

Chapter 2: Social Determinants of Health



Social Determinants of Health

Beyond individual physiology and health-related behaviors, there are other economic, environmental and social factors that influence health. Collectively, we refer to these as social determinants of health. Social determinants are societal influences that help to describe the circumstances in which people are born, grow up, live, work and age (1). Social determinants of health are uniquely experienced by individuals, differentially impacting health experiences and ultimately contributing to health inequities (2). Research has identified a wide range of social factors that are associated with differences in health outcomes (2):

- Employment
- Access to Healthy Food
- Access to Health Care
- Exposure to Violence
- Insurance Coverage
- Education
- Access to Health Resources
- Income
- Housing Conditions
- Transportation Options
- Environmental Safety
- Occupational Safety

These social determinants of health impact an individual's life in many specific ways, for example, the quality of education available to them, their ability to find and maintain employment and the type of work (including levels of exposure to occupational hazards), access to safe and stable housing, and access to health care and the quality of those services (3). The resulting life experiences, in turn, directly influence physical and mental health and contribute to health inequities. Our report describes how many health-promoting resources, such as income, employment, education, and home ownership, are unevenly distributed within our city among those of differing races and ethnicities, socioeconomic status, and geographic locations.

Social determinants of health can be described in terms of three broad context areas: economic, environmental, and social.

Economic Conditions and Health

Economic factors that influence health occur on both community and individual levels. On the community level, economic factors believed to be associated with health outcomes include collective income, poverty rates, employment opportunities, community investment, tax base and spending priorities for local tax dollars (2). On an individual-level, the opportunity to obtain a meaningful job

with few occupational hazards, address financial needs, and remain food secure are paramount to maintaining good health. Economic resources enable health purchasing power including the ability to attain resources to manage or control disease (4). Lack of economic opportunity can create a vicious cycle where children who grow up in poverty are less able to acquire the needed resources for health and are more likely to experience mental, emotional, and behavioral disorders as a result (5). The effects of coping with daily economic hardship can trigger a physical response which may damage immune defense, dysregulate physical processes, and accelerate aging or the onset of chronic disease (6,7).

The opportunity for a quality education is widely recognized as a leading influence of acquiring higher economic position and is associated with better health outcomes. Educational attainment is associated with improved working conditions and higher income, which in turn allows for improved housing, nutrition, control of hazards and stress, as well as direct health benefits from having quality health insurance, retirement benefits, and adequate sick leave (8). Educational attainment is also closely linked to improved health knowledge, literacy, and behaviors, all of which are associated with improved health awareness and disease management (8).

Environmental Conditions and Health

The “built environment”, or physical structures and infrastructure of communities and homes, can profoundly impact the safety and lifestyle options of the residents (9). Neighborhood safety, desirable areas for physical activity, close proximity to providers of affordable and nutrient-dense foods such as fruits and vegetables, clean air, access to formal health services, transportation options, and affordable housing are all essential to helping individuals attain full and vibrant health. Conversely, a density of retailers selling tobacco and alcohol, the presence of deserted and rundown lots, and industrial pollution serve to diminish safety and health (1,8).

Physical inactivity, which increases the risk of diabetes, high blood pressure, and obesity, can be spurred by environmental conditions that produce fear and concern of victimization such as the presence of crime, or by a lack of well-kept sidewalks and walkability in neighborhoods (10). Children living in such physical environments are more likely to become overweight and obese (11). Communities with fewer physical assets and less desirable living conditions experience poorer overall health, including higher levels of depression, infant mortality, low birth weight, child maltreatment, and homicide rates (12). The built environment serves to mediate an individual’s perceptions about the health opportunities available to them, their ability and likelihood of engaging in healthy behaviors and their ability to buffer toxic and stressful exposures.

Social Conditions and Health

Social conditions encompass the social relationships, family structure, and cultural dynamics within which defined groups of people function and interact (13) (14). The “acceptability” or “norms” for positive behaviors can also be developed within these networks, and may influence health-related behaviors (15). Social conditions also include social capital, which refers to the individual and communal time and energy available for community improvement, social networking, civic engagement, and other activities that create social bonds between individuals and groups (16). Social capital can be formed through an individual’s level of trust and sharing within communities, while dense social networks and civic engagement provide structure for social capital (17). The presence of social capital, support, trust, and reciprocity have been associated with improved overall psychological well-being and improved perceptions of personal health (18).

Social conditions also encompass perceptions of community members about their social surroundings. Crime rates, housing patterns, and law enforcement policies can all influence a person’s perceptions of the value and safety of their social environment, as well as their tendency to engage positively in their community (2). When social relationships or conditions breed an environment of fear, suspicion, discrimination, and/or racism, a chronic stress response may occur to the detriment of health (19, 20). Chronic stress can create long-term elevation in stress hormones, implicated in the development of anxiety, depression, digestive problems, heart disease, sleep problems, weight gain, and problems with memory and concentration (21). Encouragingly, however, positive social ties tend to naturally reduce the negative effects of stress in a person’s life by encouraging more healthful behaviors and “buffering” stressful influences (22, 23).

This section presents data on educational attainment, employment, income, and housing status and the association of these factors with specific health outcomes.

Education

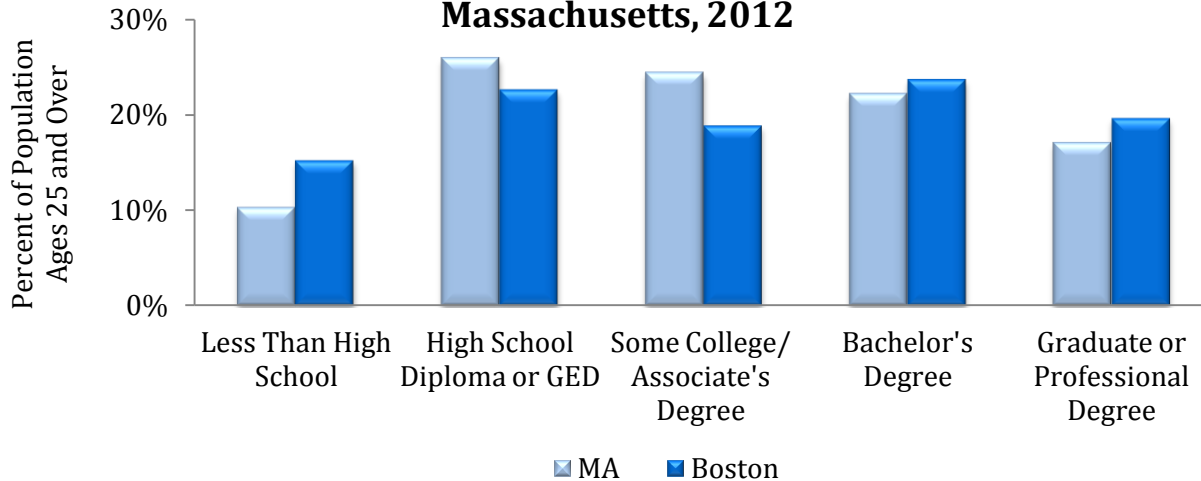
Education is a very general term used to refer to the experience and/or result of learning undertaken primarily in institutional settings such as schools and colleges (24). The number of years of schooling is often used as a measure of education, and is associated with income status.

Education is associated with health in many ways. Higher educational attainment is associated with improved working conditions and income, which in turn allows for improved housing, nutrition, control of hazards and stress, as well as direct health benefits of quality health insurance, retirement benefits, and sick leave (8). Educational attainment is also closely linked to improved health knowledge, literacy, and behaviors, which are, in turn, associated with improved health awareness and disease management (8). Individuals with more years of formal education tend to have healthier behaviors and better health outcomes. Education also helps promote and sustain healthy lifestyles and positive choices that support and nurture personal development, relationships, and community well-being (25). Although educational attainment is associated with adult socioeconomic status (SES), many studies suggest that schooling has an important effect on health independent of SES (26).

Additionally, parental level of education attainment is a significant predictor of child health, with children of more highly educated parents having better overall health than children with less educated parents (27).

Despite Boston's reputation as an education hub, racial inequities in educational attainment exist. Data presented in this section show that a larger percentage of Black and Latino residents have fewer years of education than White residents. Inequities are also reflected in the graduation rates for males and females.

This section presents data on educational attainment and selected health indicators associated with educational attainment.

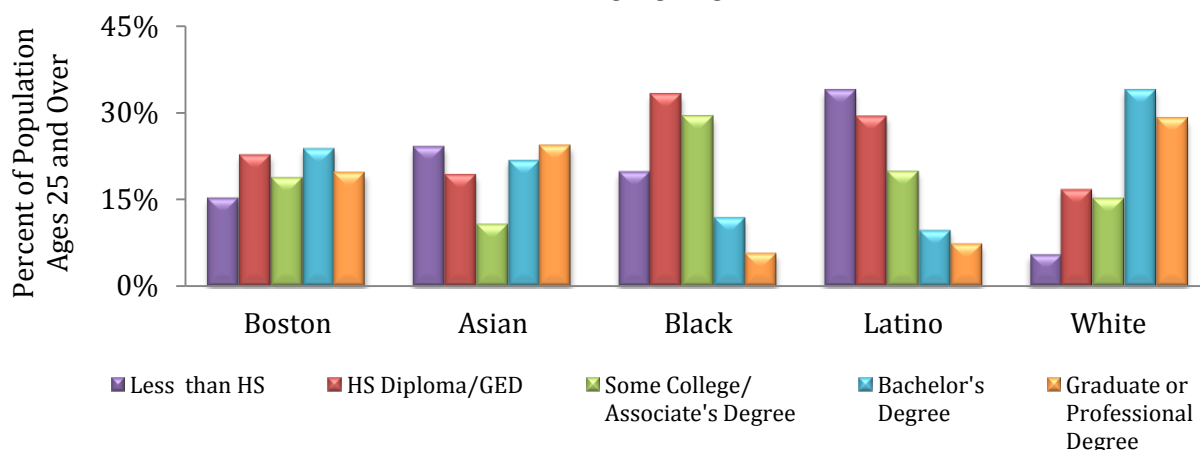
Figure 2.1 Educational Attainment, Boston and Massachusetts, 2012

	Less than High School	High School Diploma or GED	Some College/Associate's Degree	Bachelor's Degree	Graduate or Professional Degree
MA	10.3% (10.1-10.6)	25.9% (25.5-26.4)	24.4% (24.0-24.8)	22.2% (21.8-22.6)	17.1% (16.7-17.4)
Boston	15.2% (14.0-16.4)	22.6% (21.5-23.8)	18.8% (17.7-19.9)	23.7% (22.4-25.0)	19.6% (18.5-20.7)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

In 2012, a higher percentage of Boston residents had less than a high school education than Massachusetts overall. Boston also had higher percentages of the population with a Bachelor's degree and graduate or professional degree. Lower percentages of Boston residents obtained a high school diploma/GED or completed some college or an associate's degree compared to Massachusetts residents.

Figure 2.2 Educational Attainment by Race/Ethnicity, 2010-2012

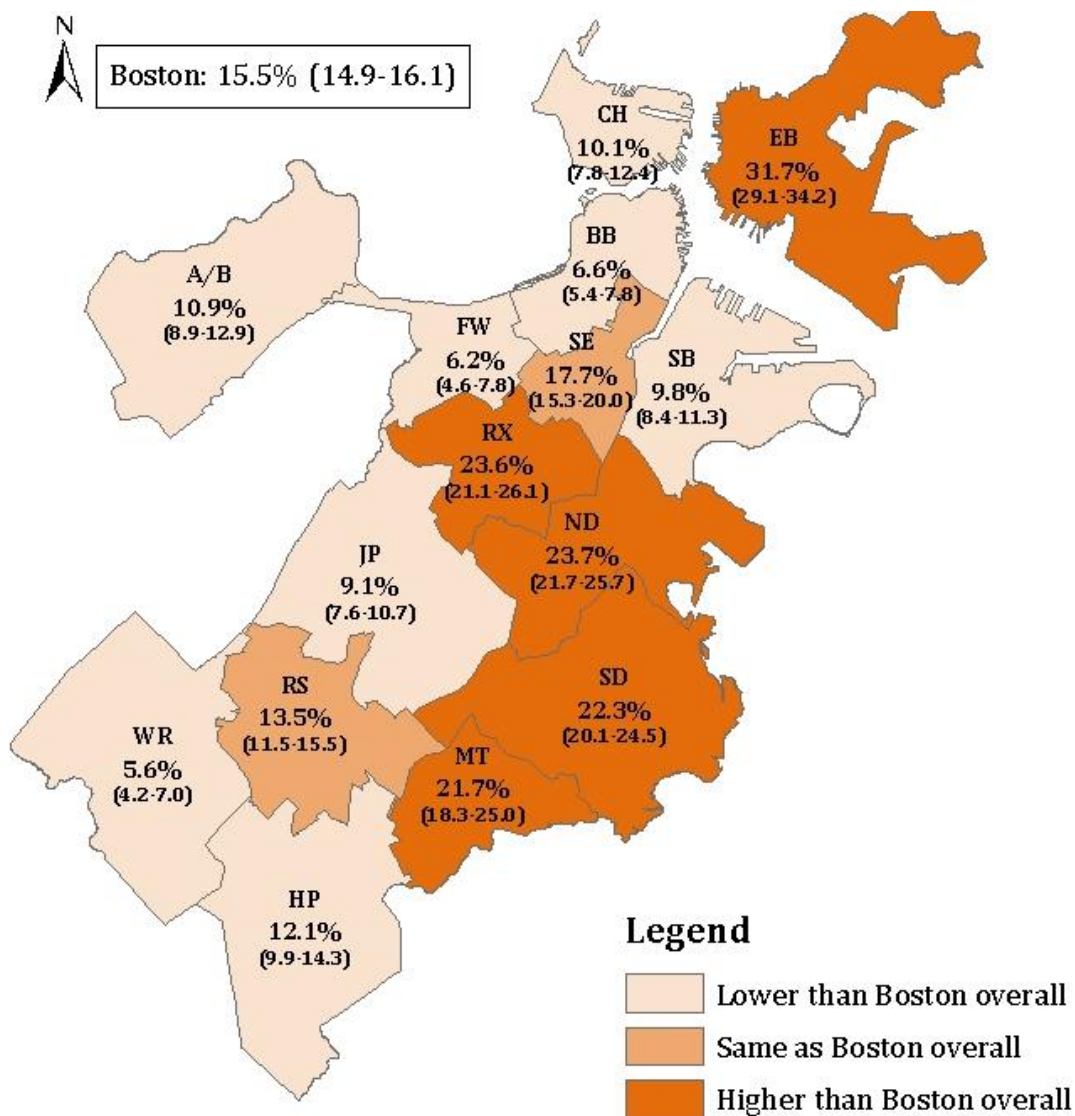


	Less than High School	High School Diploma or GED	Some College/ Associate's Degree	Bachelor's Degree	Graduate or Professional Degree
Boston	15.2% (14.4-16.0)	22.7% (21.9-23.5)	18.7% (18.1-19.3)	23.8% (23.0-24.6)	19.6% (19.0-20.2)
Asian	24.1% (21.0-27.2)	19.3% (16.6-22.0)	10.7% (8.7-12.7)	21.8% (19.4-24.2)	24.2% (21.0-27.4)
Black	19.8% (17.9-21.7)	33.2% (31.3-35.1)	29.3% (27.6-31.0)	11.9% (10.6-13.2)	5.7% (4.9-6.5)
Latino	33.9% (31.5-36.3)	29.3% (26.8-31.8)	19.8% (17.9-21.7)	9.7% (8.3-11.1)	7.3% (6.0-8.6)
White	5.5% (4.9-6.1)	16.7% (15.9-17.5)	15.1% (14.3-15.9)	34.0% (32.7-35.3)	28.9% (27.9-29.9)

DATA SOURCE: American Community Survey, 2010-2012, U.S. Census Bureau

During the period 2010-2012, there were racial/ethnic differences in educational attainment among Boston residents ages 25 and over. Higher percentages of Black and Latino residents had less than a high school diploma, a high school diploma or GED, and some college or associate's degree than White residents. A higher percentage of Asian residents also had less than a high school diploma than White residents. The percentage of Boston residents who attained a Bachelor's degree or graduate or professional degree was lower for Asian, Black, and Latino residents compared to White residents.

Figure 2.3 Percent of Population with Less than a High School Education by Neighborhood, 2008-2012 Combined

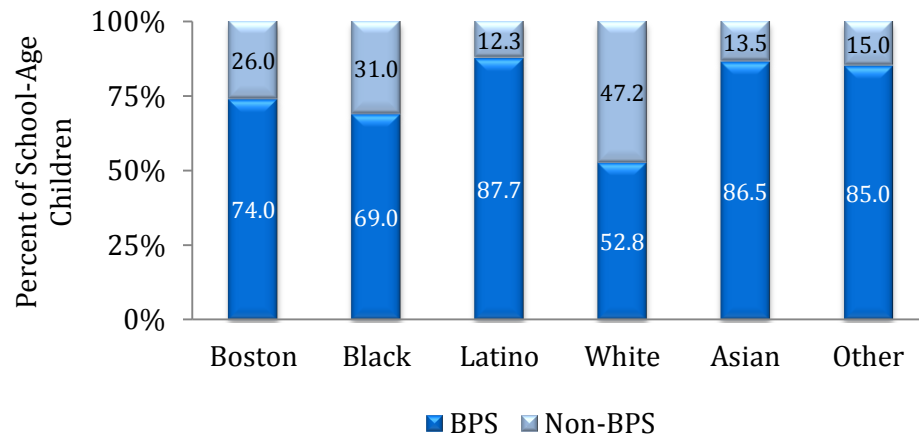


NOTE: Back Bay includes Beacon Hill, Downtown, the North End, and the West End. The South End includes Chinatown.

