Shriners Hospitals for Children — Boston

2019 Community Health Needs Assessment

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Shriners Hospitals for Children at a Glance

Shriners Hospitals for Children® is a health care system with locations in the U.S., Canada and Mexico. Our staff is dedicated to improving the lives of children by providing pediatric specialty care, conducting innovative research, and offering outstanding educational programs for medical professionals. Children up to age 18 with orthopaedic conditions, burns, spinal cord injuries, and cleft lip and palate are eligible for care, regardless of the families' ability to pay. Within these broad service lines, many types of care are provided. For example, some locations offer reconstructive plastic surgery, treatment for craniofacial abnormalities or care for sports injuries. Generally, care is provided until age 18, although, in some cases, it may be extended to age 21. All services are provided in a compassionate, family-centered environment. Our patients are our priority. We take the time to care, and to listen. At Shriners Hospitals for Children, every patient and family can expect respectful, compassionate, expert care.

The mission of Shriners Hospitals for Children is to:

Provide the highest quality care to children with neuromusculoskeletal conditions, burn injuries and other special health care needs within a compassionate, family-centered and collaborative care environment.

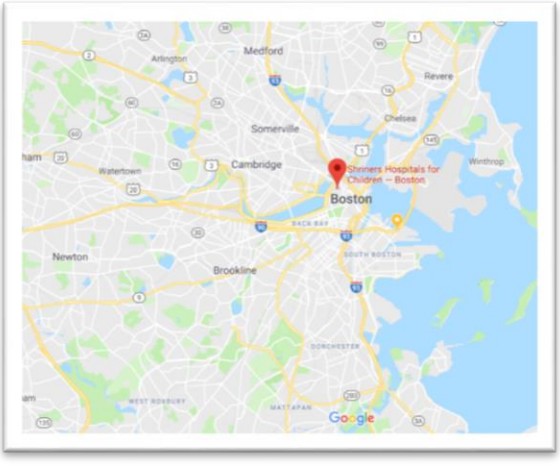
Provide for the education of physicians and other health care professionals.

Conduct research to discover new knowledge that improves the quality of care and quality of life of children and families.

This mission is carried out without regard to race, color, creed, sex or sect, disability, national origin, or ability of a patient or family to pay.

About Shriners Hospitals for Children — Boston

Shriners Hospitals for Children — Boston is a licensed 30-bed pediatric hospital specializing in the treatment of severe burns, re-constructive surgery, and cleft lip and palate care. Shriners Hospitals for Children — Boston opened in 1968 and remains committed to providing medical care for children with burn injuries, as well as educating the public regarding burn prevention, burn care, and providing medical education to physicians interested in burn specific protocols. All children receive care at Shriners Hospitals for Children regardless of their family's ability to pay. The hospital is a leader in acute pediatric burn care and is one of only four verified burns centers in New England and one of 66 in the United States.



The Boston Shriners Hospital is the only exclusively “all pediatric” burn center in the Northeastern United States. Verification of burns centers is a joint program of the American Burn Association (ABA) and the American College of Surgeons (ACS).

SHC-Boston has been instrumental in advancing pediatric burn care and survival rates, as well as helping to advance and measure the “quality of life” of the post-burn patient. With extensive follow-up “outcomes research,” and a comprehensive level of burn care that includes a multidisciplinary aftercare model designed for better recovery rates. Improved patient outcomes are measured in terms of patient physical, psychological, and social outcomes. Shriners Hospitals for Children, along with the American Burn Association, have participated in a long standing unique program in burn outcome research. The study utilizes a parent/patient centered outcome assessment model with the main focus on quality of life improvements of the burn patient. Today survival is expected in most children with a burn covering 90% of total body surface area or less (*The Journal of Trauma and Acute Care Surgery, volume 73, number 3 September Supplement 2012*).

As a leader and pioneer in clinical research, Shriners Hospitals for Children—Boston has a legacy of translating burn care research into successful clinical care. The first successful creation of artificial skin took place at the Shriners Hospital in Boston in 1969. Today, our science can predict sepsis in patients with major burns two days in advance by examining the behavior of the patient’s immune cells’ migration patterns through a point of care microfluidic device developed at Shriners Hospitals for Children — Boston. While this science is still at the development stage and in clinical trials, if successful it is likely to enable the early use of antibiotics to prevent organ damage and significantly reduce fatalities from sepsis related to burn trauma.

The mission for Shriners Hospitals for Children — Boston remains in alignment with the health care needs of the communities it serves through increasing burn awareness, improving burn injury outcomes, providing reconstructive surgical care, and education for both the general public and medical community.

Pediatric Burn Care and Education

For more than 50 years Shriners Hospitals for Children — Boston has served the medical needs of the community by providing care to children with burn injuries. Shriners Hospitals for Children ranks as one of the nation’s largest charities with educational outreach and training as one if its core activities. At Shriners Hospitals for Children — Boston, a special team of educational coordinators provides training to nurses, nursing students, school nurses, emergency medical technicians and paramedics. Training averages over 75 classes per year serving all of New England and eastern New York.

SHC-Boston regularly visits emergency department physicians and pediatricians throughout New England to provide pediatric burn education and spread the mission of Shriners to those in need. Many of the hospitals visited throughout the year have requested to have a Shrine

physician or nurse present at their grand rounds and provide in-service training for their hospital's medical staff.

Burn care education is an ongoing focus of Shriners Hospitals for Children — Boston. Burn care information falls into two categories: educational materials for parents and families and also medical professionals. Examples of educational material that are of value to the community include a laminated "*Emergency Treatment of Pediatric Burns*" card for physicians detailing emergency protocols for initial emergency care of the child; such as airway management, burn assessment criteria, fluid resuscitation, pain management, wound care and other interventions. For the general public, the distribution of a "*Scald-Injury Prevention and Burn First Aid*" reference card outlines safety in the kitchen, dining areas and how to initially treat the injured site along with an emergency phone number to speak with a Shriners Hospitals for Children — Boston clinician.

Clinical Teaching

Over 600 fellows have been trained by Shriners Hospitals for Children — Boston surgeons, with over 90% now professors at prestigious academic institutions worldwide. Many serve on the boards of professional associations, including the American Burn Association and International Society of Burn Injury.

The American Burn Association (ABA) in conjunction with the American College of Surgeons (ACS) offers a program to verify that a burn center is meeting the highest current standards of care for the burn-injured patient.

Caring for severely injured burned patients requires specialty training, a cohesive, comprehensive multidisciplinary team and dedicated resources to provide the highest level of care and best outcomes for the patient. The ABA verification program entails a rigorous review process designed to examine all burn center resources to ensure the provision of optimal care from the time of injury through rehabilitation to re-integration back into the community. To achieve verification, a burn center must meet standards for organizational structure, injury prevention and education, qualifications and training of personnel, facilities and resources.

The comprehensive review process involves completion of a Pre-Review Questionnaire that addresses fulfillment of the verification criteria, an on-site data collection visit by two surveyors who are experienced burn surgeons and a post visit review of the application and data by the ABA Verification Review Committee.

Purpose

A Community Health Needs Assessment (CHNA) is a report based on epidemiological, qualitative, and comparative methods that assess the health issues in a hospital organization's community and that community's access to services related to those issues.

The Patient Protection and Affordable Care Act (PPACA) enacted on March 23, 2010, requires not-for-profit hospital organizations to conduct a CHNA once every three taxable years that meets the requirements the Internal Revenue Code 501(r) set forth by the PPACA. The PPACA defines a hospital organization as an organization that operates a facility required by a state to be licensed, registered, or similarly recognized as a hospital; or, a hospital organization is any other organization that the Treasury's Office of the Assistant Secretary ("Secretary") determines has the provision of hospital care as its principal function or purpose constituting the basis for its exemption under section 501(c)(3).

This assessment is designed and intended to meet the IRS needs assessment requirement as it is currently understood and interpreted by Shriners Hospitals for Children leadership.

Shriners Hospitals for Children's Commitment to the Community

Shriners Hospitals for Children — Boston, is committed to providing care within the scope of our mission without regard for the family's ability to pay. We work collaboratively with our community partners to assess community needs and develop new clinical and community benefit programs that enhance health and well-being of children in our community. SHC—Boston like the other U.S. based hospitals in the Shriners Hospitals for Children health care system, reaffirms its commitment to excellence of care through the development of its Community Health Needs Assessment (CHNA). Based on the findings, we have developed an action plan to work alongside community stakeholders to address the health needs of the community.

Our Community

Greater Boston is the metropolitan region of New England encompassing the municipality of Boston, the capital of Massachusetts, and the most populous city in New England, as well as its surrounding areas. The region forms the northern arc of the US northeast megalopolis and as such, Greater Boston can be described either as a metropolitan statistical area (MSA), or as a broader combined statistical area (CSA). The MSA consists of most of the eastern third of Massachusetts, excluding the South Coast region and Cape Cod; while the CSA additionally includes the municipalities of Manchester (the largest city in the U.S. state of New Hampshire), Providence(the capital and largest city of the U.S. state of Rhode Island), Worcester, Massachusetts (the second largest city in New England), as well as the South Coast region and Cape Cod in Massachusetts. While the small footprint of the city of Boston itself only contains an estimated 685,094, the urbanization has extended well into surrounding areas; the CSA is one of two in Massachusetts, the only other being Greater Springfield; and is the only CSA-form statistical area in New England which crosses into three states (Massachusetts, New Hampshire and Rhode Island).

Some of Greater Boston's most well-known contributions involve the region's higher education and medical institutions. Greater Boston has been influential upon American history and industry. The region and the state of Massachusetts are global leaders in biotechnology, engineering, higher education, finance, and maritime trade.

Over 80% of Massachusetts' population lives in the Greater Boston metropolitan region. Greater Boston is ranked tenth in population among US metropolitan statistical areas, home to 4,732,161 people as of the 2014 US Census estimate, and sixth among combined statistical areas, with a population of 8,099,575. The area has hosted many people and sites significant to American culture and history, particularly American literature, politics, and the American Revolution.

The 2019 community health needs assessment focuses on the overall SHC-Boston primary service area comprised by the Greater Boston Metropolitan area including Middlesex, Suffolk, Essex, Norfolk, and Plymouth counties. Approximately 70% of all patients seen at SHC-Boston come from Massachusetts as defined by number of unique patients referred to the hospital. During 2018, 18.3% of new patient referrals came from Middlesex County, 16.1% from Suffolk County, 8.9% from Essex County, 8.6% from Norfolk County, and 6.2% from Plymouth County, totaling 58.1% of all new referrals in 2018 coming from this area. The full service area includes 28 states outside Massachusetts and 34 countries outside the United States. For the purposes of this CHNA, the process focuses on Middlesex, Suffolk, Essex, Norfolk, and Plymouth counties with a more focused look at Suffolk County, which is the county the Boston Shriners Hospital is located in and has the lowest level of health of the counties in the service area.

The 2019 CHNA was conducted with equity as a guiding value, understanding that everyone has the right to a fair and just opportunity to be healthy and that this requires removing the obstacles to health. Obstacles range from poverty and discrimination and their consequences, such as unequal access to jobs, education, housing, safe environments and health care.

When identifying the areas that can be addressed to improve the health of the population, the assessment used the Massachusetts Department of Public Health (MDPH) **social and economic determinants of health framework,** recognizing that these factors contribute substantially to population health. The MDPH framework also offers guidance for community engagement for CHNAs and Determination of Need processes when hospitals make capital improvements and allocate funds for community benefits.

The prioritized health needs identified in the 2019 CHNA include community level social and economic determinants that impact health, access and barriers to quality health care, and health conditions and behaviors. The assessment included analysis and synthesis of 1) a variety of social, economic and health data from sources such as the U.S. Census Bureau, Department of Agriculture, Bureau of Labor Statistics, National Center for Health Statistics, and other national and state agency data sources; 2) findings from recent metropolitan Boston county and regional assessment reports; 3) qualitative information from focus groups such as the hospital's Patient Family Advisory Council and a regional community focus group on social determinants of health, key informant interviews with individuals and health care leaders, and interviews with public health leaders.

Vulnerable populations were identified using a health equity framework with available data.

Knowing that health inequities exist for many communities of color in the metropolitan Boston area including Suffolk County, we focus on inequities among those who are Latino and Black

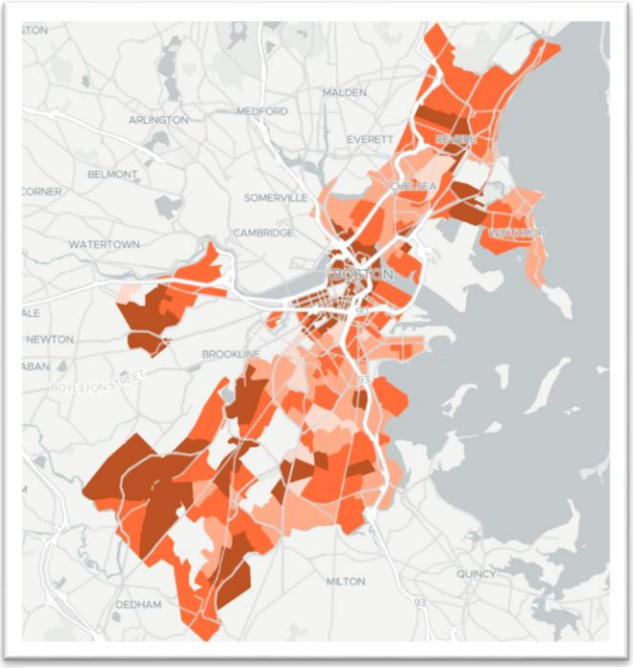
because 1) they are the largest communities of color in Boston and 2) available data was limited for other racial and ethnic groups, such as Asian, Native American, and others. We use the terms White, Black, and Latino, recognizing that these terms do not always capture how every individual identifies themselves.

