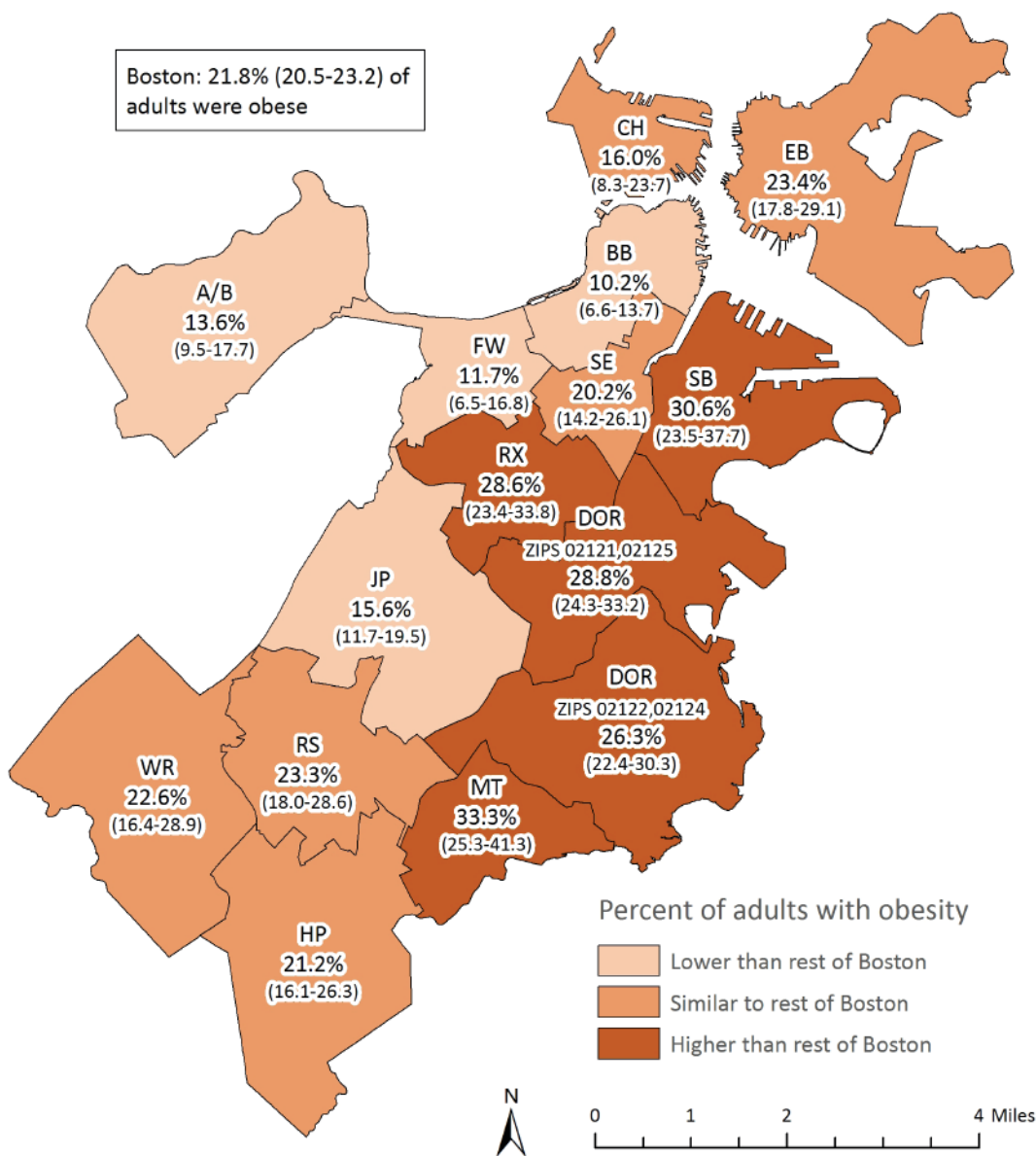
* Statistically significant difference when compared to reference group

NOTE: Bars with patterns indicate the reference group within each selected indicator.

DATA SOURCE: Boston Behavioral Risk Factor Survey (2010, 2013, 2015), Boston Public Health Commission



Figure 8.53 Obesity Among Adults by Neighborhood, 2013 and 2015 Combined



NOTE: "BB" includes the Back Bay, Beacon Hill, Downtown, the North End, and the West End.
 "SE" includes the South End and Chinatown.