DATA SOURCE: American Community Survey, 2008-2012, U.S. Census Bureau

During the period 2008-2012, 16% of Boston residents had less than a high school diploma with percentages ranging from 6% in West Roxbury to 32% in East Boston. A higher percentage of residents from five Boston neighborhoods had less than a high school diploma compared to Boston overall. Those neighborhoods included East Boston, Mattapan, North Dorchester, Roxbury, and South Dorchester.

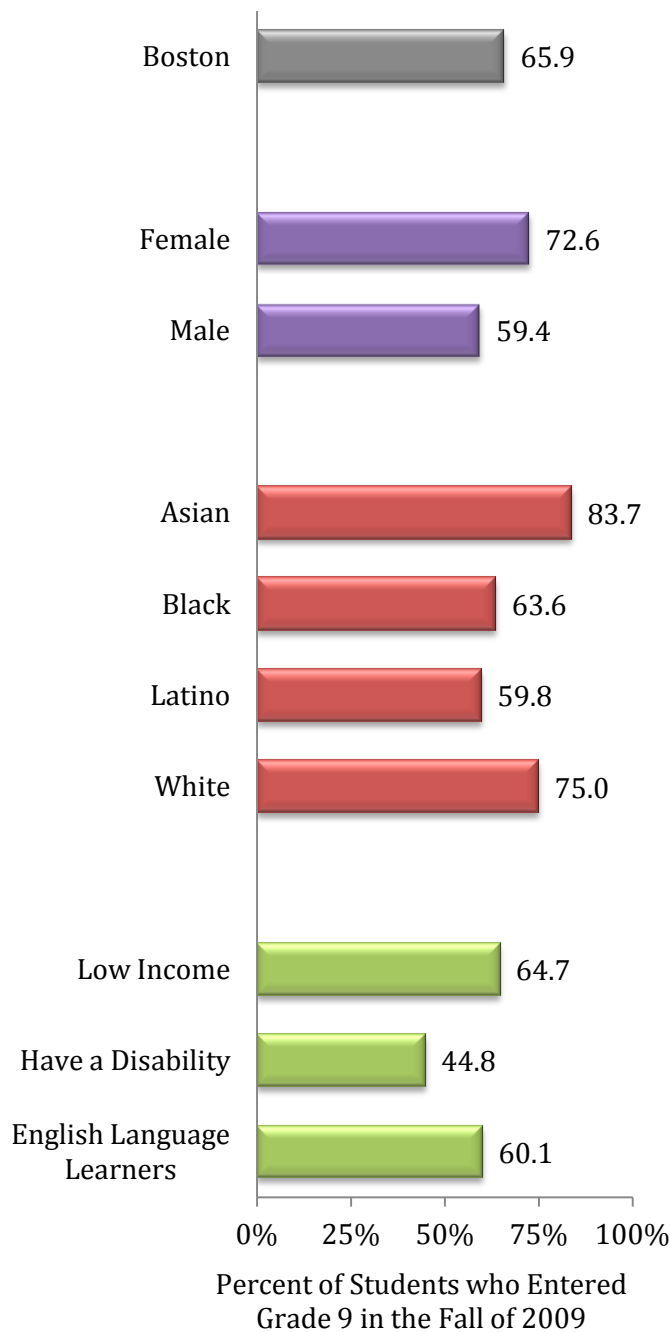
**Figure 2.4 Boston School-Age Children Attending School
by Type of School and Race/Ethnicity, 2012-2013**



DATA SOURCE: Office of Data and Accountability, Boston Public Schools

Almost three-quarters of Boston school-age children attended Boston public schools during 2012-2013. Most Latino and Asian children attended Boston public schools, 88% and 87%, respectively. By comparison, only 53% of White children attended Boston public schools.

**Figure 2.5 Boston Public Schools
Four-Year High School
Graduation Rates, 2013 Cohort**

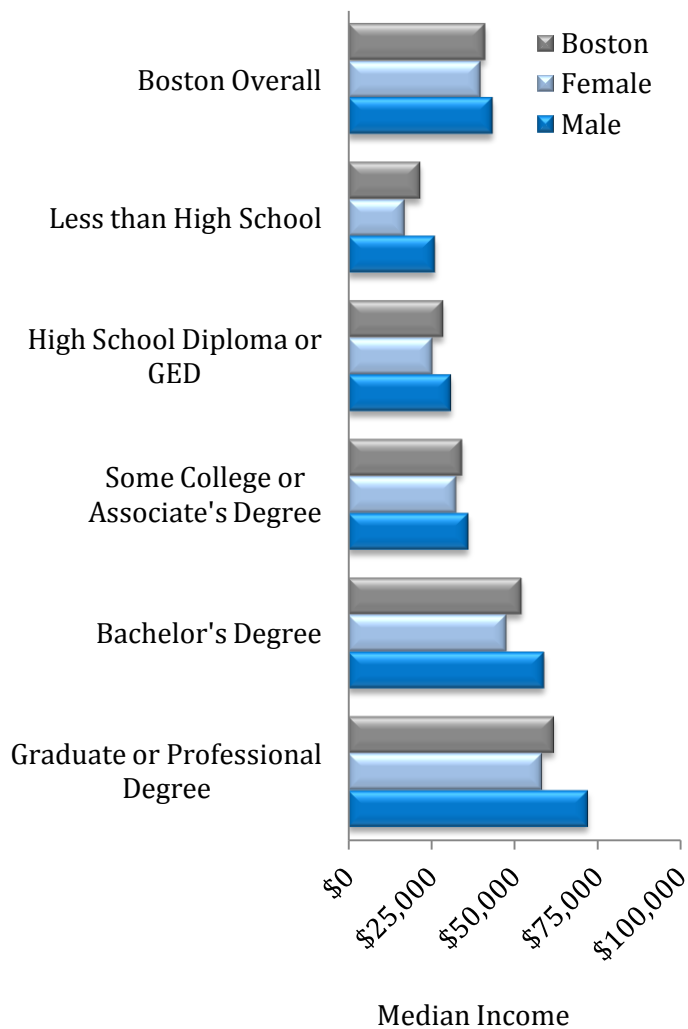


Overall, 66% of Boston public school students who entered Grade 9 in the fall of 2009 graduated in four years. Seventy-three percent of females graduated in four years, while only 59% percent of males graduated in four years. Eighty-four percent of Asian students graduated in four years compared to 60% of Latino students. Additionally, 45% of students with disabilities and 60% of English Language Learners graduated in the expected amount of time (four years).

NOTE: Five-year graduation rates were unavailable.

DATA SOURCE: Office of Data and Accountability, Boston Public Schools

Figure 2.6 Median Earnings by Educational Attainment and Gender, 2012



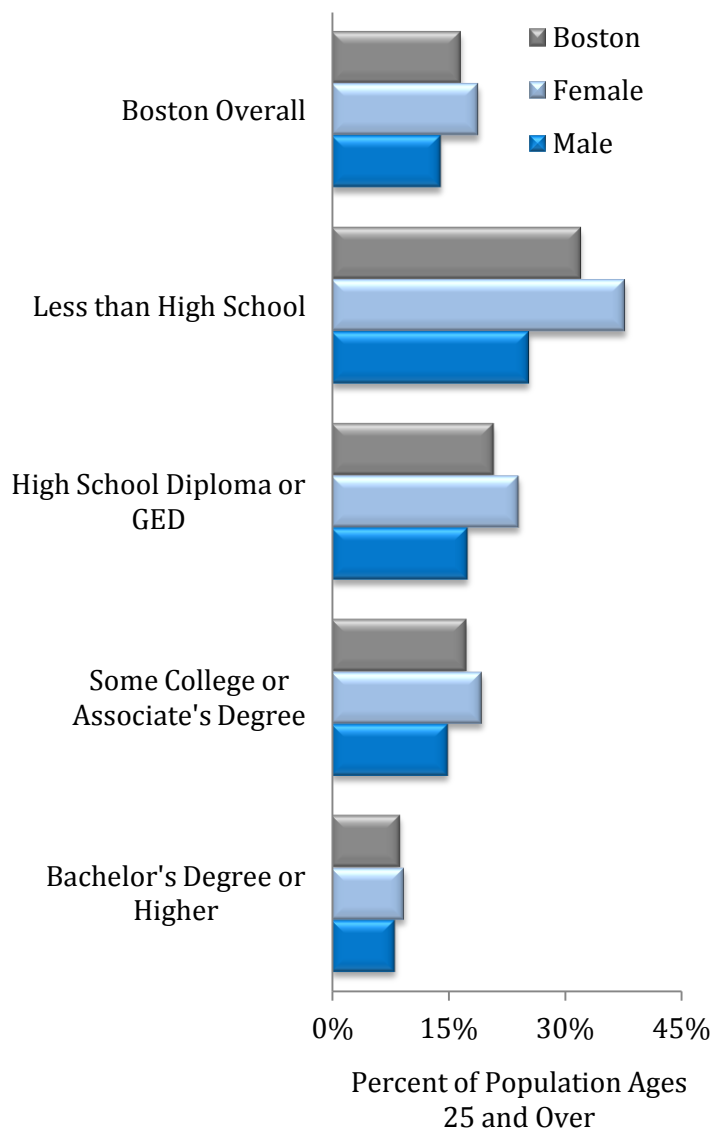
Median earnings of Boston residents ages 25 and over varied in 2012 by educational attainment and gender. Females with less than a high school diploma and those with a graduate or professional degree had lower earnings than males with the same educational attainment.

	Boston	Female	Male
Boston Overall	\$41,192 (40,426-41,958)	\$39,791 (38,010-41,572)	\$43,307 (38,964-47,650)
Less than High School	\$21,729 (20,029-23,429)	\$17,029 (13,700-20,358)	\$26,050 (22,975-29,125)
High School Diploma or GED	\$28,600 (25,149-32,051)	\$25,260 (21,400-29,120)	\$30,904 (29,285-32,523)
Some College or Associate's Degree	\$34,232 (31,494-36,970)	\$32,392 (29,822-34,962)	\$36,040 (32,232-39,848)
Bachelor's Degree	\$52,119 (50,321-53,917)	\$47,455 (43,856-51,054)	\$58,758 (52,388-65,128)
Graduate or Professional Degree	\$61,797 (59,522-64,072)	\$58,186 (54,088-62,284)	\$71,806 (64,954-78,658)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

In 2012, the percentage of Boston residents ages 25 and over who lived below the poverty level varied by educational attainment and gender. Compared to males, higher percentages of female residents overall, as well as those with less than a high school diploma, and those with a high school diploma or GED lived in poverty.

Figure 2.7 Poverty Status by Educational Attainment and Gender, 2012



	Boston	Female	Male
Boston Overall	16.6% (15.2-17.9)	18.9% (17.2-20.6)	14.0% (12.3-15.7)
Less than High School	32.0% (28.3-35.7)	37.7% (32.1-43.3)	25.3% (20.7-29.8)
High School Diploma or GED	20.8% (17.9-23.8)	24.1% (19.4-28.8)	17.4% (14.0-20.9)
Some College or Associate's Degree	17.3% (14.9-19.7)	19.3% (16.3-22.4)	14.9% (11.2-18.7)
Bachelor's Degree or Higher	8.8% (7.5-10.1)	9.4% (7.7-11.1)	8.1% (6.1-10.1)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

Figure 2.8 Health Indicators by Educational Attainment, 2012 and 2013

	Year	Less than High School	High School Diploma or GED	Some College/ Bachelor's Degree or Higher
Low Birthweight Births	2012	9.8%	9.9%	7.7%
Preterm Births	2012	10.3%	10.1%	9.3%
Asthma*	2013	12.5% (8.1-18.7)	11.7% (8.8-15.5)	9.3% (7.7-11.2)
Diabetes*	2013	3.8% [†] (2.4-5.9)	3.7% [†] (2.4-5.7)	2.4% (1.7-3.4)
Hypertension*	2013	30.1% [†] (22.9-38.5)	17.1% [†] (14.3-20.4)	16.0% (13.9-18.2)
Obesity*	2013	22.0% (16.7-28.4)	24.9% [†] (21.0-29.2)	18.6% (16.5-20.9)
Persistent Anxiety*	2013	27.1% [†] (20.5-34.9)	16.5% (12.8-20.9)	18.7% (16.6-21.1)
Persistent Sadness*	2013	19.1% [†] (13.7-26.0)	13.9% [†] (10.4-18.5)	9.8% (8.2-11.6)

*Adjusted for age, race/ethnicity and gender.

†Model tested comparison to reference group (Some College/Bachelor's Degree or Higher) is statistically significant (p<0.05).

DATA SOURCES: Boston Behavioral Risk Factor Survey (2013), Boston Public Health Commission and Boston resident live births, Massachusetts Department of Public Health.

The above table presents select health indicators by educational attainment. After adjusting for differences in age, race/ethnicity and gender, rates of these adverse health outcomes tend to decrease with increased educational attainment. Those who received less than a high school education were more likely to report diabetes, persistent sadness, hypertension and persistent anxiety compared to those receiving at least some college level education. Those who received a high school education were more likely to report diabetes and persistent sadness and were more likely to be obese compared to those receiving at least some college education.

Employment

On average, American adults spend more than half of their waking hours at work (38). For millions of Americans, a stable job in safe working conditions provides several benefits critical to maintaining good health, such as income, health insurance, and stability (39).

Employment is associated with income and is part of an individual's and community's socioeconomic status. Being employed makes it easier for workers to live in healthy neighborhoods, provide quality education for their children, secure child care services, and buy healthy foods (39). Unemployed Americans face numerous health challenges beyond loss of income. It has been well documented that perceived health (self reported excellent, good, or poor health) and physical functioning decrease with age. However, research indicates that these declines are more gradual among individuals with full-time employment (40). In terms of mental health, a 2010 Gallup Poll found that unemployed Americans were more likely than employed Americans to be diagnosed with depression and report feelings of sadness and worry (39).

In 2010, Boston supplied an estimated 652,180 jobs, approximately one out of every five jobs in Massachusetts and one out of every thirteen jobs in New England (41). The number of Boston-based jobs exceeds the resident labor force by more than double; this means that many who work in Boston do not actually live in the city (41). This section presents data on unemployment and the association between selected health indicators and employment status.

Figure 2.9 Unemployment Rate by Year

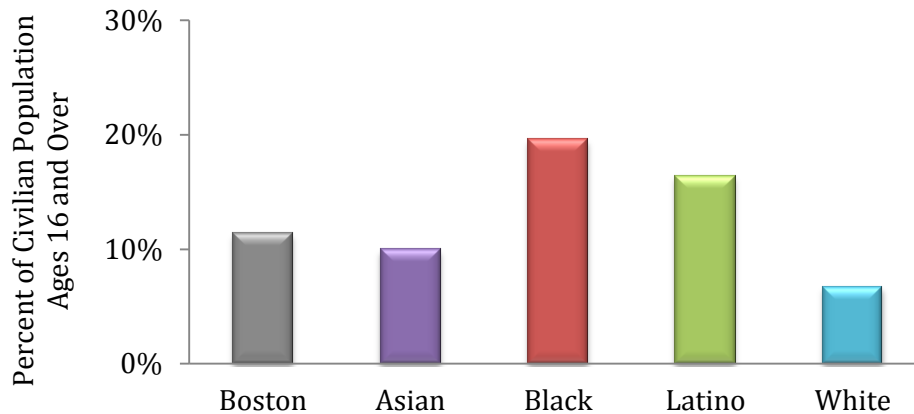
2005	2006	2007	2008	2009	2010	2011	2012
9.1%	6.4%	8.2%	7.7%	11.2%	12.9%	11.6%	9.6%
(7.9-10.3)	(5.6-7.2)	(7.0-9.4)	(6.6-8.8)	(9.8-12.6)	(11.8-14.0)	(10.4-12.8)	(8.6-10.6)

DATA SOURCE: American Community Survey, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, U.S. Census Bureau

Since 2005, the unemployment rate for Boston was highest in 2010 (13%). Rates decreased in 2011 and 2012.

For the years 2010-2012 combined, the unemployment rate in Boston was 11%. Black, Latino, and Asian residents had higher unemployment rates compared to White residents during the same time period.