Process and Methods

Equity as a Guiding Value

The CHNA process was conducted with a focus on equity. Health equity means that everyone has a fair and just opportunity to be healthier. This requires removing obstacles to health - such as poverty and discrimination - and their consequences, including lack of access to good jobs with fair pay, quality education and housing, safe environments, and health care.[i]

Figure 1. Life Expectancy: Suffolk County



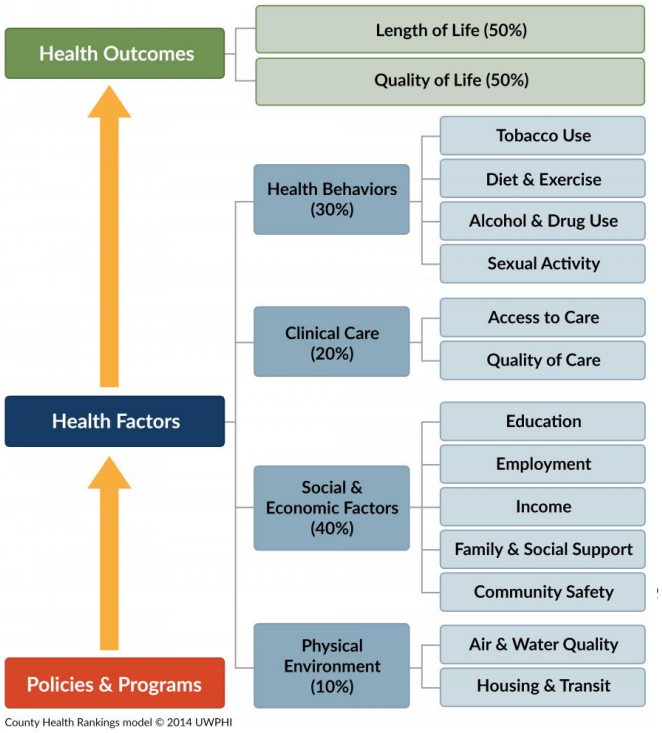
Source: National Center for Health Statistics. U.S. Small-Area Life Expectancy Estimates Project (USALEEP): Life Expectancy Estimates File for Suffolk County, MA, 2010-2015]. National Center for Health Statistics. 2018.

Opportunities to lead a long and healthy life vary dramatically by where you live. Life expectancy in Massachusetts overall is 80.7 years, the sixth highest in the nation. Average life expectancy in Suffolk County is 80.8 years on average. However, there are large differences depending on which neighborhood you live in. There is more than a 20-year difference between neighborhoods with the lowest life expectancy (Roxbury – 59), and the highest (Back Bay, Allston/Brighton – 84.5). Neighborhoods with low life expectancy have lower incomes, higher unemployment, lower educational attainment, lack health insurance, and have more nonwhite residents among other measures. Inequity impacts health.

Social Determinants of Health Framework

This CHNA was conducted using a determinant of health framework recognizing that **social and economic environment contributes substantially to population health**. Research shows that that less than a third of our health is influenced by our genetics or biology. Our health is largely determined by the social, economic, cultural, and physical environments that we live in and healthcare we receive.

Figure 2. County Health Rankings Model of Health



Among modifiable factors that affect health, research shows that social and economic environments have the greatest impact. The County Health Rankings model (Figure 2), developed by the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute, estimates the proportion of health that modifiable factors contribute to, based on reviews of the scientific literature. It is estimated that social and economic factors account for 40% of our health, followed by health behaviors (30%), clinical care (20%), and the physical environment (10%). Many health disparities occur as a result of inequities in these **determinants of health.**

Figure 3. MA Department of Public Health Priorities

Since the 2016 CHNA, the Massachusetts Department of Public Health has prioritized six broad categories of determinants, which they refer to as health priorities: housing, employment, education, violence and trauma, the built environment, and the social environment. MDPH also has focus health issues: substance use, mental illness and health, and chronic disease. This CHNA is organized according to the MDPH categories and focus issues.

In a recent study by researchers at Massachusetts General Hospital, the research team surveyed 326 residents from three Boston neighborhoods and asked them to rate the impact of 27 neighborhood stressors, 16 stress-related negative behaviors and 13 stress-related health problems.

In Roxbury, the highest neighborhood stressors were cost of living, high substance abuse and discrimination. In Jamaica Plain, residents cited housing costs and alcohol and drug use along with unsafe bike and pedestrian access. The three highest stressors identified by residents of the Back Bay were unsafe bike and pedestrian access, a lack of affordable fitness facilities and noise pollution.

When it came to the most significant stress-related health problems Roxbury residents cited substance abuse, obesity and gastrointestinal disorders. Jamaica Plain residents once again responded similarly, citing substance abuse, insomnia and obesity. In Back Bay, the top three stress-related health problems were chronic pain, anxiety and insomnia.

For stress-related behaviors, in Roxbury, residents identified physical violence, aggressive driving and child abuse/neglect. In Jamaica Plain, residents identified poor eating habits, intolerance and lack of exercise. In the Back Bay, poor eating habits, social isolation and intolerance were the top three.

These qualitative findings support the multitude of social and economic factors that affect health based upon where someone lives.

Assessment Methods

The prioritized health needs identified in the 2019 CHNA include community level **social and economic determinants that impact health**, **barriers to accessing care**, and **health behaviors and outcomes.** We also provide context for the role that social policies and the practices of systems have on health outcomes.

Assessment methods included: 1) analysis of social, economic, and health **quantitative data** from MA Department of Public Health, the U.S Census Bureau, the County Health Ranking Reports, Social Explorer, Department of Agriculture, Bureau of Labor Statistics, National Center for Health Statistics and a variety of other data sources; 2) findings from recent metropolitan Boston county and regional assessment reports; 3) qualitative information from focus groups such as the hospital's Patient Family Advisory Council and a regional community focus group on social determinants of health, key informant interviews with individuals and health care leaders, and interviews with public health leaders. The assessment focused on county-level data and select community-level data as available. Small area assessments below the county level were included as data was available and analysis indicated an identified health need for that community. To the extent possible given data and resource constraints, vulnerable populations were identified using qualitative and quantitative information. Qualitative data included focus group findings, interviews, input from our Patient Family Advisory Council, and community outreach. We used quantitative data to identify vulnerable populations by disaggregating by race, ethnicity and age with a focus on children/youth populations.

Prioritization Process

For the 2019 CHNA prioritization, health conditions were identified based on consideration of magnitude and severity of impacts, populations impacted, and rates compared to a referent (generally the state rate). Prioritized health needs were those that had the greatest combined magnitude and severity or that disproportionately impacted vulnerable populations in the community. Quantitative data, qualitative data, and community feedback confirm the priorities.

Community and Stakeholder Engagement

The input of the community and other important regional stakeholders was prioritized as an important part of the CHNA process. Below are the primary mechanisms for community and stakeholder engagement.

- **Key informant interviews** and **focus groups** were conducted to gather information used to identify priority health needs and engage the community. Key informant interviews were conducted with health care providers, health care administrators, local and regional public health officials, and local leaders that represent the interests of the community or that serve medically underserved, low-income or populations of color in the service area. Interviews with local and regional public health officials identified priority health areas and community factors that contribute to health needs. Focus group participants included community organizational representatives, community members

(low-income, people of color, and others), and other community stakeholders. Key informant interviews and focus groups were conducted from February 2019 – May 2019. This CHNA also used published qualitative data from other hospitals and community agencies as appropriate.

- A **Community Forum** will be held upon completion of this report to share the findings. The Community Forum will include individuals representing the broad interests of the community, and community stakeholders representing medically underserved, low-income and populations of color.

Limitations and Information Gaps

Given the limitations of time, resources and available data, our analysis was not able to examine every health and community issue. The assessment used the best available data given time and resource constraints.

Limited data was available to assess some vulnerable populations. We were able to identify health needs among some vulnerable populations; however, more data is needed. We have included emergent health needs that were identified primarily through qualitative data, though additional data may be needed to better understand the impact of the need or potential actions to address the need.

Due to the specialty nature of Shriners Hospitals for Children (its mission, vision and values), its staffing and available resources, Boston Shriners Hospital is unable to sufficiently address all unmet needs identified within this report. Given this, Boston Shriners has identified the following pediatric institution within the geographic area, many of which are full service and equipped to handle the health needs of the community:

- Floating Hospital for Children at Tufts Medical Center
- Massachusetts General Hospital for Children
- Newton-Wellesley Hospital
- Boston Children's Hospital
- Boston Medical Center
- Hasbro Children's Hospital/Rhode Island Hospital, Providence, RI
- Connecticut Children's Medical Center, Hartford, CT
- Bridgeport Hospital, Bridgeport, CT

Key Findings

The stated mission of Shriners Hospitals for Children-Boston is to provide the highest quality care to children with severe burn injuries, complex skin conditions, wound and scar management, and cleft lip and palate within a compassionate, family-centered, and collaborative care environment. Therefore, our goal was to target families with children 0-18 within Middlesex, Suffolk, Essex, Norfolk, and Plymouth Counties. Key findings are organized according to Health Factors, including socioeconomic determinants and health behaviors/clinical care and Health Outcomes, each of which quantifies the health of our community.

Executive Summary of Key Findings

Health Factors

Socioeconomic Determinants

Socioeconomic and cultural characteristics of the population of Middlesex, Suffolk, Essex, Norfolk, and Plymouth Counties influence the main health concerns. The secondary data point to higher concentrations of people that are at increased risk for unhealthy living merely because of their language, income, educational status, or family status.

- Middlesex, Suffolk, Essex, Norfolk, and Plymouth Counties have a higher median per capita income ($81,080) than the State average ($74,167). *Data source: U.S. Census Bureau.* However, sections of each county, especially Suffolk County have higher levels of poverty with more than 50% of some neighborhoods living below poverty level. Additionally, median income is affected by race with Blacks earning approximately half of what Whites earn within the same county.
- There is a greater proportion of linguistically isolated families (5.81%) compared to either State (5.05%) or National (4.48%) benchmarks. This creates barriers for access to care, as well as satisfactory communication with healthcare providers and health literacy. *Data source: U.S. Census Bureau, 2010*
- The proportion of children in poverty is decreased (13.14%) compared to State (14.91 %) and National (21.17%) averages. Poverty creates barriers for transportation, access to healthy foods, access to health services and choices that provide for a healthy lifestyle. However, in certain census tracts of Suffolk County, poverty rates are as high as 50% and these are aligned primarily with communities of color. *Data source: U.S. Census Bureau, 2010*.
- The percentage of the households without a motor vehicle is 14.1%, which is higher than both Massachusetts at 12.55% and National averages at 8.97%. However, in certain sections of several counties, access to a motor vehicle is severely limited.
- The percentage of mothers receiving Supplemental Nutrition Assistance Program (SNAP) is decreased (9.9%) compared to State (11.5%) and National (13.9%) averages. This indicator identifies vulnerable populations, which are more likely to have multiple health access, health status, and social support needs. However, rates in certain census tracts, especially in Suffolk County are much higher. *Data Source: U.S. Census Bureau, Small Area Income and Poverty Estimates (SAIPE), 2010. Source geography: County.*

- The high school graduation rate (87.3%) is higher than the State (86.1%) average and the Healthy People 2020 goal of 82.4%. While graduation rates in general are high, some schools in Boston have graduation rates as low as 9%. Low education level is an important indicator of poverty, poor health literacy, and poor health. *Data source: U.S. Census Bureau, 2010*
- The teen birth rate (15.3%) is lower than the State (18.3%) average. Teen parents have unique social, economic, and health support services that may be more challenging to meet.
- The unemployment rate (3.3%) is lower than State (3.5%) or National (4%) averages. Unemployment creates financial instability and barriers to access including insurance coverage, health services, healthy food, and other necessities that contribute to poor health status. *U.S. Bureau of Labor Statistics, July 2012*
- The proportion of families (25.7%) living in tracts with poor access to healthy foods (food deserts) is lower than State (28.7%) and higher than National (22.43%) averages. Lack of access to food is an important indicator of poor health. *Data Source: U.S. Department of Agriculture, Food Access Atlas, 2013.*
- The violent crime rate among these five counties is 367.6, which is lower than both Massachusetts at 403.1 and The United States at 379.7. However, the crime rate in some neighborhoods is more than twice the crime rate in other neighborhoods.

Health Behaviors/Clinical Care

Health behaviors and clinical care interact within a community to define health. Communities that exemplify healthy lifestyles, with good access to quality clinical care provide for a solid foundation of health.

- The rate of the population with access to recreation and fitness facilities is 20.34, which is higher than both Massachusetts at 17.70 and The United States at 11.01. This is significant as children model their health behaviors from parents. Children with special health care needs are especially vulnerable to increased rates of obesity due to inactivity.
- The rate of the population with access to fast food restaurants is 81.18, which is higher than both Massachusetts at 78.26 and The United States at 77.06. Rates of access to fast food restaurants are especially high in Suffolk County.
- The rate of access to Dentists, mental health care, and primary care is higher than both Massachusetts and The United States. The areas defined as having shortages of primary medical, dental or mental health care are also lower than both State and National averages.
- Current behaviors are determinants of future health and the percent of the population with no leisure time physical activity is 18.7%, which is lower than both Massachusetts at 19.3% and The United States at 21.6%.

Health Outcomes

- The percent of obese adults is 23.1%, which is lower than both Massachusetts at 24% and the United States at 28.3%.