DATA SOURCE: Boston Behavioral Risk Factor Survey (2013, 2015), Boston Public Health Commission

During 2013 and 2015 combined, a lower percentage of Boston adult residents were obese in Allston/Brighton, Back Bay, Fenway, and Jamaica Plain compared with the rest of Boston. A higher percentage of adults were obese in Dorchester (02121, 02125), Dorchester (02122, 02124), Mattapan, Roxbury, and South Boston compared with the rest of Boston.

Summary

Black and Latino adults have a higher prevalence of asthma, diabetes, hypertension, and obesity when compared to their White counterparts, and inequities across other social determinants were also observed for these chronic conditions. These conditions tend to disproportionately affect adults with educational attainment less than a high school diploma, who were not employed, with household income less than \$25,000, and who lived in publicly supported housing. At the neighborhood level, elevated percentages or rates for indicators of asthma, diabetes, heart disease, hypertension, and obesity were concentrated in Dorchester (02121, 02125), Dorchester (02122, 02124), Mattapan, and Roxbury.

Although inequities persist across racial/ethnic groups and social determinants, improvements over time were observed for Boston overall for some indicators. The rate of asthma hospitalizations declined by 31% for Boston overall from 2011 to 2015, with corresponding declines of similar magnitude observed for Asian, Black, Latino, and White residents. Similarly, the rate of asthma emergency department visits also declined by 4% from 2011 to 2015 for Boston overall, which may be partially explained by the corresponding 6% decline observed for Black residents. The rate of heart disease hospitalizations declined by 9% for Boston overall from 2011 to 2015. Over the same time period, the rate of heart disease hospitalizations declined by 22%, 8%, and 5% for Latino, Black, and White residents, respectively.

Boston adults also met the Healthy People 2020 goals for hypertension and obesity.

Chronic Disease

Chronic conditions among adults in 2015



Asthma
12%



Diabetes
8%



Hypertension
25%



Obesity
22%



Chronic conditions and Boston neighborhoods

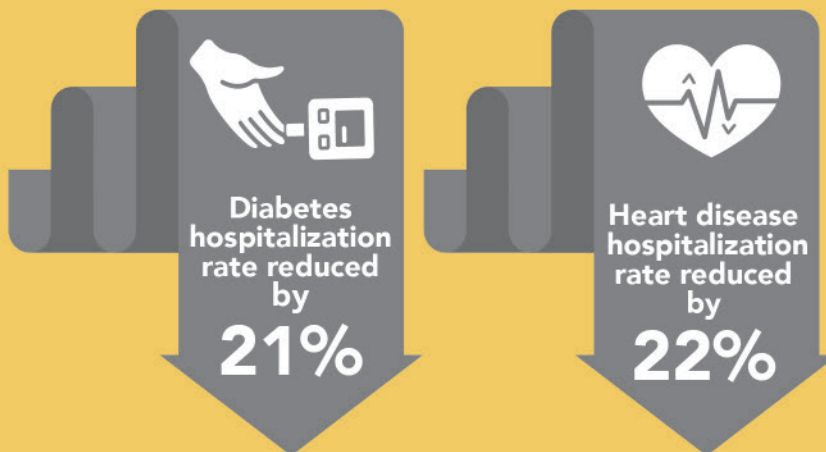


Dorchester (zipcodes 02121, 02125) and Roxbury had a higher prevalence of asthma¹, diabetes¹, hypertension², and obesity² than the rest of Boston.

¹ 2010, 2013, and 2015 combined

² 2013 and 2015 combined

Hospitalization rates decreased among Latino residents from 2011-2015



Our Point of View: Thoughts from public health

Coming together to control asthma

By Anjali Nath, MPH
Director, Asthma Prevention and Control
Boston Public Health Commission

Asthma is a complicated disease with numerous risk factors that can be challenging to prevent and control. Managing triggers, medications, and communication with medical providers can be confusing but all are important. Exposure to asthma triggers can often be outside the control of the patient – especially if the patient is a child. Pest infestations, tobacco smoke, and mold all contribute to the disease and are known to be more common in low income, urban populations and be a cause for poor asthma control.¹ Research has shown that many of these factors can be modified through the involvement of community health workers (CHWs), who conduct environmental assessments, support remediation efforts, and provide in-home asthma education and problem solving.^{2,3} As healthcare transformation continues, incorporating trained CHWs into clinical asthma teams should be considered seriously and adopted.