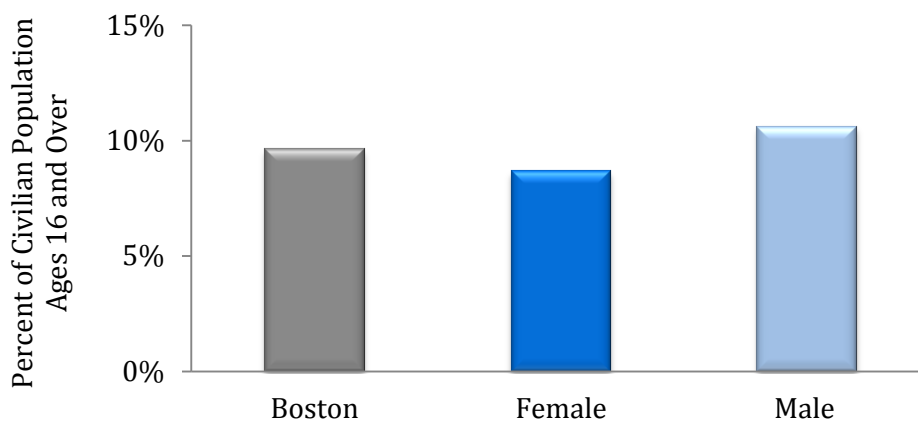
Figure 2.10 Unemployment Rate by Race/Ethnicity, 2010-2012 Combined



Boston	Asian	Black	Latino	White
11.4%	10.0%	19.6%	16.4%	6.7%
(10.8-12.0)	(7.7-12.3)	(17.8-21.4)	(14.4-18.4)	(6.0-7.4)

DATA SOURCE: American Community Survey, 2010-2012, U.S. Census Bureau

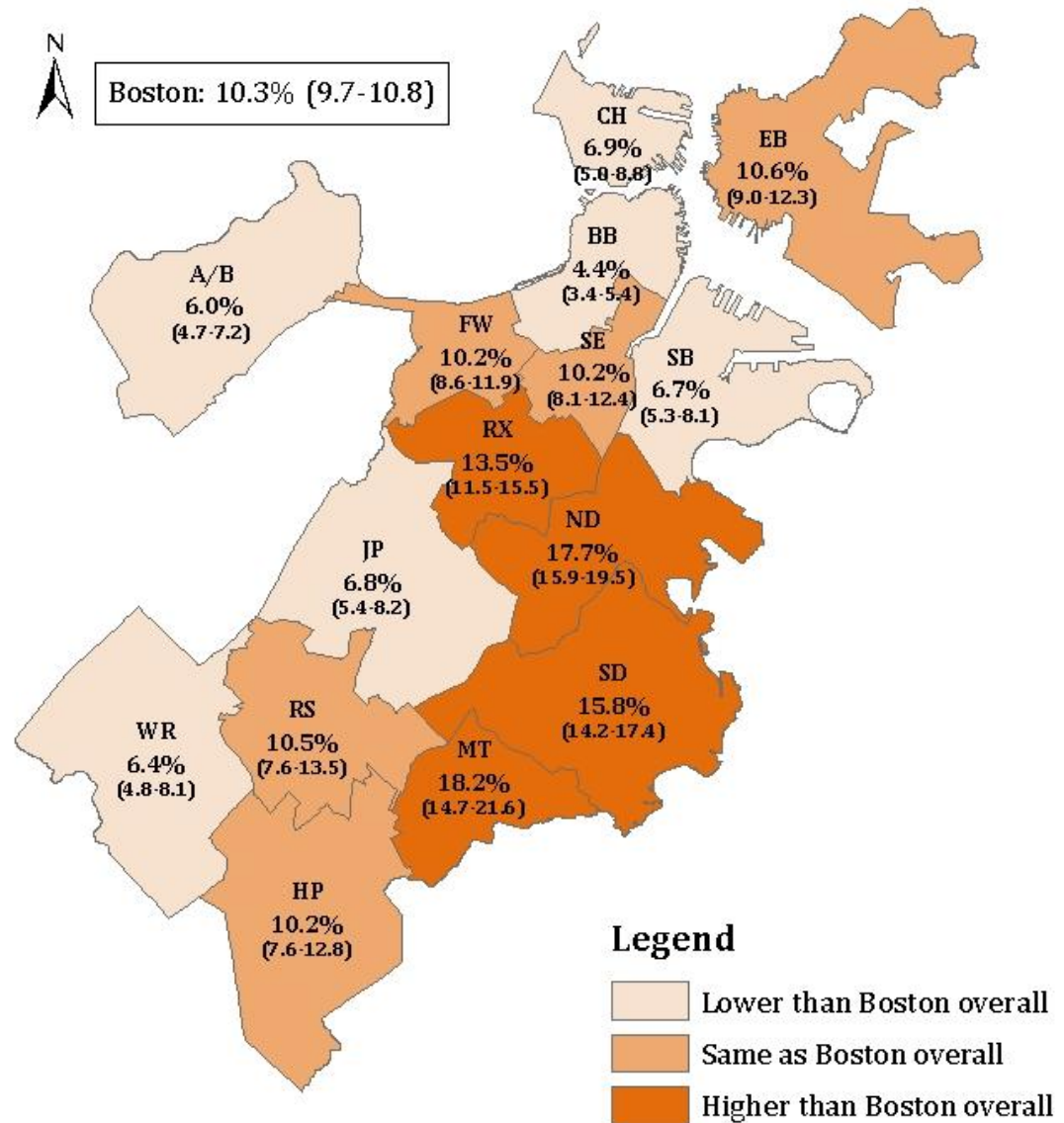
Figure 2.11 Unemployment by Gender, 2012



In 2012, Boston's unemployment rate was 10%. Compared to male residents, females had a lower unemployment rate.

Boston	Female	Male
9.6%	8.6%	10.6%
(8.6-10.6)	(7.3-9.9)	(9.2-12.0)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

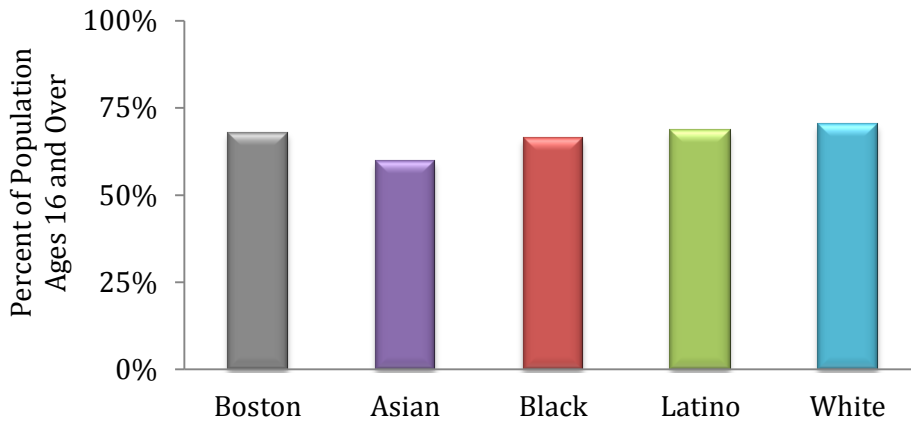
Figure 2.12 Unemployment Rate by Neighborhood, 2008-2012 Combined

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

DATA SOURCE: American Community Survey, 2008-2012, U.S. Census Bureau

During the time period 2008 to 2012, Boston's unemployment rate was 10%. Although rates for Allston/Brighton, Back Bay, Charlestown, Jamaica Plain, South Boston and West Roxbury were lower compared to the rate for Boston, rates were higher for Mattapan, North Dorchester, Roxbury, and South Dorchester.

Figure 2.13 Labor Force Participation Rate by Race/Ethnicity, 2010-2012 Combined



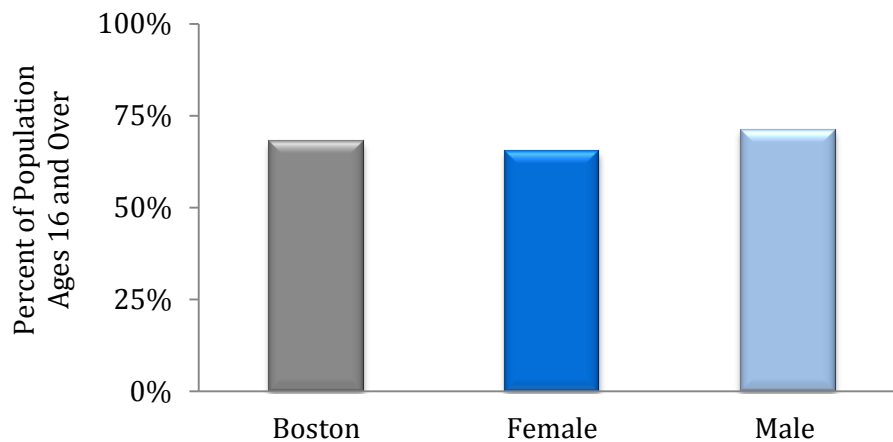
The estimated Labor Force Participation Rate (LFPR) was 68% for Boston during the time period 2010 to 2012 combined. Asian and Black residents had lower LFPR compared to White residents in the same time period.

Boston	Asian	Black	Latino	White
67.9%	59.7%	66.3%	68.5%	70.2%
(67.3-68.5)	(57.7-61.7)	(64.6-68.0)	(66.7-70.3)	(69.4-71.0)

DATA SOURCE: American Community Survey, 2010-2012, U.S. Census Bureau

Figure 2.14 Labor Force Participation by Gender, 2012

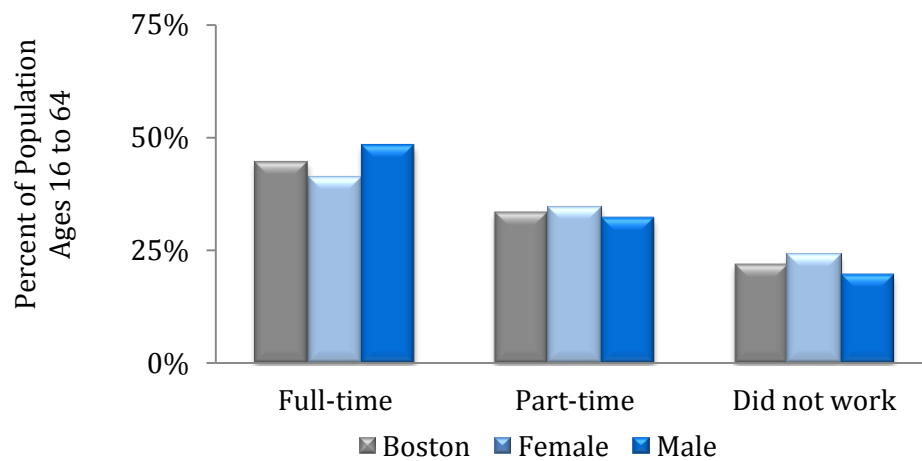
In 2012, the estimated Labor Force Participation Rate was lower for females compared to males.



Boston	Female	Male
67.9%	65.3%	71.1%
(67.3-68.5)	(63.7-66.9)	(69.6-72.7)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

Figure 2.15 Employment Status by Gender, 2012

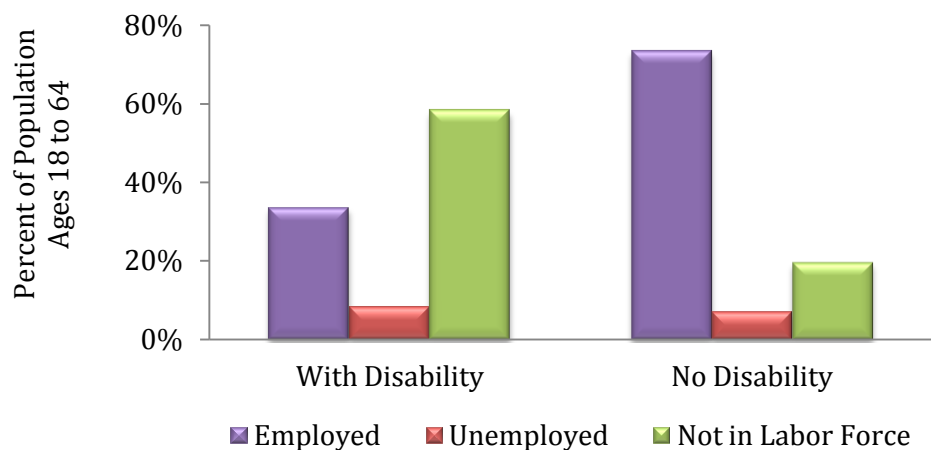


	Full-time	Part-time	Did not work
Boston	44.6% (43.3-45.9)	33.5% (32.3-34.7)	21.9% (20.8-23.1)
Female	41.2% (39.6-42.9)	34.7% (33.0-36.3)	24.1% (22.5-25.6)
Male	48.2% (46.6-49.8)	32.2% (30.4-33.9)	19.7% (18.1-21.2)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

In 2012, 45% of Boston residents worked full-time, 34% worked part-time, and 22% did not work. Compared to males, a lower percentage of females worked full-time while a higher percentage of females worked part-time or did not work.

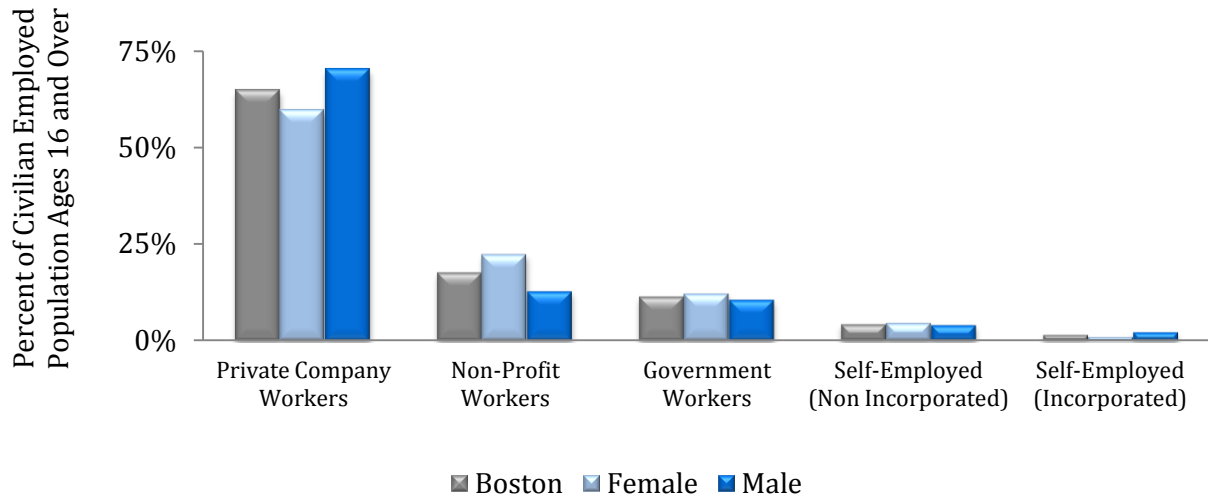
Figure 2.16 Employment Status by Disability Status, 2012



	Employed	Unemployed	Not in Labor Force
No Disability	73.4% (71.6-75.2)	7.0% (6.2-7.8)	19.6% (18.5-20.7)
Have a Disability	33.6% (29.4-37.8)	8.2% (5.9-10.6)	58.2% (53.6-62.7)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

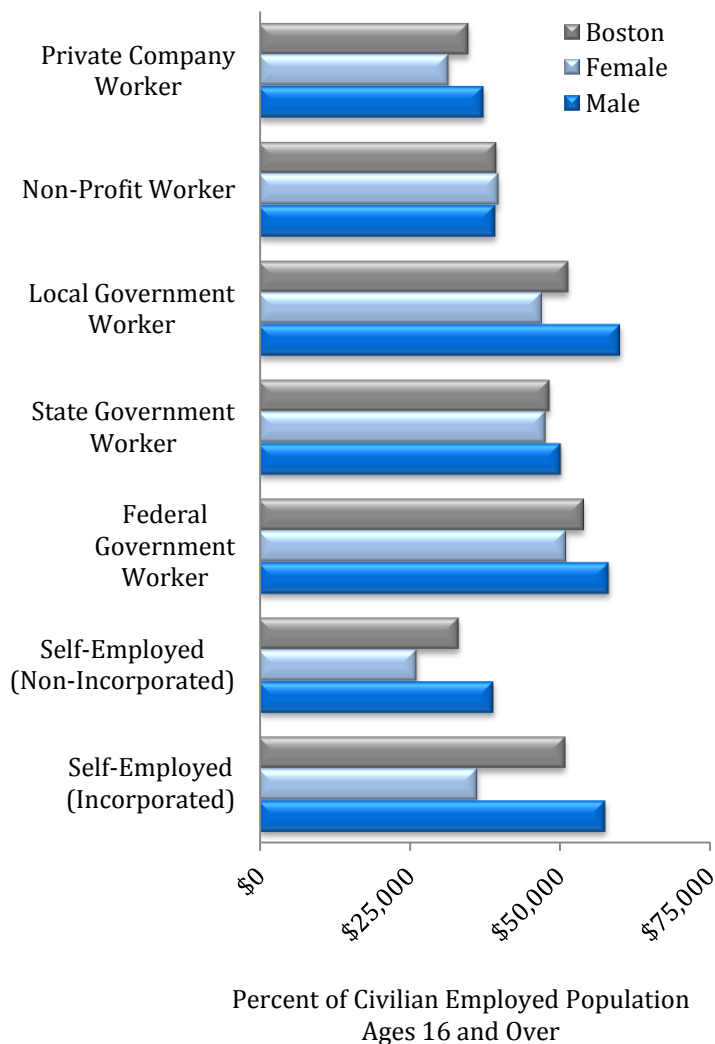
In 2012, a lower percentage of Boston residents with a disability were employed compared to residents with no disability. For the same year, a higher percentage of residents with a disability were not in the labor force compared to residents without a disability.