Table 1. Sociodemographic Characteristics

Sociodemographic Characteristic	Middlesex County	Suffolk County	Essex County	Norfolk County	Plymouth County	Massachusetts	United States
Age							
Median age (years)	38.5	32.6	40.8	41.0	42.6	39.4	37.8
Under 5 years	5.4%	5.3%	5.6%	5.4%	5.3%	5.3%	6.1%
5-17 years	19.9%	11.5%	15.8%	15.8%	16.3%	14.7%	16.5%
18-64 years	65.1%	71.5%	61.9%	62.3%	60.8%	63.9%	61.8%
65 years and over	15.0%	11.7%	16.6%	16.6%	17.6%	16.2%	15.6%
Population							
Under 18 Years Old	321,459	133,047	169,026	149,306	113,168	1,369,955	73,655,378
Race and Ethnicity							
One race	97.1%	93.9%	97.3%	97.8%	97.7%	96.9%	96.9%
White	77.9%	55.2%	80.6%	79.4%	83.9%	78.9%	73.0%
Black or African American	5.2%	22.5%	4.0%	6.6%	9.2%	7.4%	12.7%
American Indian and Alaska Native	0.2%	0.3%	0.2%	0.1%	0.1%	6.3%	0.8%
Asian	11.2%	8.7%	3.4%	10.4%	1.2%	0.0%	5.4%
Native Hawaiian and Other Pacific Islander	0.0%	0.0%	0.0%	0.0%	0.0%	4.1%	0.2%
Some other race	2.6%	7.1%	8.9%	1.3%	3.1%	3.1%	4.8%
Two or more races	2.9%	6.1%	2.7%	2.2%	2.3%		3.1%
Latino or Hispanic origin (of any race)	7.7%	22.3%	19.6%	4.2%	3.7%	11.2%	17.6%
White, not Latino or Hispanic	73.3%	45.5%	72.0%	76.7%	81.9%	72.9%	61.5%
Language Spoken at Home (5 years and over)							
Speaks language other than English at home	26.0%	39.7%	25.6%	20.9%	12.7%	23.1%	21.3%
Educational Attainment							
Population 25 years and over							
Less than high school graduate	7.2%	14.8%	10.6%	6.1%	7.3%	9.7%	12.7%
High school graduate, GED, or alternative	20.1%	23.2%	25.4%	20.0%	28.3%	24.7%	27.3%
Some college or associate's degree	18.7%	18.3%	25.2%	21.3%	28.8%	23.5%	29.1%
Bachelor's degree or higher	54.1%	43.6%	38.8%	52.5%	35.7%	42.1%	30.9%
Income							
Median income- Household	$ 92,878.00	$61,242.00	$73,533.00	$95,668.00	$82,081.00	$ 74,167.00	$ 57,652.00

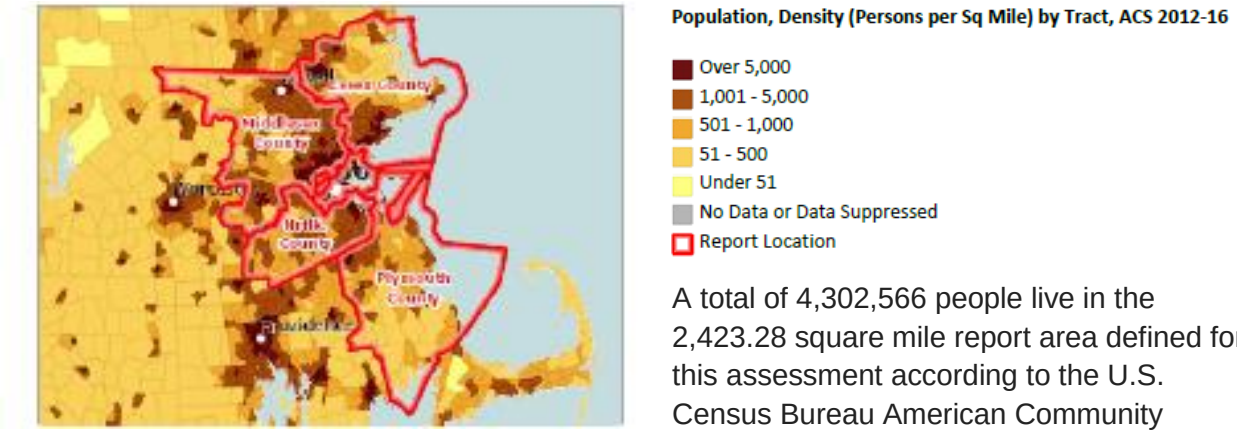
Source: U.S. Census Bureau (2017). American Community Survey 1-year estimates. Retrieved from Census Reporter Profile page for Suffolk County, MA <http://censusreporter.org/profiles/05000US25025-suffolk-county-ma/

Table 2: Socioeconomic Characteristics

Socioeconomic Characteristics	Middlesex County	Suffolk County	Essex County	Norfolk County	Plymouth County	Massachusetts	United States
Median Family Income	$ 92,878.00	$61,242.00	$73,533.00	$95,668.00	$82,081.00	$ 74,167.00	$57,652.00
Unemployment	4.8%	4.0%	3.3%	3.1%	3.3%	6.0%	4.1%
Poverty							
Population living below federal poverty level	8.2%	19.6%	10.9%	6.5%	8.0%	11.1%	14.6%
Population living below 125% of federal poverty level	10.5%	24.7%	14.1%	8.5%	10.3%	14.3%	19.2%
Children living below federal poverty level	9.3%	28.2%	15.4%	6.7%	11.0%	14.6%	20.3%
Children living in households with Supplemental Security Income (SS), cash public assistance income, or Food Stamp/SNAP benefits	12.8%	39.5%	25.3%	10.9%	18.8%	22.1%	27.2%
No high school diploma	21.0%	31.0%	25.2%	18.5%	19.5%	24.9%	26.4%

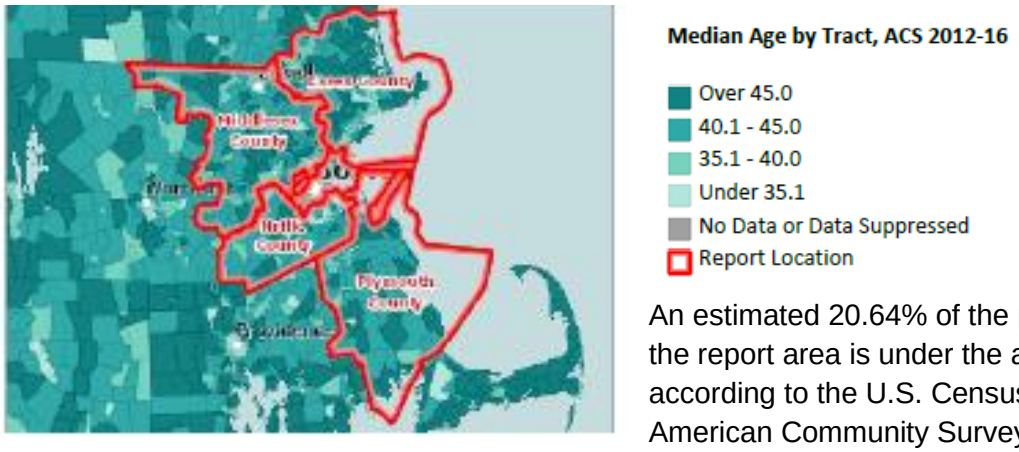
Source: U.S. Census Bureau (2017). American Community Survey 1-year estimates. Retrieved from Census Reporter Profile page for Suffolk County, MA <http://censusreporter.org/profiles/05000US25025-suffolk-county-ma/

Figure 4. Boston Metropolitan Area Population Density



A total of 4,302,566 people live in the 2,423.28 square mile report area defined for this assessment according to the U.S. Census Bureau American Community Survey 2012-16 5-year estimates. The population density for this area, estimated at 1,775.51 persons per square mile, is greater than the national average population density of 90.19 persons per square mile.

Figure 5. Boston Metropolitan Area Median Age by



An estimated 20.64% of the population in the report area is under the age of 18 according to the U.S. Census Bureau American Community Survey 2012-16 5-year estimates. An estimated 888,037 youths resided in the area during this period. The number of persons under age 18 is relevant because this population has unique health needs, which should be considered separately from other age groups.

Table 3. Persons with a disability by age

Report Area	Under Age 18	Age 18 - 64	Age 65 +
Report Location	35,688	221,047	193,400
Essex County, MA	8,082	45,269	38,528
Middlesex County, MA	11,103	64,962	65,339
Norfolk County, MA	5,020	29,649	31,698
Plymouth County, MA	4,718	27,648	23,989
Suffolk County, MA	6,765	53,519	33,846
Massachusetts	63,424	387,416	322,886
United States	3,042,011	20,188,257	16,042,261

The percent of the population with a Disability status based on age group is lower under the age of 18 when compared with the age groups, 18 to 64 and 65+.

There is limited data on children with special health care needs. The most recent data is from www.childhealthdata.org and dates back to 2009-2010. Children with special health care needs (CSHCN) as defined by the Child and Adolescent Health Measurement Initiative are “those who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally.” Shriners Hospitals for Children-Boston cares for many within this population and is located in a region where the health/clinical care indicators and outcomes as defined above serve to likely increase the number of children with special health care needs. There is a greater percentage of CSHCN in Massachusetts (18.3%) than there are in Nationwide (15.1%).

Figure 6. Population in linguistically isolated households

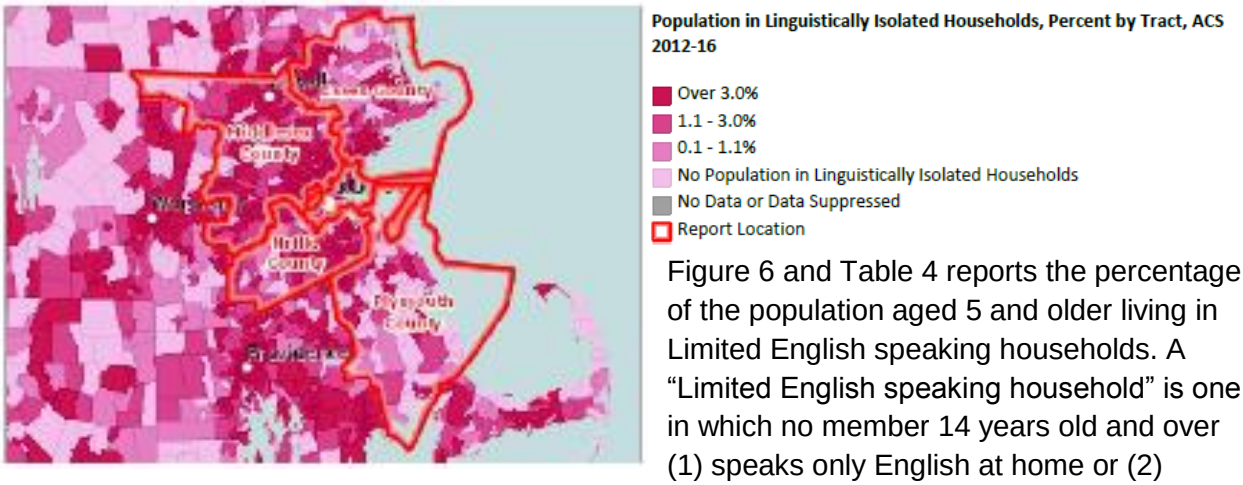


Figure 6 and Table 4 reports the percentage of the population aged 5 and older living in Limited English speaking households. A "Limited English speaking household" is one in which no member 14 years old and over (1) speaks only English at home or (2) speaks a language other than English at home and speaks English "Very well." This indicator is significant as it identifies households and populations that may need English-language assistance. The percent of the population in linguistically isolated households is 5.81%, which is higher than both Massachusetts at 5.05% and the United States at 4.48%.

Table 4. Linguistically Isolated Population by Age and County

Report Area	Total Population Age 5+	Linguistically Isolated Population	Percent Linguistically Isolated Population
Report Location	4,064,493	236,224	5.81%
Essex County, MA	725,701	39,564	5.45%
Middlesex County, MA	1,480,024	74,418	5.03%
Norfolk County, MA	653,977	26,653	4.08%
Plymouth County, MA	479,639	11,769	2.45%
Suffolk County, MA	725,152	83,820	11.56%
Massachusetts	6,378,533	322,354	5.05%
United States	298,691,202	13,393,615	4.48%

Note: This indicator is compared to the state average.
Data Source: US Census Bureau, American Community Survey. 2012-16. Source geography: Tract

Table 5. Household Composition by County

Report Area	Total Households	Family Households	Family Households, Percent	Non-Family Households	Non-Family Households, Percent
Report Location	1,617,997	1,022,797	63.21%	595,200	36.79%
Essex County, MA	288,291	192,613	66.81%	95,678	33.19%
Middlesex County, MA	587,735	380,358	64.72%	207,377	35.28%
Norfolk County, MA	260,061	171,505	65.95%	88,556	34.05%
Plymouth County, MA	182,252	129,695	71.16%	52,557	28.84%
Suffolk County, MA	299,658	148,626	49.6%	151,032	50.4%
Massachusetts	2,558,889	1,627,194	63.59%	931,695	36.41%
United States	117,716,237	77,608,829	65.93%	40,107,408	34.07%

Data Source: US Census Bureau, American Community Survey. 2012-16. Source geography: Tract

Table 5 reports the total number and percentage of households by composition (married couple family, nonfamily, etc.). According to the American Community Survey subject definitions, a family household is any housing unit in which the householder is living with one or more individuals related to him or her by birth, marriage, or adoption*. A non-family households is any household occupied by the householder alone, or by the householder and one or more unrelated individuals.

The percent of the population that lives in a family household is 63.21%, which is lower than Massachusetts at 63.59% and the United States at 65.93%. The percent of the population that lives in a non-family household is 36.79%, which is higher than both Massachusetts at 36.41% and the United States at 34.07%.

Table 6. Urban vs Rural Population by County

Report Area	Total Population	Urban Population	Rural Population	Percent Urban	Percent Rural
Report Location	4,134,036	3,997,116	136,920	96.69%	3.31%
Essex County, MA	743,159	711,619	31,540	95.76%	4.24%
Middlesex County, MA	1,503,085	1,457,576	45,509	96.97%	3.03%
Norfolk County, MA	670,850	662,529	8,321	98.76%	1.24%
Plymouth County, MA	494,919	443,904	51,015	89.69%	10.31%
Suffolk County, MA	722,023	721,488	535	99.93%	0.07%
Massachusetts	6,547,629	6,021,989	525,640	91.97%	8.03%
United States	312,471,327	252,746,527	59,724,800	80.89%	19.11%

Data Source: US Census Bureau, Decennial Census. 2010. Source geography: Tract

Table 6 reports the percentage of population living in urban and rural areas. Urban areas are identified using population density, count, and size thresholds. Urban areas also include territory with a high degree of impervious surface (development). Rural areas are all areas that are not urban.

The percent of the population that lives in an urban setting is 96.69%, which is higher than Massachusetts at 91.97% and the United States at 80.89%. The percent of the population that lives in a rural setting is 3.31%, which is lower than both Massachusetts at 8.03% and the United States at 19.11%.