Boston Public Health Commission (BPHC) has an award-winning, nationally recognized Asthma Program that can help. We offer free home visit services to Boston residents with asthma, in partnership with four Boston hospitals. To best serve Bostonians, we collectively speak seven languages. The Breathe Easy at Home program includes a vital partner – Boston Inspectional Services – which conducts home inspections to help correct poor housing conditions that are covered by the state sanitary code. We have also worked with all the major affordable and public housing providers in Boston to introduce safe pest management and smoke-free housing practices to improve the health of all residents, particularly those with asthma.

In 2014, BPHC received funding from the Massachusetts tax-payer-funded Prevention and Wellness Trust Fund (PWTF) to focus on two priority Boston neighborhoods. BPHC is working with 7 community health centers, 26 Boston Public Schools, and 6 ABCD Head Start child care sites in the neighborhoods of Roxbury and Dorchester (zipcodes 02121, 02125), to strengthen clinical and community linkages and cross-sector collaboration to improve the quality of asthma care.

These are programs that work. While great inequities in asthma outcomes persist, things are moving in the right direction. From 2008 to 2014, Boston saw a statistically significant reduction in emergency department visits for all ages among Black, Latino and White Bostonians.⁴ Armed with the right information and a little assistance, people with asthma can lead healthy, active lives.

¹Phipatanakul, W., et al., Mouse allergen. II. The relationship of mouse allergen exposure to mouse sensitization and asthma morbidity in inner-city children with asthma. *J Allergy Clin Immunol*, 2000. 106(6): p. 1075-80.

²Phipatanakul, W., et al., Mouse allergen. II. The relationship of mouse allergen exposure to mouse sensitization and asthma morbidity in inner-city children with asthma. *J Allergy Clin Immunol*, 2000. 106(6): p. 1075-80.

³Krieger JK, Takaro TK, Allen C, et al. The Seattle-King County Healthy Homes Project: Implementation of a comprehensive approach to improving indoor environmental quality for low-income children with asthma. *Environmental Health Perspectives*. 2002;110(suppl 2):311-322.
Beeson T, Mcallister BD, Regenstein M. Making the Case for Medical-Legal Partnerships: A Review of the Evidence. Department of Health Policy. The George Washington University School of Public Health and Health Services. Feb 2013. Available: <http://www.medicallegalpartnership.org/sites/default/files/page/Medical-LegalPartnershipLiteraturereviewFebruary2013.pdf> Accessed on Sept 16, 2013. 2013

⁴Acute Hospital Case Mixes, Massachusetts Center for Health Information and Analysis. Boston Public Health Commission Research and Evaluation Office.

Our Point of View: Thoughts from a community resident

Keeping my daughter healthy and active

By Nilda

Nilda is raising her four children in Boston

My seven-year old-daughter, Kailisa, loves to dance and hopes to be a cheerleader. Before she does any activity, she takes a couple of puffs on her albuterol inhaler, to keep the tubes in her lungs open. My other three children have asthma, but Kailisa's asthma is so frightening. She has been in the critical care unit five times because of her asthma. The good news is she hasn't had one of these serious episodes in a long time and she isn't missing as much school anymore.

Kailisa has an asthma nurse at her health center and sees a pulmonologist at her hospital. Both her pulmonologist and nurse taught us what we need to do to keep her asthma under control. We have an asthma action plan that tells us which medications to take every day – whether her asthma is good or whether it is getting worse. It also helps us know what to do when she is going to be active or if she is having an emergency. Her school has a copy as well. Everything I have learned about asthma for Kailisa helps me to manage my other children's asthma better too.

In addition to the health care services Kailisa gets, we got a referral to Boston Breathe Easy at Home through the Boston Public Health Commission. Inspectors from Boston Inspectional Services Department come to the home and inspect for housing issues that make asthma worse. If they find them, the landlord needs to make repairs. We had mold, but the mold problem got resolved. This improved the housing for all of us, not only Kailisa.

All of this coordination around asthma is being supported by a grant called the Prevention and Wellness Trust Fund. In Boston, with the grant, they are working on improving communication and coordination between schools, health centers, hospitals, housing, and community services for children with asthma. For Kailisa and my whole family – it is definitely working!

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