Figure 2.17 Class of Worker by Gender, 2012

	Boston	Female	Male
Private Company Workers	64.9% (63.1-66.7)	59.7% (57.2-62.2)	70.2% (67.8-72.7)
Non-Profit Workers	17.7% (16.5-18.8)	22.4% (20.7-24.1)	12.8% (11.3-14.3)
Government Workers	11.5% (10.5-12.5)	12.2% (10.8-13.7)	10.7% (9.3-12.0)
Self-Employed (Non-Incorporated)	4.3% (3.5-5.1)	4.6% (3.3-5.9)	4.1% (3.1-5.0)
Self-Employed (Incorporated)	1.6% (1.2-2.0)	1.0% (0.6-1.4)	2.2% (1.4-3.0)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

In 2012, the majority of Boston residents were employed by private companies. However, a lower percentage of those residents were females as compared to males. A higher percentage of females worked for non-profit companies as compared to males. A lower percentage of females were self-employed (incorporated) compared to males.

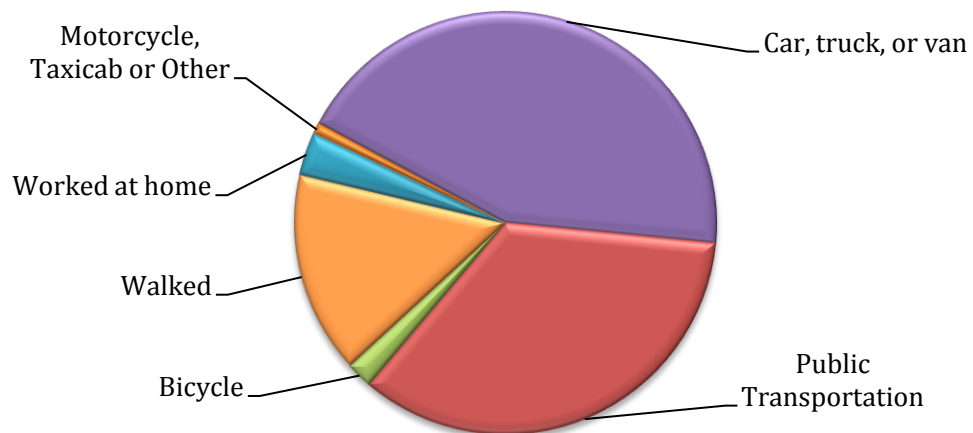
Figure 2.18 Median Income by Type of Work and Gender, 2012

Boston residents working for the federal government had the highest median income in 2012 (\$54,008). Females working for a private company or the local government had lower median incomes compared to males.

	Boston	Female	Male
Private Company Worker	\$34,847 (33,009-36,685)	\$31,479 (29,854-33,104)	\$37,377 (33,176-41,578)
Non-Profit Worker	\$39,476 (36,989-41,963)	\$39,719 (35,853-43,585)	\$39,282 (35,979-42,585)
Local Government Worker	\$51,388 (48,400-54,376)	\$46,898 (41,005-52,791)	\$60,032 (49,099-70,965)
State Government Worker	\$48,263 (42,144-54,382)	\$47,480 (41,901-53,059)	\$50,179 (30,241-70,117)
Federal Government Worker	\$54,008 (42,630-65,386)	\$50,868 (34,483-67,253)	\$58,138 (41,761-74,515)
Self-Employed (Non-Incorporated)	\$33,223 (20,376-46,070)	\$26,183 (12,582-39,784)	\$38,991 (30,259-47,723)
Self-Employed (Incorporated)	\$50,894 (40,457-61,331)	\$36,207 (23,594-48,820)	\$57,583 (37,000-78,166)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

Figure 2.19 Workers' Means of Transportation to Work, 2012

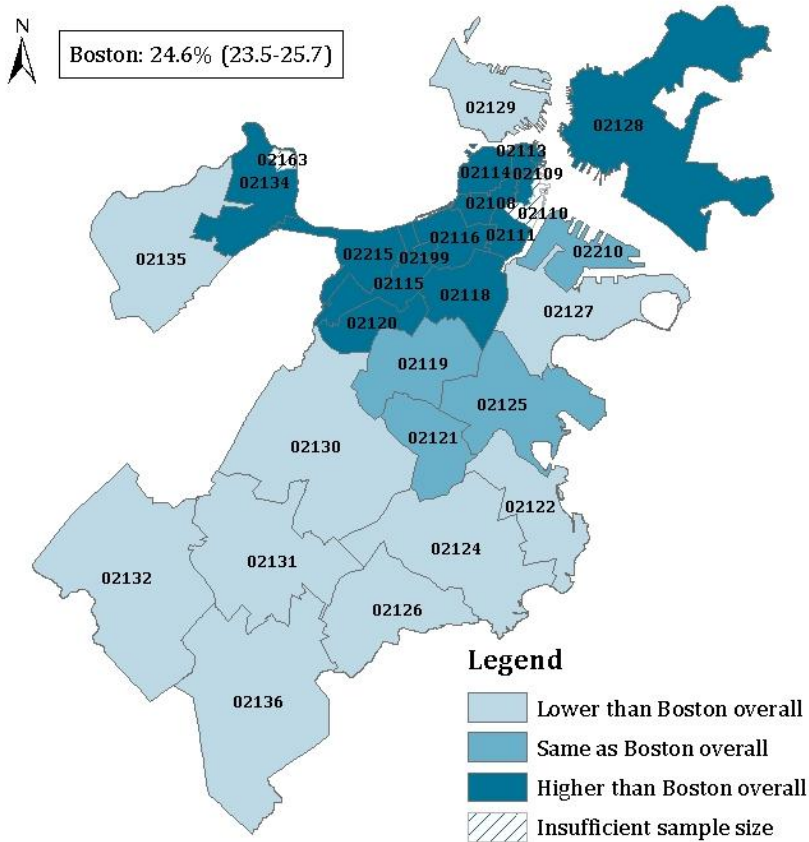


Car, truck or van	43.8% (42.3-45.3)
Public Transportation	34.6% (33.0-36.3)
Bicycle	2.0% (1.5-2.5)
Walked	15.5% (14.2-16.7)
Worked at Home	3.3% (2.6-3.9)
Motorcycle, Taxicab or Other	0.8% (0.5-1.2)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

In 2012, 44% of Boston's employed residents drove to work in a car, truck, or van. Thirty-five percent of working residents relied on public transportation and 16% walked to work.

**Figure 2.20 Zero-Vehicle Households
by Neighborhood, 2008-2012
Combined**



During the combined years of 2008-2012, 25% of Boston households had a vehicle. A higher percentage of households in zip codes 02108, 02109, 02111, 02113, 02114, 02115, 02116, 02118, 02120, 02128, 02134, 02199, and 02215 did not have a vehicle compared to Boston households overall. However, a lower percentage of households in zip codes 02122, 02124, 02126, 02127, 02129, 02130, 02131, 02132, 02135 and 02136 did not have a vehicle compared to Boston overall.

Neighborhood	Zip Code	Zero Vehicle Households
Boston		24.6% (23.5-25.7)
Allston/ Brighton	02134	33.9% (28.3-39.5)
	02135	20.9% (17.4-24.4)
	02163	*
Back Bay (Beacon Hill, Downtown, West End)	02108	59.5% (46.9-72.1)
	02109	44.5% (35.2-53.8)
	02110	*
	02114	54.7% (49.0-60.4)
	02116	33.9% (29.6-38.2)
	02199	46.3% (26.9-65.7)
Charlestown	02129	14.1% (10.3-17.9)
East Boston	02128	30.4% (26.2-34.6)
Fenway	02115	54.1% (46.8-61.4)
	02125	21.6% (18.1-25.1)
Hyde Park	02136	5.5% (3.5-7.5)
Jamaica Plain	02130	17.6% (13.9-21.3)
Mattapan	02126	17.1% (11.7-22.5)
North Dorchester	02121	27.1% (21.5-32.7)
	02215	55.9% (50.9-60.9)
North End	02113	63.9% (57.2-70.6)
Roslindale	02131	8.7% (6.4-11.0)
Roxbury	02119	21.6% (16.7-26.5)
	02120	51.5% (42.3-60.7)
South Boston	02127	17.5% (13.9-21.1)
	02210	23.1% (12.6-33.6)
South Dorchester	02122	16.9% (12.5-21.3)
	02124	16.4% (13.1-19.7)
South End	02111	44.7% (34.2-55.2)
	02118	31.5% (26.9-36.1)
West Roxbury	02132	2.1% (1.0-3.2)

* Insufficient sample size

DATA SOURCE: American Community Survey, 2008-2012, U.S. Census Bureau

Figure 2.21 Health Indicators by Employment Status, 2013

	Employed	Out of Work	Other[†]
Asthma*	8.6% (7.1-10.5)	10.5% (7.1-15.2)	13.3% [‡] (10.3-17.0)
Diabetes*	1.9% (1.3-2.8)	3.6% [‡] (2.2-5.8)	4.7% [‡] (3.2-6.8)
Hypertension*	14.5% (12.5-16.7)	18.2% (13.0-24.9)	25.5% [‡] (21.6-29.9)
Obesity*	17.1% (15.1-19.4)	29.3% [‡] (23.0-36.6)	23.8% [‡] (20.1-28.1)
Persistent Anxiety*	16.2% (14.0-18.7)	25.6% [‡] (19.7-32.5)	23.9% [‡] (20.0-28.3)
Persistent Sadness*	8.1% (6.5-10.1)	19.0% [‡] (13.8-25.6)	17.1% [‡] (13.7-21.1)

*Adjusted for age, race/ethnicity and gender

[†]Includes homemakers, students, retirees and those unable to work

[‡]Model tested comparison to reference group (Employed) is statistically significant (p<0.05).

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

The above table presents select health indicators by employment status. After adjusting for age, race/ethnicity and gender, the prevalence of these health conditions tends to be higher among those who are out of work and among the other non-employed group (homemakers, students, retirees and those unable to work) compared to those who were employed. Adults who were out of work were more likely to report diabetes, persistent anxiety and persistent sadness and were more likely to be obese. Adults among the other non-employed group were significantly more likely to report asthma, diabetes, hypertension, persistent sadness and persistent anxiety and were more likely to be obese as well.

Income & Poverty

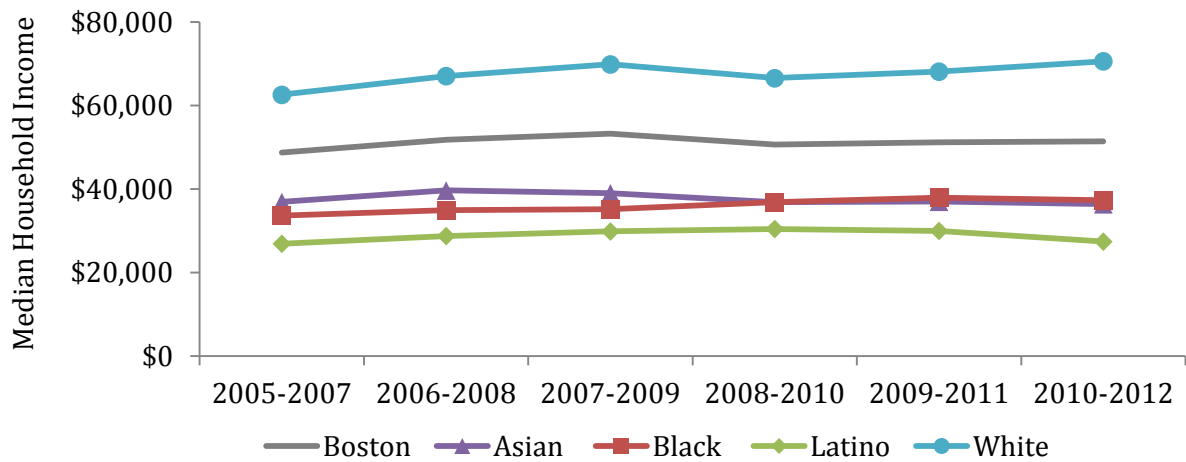
The Gini index represents the distribution of income in a population (0=perfect equality or a situation in which everyone has the same income; 1= perfect inequality or where income is concentrated in the hands of one or a few) (28). As a general rule, an index between 0.5 and 0.7 translates to a high level of unequal income distribution or income inequality. The degree of income inequality in Boston is striking: in 2012 the Gini index was 0.54.

In 2012, the official poverty rate in the United States was 15.9%, while in Boston, it was 21.6% with significant geographic variation [see poverty map in this section] (29). Poverty thresholds vary by family size and composition. For example, a family of four with two children and two adults has a poverty threshold of \$23,283, while a single person under the age of 65 has a poverty threshold of \$11,945. Residents living at or below poverty have a difficult time making ends meet. Working for forty hours a week at minimum wage (\$8), an individual will earn only \$16,640 annually (30). The gap between the current minimum wage and what is considered necessary to support a family makes it difficult for Boston's lowest-earning families to enjoy the same resources and financial safety net as higher-income individuals.

The cumulative effects of poverty are powerful predictors of poor health outcomes, often explained by a combination of environmental factors, social pressures, and influences on personal behavior. Poverty leads to chronic stress, which has been associated with poor health outcomes, and may encourage adverse coping behaviors such as tobacco use and excessive alcohol consumption. Chronic diseases such as diabetes have been shown to be associated with income (31); individuals making less than \$25,000 are two and half times more likely to develop diabetes than those with incomes over \$50,000. Those living below the poverty line, especially children, are more likely to develop asthma symptoms (32). Inequities in HIV/AIDS death rates between socioeconomic groups is partly attributed to higher rates of risk behavior, depression and impaired access to antiretroviral therapy (33, 34).

This section presents data on household income, poverty, and food insecurity in Boston, and the association between income and selected health indicators.

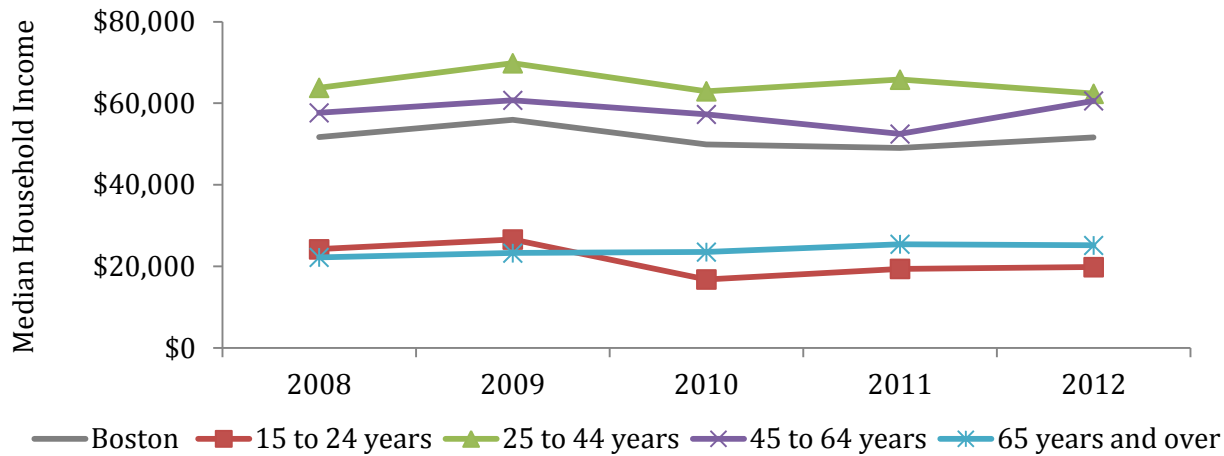
Figure 2.22 Median Household Income by Race/Ethnicity and Year (3 Year Estimates)



	Boston	Asian	Black	Latino	White
2005-2007	\$48,729 (46,980-50,478)	\$36,937 (32,901-40,973)	\$33,702 (31,523-35,881)	\$26,947 (23,647-30,247)	\$62,605 (60,205-65,005)
2006-2008	\$51,849 (50,662-53,036)	\$39,691 (36,491-42,891)	\$34,985 (32,223-37,747)	\$28,793 (26,185-31,401)	\$67,087 (64,587-69,587)
2007-2009	\$53,324 (51,993-54,655)	\$39,031 (34,798-43,264)	\$35,197 (33,443-36,951)	\$29,886 (27,714-32,058)	\$69,890 (67,806-71,974)
2008-2010	\$50,710 (49,613-51,807)	\$36,889 (33,035-40,743)	\$36,922 (34,719-39,125)	\$30,485 (28,000-32,970)	\$66,583 (64,759-68,407)
2009-2011	\$51,230 (49,949-52,511)	\$37,027 (31,960-42,094)	\$37,974 (35,929-40,019)	\$30,019 (27,069-32,969)	\$68,162 (65,923-70,401)
2010-2012	\$51,452 (50,016-52,888)	\$36,419 (32,393-40,445)	\$37,385 (34,509-40,261)	\$27,461 (23,061-31,861)	\$70,644 (67,809-73,479)

DATA SOURCE: American Community Surveys, 2005-2007, 2006-2008, 2007-2009, 2008-2010, 2009-2011, 2010-2012, U.S. Census Bureau

Racial/ethnic group differences were observed for median household income of Boston residents. For combined years of 2010-2012, Asian, Black, and Latino resident households had lower median household income compared to White resident households.