Prioritized Health Needs of the Community

Based on our analysis, the prioritized community level social and economic determinants of health that impact the Shriners Hospitals for Children – Boston service area are shown below. Selected data for each of the social and economic determinants are presented.

- **Housing Needs** – affordability, quality, stability, and tenure
- **Built Environment** – transportation, access to healthy food, and places to be active
- **Employment and Income** – poverty, living wages, unemployment, and workplace policies
- **Educational Needs** – educational attainment and systemic barriers to quality education

- **Violence and Trauma** – interpersonal and community violence and violence-related trauma
- **Social Environment** – social isolation, connection to community, and interpersonal, institutional, structural, and historical racism
- **Environmental Exposures** – air quality and lead exposures

Social and Economic Determinants of Health

Housing

Affordable, accessible, clean, and supportive housing is a key contributor to health. Qualitative and quantitative data from varied sectors identified housing as one of the top health-related concerns for the 2019 CHNA.

Housing tenure, or whether someone owns or rents, is a health issue. Home ownership can be a path to wealth and has the potential to be more stable than renting.

Table 7. Housing Cost Burdened Households by

Report Area	Total Households	Cost Burdened Households (Housing Costs Exceed 30% of Income)	Percentage of Cost Burdened Households (Over 30% of Income)
Report Location	1,617,997	588,480	36.37%
Essex County, MA	288,291	108,021	37.47%
Middlesex County, MA	587,735	196,852	33.49%
Norfolk County, MA	260,061	87,668	33.71%
Plymouth County, MA	182,252	64,410	35.34%
Suffolk County, MA	299,658	131,529	43.89%
Massachusetts	2,558,889	918,388	35.89%
United States	117,716,237	38,719,430	32.89%

Note: This indicator is compared to the state average.
Data Source: US Census Bureau, American Community Survey. 2012-16. Source geography: Tract

Table 7 reports the percentage of the households where housing costs exceed 30% of total household income. This indicator provides information on the cost of monthly housing expenses for owners and renters. The information offers a measure of housing affordability and excessive shelter costs. The data also serve to aid in the development of housing programs to meet the needs of people at different economic levels.

The percent of households where housing costs exceed 30% of income is 36.37%, which is higher than both Massachusetts at 35.89% and the United States at 32.89%. Housing burden

varies based on county ranging from a low of 33% in Middlesex and Norfolk Counties to a high of 44% in Suffolk County.

In Suffolk County, 34% of people own their homes and 66% rent. Historically, redlining lending practices, racial discrimination related to mortgage acquisition in the GI bill, and higher incidence of predatory lending in communities of color have denied Black and Latino communities the ability to create stability and generational wealth via home ownership. Reflecting inequitable policies and practices, only 30% of Black families and 19% of Latino families in Suffolk County own their home compared to 46% of White, Non-Hispanic families. Possibly mirroring the higher proportions of people of color and lower incomes in Boston, 47% of Boston residents own their own homes compared to the countywide proportion of 61%. (*U.S. Census, ACS, 2013-2017*).

Table 8. Home Ownership by Race/Ethnicity

Race/Ethnicity	% Home Ownership		
	Boston	Suffolk	Massachusetts
White Non-Hispanic	44.7	45.8	69.7
Black or African American	29.6	29.7	46.5
American Indian or Alaska Native	22.6	23.5	36.7
Asian	28.2	29.3	53.2
Native Hawaiian or Pacific Islander	0	0	38.7
Some Other Race	16.1	18.1	23.2
Hispanic or Latino	16.2	18.5	25.4

Source: U.S. Census Bureau (2017). American Community Survey 5-year estimates.

Poor Housing Conditions impact health. Older housing combined with limited resources for maintenance can lead to problems (e.g. mold, pest/rodent exposure, exposure to lead paint, asbestos, and lead pipes) that affect asthma, other respiratory illnesses, and child development. Housing conditions are important for the safety and accessibility of children, elderly or disabled populations.

Table 9. Substandard Housing Units by County

Report Area	Total Occupied Housing Units	Occupied Housing Units with One or More Substandard Conditions	Percent Occupied Housing Units with One or More Substandard Conditions
Report Location	1,617,997	581,545	35.94%
Essex County, MA	288,291	106,396	36.91%
Middlesex County, MA	587,735	194,353	33.07%
Norfolk County, MA	260,061	86,242	33.16%
Plymouth County, MA	182,252	62,552	34.32%
Suffolk County, MA	299,658	132,002	44.05%
Massachusetts	2,558,889	905,896	35.4%
United States	117,716,237	39,729,263	33.75%

Note: This indicator is compared to the state average.
Data Source: US Census Bureau, American Community Survey. 2012-16. Source geography: Tract

Table 9 reports the number and percentage of owner- and renter-occupied housing units having at least one of the following conditions: 1) lacking complete plumbing facilities 2) lacking complete kitchen facilities 3) with 1.01 or more occupants per room 4) selected monthly owner costs as a percentage of household income greater than 30% and 5) gross rent as a percentage of household income greater than 30%. Selected conditions provide information in assessing the quality of the housing inventory and its occupants. This data is used to easily identify homes where the quality of living and housing can be considered substandard. The percent of the population living with one or more substandard housing conditions is 35.94%, which is higher than both Massachusetts at 35.4% and the United States at 33.75%. Suffolk County has a large older housing stock with 51% of housing built before 1940.

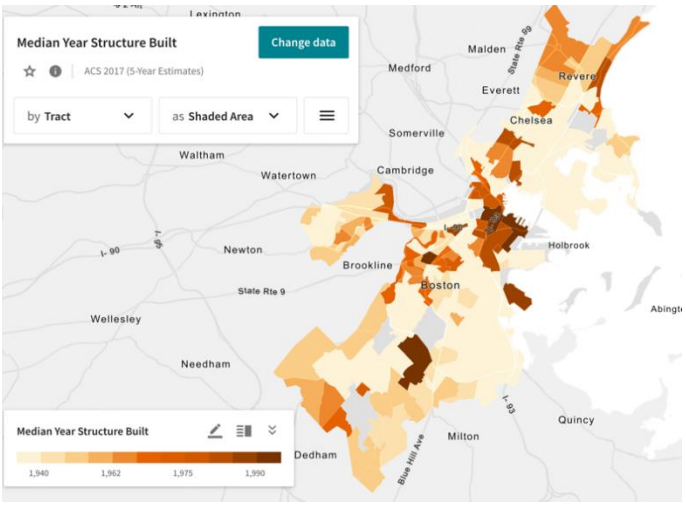


Table 10. Age of Residential Housing in Suffolk County

Year Built	% of Structures
2014 or later	1.00%
2010 to 2013	1.80%
2000 to 2009	6.70%
1990 to 1999	4.00%
1980 to 1989	6.10%
1970 to 1979	7.70%
1960 to 1969	8.40%
1950 to 1959	7.30%
1940 to 1949	5.80%
1939 or earlier	51.30%

Source: U.S. Census Bureau (2014-2017). American Community Survey 5-year estimates.

Housing costs vary substantially across neighborhoods in Boston. Overall, within the city of Boston, 52.1% of all renters pay more than 30% of their household income to pay for the cost of housing (2013-2017 American Community Survey 5-year estimates). In Suffolk County, with a median household income of $66,459 and a median 2-bedroom rent of $2,700, the average family uses about half of their income to pay for the cost of housing. Table 10 below shows the % of income required to pay for housing (gross rent) by select zip code within the Boston Metropolitan Area.

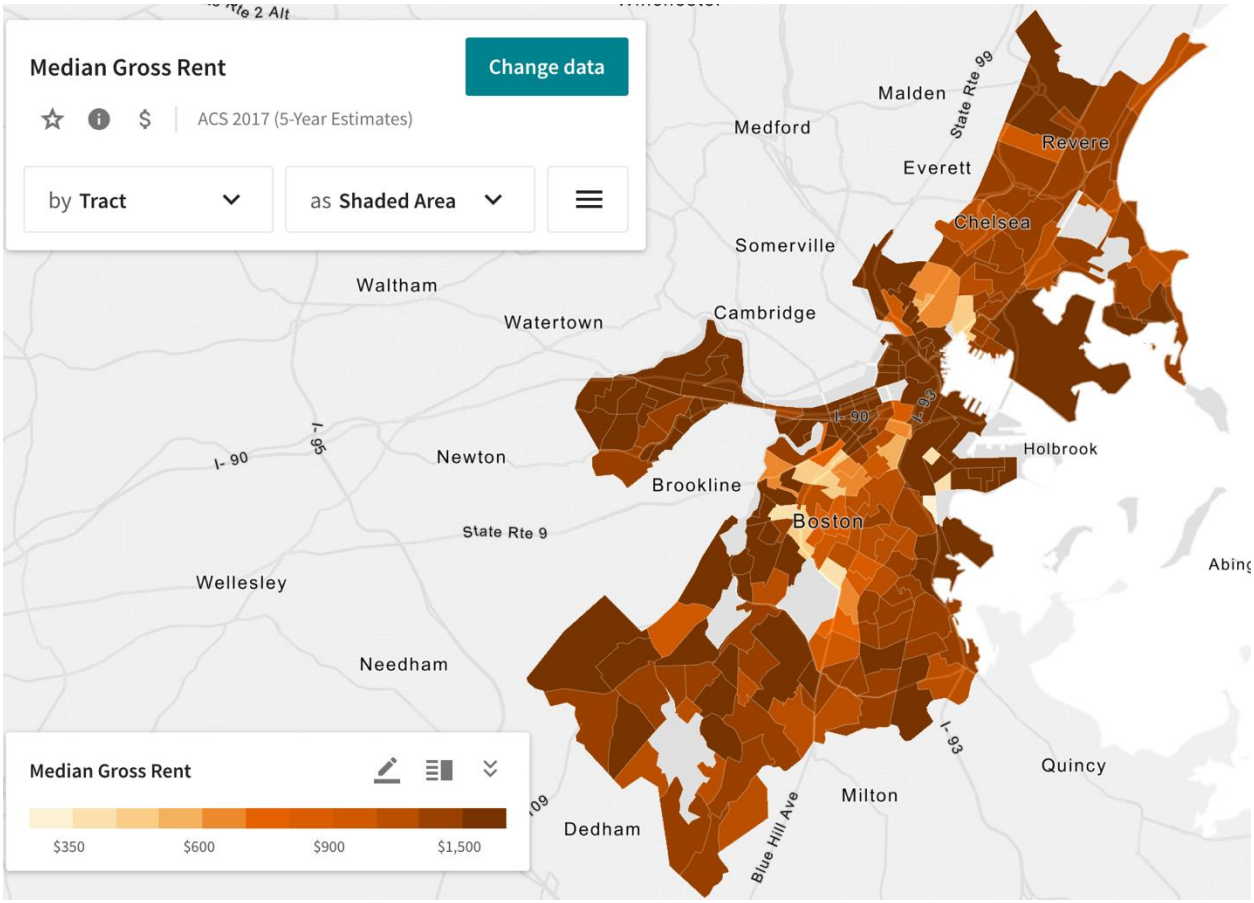
Table 11. Housing Costs Relative to Income in Suffolk County

Neighborhood	Median Household Income	Median 2 Bedroom Rent	% Income Required
Nation	$60,336	$1,173	23%
Massachusetts	$77,385	$1,611	25%
Suffolk	**$66,459**	**$2,700**	**49%**
Wellesley	$179,655	$2,725	18%
Newton Center	$150,282	$2,500	20%
Hyde Square	$68,655	$2,050	36%
Stony Brook – Cleary Square	$62,114	$1,873	36%
Needham	$125,481	$3,878	37%
Neponset	$53,103	$1,695	38%
Marina Bay	$73,280	$2,413	40%
Beacon Hill	$86,863	$3,000	41%
Crescent Beach	$51,468	$1,900	44%
Jeffries Point – Airport	$52,152	$2,200	51%
Columbia Point	$49,683	$2,350	57%
Eggleston Square	$30,278	$2,200	87%
West Fens	$40,115	$2,945	88%
Mission Hill	$29,592	$2,600	105%
Chinatown-Leather District	$39,670	$3,600	109%

Source: Median household income: US Census American Community Survey table S1903. Median rent for a 2 bedroom: RentHop listing data for the 7 months prior to August 1, 2018 summarized at

https://www.renthop.com/studies/boston/can-you-afford-to-live-in-boston-in-2018. Comparable data for state and nation came from https://www.apartmentlist.com/rentonomics/rental-price-data/

Figure 8. Median Gross Rent by Census Tract in Suffolk County



Built Environment (Access to healthy food, Transportation, Places to be active)

There is a vast research base demonstrating that decisions about how the world around us is constructed can impact health behaviors. Transportation systems and choices, environmental exposures from industry, access to food, community spaces, retail, and institutions all serve to help or harm.

Transportation **is a major obstacle to good health.** Reliable and affordable transportation is critical for meeting daily needs and accessing educational and employment opportunities located throughout the region. For households living in regions without robust transit systems, access to a car is critical, but lower-income people and people of color are more likely to be carless. **Reliable transportation is a critical part of daily life, allowing individuals to go to work, travel to the grocery store, or get to medical appointments. However, nearly 23% of all Boston households report not having any access to a vehicle, and 14% of Suffolk County residents.**

Unequal access to appropriate transportation options exacerbates racial and ethnic health disparities. Communities of color and those with lower incomes have less access to transportation options compared to majority white and higher income communities. Public transportation plays a significant role in filling transportation needs for many of these households. Differences in mode of transportation also occur based on race and ethnicity.

Table 12. Mode of Transportation in Suffolk County

Mode of Transportation	Suffolk	Massachusetts	Nation
Drove alone	39.6	7.0	76.4
Car-pooled	6.9	7.2	8.9
Public transit	33.8	10.4	5.0
Bicycle	1.9	0.9	0.6
Walked	12.9	4.8	2.7
Other	1.9	1.3	1.3
Worked at home	2.9	5.3	5.2

Source: U.S. Census Bureau (2014-2017). American Community Survey 5-year estimates.

Table 13. Mode of Transportation in Boston by Race

Mode of Transportation	White Non-Hispanic	Black	Asian	Hispanic or Latino
No access to vehicle	29.9	37.7	46.4	43.1
Drove alone	52.2	21.7	8.3	16.6
Car-pooled	40.9	25.9	12.2	20.2
Public transit	44.5	24.5	7.8	21.9

Source: U.S. Census Bureau (2014-2017). American Community Survey 5-year estimates.

The percent of the households without a motor vehicle is 14.1%, which is higher than both Massachusetts at 12.55% and the United States at 8.97%. Access to a motor vehicle varies by county ranging from a high of 91% in Norfolk County to a low of 68% in Suffolk County.

Table 14. Access to a Motor Vehicle by County

Report Area	Total Occupied Households	Households with No Motor Vehicle	Percentage of Households with No Motor Vehicle
Report Location	1,617,997	228,112	14.1%
Essex County, MA	288,291	31,645	10.98%
Middlesex County, MA	587,735	62,066	10.56%
Norfolk County, MA	260,061	24,293	9.34%
Plymouth County, MA	182,252	11,341	6.22%
Suffolk County, MA	299,658	98,767	32.96%
Massachusetts	2,558,889	321,078	12.55%
United States	117,716,237	10,562,847	8.97%

Note: This indicator is compared to the state average.
Data Source: US Census Bureau, American Community Survey. 2012-16. Source geography: Tract

Food Access.

Food insecurity or being without reliable access to sufficient affordable and nutritious food, impacts many Suffolk County residents. Eating nutritious food promotes overall health and helps manage many chronic health conditions. However, not all individuals and communities have equal access to healthy food. Overall, 8.1% of the population of Suffolk County are considered food insecure, persons compared to 9.0% across the Commonwealth of Massachusetts (*Feeding America, 2017*). The child food insecurity is higher at 13.7%, the highest of any county in Massachusetts. Suffolk County is in the top 10% of counties in the U.S. for the number of food insecure people (107,030). With high food prices amounting to an average meal cost of $4.19 per person per meal, this is higher than the national average of $3.02. Food insecure individuals would need an additional $23.55 per week to be food secure.

Table 15. Food Desert Census Tracts

Report Area	Total Population (2010)	Food Desert Census Tracts	Other Census Tracts	Food Desert Population	Other Population
Report Location	4,134,036	357	558	1,884,220	2,249,816
Essex County, MA	743,159	83	80	409,839	333,320
Middlesex County, MA	1,503,085	128	190	698,594	804,491
Norfolk County, MA	670,850	79	51	436,856	233,994
Plymouth County, MA	494,919	62	38	317,782	177,137
Suffolk County, MA	722,023	5	199	21,149	700,874
Massachusetts	6,547,629	615	861	3,162,229	3,385,400
United States	308,745,538	27,527	45,337	129,885,212	178,860,326

Data Source: US Department of Agriculture, Economic Research Service, USDA - Food Access Research Atlas. 2015.

Table 16. Low Access to Food

Report Area	Total Population	Population with Low Food Access	Percent Population with Low Food Access
Report Location	4,134,036	1,062,376	25.7%
Essex County, MA	743,159	230,620	31.03%
Middlesex County, MA	1,503,085	382,025	25.42%
Norfolk County, MA	670,850	237,066	35.34%
Plymouth County, MA	494,919	206,345	41.69%
Suffolk County, MA	722,023	6,320	0.88%
Massachusetts	6,547,629	1,837,766	28.07%
United States	308,745,538	69,266,771	22.43%

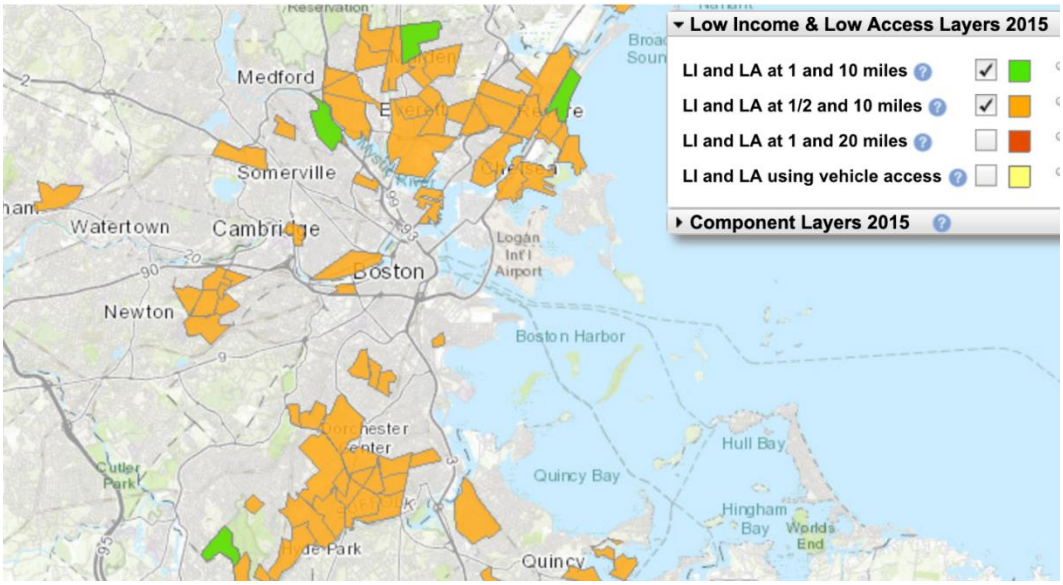
Note: This indicator is compared to the state average.
Data Source: US Department of Agriculture, Economic Research Service, USDA - Food Access Research Atlas. 2015. Source geography: Tract

Table 16 reports the percentage of the population with low food access. Low food access is defined as living more than ½ mile from the nearest supermarket, supercenter, or large grocery store. Data are from the 2017 report, Low-Income and Low-Supermarket-Access Census Tracts, 2010-2015. This indicator is relevant because it highlights populations and geographies facing food insecurity.

The percent of the population with Low Food Access is 25.7%, which is lower than Massachusetts at 28.07% and higher than the United States at 22.43%.

Within Suffolk County there are many areas that are identified by the U.S. Department of Agriculture as having limited access to healthy foods within ½ mile of home and several with limited access within 1 mile of home. For example, one section of Revere has a relatively high number of households (323 of 1634 total households (19.8%)) without vehicles that are more than 1 mile from a supermarket. In large sections of Dorchester, Mattapan, Hyde Park, Franklin Park, and Roxbury, more than 33% of the population have low income and no access to healthy foods within 1/2 mile of home.

Figure 9. Low Income and Low Access to Food



Source: U.S. Department of Agriculture, Food Access Research Atlas, 2015

Access to opportunities for physical activity.

Having safe and accessible places to be physically active is a key resource for people's health. Increased physical activity is associated with lower risks of type 2 diabetes, cancer, stroke, hypertension, cardiovascular disease, and premature mortality, independent of obesity. The role of the built environment is important for encouraging physical activity. Individuals who live closer to sidewalks, parks, and gyms are more likely to exercise. Access to physical activity opportunities is defined as having a park or recreational facility within a mile of home; 100% of residents in Suffolk County have access to opportunities for physical activity. However, rates of number of facilities per 100,000 population vary by county from a low of 18.4 in Suffolk to a high of 23.3 in Norfolk County.

Table 17. Rate of Recreation and Fitness Facilities by County

Report Area	Total Population	Number of Establishments	Establishments, Rate per 100,000 Population
Report Location	4,134,036	841	20.34
Essex County, MA	743,159	123	16.55
Middlesex County, MA	1,503,085	331	22.02
Norfolk County, MA	670,850	156	23.25
Plymouth County, MA	494,919	98	19.80
Suffolk County, MA	722,023	133	18.42
Massachusetts	6,547,629	1,159	17.70
United States	308,745,538	33,980	11.01

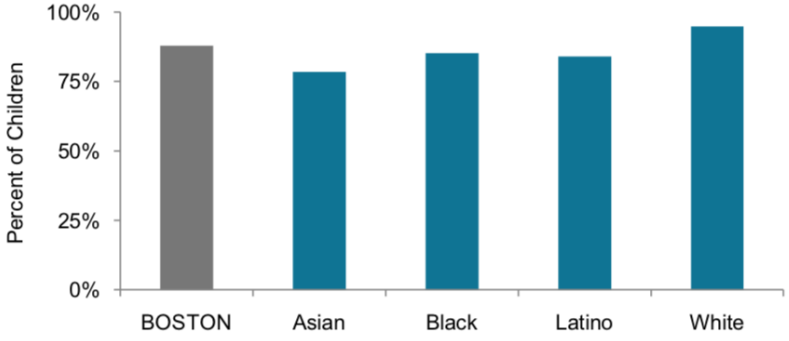
Note: This indicator is compared to the state average.
Data Source: US Census Bureau, County Business Patterns. Additional data analysis by CARES. 2016. Source geography: ZCTA

Table 17 reports the number per 100,000 population of recreation and fitness facilities as defined by North American Industry Classification System (NAICS) Code 713940. This indicator is relevant because access to recreation and fitness facilities encourages physical activity and other healthy behaviors.

The rate of the population, per 100,000, with access to recreation and fitness facilities is 20.34, which is higher than both Massachusetts at 17.70 and the United States at 11.01.

In a survey conducted by the Boston Public Health Commission on access to physical activity resources, differences in access were identified by race and ethnicity. While 87.8% of all Boston children had been to a park or recreational facility within the past year, 78.4% of Asian, 85.2% of Black, and 84.0% of Latino children went to a park compared to 94.8% of White children.

Figure 9. Children under age 18 who Accessed a Playground in the Past 12 Months



BOSTON	Asian	Black	Latino	White
87.8% (85.7-90.0)	78.4% (59.6-97.2)	85.2% (81.3-89.1)	84.0% (79.1-88.9)	94.8% (92.6-97.0)

NOTE: Data for multiracial/other race are not shown.
DATA SOURCE: Boston Survey of Children's Health, 2012
DATA ANALYSIS: Boston Public Health Commission Research and Evaluation Office

Fast food restaurants

Table 18. Rate of Fast Food Restaurants by County

Report Area	Total Population	Number of Establishments	Establishments, Rate per 100,000 Population
Report Location	4,134,036	3,356	81.18
Essex County, MA	743,159	572	76.97
Middlesex County, MA	1,503,085	1,263	84.03
Norfolk County, MA	670,850	465	69.32
Plymouth County, MA	494,919	300	60.62
Suffolk County, MA	722,023	756	104.71
Massachusetts	6,547,629	5,124	78.26
United States	308,745,538	237,922	77.06

Note: This indicator is compared to the state average.
Data Source: US Census Bureau, County Business Patterns. Additional data analysis by CARES. 2016. Source geography: ZCTA

Table 18 reports the number of fast food restaurants per 100,000 population. Fast food restaurants are defined as limited-service establishments primarily engaged in providing food services (except snack and nonalcoholic beverage bars) where patrons generally order or select items and pay before eating. This indicator is relevant because it provides a measure of healthy food access and environmental influences on dietary behaviors.

The rate of the population, per 100,000 with access to fast food restaurants is 81.18, which is higher than both Massachusetts at 78.26 and The United States at 77.06. The rate of fast food restaurants per 100,000 population varies by county from a low of 60.6 in Plymouth to a high of 104.7 in Suffolk County.

Employment and Income

In Suffolk County, many residents struggle with a lack of resources to meet basic needs. Suffolk County has **high rates of poverty** and **low levels of income**. The connections between poor health and poverty, low levels of income, and access to fewer resources are well established. People who lower incomes are more likely to be negatively impacted by chronic stress associated with challenges in securing basic necessities that impact health, such as housing, food, and access to physical activity.

The median household income was $66,459 in Suffolk County in 2017 with men ($86,839) earning 32% more than women ($65,619) on average. Median household income varies by neighborhood, ranging from a low of $29,583 in Mission Hill to a high of $223,411 in Fort Point.

Income varies by race and ethnic group. In Suffolk County, the Census estimates that Black and Latino families make less than half of what White families do in Suffolk County. The unemployment rate in Suffolk County among Black population is double that of the White population.

Figure 10. Median Household Income by Census Tract

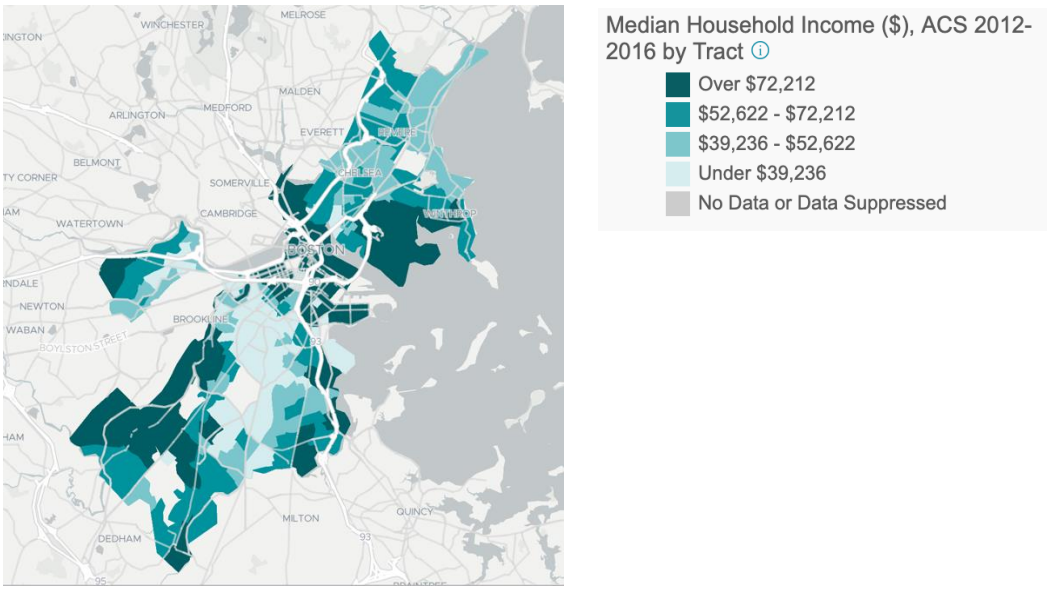


Table 19. Socioeconomic Status Indicators

Median Household Income by Race / Ethnicity of Householder

Report Area	Non-Hispanic White	Black	Asian	American Indian / Alaska Native	Native Hawaiian / Pacific Islander	Other Race	Multiple Race	Hispanic / Latino
Report Location	No data	No data	No data	No data	No data	No data	No data	No data
Essex County, MA	$78,848.00	$46,449.00	$82,679.00	$35,625.00	No data	$38,639.00	$53,925.00	$38,996.00
Middlesex County, MA	$93,565.00	$50,931.00	$99,696.00	$63,438.00	$76,806.00	$47,483.00	$63,141.00	$51,663.00
Norfolk County, MA	$93,178.00	$65,947.00	$90,252.00	No data	No data	$46,566.00	$77,454.00	$69,658.00
Plymouth County, MA	$82,175.00	$48,041.00	$86,080.00	$70,469.00	No data	$52,321.00	$59,710.00	$52,868.00
Suffolk County, MA	$78,476.00	$40,145.00	$40,865.00	$38,514.00	No data	$29,829.00	$52,543.00	$36,540.00
Massachusetts	$77,261.00	$44,117.00	$82,020.00	$37,917.00	$71,607.00	$35,169.00	$52,864.00	$37,100.00
United States	$61,018.00	$36,651.00	$76,667.00	$38,502.00	$54,993.00	$41,927.00	$50,513.00	$44,254.00

Table 19 reports median household income based on the latest 5-year American Community Survey estimates. This includes the income of the householder and all other individuals 15 years old and over in the household, whether they are related to the householder or not. Because many households consist of only one person, average household income is usually less than average family income.