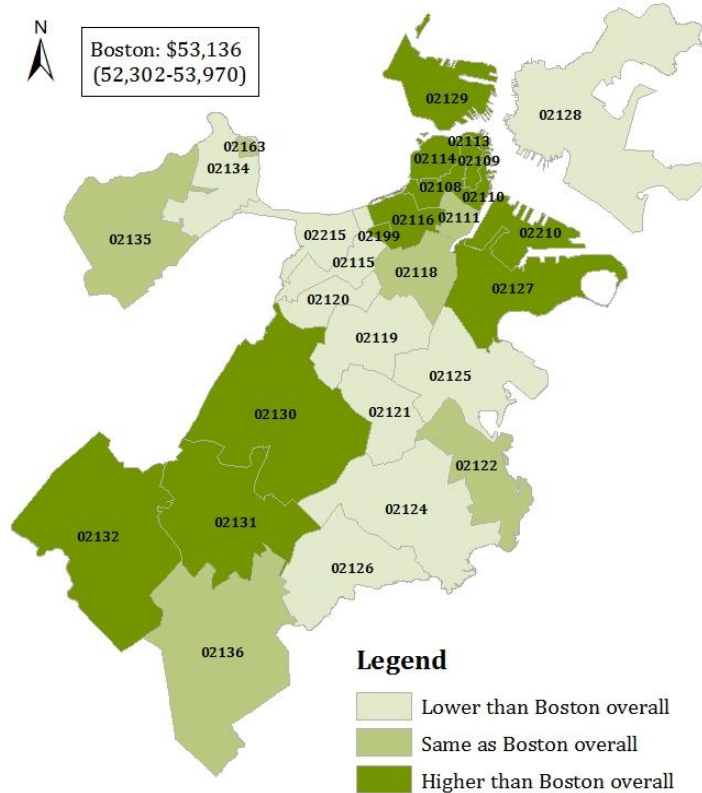
Figure 2.23 Median Household Income by Age and Year

	Boston	15 to 24 years	25 to 44 years	45 to 64 years	65 years and over
2008	\$51,688 (50,174-53,202)	\$24,201 (17,190-31,212)	\$63,831 (58,653-69,009)	\$57,685 (50,602-64,768)	\$22,225 (19,706-24,744)
2009	\$55,979 (52,794-59,164)	\$26,611 (18,828-34,394)	\$69,853 (65,263-74,443)	\$60,759 (55,757-65,761)	\$23,257 (19,835-26,679)
2010	\$49,893 (46,983-52,803)	\$16,804 (10,925-22,683)	\$62,982 (59,589-66,375)	\$57,302 (50,443-64,161)	\$23,520(18,916-28,124)
2011	\$49,081 (45,887-52,275)	\$19,398 (15,613-23,183)	\$65,824 (60,913-70,735)	\$52,492 (48,966-56,018)	\$25,443 (22,041-28,845)
2012	\$51,642 (49,663-53,621)	\$19,826 (15,352-24,300)	\$62,364 (56,631-68,097)	\$60,617 (56,071-65,163)	\$25,155(20,502-29,808)

DATA SOURCE: American Community Survey, 2008, 2009, 2010, 2011, 2012, U.S. Census Bureau

In 2012, the estimated median household income of Boston residents was \$51,642. Compared to households in which the head of household was 25-44 years of age, households with the head of household ages 15-24 and 65 years and over had lower median household income in 2012.

Figure 2.24 Median Household Income by Zip Code, 2008-2012 Combined

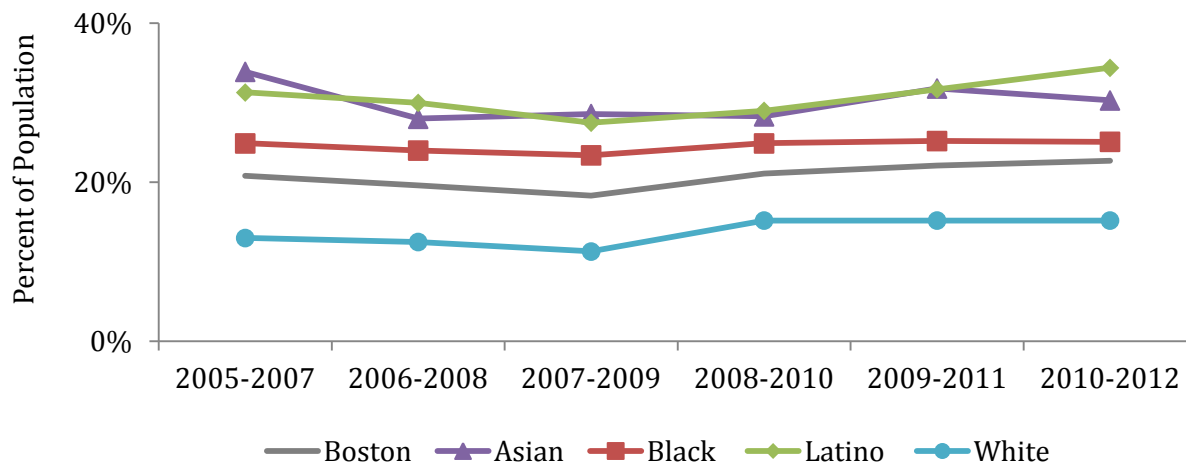


During 2008 to 2012 combined, the median household income for Boston residents was \$53,136. Residents living in zip codes 02115, 02119, 02120, 02121, 02124, 02125, 02126, 02128, 02134, and 02215 had lower household income compared to Boston overall.

Neighborhood	Zip Code	Median Income
Boston		\$53,136 (52,302-53,970)
Allston/Brighton	02134	\$37,638 (34,949-40,327)
	02135	\$50,291 (46,135-54,447)
	02163	\$43,889 (24,923-62,855)
Back Bay (Beacon Hill, Downtown, West End)	02108	\$95,753 (75,684-115,822)
	02109	\$128,022 (109,940-146,104)
	02110	\$123,795 (90,412-157,178)
	02114	\$79,734 (66,211-93,257)
	02116	\$87,630 (78,454-96,806)
	02199	\$107,159 (73,249-141,069)
Charlestown	02129	\$89,105 (80,225-97,985)
East Boston	02128	\$49,549 (46,556-52,542)
Fenway	02115	\$23,677 (19,502-27,852)
	02125	\$42,298 (38,550-46,046)
Hyde Park	02136	\$57,080 (52,633-61,527)
Jamaica Plain	02130	\$74,198 (68,736-79,660)
Mattapan	02126	\$43,532 (38,418-48,646)
North Dorchester	02121	\$30,419 (27,940-32,898)
	02215	\$30,823 (26,067-35,579)
North End	02113	\$64,413 (58,174-70,652)
Roslindale	02131	\$61,099 (57,285-64,913)
Roxbury	02119	\$27,051 (21,553-32,549)
	02120	\$32,367 (27,717-37,017)
South Boston	02127	\$67,012 (61,648-72,376)
	02210	\$111,061 (75,203-146,919)
South Dorchester	02122	\$51,798 (45,317-58,279)
	02124	\$48,329 (45,824-50,834)
South End	02111	\$44,758 (32,577-56,939)
	02118	\$50,000 (42,168-57,832)
West Roxbury	02132	\$82,421 (75,989-88,853)

DATA SOURCE: American Community Survey, 2008-2012, U.S. Census Bureau

Figure 2.25 Population Living Below Poverty Level by Race/Ethnicity and Year (3 Year Estimates)

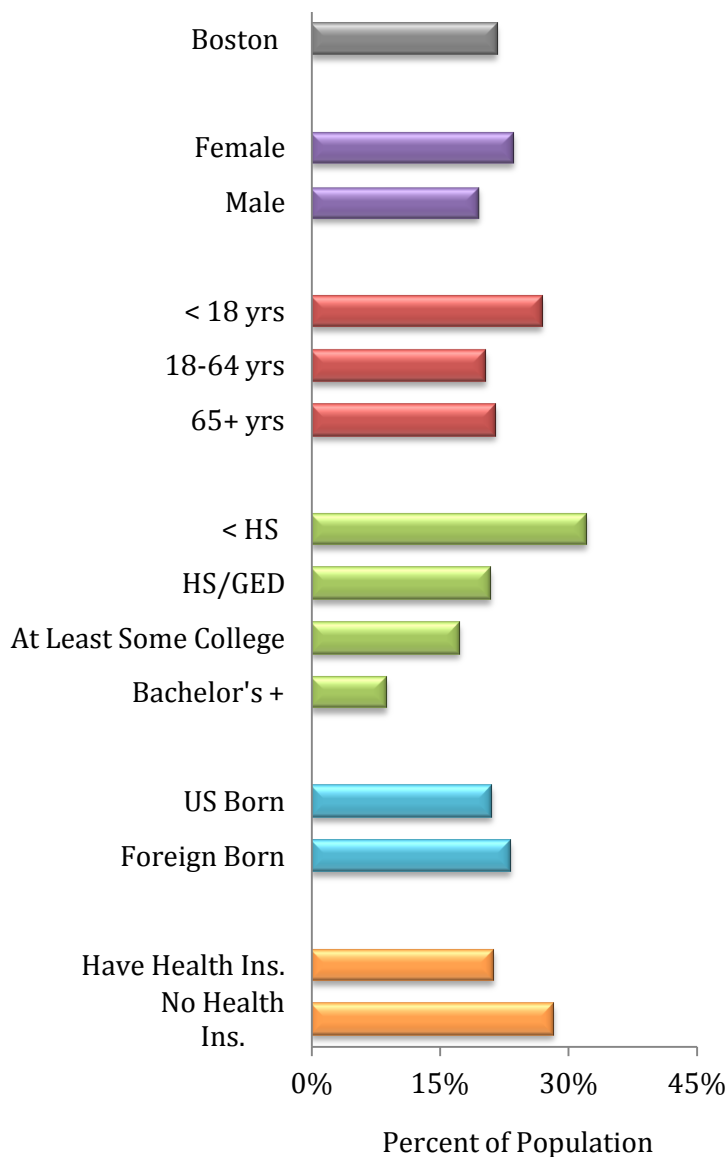


	Boston	Asian	Black	Latino	White
2005-2007	20.8% (19.7-21.9)	33.9% (30.0-37.8)	24.9% (22.8-27.0)	31.3% (27.7-34.9)	13.0% (11.8-14.2)
2006-2008	19.6% (18.6-20.6)	28.0% (24.4-31.6)	24.0% (21.4-26.6)	30.0% (26.9-33.1)	12.5% (11.2-13.8)
2007-2009	18.3% (17.3-19.3)	28.6% (24.9-32.3)	23.4% (21.1-25.7)	27.5% (25.0-30.0)	11.3% (10.3-12.3)
2008-2010	21.1% (20.1-22.1)	28.3% (24.7-31.9)	24.9% (22.6-27.2)	29.0% (26.3-31.7)	15.2% (14.0-16.4)
2009-2011	22.1% (21.0-23.2)	31.8% (28.2-35.4)	25.2% (22.8-27.6)	31.7% (28.8-34.6)	15.2% (14.1-16.3)
2010-2012	22.7% (21.7-23.7)	30.3% (26.7-33.9)	25.1% (22.6-27.6)	34.4% (32.0-36.8)	15.2% (14.2-16.2)

DATA SOURCE: American Community Survey, 2005-2007, 2006-2008, 2007-2009, 2008-2010, 2009-2011, 2010-2012, U.S. Census Bureau

An estimated 23% of Boston residents had an income below the poverty level for the combined years of 2010-2012. Compared to White residents, the percentage of Asian, Black and Latino residents living below poverty level was higher for 2010-2012.

Figure 2.26 Population Living Below Poverty Level by Selected Indicators, 2012



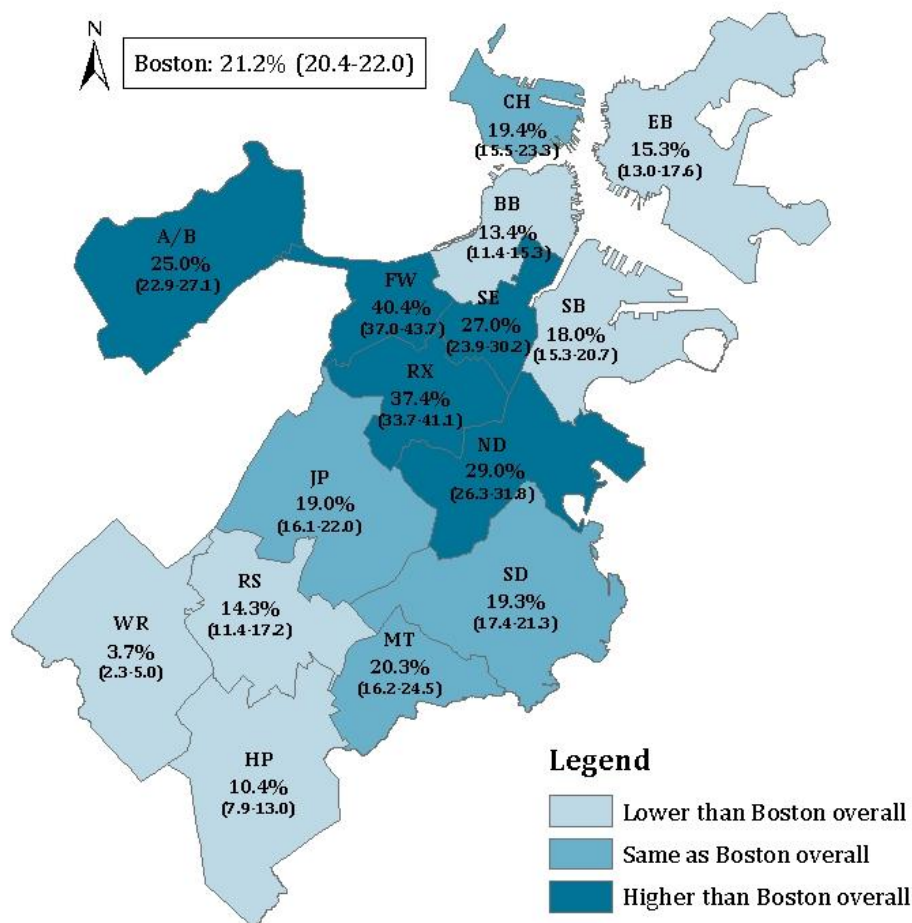
Boston	21.6% (20.1-23.2)
Gender	
Female	23.6% (21.6-25.6)
Male	19.5% (17.8-21.2)
Age	
<18 yrs	26.9% (23.3-30.6)
18-64 yrs	20.3% (18.8-21.8)
65+ yrs	21.4% (18.4-24.5)
Educational Attainment	
Less than High School	32.0% (28.0-36.1)
High School Diploma or GED	20.8% (17.8-23.9)
Some College or Associate's Degree	17.3% (14.8-19.8)
Bachelor's Degree or Higher	8.8% (7.5-10.0)
Place of Birth	
US Born	21.0% (19.5-22.5)
Foreign Born	23.2% (20.4-26.0)
Health Insurance Status	
Have Health Insurance	21.3% (20.0-22.5)
No Health Insurance	28.3% (21.1-35.4)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

In 2012, an estimated 22% of Boston residents lived below the poverty level. A lower percentage of male residents than female residents lived below the poverty level as well as residents with a high school diploma or GED or higher education compared with residents who had less than a high school education. A higher percentage of residents under the age of 18 lived below the poverty level compared to residents ages 18-64. The percentage of residents living in poverty was similar with respect to place of birth and health insurance status.

Figure 2.27 Percent of Population with Income Below Poverty Level, 2008-2012 Combined

During the combined years of 2008 and 2012, Allston/Brighton, Fenway, North Dorchester, Roxbury, and South End had a higher percentage of residents living below the poverty level compared to Boston overall. In the same time period, compared to Boston overall, a lower percentage of residents lived below the poverty level in Back Bay, East Boston, Hyde Park, Roslindale, South Boston, and West Roxbury. No statistical difference was seen for other neighborhoods.



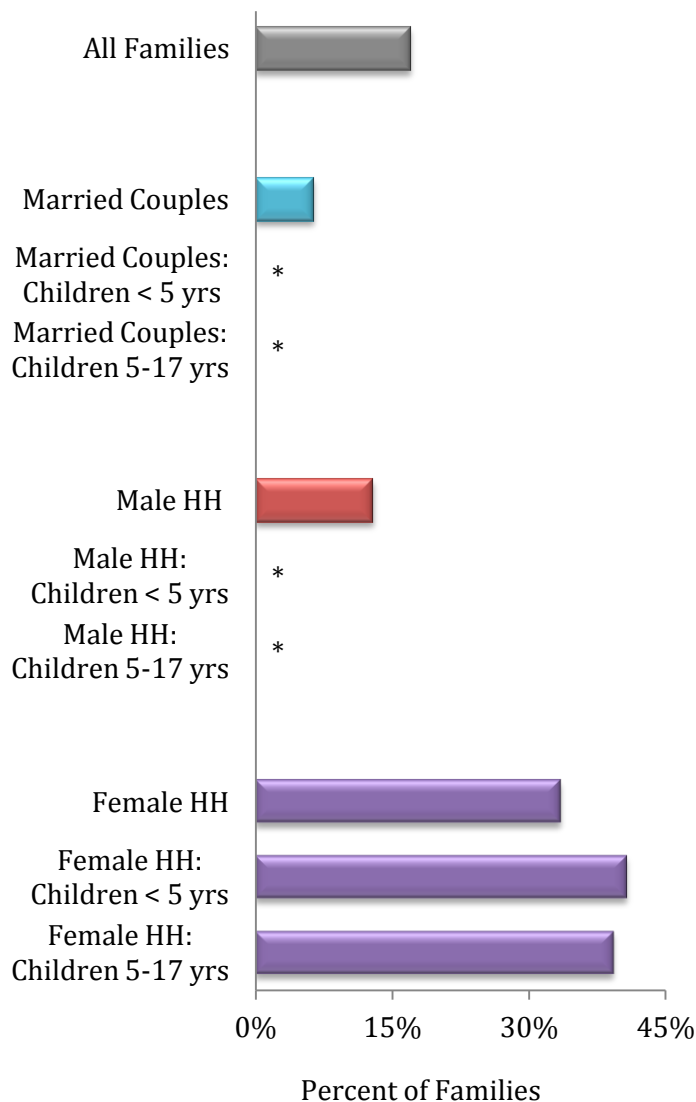
NOTE: Back Bay includes Beacon Hill, Downtown, the North End, and the West End. The South End includes Chinatown.