Table 20. Socioeconomic Status Indicators by Race in Suffolk County

	Suffolk County					MA
	Overall	White	Black	Latino	Asian	
Median Household Income	$57,433	$78,476	$40,145	$36,540	$40,865	$77,385
Unemployment	7.1%	4.5%	10.9%	8.5%	7.1%	6.0%
Poverty	19.6%	12.2%	23.6%	27.6%	30.0%	11.1%

Sources: US Census, ACS 2013-2017; poverty is 100% below federal poverty level; no high school diploma among adults age 25 and older; US Census, Fact Finder, MA Profile; Data for White residents is among those reporting non-Latino White.

Unemployment

Table 21. Unemployment by County

Report Area	Labor Force	Number Employed	Number Unemployed	Unemployment Rate
Report Location	2,521,701	2,438,879	82,822	3.3%
Essex County, MA	436,000	420,195	15,805	3.6%
Middlesex County, MA	935,733	907,902	27,831	3%
Norfolk County, MA	400,105	387,181	12,924	3.2%
Plymouth County, MA	290,801	280,044	10,757	3.7%
Suffolk County, MA	459,062	443,557	15,505	3.4%
Massachusetts	3,866,987	3,730,224	136,763	3.5%
United States	162,996,774	156,527,318	6,469,456	4%

Note: This indicator is compared to the state average.
Data Source: US Department of Labor, Bureau of Labor Statistics. 2018 - August. Source geography: County

The percent of the population that is unemployed is 3.3%, which is lower than both Massachusetts at 3.5% and the United States at 4%. Unemployment does not vary substantially by county.

Table 21 reports the percentage of the civilian non-institutionalized population age 16 and older that is unemployed (non-seasonally adjusted). This indicator is relevant because unemployment creates financial instability and barriers to access including insurance coverage, health services, healthy food, and other necessities that contribute to poor health status. (www.chna.org)

Children living in poverty

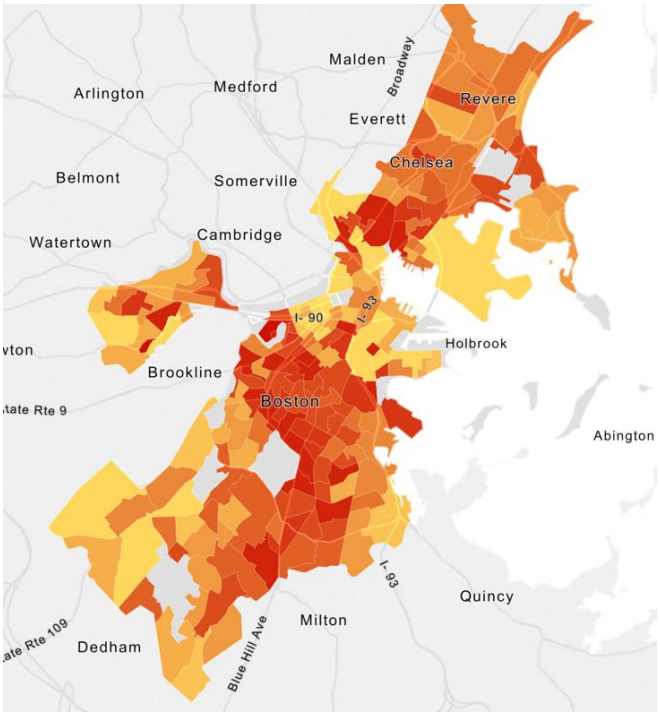
Table 22. Child Poverty by County

Report Area	Total Population	Population Under Age 18	Population Under Age 18 in Poverty	Percent Population Under Age 18 in Poverty
Report Location	4,156,730	877,531	115,337	13.14%
Essex County, MA	752,929	167,200	26,563	15.89%
Middlesex County, MA	1,511,503	318,796	29,251	9.18%
Norfolk County, MA	673,446	148,664	10,215	6.87%
Plymouth County, MA	495,308	112,301	12,794	11.39%
Suffolk County, MA	723,544	130,570	36,514	27.97%
Massachusetts	6,506,029	1,369,854	204,202	14.91%
United States	310,629,645	72,456,096	15,335,783	21.17%

The percent of children living in poverty is 13.14%, which is lower than both Massachusetts at 14.91% and the United States at 21.17%.

This indicator reports the percentage of children aged 0-18 living under 100% of the Federal Poverty Level (FPL). This indicator is relevant because poverty creates barriers to access including health services, healthy food, and other necessities that contribute to poor health status. (www.chna.org).

Figure 11. Percent Childhood Poverty Level by Census Tract – Suffolk



Childhood poverty is a strong determinant of health. Black, Latino, and Asian families are twice as likely to live under the 100% Federal Poverty Level compared to White families. In some census tracts in Allston, Charlestown, Chelsea, Roxbury, South End, Dorchester, and Mattapan more than 50% of children live in poverty.

Uninsured

Table 23. Uninsured Rate by Age Group - County

Report Area	Under Age 18	Age 18 - 64	Age 65 +
Report Location	10,963	121,118	2,931
Essex County, MA	2,445	23,631	320
Middlesex County, MA	3,620	40,968	1,173
Norfolk County, MA	1,597	12,640	430
Plymouth County, MA	1,506	12,574	269
Suffolk County, MA	1,795	31,305	739
Massachusetts	18,192	192,313	3,653
United States	4,333,068	31,960,240	406,938

The lack of health insurance is considered a *key driver* of health status.

Table 23 reports the percentage of the total civilian non-institutionalized population without health insurance coverage. This indicator is relevant because lack of insurance is a primary barrier to healthcare access including regular primary care, specialty care, and other health services that contributes to poor health status.

The number of people under the age of 18 who are uninsured is 10,963, which is lower than both Massachusetts at 18,192 and the United States at 4,333,068.

Teen moms

Table 24. Teenage Pregnancy/Birth Rate by County

Report Area	Female Population Age 15 - 19	Births to Mothers Age 15 - 19	Teen Birth Rate (Per 1,000 Population)
Report Location	140,101	2,148	15.33
Essex County, MA	25,467	570	22.4
Middlesex County, MA	47,834	536	11.2
Norfolk County, MA	21,115	129	6.1
Plymouth County, MA	16,622	271	16.3
Suffolk County, MA	29,063	642	22.1
Massachusetts	227,876	4,170	18.3
United States	10,736,677	392,962	36.6

Note: This indicator is compared to the state average.
Data Source: US Department of Health & Human Services, Health Indicators Warehouse. Centers for Disease Control and Prevention, National Vital Statistics System. Accessed via CDC WONDER. 2006-12. Source geography: County

Figure 12. Teenage Pregnancy/Birth Rate by County

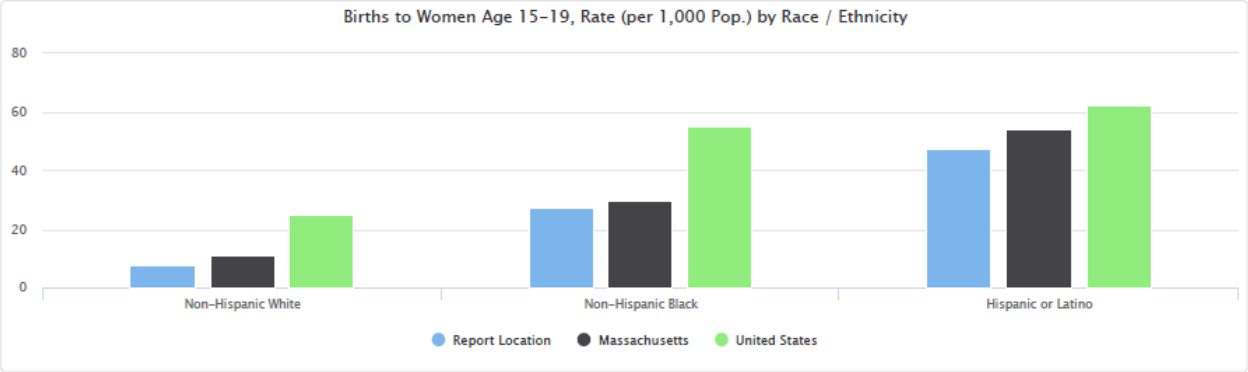
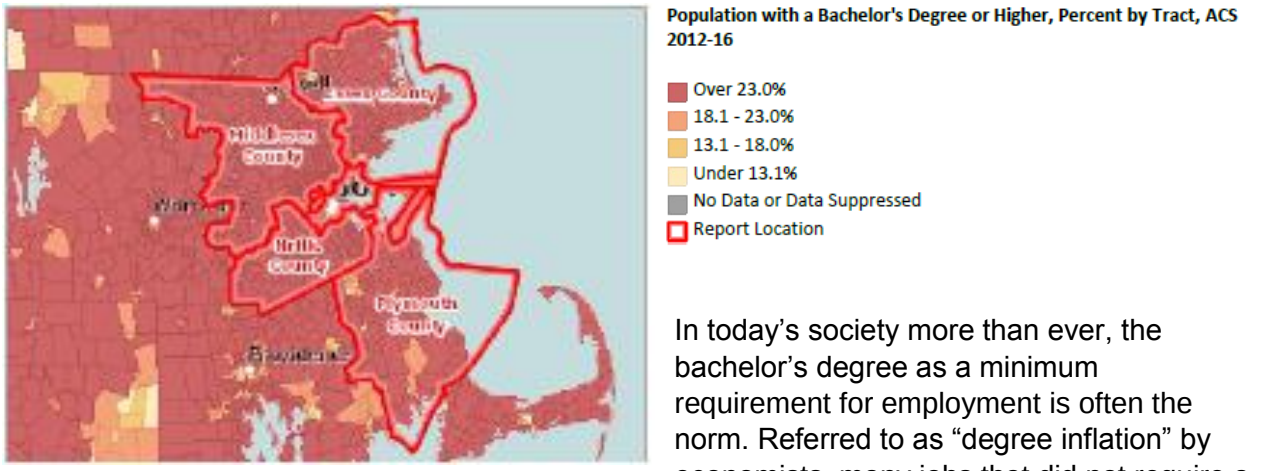


Table 24 and Figure 12 report the rate of total births to women age of 15 - 19 per 1,000 female population age 15 - 19. This indicator is relevant because in many cases, teen parents have unique social, economic, and health support services. Additionally, high rates of teen pregnancy may indicate the prevalence of unsafe sex practices. The number of teen moms per 1000 population is 15.33, which is lower than both Massachusetts at 18.3 and the United States at 36.6.

Rates vary from a low of 6.1 in Norfolk to a high of 22.1 in Suffolk County, and vary by race, with non-Hispanic Black and Hispanic teens having higher rates of teen pregnancy than non-Hispanic White teens.

Education

Figure 13. Percent population with Bachelor's degree or higher



In today's society more than ever, the bachelor's degree as a minimum requirement for employment is often the norm. Referred to as "degree inflation" by economists, many jobs that did not require a college degree years ago are increasingly doing so. (Rampell, 2013). Figure 13 is relevant because educational attainment has been linked to positive health outcomes. The percent of the population with a Bachelor's degree or higher is 46.14%, which is higher than both Massachusetts at 41.22% and the United States at 30.32%.

Educational attainment is a community health need as it contributes longevity, availability of resources to meet basic needs, higher health literacy, and access to less physically dangerous jobs. Levels of education are strongly correlated with both employment status, the ability to earn a livable wage, and many health outcomes. Approximately 13% of Hampden County residents age 25 and older do not have a high school diploma, compared to the Massachusetts rate of 10%. In the communities of Chelsea, Revere, and Dorchester, areas where there are a higher proportion of people of color living, more than 20% of adults do not have a high school diploma. And while 43.4% of the population of Massachusetts has a bachelor's degree or higher, in Suffolk County only 44.7% do, suggesting a higher level of educational achievement. However, rates of higher-level education are much lower in Chelsea (14%), Chicopee (174%), Revere (19.9%), and Dorchester (9.3%) (U.S. Census, ACS, 2013-2017; Boston Public Schools Focus on Children). Students who are White (80.3) or Asian (90.7) are 10-20% more likely to graduate high school than all students, while those who are students of color, have high needs, or low income, are 5-10 % less likely than average, and those who have disabilities are 28% less likely than average to graduate high school.