DATA SOURCE: American Community Survey, 2008-2012, U.S. Census Bureau

Poverty status was determined for all people except people who are institutionalized, people in military group quarters, people in college dormitories, and unrelated individuals under 15 years of age. These groups were excluded from the numerator and denominator when calculating poverty rates for neighborhoods and Boston overall. For example, due to the high proportion of students living in college dormitories, the poverty level for Fenway represents only approximately 50% of its population.

Though poverty is experienced across all socio-demographic groups, poverty in Fenway occurs primarily among a younger (ages 18 to 29), White and Asian population, which is very different than what we see in other Boston neighborhoods where poverty is more often experienced among single-parent households, the elderly, Black, Latino, and immigrant populations. Fenway's relatively high poverty rate may largely reflect students living off campus and lacking steady/full-time employment incomes.

Figure 2.28 Population Living Below Poverty Level by Family Type, 2012



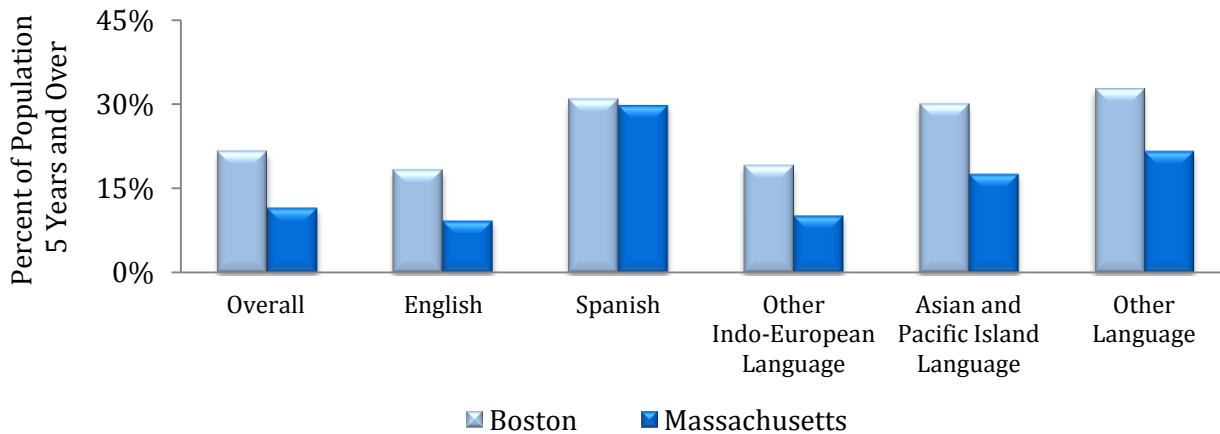
All Families	17.0% (14.8-19.1)
Married Couple Families	
Married Couples	6.4% (4.4-8.3)
Married Couples: Children < 5 yrs	*
Married Couples: Children 5-17 yrs	*
Male Headed Household Families	
Male Headed Household	12.9% (7.9-17.8)
Male HH: Children < 5 yrs	*
Male HH: Children 5-17 yrs	*
Female Headed Household Families	
Female Headed Household	33.5% (28.9-38.0)
Female HH: Children < 5 yrs	40.7% (27.9-53.6)
Female HH: Children 5-17 yrs	39.2% (31.4-47.1)

*Insufficient sample size

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

In 2012, 17% of all Boston families lived below the poverty level. Compared to female-headed households, a lower percentage of married couples and male-headed households lived below the poverty level.

Figure 2.29 Population Living Below Poverty Level by Language Spoken at Home, Boston and Massachusetts, 2012

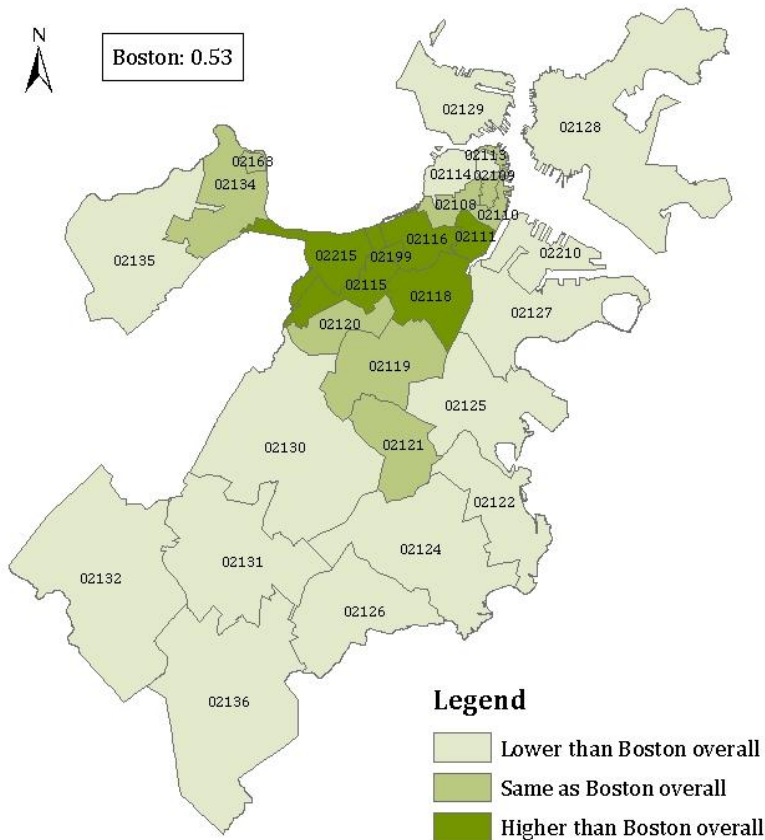


	Overall	English	Spanish	Other Indo-European Language	Asian and Pacific Island Language	Other Language
Boston	21.6% (20.0-23.2)	18.3% (16.7-20.0)	30.8% (26.5-35.1)	19.1% (13.1-25.1)	30.0% (24.2-35.8)	32.7% (19.0-46.4)
MA	11.6% (11.2-11.9)	9.3% (9.0-9.6)	29.7% (28.0-31.5)	10.2% (8.9-11.5)	17.6% (15.2-20.0)	21.6% (17.2-26.0)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

Compared to Massachusetts, a higher percentage of Boston residents lived below the poverty level in 2012. A higher percentage of Boston residents who spoke English, other Indo-European languages, or Asian and Pacific Island languages at home lived below the poverty level compared to Massachusetts.

**Figure 2.30 Gini Index by Zip Code,
2008-2012 Combined**



The Gini index represents the distribution of income in a population (0=perfect equality or a situation in which everyone has the same income; 1= perfect inequality or where income is concentrated in the hands of one or a few). As a general rule, an index between 0.5 and 0.7 translates to a high level of unequal income distribution or income inequality. The Gini Index was applied to the Boston population by zip code. The overall Boston's Gini index was 0.53 for the combined time period of 2008 to 2012. The index values by zip code ranged from 0.42 (02210) to 0.69 (02111). Compared to Boston, zip codes 02111, 02115, 02116, 02118, 02199, 02215 had higher Gini index values.

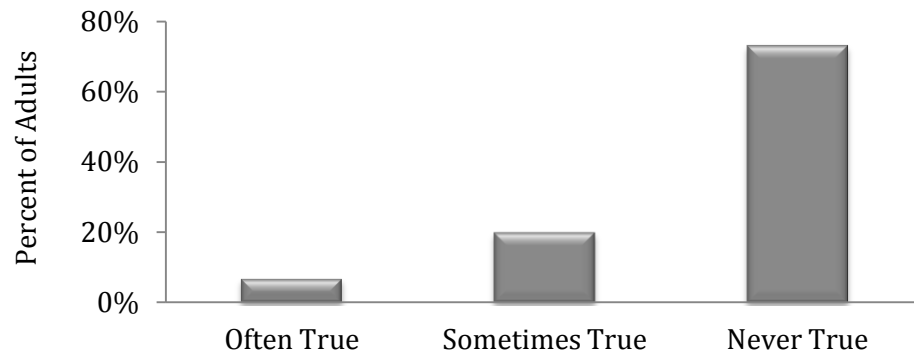
Neighborhood	Zip Code	Gini Index
Boston		0.53 (0.53-0.54)
Allston/Brighton	02134	0.52 (0.47-0.56)
	02135	0.47 (0.45-0.49)
	02163	0.52 (0.41-0.63)
Back Bay (Beacon Hill, Downtown, West End)	02108	0.52 (0.44-0.59)
	02109	0.48 (0.43-0.54)
	02110	0.57 (0.49-0.65)
	02114	0.49 (0.46-0.52)
	02116	0.59 (0.56-0.62)
	02199	0.60 (0.55-0.65)
Charlestown	02129	0.50 (0.48-0.53)
East Boston	02128	0.42 (0.40-0.44)
Fenway	02115	0.65 (0.62-0.68)
	02125	0.49 (0.47-0.51)
Hyde Park	02136	0.43 (0.41-0.46)
Jamaica Plain	02130	0.48 (0.45-0.50)
Mattapan	02126	0.44 (0.42-0.47)
North Dorchester	02121	0.52 (0.49-0.56)
	02215	0.57 (0.54-0.61)
North End	02113	0.47 (0.43-0.52)
Roslindale	02131	0.44 (0.42-0.46)
Roxbury	02119	0.53 (0.49-0.56)
	02120	0.51 (0.47-0.54)
South Boston	02127	0.48 (0.46-0.50)
	02210	0.42 (0.34-0.50)
South Dorchester	02122	0.44 (0.41-0.46)
	02124	0.46 (0.44-0.48)
South End*	02111	0.69 (0.64-0.74)
	02118	0.58 (0.56-0.61)
West Roxbury	02132	0.43 (0.40-0.46)

* Includes Chinatown.

DATA SOURCE: American Community Survey, 2008-2012, U.S. Census Bureau

For 7% of Boston residents in 2013, it was often true that the food they purchased did not last and they did not have money to get more.

Figure 2.31 Food Purchased Did Not Last and Did Not Have Money to Get More, 2013



Often True	Sometimes True	Never True
6.8%	20.1%	73.1%
(5.7-8.0)	(18.3-21.9)	(71.1-75.1)

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

Figure 2.32 Hungry But Did Not Eat Because Could Not Afford Food, 2013



Often True	Sometimes True	Never True
2.2%	10.2%	87.6%
(1.6-2.9)	(8.8-11.6)	(86.1-89.1)

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

In 2013, it was often true that 2% of Boston residents remained hungry because they could not afford food. This was sometimes true for 10% of residents.

Figure 2.33 Health Indicators by Household Income, 2013			
	Less than \$25,000	\$25,000-\$49,999	\$50,000 or more
Asthma*	15.1% † (11.8-19.0)	10.4% (7.6-13.9)	7.1% (5.3-9.3)
Diabetes*	4.6% † (3.1-6.9)	3.1% † (2.1-4.8)	1.8% (1.2-2.7)
Hypertension*	24.2% † (20.6-28.1)	18.0% (14.3-22.4)	15.3 (12.6-18.5)
Obesity**	25.8% † (21.3-30.3)	18.2% (15.0-21.9)	17.3% (14.7-20.3)
Persistent Anxiety**	30.6% † (26.2-35.4)	16.9% (13.1-21.5)	12.9% (10.6-15.5)
Persistent Sadness**	22.4% † (18.5-26.8)	8.5% (6.0-12.0)	5.6% (4.1-7.7)

*Adjusted for age, race/ethnicity and gender

†Model tested comparison to reference group (\$50,000 or more) is statistically significant (p<0.05).‡15-20% of unweighted sample was missing data

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

The above table describes select health indicators by household income level. After adjusting for differences in age, race/ethnicity and gender, the prevalence of the above health outcomes tends to decrease as income level increases. Those who had a household income of <\$25,000 were more likely to report asthma, diabetes, hypertension, persistent anxiety and persistent sadness and were more likely to be obese compared to those with a household income \$50,000+. Those who had a household income of \$25,000-\$49,999 were more likely to report diabetes compared to those with a household income of \$50,000.

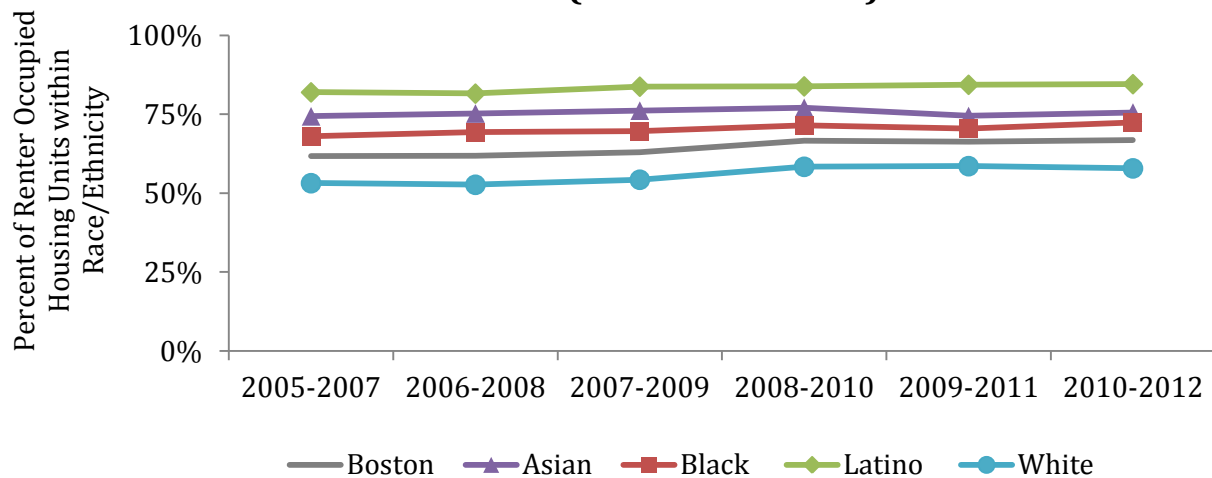
Housing

In Boston, the median value of owner-occupied housing units is about \$370,400 with over 25% of those homes topping \$500,000 (35). Average rental prices in Boston are among the highest in the nation (36) with over 35% of residents paying more than \$1,500 a month (35). Subsidized housing, accessible on a limited basis to those with incomes less than 50% of the city-wide median income level (37), often has a wait list of more than two years (38). Meanwhile, nearly 80,000 Boston residents are cost burdened and pay over 30% of their income toward rent (39, 40), diverting finances away from other necessities such as childcare, food, medical, and dental care (41). The benefits of home ownership, including tax deductions, cost savings over time compared to renting, and the ability to build equity, are reserved for higher-income individuals. Lower-income individuals who cannot afford home ownership often struggle with the negative impact that residential instability has on crime (42), mental health (43) and social capital (44, 45).

Safe and stable housing provides personal security, reduces stress and exposure to disease, and provides a foundation for meeting basic hygienic, nutritional, and healthcare needs. Average income gains over the past decade have failed to keep pace with rising housing costs, pushing thousands of residents into unstable housing situations(46). In 2013, over 7,000 individuals in Boston were homeless (47). Without consistent access to health care, homeless individuals are less likely to participate in preventative care and are much more likely to utilize the emergency department for non-emergencies. Such patterns of use are not only a burden on the healthcare system, but detrimental to personal health as well (48).

This section presents data on housing tenure, foreclosures, and homelessness, and the association between housing tenure and selected health indicators.

Figure 2.34 Renter-Occupied Tenure by Race/Ethnicity and Year (3 Year Estimates)

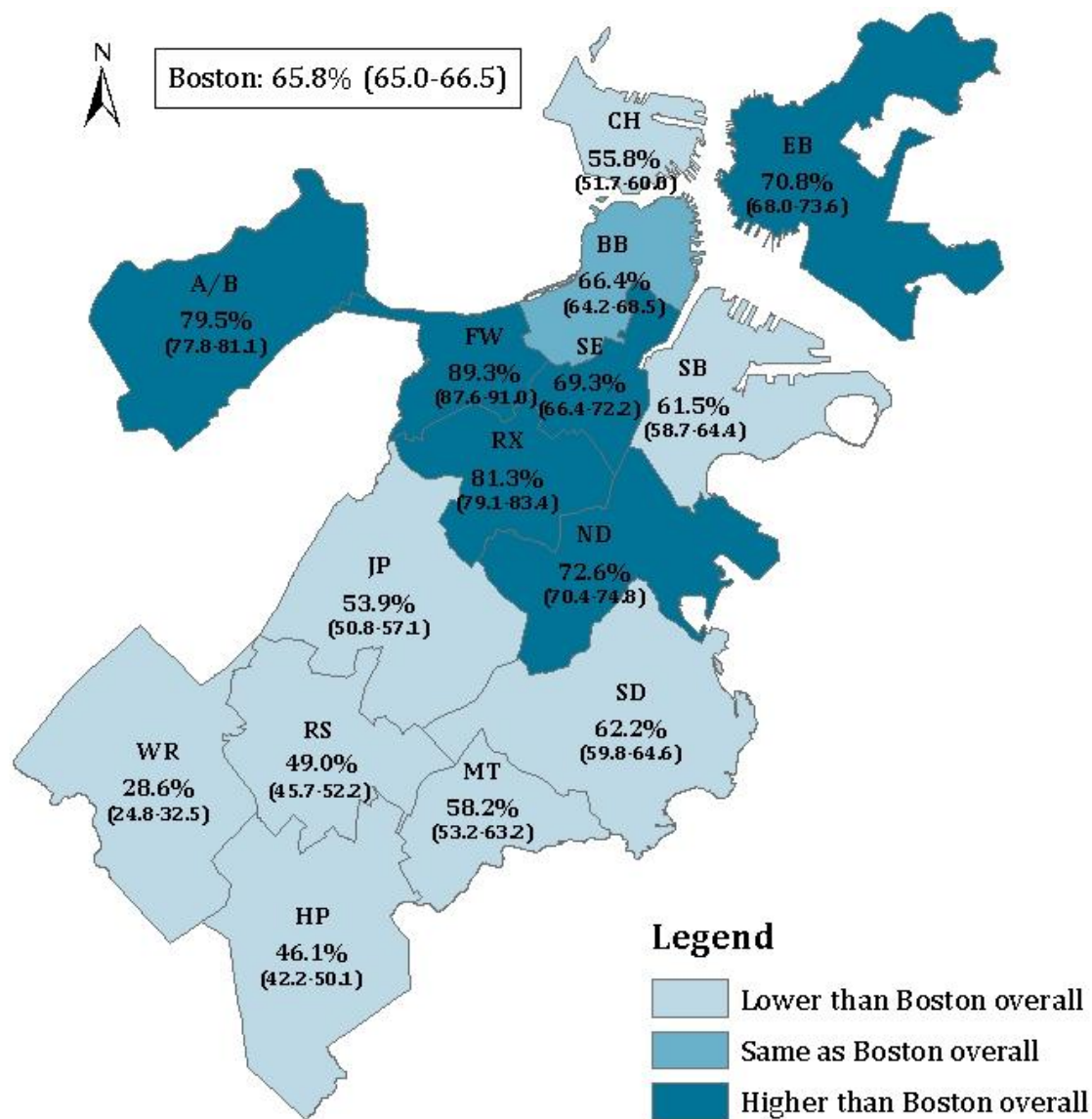


	Boston	Asian	Black	Latino	White
2005-2007	61.8% (60.7-62.9)	74.4% (70.3-78.5)	68.0% (65.7-70.3)	82.0% (79.5-84.5)	53.2% (51.7-54.7)
2006-2008	61.9% (60.8-63.0)	75.3% (72.3-78.3)	69.4% (66.9-71.9)	81.6% (79.2-84.0)	52.7% (51.2-54.2)
2007-2009	63.0% (61.9-64.1)	76.2% (72.9-79.5)	69.7% (67.7-71.7)	83.8% (81.7-85.9)	54.3% (52.9-55.7)
2008-2010	66.6% (65.8-67.4)	77.1% (73.8-80.4)	71.5% (69.6-73.4)	83.9% (81.9-85.9)	58.4% (57.2-59.6)
2009-2011	66.3% (65.2-67.4)	74.5% (71.5-77.5)	70.5% (68.2-72.8)	84.4% (82.1-86.7)	58.6% (57.4-59.8)
2010-2012	66.8% (66.0-67.6)	75.6% (72.7-78.5)	72.4% (70.5-74.3)	84.6% (82.7-86.5)	57.9% (56.8-59.0)

DATA SOURCE: American Community Survey, 2005-2007, 2006-2008, 2007-2009, 2008-2010, 2009-2011, 2010-2012, U.S. Census Bureau

The three year estimates for renter-occupied tenure varied by race/ethnicity. Compared to Whites, a higher percentage of Asian, Black and Latino residents lived in renter-occupied units during 2010-2012. Sixty-seven percent of Boston residents lived in renter-occupied units during the same time period.

Figure 2.35 Renter-Occupied Tenure by Neighborhood, 2008-2012 Combined

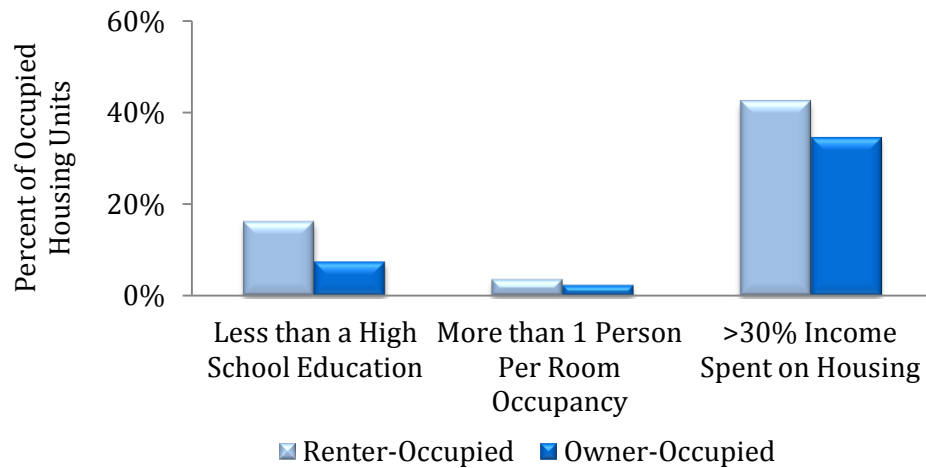


NOTE: Back Bay includes Beacon Hill, Downtown, the North End, and the West End. The South End includes Chinatown.

DATA SOURCE: American Community Survey, 2008-2012, U.S. Census Bureau

During 2008-2012, a higher percentage of units in Allston/Brighton, East Boston, Fenway, North Dorchester, Roxbury and the South End were renter-occupied compared to Boston. The percentage of renter-occupied units was lower in all other neighborhoods except for Back Bay where there was no statistical difference compared to Boston.

Figure 2.36 Tenure by Selected Characteristics, 2012

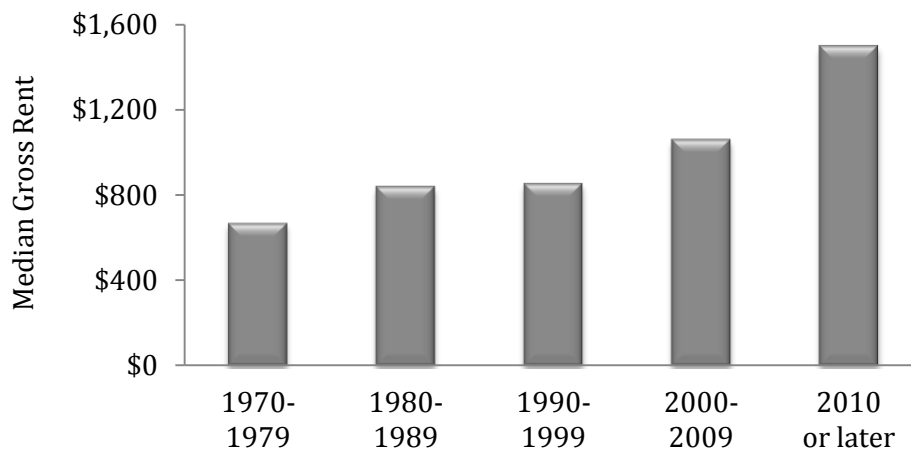


	Renter-Occupied	Owner-Occupied
Less than a High School Education	16.3% (14.7-17.9)	7.5% (6.2-8.8)
More than 1 Person Per Room Occupancy	3.7% (2.8-4.5)	2.4% (1.5-3.3)
>30% Income Spent on Housing	42.5% (39.8-45.3)	34.5% (31.3-37.6)

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

In 2012, a higher percentage of Boston residents living in renter-occupied units had less than a high school education, more than one person per room occupancy and paid more than 30% of their income on housing compared to residents in owner-occupied units.

**Figure 2.37 Median Gross Rent* by Year
Householder Moved into Unit, 2012**



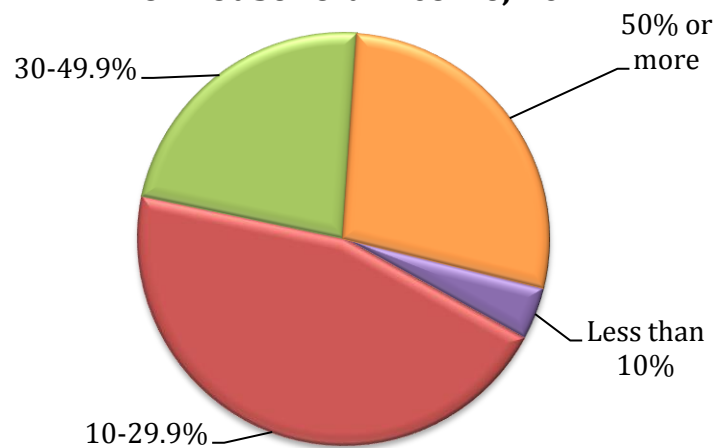
1970-1979	1980-1989	1990-1999	2000-2009	2010 or later
\$668 (445-891)	\$840 (606-1,074)	\$854 (744-964)	\$1,060 (1,003-1,117)	\$1,498 (1,436-1,560)

*Includes average monthly utility costs

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

In 2012, the median gross rent for a householder moving into a unit in 2010 or later was \$1,498, compared to only \$668 for householders who moved into a unit during 1970-1979.

Figure 2.38 Gross Rent* as a Percentage of Household Income, 2012



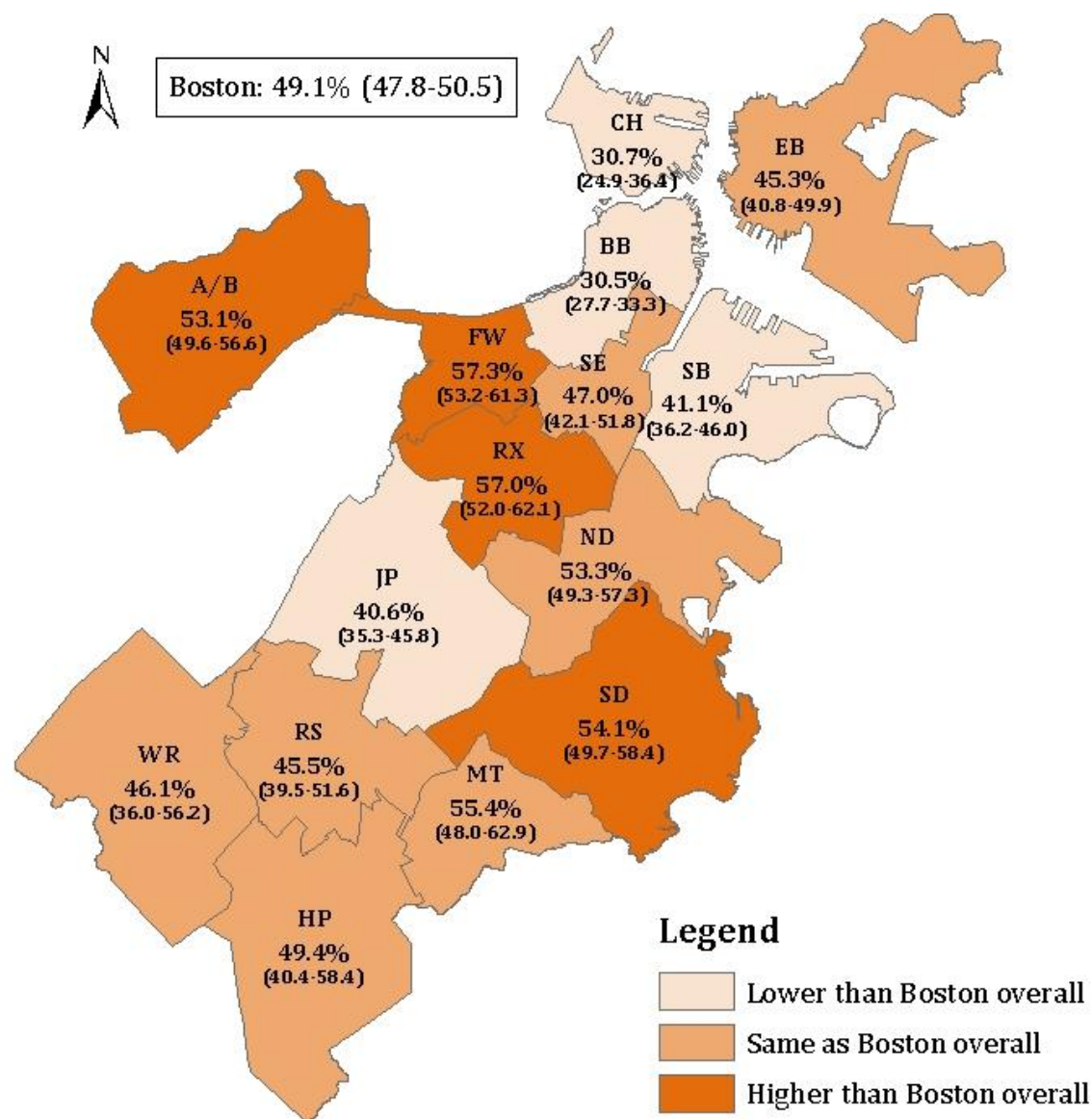
Less than 10% of Income	10-29.9% of Income	30-49.9% of Income	50% or more of Income
4.1% (3.1-5.0)	45.3% (43.2-47.5)	22.8% (20.9-24.7)	27.8% (25.6-30.0)

*Includes average monthly utility costs

DATA SOURCE: American Community Survey, 2012, U.S. Census Bureau

In 2012, almost one-third (28%) of Boston residents paid 50% or more of their household income in rent. For 51% of Boston residents, their rent was 30% or more than their household income.

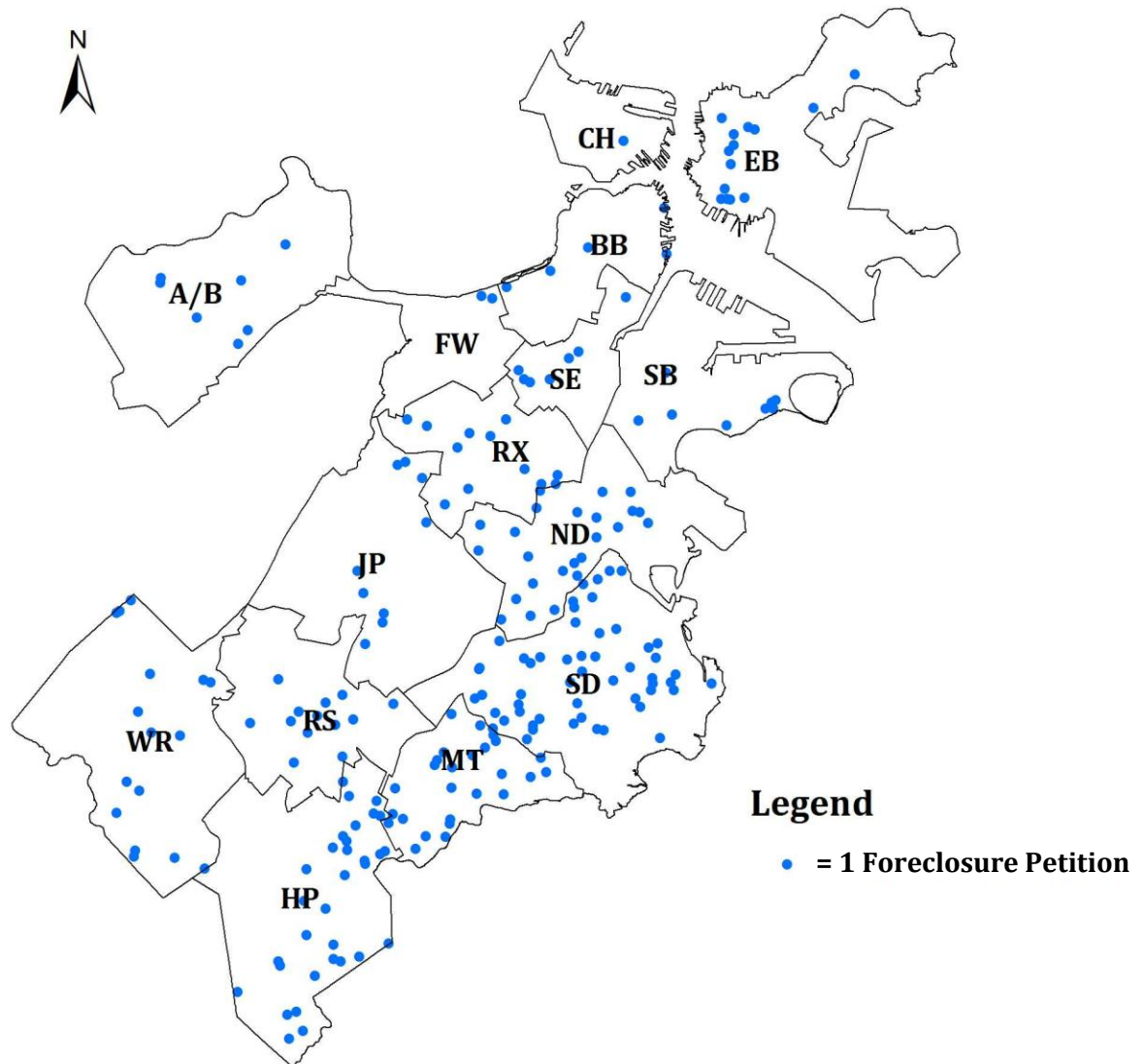
Figure 2.39 Renter-Occupied Housing Units Paying At Least 30% Income Towards Rent, 2008-2012 Combined



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

DATA SOURCE: American Community Survey, 2008-2012, U.S. Census Bureau

During 2008 -2012, 49% of Boston residents living in renter-occupied housing units paid at least 30% of their income towards rent. Compared to Boston overall, a higher percentage of residents in Allston/Brighton, Fenway, Roxbury and South Dorchester paid at least 30% of their income towards rent. A lower percentage of Back Bay, Charlestown, Jamaica Plain and South Boston residents paid at least 30% of their income towards rent.