Figure 14. Percent population with less than a high school degree

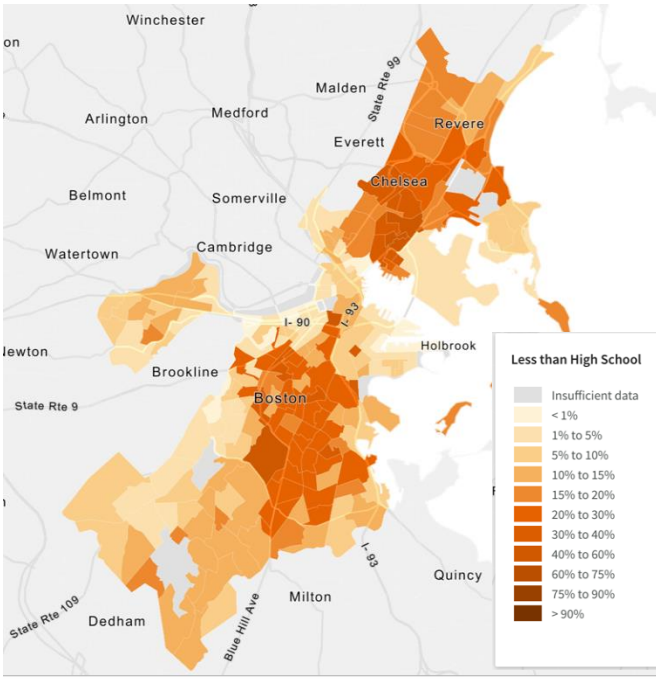


Table 25. Reading Proficiency by County

Report Area	Total Students with Valid Test Scores	Percentage of Students Scoring 'Proficient' or Better	Percentage of Students Scoring 'Not Proficient' or Worse
Report Location	41,023	58.14%	41.86
Essex County, MA	8,193	55.15%	44.85
Middlesex County, MA	14,602	63.9%	36.1
Norfolk County, MA	7,249	68.41%	31.59
Plymouth County, MA	5,956	53.9%	46.1
Suffolk County, MA	5,023	36.52%	63.48
Massachusetts	65,584	55.43%	44.57
United States	3,393,582	49.67%	45.61

Note: This indicator is compared to the state average.
Data Source: US Department of Education, EDFacts. Accessed via DATA.GOV. 2014-15. Source geography: School District

Table 25 reports the percentage of children in grade 4 whose reading skills tested below the "proficient" level for the English Language Arts portion of the state-specific standardized test. This indicator is relevant because an inability to read English well is linked to poverty, unemployment, and barriers to healthcare access, provider communications, and health literacy/education.

The percent of the population with a Low Reading proficiency is 41.86%, which is lower than both Massachusetts at 44.57% and the United States at 45.61%.

Violence and Trauma

Interpersonal and **collective** violence affects health directly, via death and injury, as well indirectly through the trauma that impacts mental health and healthy relationships.

Interpersonal violence includes sexual and intimate partner violence, childhood physical and sexual abuse and neglect, and elder abuse and neglect. Suffolk County does not have any surveillance systems that measure incidence, prevalence, risk and protective factors, and related negative health outcomes associated with interpersonal violence (including intimate partner, dating, and sexual violence, violence against children, child exploitation).

Collective violence and trauma. A safe community is one that is free from violence and danger. It is a place where people do not have to consider whether they will be safe or not when deciding where and when they will go outside of their homes.

Table 26. Violent Crime Rate by County

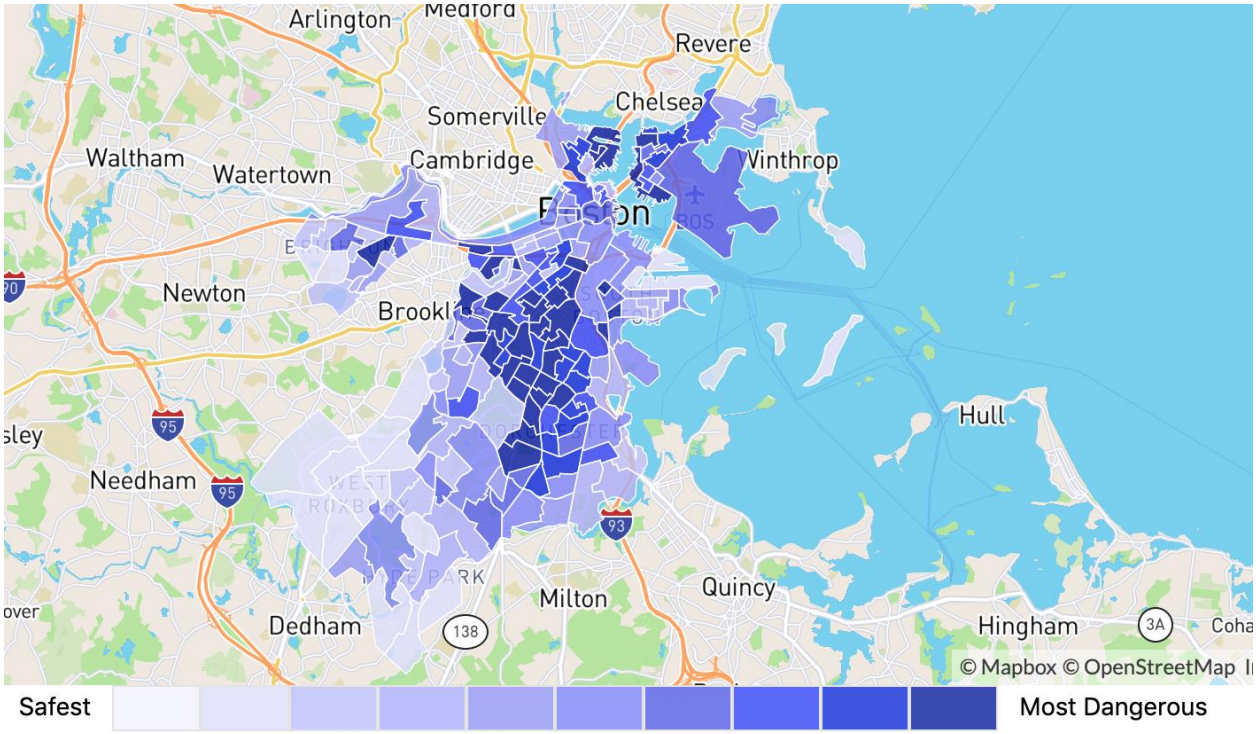
Report Area	Total Population	Violent Crimes	Violent Crime Rate (Per 100,000 Pop.)
Report Location	4,177,441	15,356	367.6
Essex County, MA	759,862	2,904	382.2
Middlesex County, MA	1,531,827	3,164	206.6
Norfolk County, MA	675,121	1,304	193.1
Plymouth County, MA	458,591	1,854	404.4
Suffolk County, MA	752,040	6,130	815.2
Massachusetts	6,574,668	26,503	403.1
United States	311,082,592	1,181,036	379.7

Note: This indicator is compared to the state average.
Data Source: Federal Bureau of Investigation, FBI Uniform Crime Reports. Additional analysis by the National Archive of Criminal Justice Data. Accessed via the Inter-university Consortium for Political and Social Research. 2012-14. Source geography: County

Table 26 reports the rate of violent crime offenses reported by law enforcement per 100,000 residents. Violent crime includes homicide, rape, robbery, and aggravated assault. This indicator is relevant because it assesses community safety.

The violent crime rate per 100,000 population is 367.6, which is lower than both Massachusetts at 403.1 and the United States at 379.7. Violent crime rates vary by county, ranging from a low of 193 in Norfolk to a high of 815 per 100,000 population in Suffolk County.

Figure 15. Violent Crime Rate by Tract within Suffolk County



Crime rates are high in Suffolk County. Boston is ranked 18/100, safer than 18% of cities in the U.S. The violent crime rate in Suffolk County was 7.03/1,000 population, much higher than that of the state (3.58/1,000 population) or nation (4/1,000 population). Property crime was similarly higher in Suffolk County than the state, at 22.54 vs. 14.37 per 1,000 population (Data Source: *Neighborhood Scout, https://www.neighborhoodscout.com/ma/boston/crime*). High crime areas include sections of Chelsea, Allston, Charlestown, Dorchester, and Roxbury.

Social Environment

The social environment consists of the **demographics** of a region, including distribution of age, race, ethnicity, immigration status, and ability; **community-level factors** such as language isolation, participation in democracy, social isolation or support, experiences of interpersonal discrimination; and the **policies and practices** of systems of government, cultural norms, and institutional racism, all of which impact people's health every day.

Community-level factors - A variety of community level factors contribute to a social environment that impacts health, with some positively impacting health such as social support and participation in society, and some negatively impacting health such as experiences of oppression. Social isolation and participation in communities arose during focus groups and interviews for the CHNA. Factors mentioned that can lead to **social isolation** are:

- Emotional implications of having a disability;
- Decreased day services for people with mental health problems;
- For older adults, limited availability of Meals on Wheels, limited Senior Centers hours and activities, and hearing, vision, and dental problems; and
- Linguistic isolation in Suffolk County, with over 25% speaking a language other than English at home and 12% stating they speak English "less than very well." (ACS, 2013-2017).

Experiences of **interpersonal racism, discrimination** and other forms of **exclusion** can serve to socially isolate people and have consequences for mental and physical health. Participants in focus groups and key informant interviews shared their experiences:

- Lack of sensitivity of transgender issues socially isolates transgender people who don't pass as the gender they identify with
- People with substance abuse and mental health disorders face discrimination in the medical system
- Youth of color report being stereotyped by peers, teachers, and mention that "doctors shame and threaten parents that they should take better care of their kids." One young woman said, "A guy told me I was unattractive because I was black. It took a toll on me."
- Children with disabilities face a high rate of bullying in schools.

Policies and practices of systems of government, cultural norms, and institutional racism impact people's health every day. **Institutional racism** is a driver of health inequities. Institutional racism is racial inequities in access to goods, services, and opportunities such as quality education, housing, employment opportunities, medical care and facilities, and a healthy physical environment. Practices of systems and institutions that result in racial inequities become the norm, are often codified by law or policy, and can manifest as inherited disadvantage. These practices do not necessarily transpire at the individual level, but are embedded in our systems, regulations, and laws. Institutional racism is perpetuated by bureaucratic barriers and inaction in the face of need. Structural racism is mutually reinforcing systems (criminal justice, poorly funded public schools, and housing policies, for example) that perpetuate discrimination in all areas of daily life and results in unequal distribution of social resources. The policies and practices of systems and institutions are directly influenced by who has power and how they use it. Racially-motivated discrimination, whether conscious or built into the practices of systems, can lead to adverse health outcomes such as poor mental health, chronic stress, hypertension, and cardiovascular disease.

Focus group participants and interviewees provided examples of institutional racism and other forms of institutionalized oppression:

- In the news recently was a story of how security guards at a Boston museum treated Black youth differently than White, with the result that the teacher took the class away from the museum rather than experience interpersonal racism and discrimination.

- In schools, black children are more likely to be disciplined and experience unequal treatment in dress code violations
- Substance use disorder recovery coaches are not paid or have very low pay, there is very little training and no certification, which systematically marginalizes and devalues recovery services
- Marginalized youth don't often see teachers, counselors, community staff who look like them or have had the same kinds of experiences they have

Environmental Exposures

Air pollution impacts the health of Boston residents. Air pollution is associated with asthma, cardiovascular disease and other illnesses. Air quality in Suffolk County as a whole is slightly worse, with 7.6 micrograms of particulate matter 2.5 (PM2.5) in the air compared to the state at 7.7 and the best U.S. cities at 6.1. Particulate matter is one form of air pollution known to impact asthma, heart disease, lung cancer, and premature mortality. *(Data source: County Health Rankings, 2014).*

Exposure to lead is a well-known health risk, connected to outcomes as varied as decreased academic achievement, IQ, and reduced growth in children and decreased kidney function, increased blood pressure and hypertension in adults. Boston has higher risk scores for blood lead poisoning based on 2013-2017 elevated blood level incidence rates, poverty, and percent of households built before 1978. In certain census tracts in the Roxbury neighborhood of Boston, from 2014-2017 as many as 88 children per 1,000 population had blood lead levels that were considered high risk for lead poisoning (>5mcg/dL).

Barriers to Accessing Quality Health Care

Access to dentists

Table 27. Access to Dentists by County

Report Area	Total Population, 2015	Dentists, 2015	Dentists, Rate per 100,000 Pop.
Report Location	4,345,719	4,745	109.2
Essex County, MA	776,043	655	84.4
Middlesex County, MA	1,585,139	1,460	92.11
Norfolk County, MA	696,023	804	115.51
Plymouth County, MA	510,393	358	70.14
Suffolk County, MA	778,121	1,468	188.66
Massachusetts	6,794,422	6,497	95.6
United States	321,418,820	210,832	65.6

Note: This indicator is compared to the state average.
Data Source: US Department of Health & Human Services, Health Resources and Services Administration, Area Health Resource File. 2015. Source geography: County

Table 27 reports the number of dentists per 100,000 population. This indicator includes all dentists - qualified as having a doctorate in dental surgery (D.D.S.) or dental medicine (D.M.D.), who are licensed by the state to practice dentistry and who are practicing within the scope of that license.

The rate of Dentists, per 100,000 population is 109.2, which is higher than both Massachusetts at 95.6 and the United States at 65.6. Access to dentists per 100,000 population varies by county, ranging from a low of 84 in Essex to a high of 189 in Suffolk County.

Access to mental health providers

Table 28. Access to Mental Health Providers by County

Report Area	Estimated Population	Number of Mental Health Providers	Ratio of Mental Health Providers to Population (1 Provider per x Persons)	Mental Health Care Provider Rate (Per 100,000 Population)
Report Location	4,305,930	21,281	202.3	494.2
Essex County, MA	769,093	3,444	223.3	447.8
Middlesex County, MA	1,570,301	7,379	212.8	469.9
Norfolk County, MA	692,259	3,365	205.7	486
Plymouth County, MA	507,025	2,140	236.9	422
Suffolk County, MA	767,253	4,953	154.9	645.5
Massachusetts	6,745,398	33,237	202.9	492.7
United States	317,105,555	643,219	493	202.8

Note: This indicator is compared to the state average.
Data Source: University of Wisconsin Population Health Institute, County Health Rankings. 2018. Source geography: County

Table 28 reports the rate of the county population to the number of mental health providers including psychiatrists, psychologists, clinical social workers, and counsellors that specialize in mental health care.