Figure 2.40 Foreclosure Petitions by Neighborhood, 2013

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

DATA SOURCE: Department of Neighborhood Development

DATA ANALYSIS: Department of Neighborhood Development

Figure 2.41 Foreclosure Petitions by Neighborhood, 2013

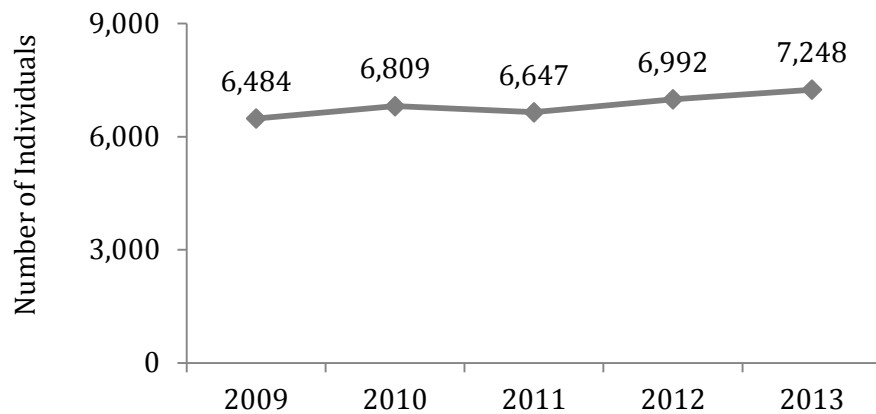
Neighborhood	2008	2009	2010	2011	2012	2013	% decrease from 2008-2013
Boston	1,899	2,172	1,541	732	890	232	88%
Allston/Brighton	60	93	67	29	31	7	88%
Back Bay*	36	50	51	17	37	5	86%
Charlestown	26	22	25	10	11	1	96%
East Boston	185	164	113	53	61	14	92%
Fenway	9	23	20	10	13	2	78%
Hyde Park	156	189	140	81	103	32	79%
Jamaica Plain	70	92	75	23	29	9	87%
Mattapan	183	196	132	72	90	26	86%
North Dorchester	276	324	212	92	108	24	91%
Roslindale	108	149	96	53	58	13	88%
Roxbury	155	137	91	63	54	12	92%
South Boston	97	93	86	34	45	8	92%
South Dorchester	462	531	324	141	177	55	88%
South End†	22	40	43	18	23	7	68%
West Roxbury	54	69	66	36	50	17	69%

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

†Includes Chinatown

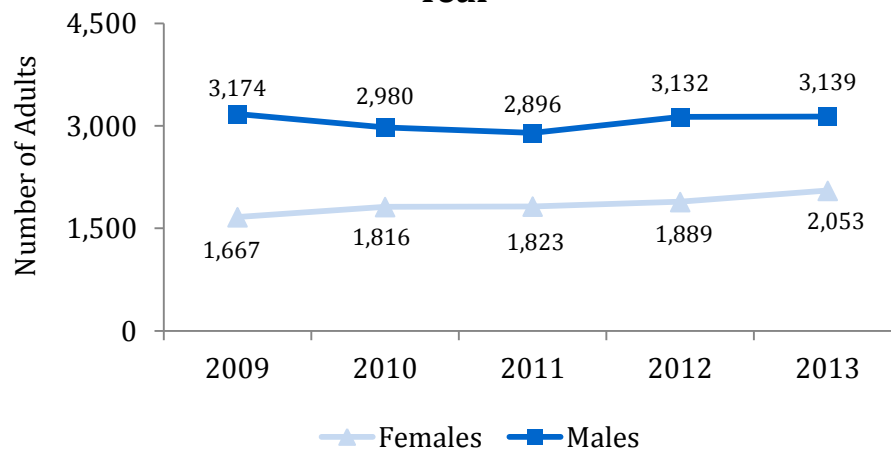
DATA SOURCE: Department of Neighborhood Development

A foreclosure petition is the first step in the foreclosure process of a home. The number of foreclosure petitions in Boston was 232 in 2013, a decrease of 88% from 2008. Foreclosure petitions decreased in all neighborhoods from 2008-2013.

Figure 2.42 Homeless Count by Year

DATA SOURCE: Emergency Shelter Commission, Boston Public Health Commission

In 2013, 7,248 homeless individuals were counted in Boston. Since 2009, the number of homeless individuals has increased by 12%.

Figure 2.43 Homeless Adults by Gender and Year

DATA SOURCE: Emergency Shelter Commission, Boston Public Health Commission

Since 2009, there have been consistently higher numbers of homeless adult males compared to homeless adult females.

Figure 2.44 Health Indicators by Tenure, 2013

	Own	Rent	Other Arrangement[‡]
Asthma*	7.8% (6.0-10.1)	12.5% [†] (10.5-14.9)	3.3% [†] (1.6-6.7)
Diabetes*	2.3% (1.6-3.5)	3.2% [†] (2.2-4.5)	3.2% (1.2-6.5)
Hypertension*	15.1% (12.6-17.9)	18.6% [†] (16.0-21.5)	29.2% [†] (19.9-40.6)
Obesity*	17.1% (14.5-20.0)	21.8% [†] (19.2-24.6)	24.3% (16.3-34.6)
Persistent Anxiety*	13.7% (11.3-16.5)	22.9% [†] (20.3-25.4)	17.1% (10.9-25.8)
Persistent Sadness*	5.2% (4.1-6.6)	15.8% [†] (13.4-18.5)	11.7% [†] (6.7-19.7)

*Adjusted for age, race/ethnicity and gender

[†] Model tested comparison to reference group (Own) is statistically significant (p<0.05).

[‡]“Other arrangement” may include group home, or staying with friends or family without paying rent

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

The above table presents select health indicators by housing tenure. After adjusting for differences in age, race/ethnicity and gender, renters were more likely to report asthma, diabetes, hypertension, persistent anxiety and persistent sadness and were more likely to be obese compared to those who own homes. Those who had other housing arrangements were more likely to report asthma, hypertension and persistent sadness compared to home owners.

Racism

Racism can take many forms ranging from interpersonal interactions to institutional/structural policies and practices. Although the expression of outright discrimination has been reduced in recent decades, the residual effects from historically discriminatory policies now shape more subtle and nuanced forms of racism at the structural, institutional, interpersonal, and internalized levels. Decades of research indicate that systemic racism negatively affects health in the United States (49). Understanding the many pathways through which racism permeates our community will enable us to address racial inequities in health outcomes that are apparent today.

At the structural level, racism can be perpetuated through a system of selectively allocating social privilege. A commonly cited example of structural racism is evident in the interaction between Black individuals and the criminal justice system (50). Black individuals disproportionately enter the criminal justice system compared to other races, which has lifelong consequences for the individual and community (50). Economic and employment opportunities, access to resources such as housing and education, and social capital are a few examples of necessities that become virtually inaccessible once an individual interacts with the criminal justice system. Lack of access to these necessities, in turn, may exacerbate health inequities.

At the institutional level, organizational policies and practices affect access to goods, services, and opportunities. Within the healthcare system, studies have demonstrated that Black patients are less likely to receive the appropriate care compared to White patients. In one study, Black and White actors portrayed patients with coronary disease (49). Physicians were less likely to recommend standard cardiac catheterization for Black patients as compared to White patients (51). Other studies have found that Black patients are less likely to receive transplants than White patients. One group of researchers have reasoned that physicians possess “subconscious bias” when delivering care (52).

Prejudice, discrimination, and bias at the interpersonal level can affect the way people of all races perceive and interact with each other, both intentionally and unintentionally. For example, within the patient-provider relationship, perceived racism is associated with less positive interactions and decreased ease of conversation over the course of care (53).

Internalized racism occurs when individuals begin to absorb the discriminatory messages they are often bombarded with; this can lead to feelings of inferiority and low self-esteem (54).

Research demonstrates that perpetual perceptions and exposure to racism and discrimination act as a

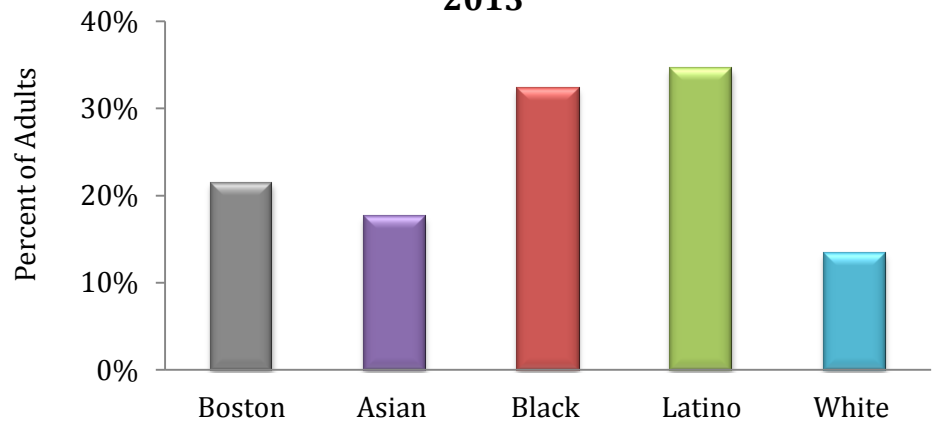
chronic stressor by increasing stress hormones that lead to increases in blood pressure and heart rate. The combination of chronic stress with other social disadvantages such as low income, can contribute to a number of health conditions including heart disease, depression, hypertension, obesity, and elevated blood sugar (55, 56, 57). Negative coping mechanisms related to marginalization or discrimination further impact health. Behaviors reportedly used to reduce feelings of stress include the use of tobacco, alcohol, other harmful substances, as well as poor eating or sleeping patterns (55, 56).

Racism at the structural, institutional, interpersonal, and internalized levels may influence health experiences and outcomes for individuals and communities. Efforts to address racial/ethnic health inequities must include mechanisms to dismantle racism at every level and to counteract its impact on health.

This section presents data on individuals who experienced physical symptoms as a result of being treated differently because of their race, and individuals who perceived they were treated worse because of their race in the health care setting.

In 2013, 22% of Boston residents reported thinking about their race once or more per day. Compared to White residents, a higher percentage of Black and Latino residents thought about their race once or more per day.

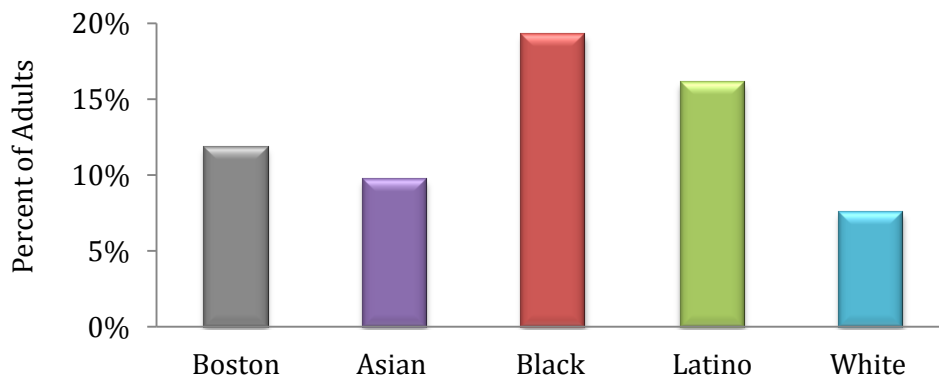
Figure 2.45 Adults Who Thought About Their Race Once or More per Day by Race/Ethnicity, 2013



Boston	Asian	Black	Latino	White
21.5%	17.6%	32.4%	34.6%	13.4%
(19.6-23.3)	(11.4-23.8)	(28.5-36.3)	(29.5-39.6)	(10.9-15.9)

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

Figure 2.46 Adults Who Felt Emotionally Upset by Perceived Race-Related Treatment Once or More per Day by Race/Ethnicity, 2013

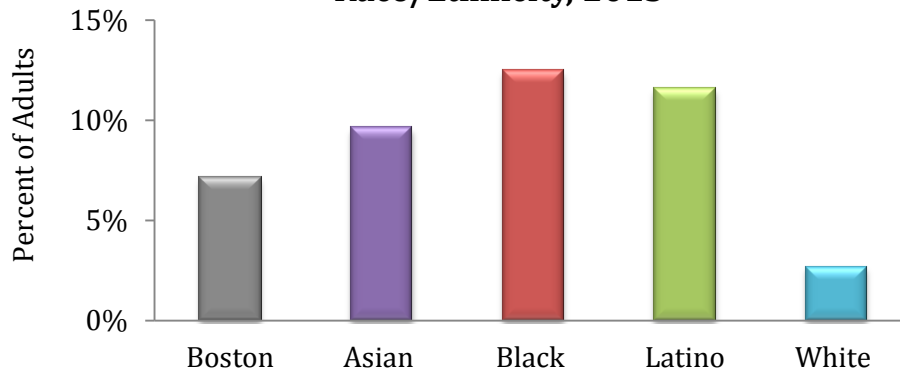


Boston	Asian	Black	Latino	White
11.8%	9.7%	19.3%	16.1%	7.6%
(10.4-13.3)	(4.5-14.9)	(16.0-22.5)	(12.4-19.9)	(5.6-9.6)

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

In 2013, 12% of Boston residents felt emotionally upset once or more per day as a result of how they were treated based on their race. A higher percent of Black and Latino residents were emotionally upset once or more per day compared to White residents.

Figure 2.47 Adults Who Experienced Physical Symptoms Based on Perceived Race-Related Treatment Once or More per Day by Race/Ethnicity, 2013



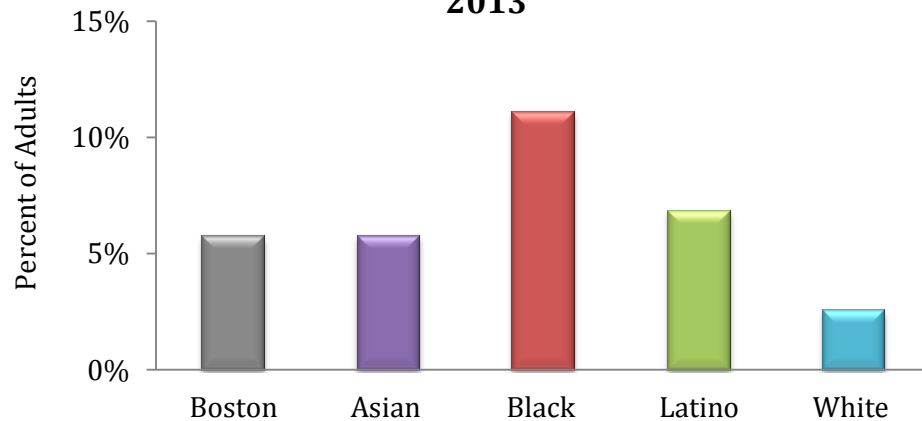
Boston	Asian	Black	Latino	White
7.1%	9.6%	12.5%	11.6%	2.7%
(6.0-8.3)	(4.3-15.0)	(9.7-15.3)	(8.2-15.0)	(1.6-3.8)

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

In 2013, 7% of Boston residents experienced physical symptoms once or more per day as a result of how they were treated based on their race. Compared to White residents, a higher percentage of Latino, Black and Asian residents reported experiencing physical symptoms once or more per day.

In 2013, 6% of Boston residents reported being treated worse than other races when seeking healthcare. Compared to White residents, a higher percentage of Black and Latino residents reported being treated worse than other races when seeking healthcare.

Figure 2.48 Treated Worse Than Other Races When Seeking Healthcare by Race/Ethnicity, 2013



Boston	Asian	Black	Latino	White
5.7%	5.8%	11.1%	6.8%	2.5%
(4.7-6.8)	(1.4-10.2)	(8.3-13.9)	(4.4-9.3)	(1.6-3.5)

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

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