The rate of access to mental health care providers, per 100,000 population is 494.2, which is higher than both Massachusetts at 492.7 and the United States at 202.8. Access to mental health providers per 100,000 population varies by county, ranging from a low of 447 in Essex to a high of 645 in Suffolk County.

Access to primary care

Table 29. Access to Primary Care Providers by County

Report Area	Total Population, 2014	Primary Care Physicians, 2014	Primary Care Physicians, Rate per 100,000 Pop.
Report Location	4,305,936	5,908	137.2
Essex County, MA	769,091	667	86.73
Middlesex County, MA	1,570,315	2,268	144.43
Norfolk County, MA	692,254	981	141.71
Plymouth County, MA	507,022	328	64.69
Suffolk County, MA	767,254	1,664	216.88
Massachusetts	6,745,408	8,374	124.1
United States	318,857,056	279,871	87.8

Note: This indicator is compared to the state average.
Data Source: US Department of Health & Human Services, Health Resources and Services Administration, Area Health Resource File. 2014. Source geography: County

Table 29 reports the number of primary care physicians per 100,000 population. Doctors classified as "primary care physicians" by the AMA include: General Family Medicine MDs and DOs, General Practice MDs and DOs, General Internal Medicine MDs and General Pediatrics MDs. Physicians age 75 and over and physicians practicing sub-specialties within the listed specialties are excluded. This indicator is relevant because a shortage of health professionals contributes to access and health status issues.

The rate of access to primary care physicians, per 100,000 population is 137.2, which is higher than both Massachusetts at 124.1 and the United States at 87.8. Access to primary care providers per 100,000 population varies by county, ranging from a low of 64 in Plymouth to a high of 216 in Suffolk County.

Federally qualified health centers

Table 30. Access to Federally Qualified Health Centers by County

Report Area	Total Population	Number of Federally Qualified Health Centers	Rate of Federally Qualified Health Centers per 100,000 Population
Report Location	4,134,036	76	1.84
Essex County, MA	743,159	26	3.5
Middlesex County, MA	1,503,085	6	0.4
Norfolk County, MA	670,850	8	1.19
Plymouth County, MA	494,919	4	0.81
Suffolk County, MA	722,023	32	4.43
Massachusetts	6,547,629	125	1.91
United States	312,471,327	8,329	2.67

Note: This indicator is compared to the state average.
Data Source: US Department of Health & Human Services, Center for Medicare & Medicaid Services, Provider of Services File. March 2018. Source geography: Address

Table 30 reports the number of Federally Qualified Health Centers (FQHCs) in the community. This indicator is relevant because FQHCs are community assets that provide health care to vulnerable populations; they receive extra funding from the federal government to promote access to ambulatory care in areas designated as medically underserved.

The rate of federally qualified health centers, per 100,000 population is 1.84, which is lower than both Massachusetts at 1.91 and the United States at 2.67. Access to FQHCs per 100,000 population varies by county, ranging from a low of 0.4 in Middlesex to a high of 4.43 in Suffolk County.

Health Professional Shortage areas

Table 31. Health Professional Shortage Areas by County

Report Area	Primary Care Facilities	Mental Health Care Facilities	Dental Health Care Facilities	Total HPSA Facility Designations
Report Location	34	30	31	95
Essex County, MA	3	3	3	9
Middlesex County, MA	5	3	5	13
Norfolk County, MA	4	3	3	10
Plymouth County, MA	3	3	2	8
Suffolk County, MA	19	18	18	55
Massachusetts	57	52	52	161
United States	3,599	3,171	3,071	9,836

Data Source: US Department of Health & Human Services, Health Resources and Services Administration, Health Resources and Services Administration. April 2016. Source geography: Address

Table 31 reports the number and location of health care facilities designated as "Health Professional Shortage Areas" (HPSAs), defined as having shortages of primary medical care, dental or mental health providers. This indicator is relevant because a shortage of health professionals contributes to access and health status issues.

The total number of HPSA facility designations is 95, which is lower than both Massachusetts at 161 and the United States at 9,836. Presence of health professional shortage areas varies by county, ranging from a low of 8 in Plymouth to a high of 55 in Suffolk County.

Health Conditions and Behaviors

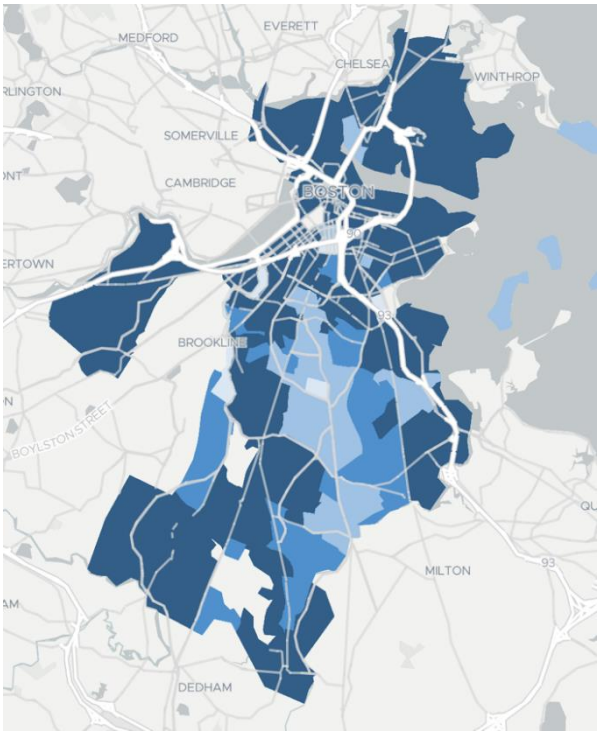
Alcohol consumption

Table 32. Excessive Alcohol Consumption by County

Report Area	Total Population Age 18+	Estimated Adults Drinking Excessively	Estimated Adults Drinking Excessively (Crude Percentage)	Estimated Adults Drinking Excessively (Age-Adjusted Percentage)
Report Location	3,213,084	611,506	19%	19.6%
Essex County, MA	566,952	109,989	19.4%	20.2%
Middlesex County, MA	1,172,281	212,183	18.1%	18.5%
Norfolk County, MA	514,778	99,867	19.4%	20.6%
Plymouth County, MA	372,841	78,669	21.1%	21.9%
Suffolk County, MA	586,232	110,798	18.9%	18.7%
Massachusetts	5,089,065	992,368	19.5%	20.3%
United States	232,556,016	38,248,349	16.4%	16.9%

Note: This indicator is compared to the state average.
Data Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System. Accessed via the Health Indicators Warehouse. US Department of Health & Human Services, Health Indicators Warehouse. 2006-12. Source geography: County

Table 32 reports the percentage of adults aged 18 and older who self-report heavy alcohol consumption (defined as more than two drinks per day on average for men and one drink per



day on average for women). This indicator is relevant because current behaviors are determinants of future health and this indicator may illustrate a cause of significant health issues, such as cirrhosis, cancers, and untreated mental and behavioral health needs.

The percent of adults drinking excessively is 19.6%, which is lower than Massachusetts at 20.3% and higher than the United States at 16.9%. Rate of drinking to excess varies by county, ranging from a low of 19% in Middlesex to a high of 22% in Plymouth County. Within Suffolk County, rates vary by census tract.

Physical inactivity

Table 33. Leisure Time Physical Activity by County

Report Area	Total Population Age 20+	Population with no Leisure Time Physical Activity	Percent Population with no Leisure Time Physical Activity
Report Location	3,320,886	635,545	18.7%
Essex County, MA	584,294	120,949	19.8%
Middlesex County, MA	1,215,661	218,819	17.6%
Norfolk County, MA	527,037	98,029	17.8%
Plymouth County, MA	384,633	88,081	21.8%
Suffolk County, MA	609,261	109,667	18.5%
Massachusetts	5,192,685	1,034,708	19.3%
United States	238,798,321	52,960,511	21.6%

Note: This indicator is compared to the state average.
Data Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. 2015. Source geography: County

Within the report area, 635,545 or 18.7% of adults aged 20 and older self-report no leisure time for activity, based on the question: "During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?". This indicator is relevant because current behaviors are determinants of future health and this indicator may illustrate a cause of significant health issues, such as obesity and poor cardiovascular health.

The percent of the population with no leisure time physical activity is 18.7%, which is lower than both Massachusetts at 19.3% and the United States at 21.6%. Rates of physical inactivity vary by county, ranging from a low of 17.6% in Middlesex to a high of 21.8% in Plymouth County. Within Suffolk County, rates vary by census tract.

HIV prevalence

Table 34. HIV Prevalence by County

Report Area	Population Age 13+	Population with HIV / AIDS	V / AIDS, Rate (Per 100,000 Pop.)
Report Location	3,710,804	13,319	358.92
Essex County, MA	657,374	1,754	266.8
Middlesex County, MA	1,352,148	3,657	270.5
Norfolk County, MA	590,938	1,235	209
Plymouth County, MA	432,549	936	216.4
Suffolk County, MA	677,795	5,737	846.4
Massachusetts	5,810,947	19,665	338.4
United States	268,159,414	971,524	362.3

Note: This indicator is compared to the state average.
Data Source: US Department of Health & Human Services, Health Indicators Warehouse. Centers for Disease Control and Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. 2015. Source geography: County

Table 34 reports prevalence rate of HIV per 100,000 population. This indicator is relevant because HIV is a life-threatening communicable disease that disproportionately affects minority populations and may also indicate the prevalence of unsafe sex practices.

The rate of HIV/Aids, per 100,000 population is 358.92, which is higher than Massachusetts at 338.4 and lower than the United States at 362.3. Rates of HIV prevalence vary by county, ranging from a low of 216 in Plymouth to a high of 846 in Plymouth County. Within Suffolk County, rates vary by census tract.

Tobacco usage

Table 35. Tobacco Utilization by County

Report Area	Total Population Age 18+	Total Adults Regularly Smoking Cigarettes	Percent Population Smoking Cigarettes (Crude)	Percent Population Smoking Cigarettes (Age-Adjusted)
Report Location	3,213,084	430,970	13.4%	13.6%
Essex County, MA	566,952	79,940	14.1%	14.4%
Middlesex County, MA	1,172,281	133,640	11.4%	11.5%
Norfolk County, MA	514,778	60,744	11.8%	12%
Plymouth County, MA	372,841	66,366	17.8%	18.3%
Suffolk County, MA	586,232	90,280	15.4%	15.2%
Massachusetts	5,089,065	773,538	15.2%	15.4%
United States	232,556,016	41,491,223	17.8%	18.1%

Note: This indicator is compared to the state average.
Data Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System. Accessed via the Health Indicators Warehouse. US Department of Health & Human Services, Health Indicators Warehouse. 2006-12. Source geography: County

Table 35 reports estimated expenditures for cigarettes, as a percentage of total household expenditures. This indicator is relevant because tobacco use is linked to leading causes of death such as cancer and cardiovascular disease. Expenditures data are suppressed for single counties and single-geography custom areas. Rank data are not available in custom report areas or multi-county areas.

The percent of adults smoking cigarettes is 13.6%, which is lower than both Massachusetts at 15.4% and the United States at 18.1%. Rates of HIV prevalence vary by county, ranging from a low of 11% in Middlesex to a high of 18% in Suffolk County. Within Suffolk County, rates vary by census tract.

Infant mortality

Table 36. Infant Mortality Rate by County

Report Area	Total Births	Total Infant Deaths	Infant Mortality Rate (Per 1,000 Births)
Report Location	246,105	1,108	4.5
Essex County, MA	44,230	195	4.4
Middlesex County, MA	89,140	365	4.1
Norfolk County, MA	36,905	125	3.4
Plymouth County, MA	27,970	145	5.2
Suffolk County, MA	47,860	278	5.8
Massachusetts	379,555	1,860	4.9
United States	20,913,535	136,369	6.5

Note: This indicator is compared to the state average.
Data Source: US Department of Health & Human Services, Health Resources and Services Administration, Area Health Resource File. 2006-10. Source geography: County

Table 36 reports the rate of deaths to infants less than one year of age per 1,000 births. This indicator is relevant because high rates of infant mortality indicate the existence of broader issues pertaining to access to care and maternal and child health.

The rate of infant mortality, per 1,000 births is 4.5, which is lower than both Massachusetts at 4.9 and The United States at 6.5. Infant mortality rate varies by county, ranging from a low of 4.1 in Middlesex to a high of 5.8 in Suffolk County. Within Suffolk County, rates vary by census tract.

Obesity

Table 37. Adult Obesity Rate by County

Report Area	Total Population Age 20+	Adults with BMI > 30.0 (Obese)	Percent Adults with BMI > 30.0 (Obese)
Report Location	3,322,501	777,429	23.1%
Essex County, MA	585,003	148,006	24.8%
Middlesex County, MA	1,215,008	273,377	22.1%
Norfolk County, MA	526,834	118,011	21.6%
Plymouth County, MA	383,881	110,174	27.8%
Suffolk County, MA	611,775	127,861	21.5%
Massachusetts	5,192,801	1,269,281	24%
United States	238,842,519	67,983,276	28.3%

Note: This indicator is compared to the state average.
Data Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. 2015. Source geography: County

Within the report area, 23.1% of adults aged 20 and older self-report that they have a Body Mass Index (BMI) greater than 30.0 (obese) in the report area. Excess weight may indicate an unhealthy lifestyle and puts individuals at risk for further health issues.

The percent of obese adults is 23.1%, which is lower than both Massachusetts at 24% and the United States at 28.3%. Rates of obesity vary by county, ranging from a low of 21.5% in Suffolk to a high of 27.8% in Plymouth County. Within Suffolk County, rates vary by census tract.

Vulnerable Populations of Concern

Available data indicate that **children and youth, older adults**, and **Latinos** and **Blacks** experience disproportionately high rates of some health conditions or associated morbidities when compared to that of the general population in the Greater Boston Metropolitan Area. Children and youth experienced high rates of asthma and are particularly impacted by obesity and STIs. Older adults had higher rates of chronic disease and hypertension. Latinos and Blacks experienced higher rates of hospitalizations due to some chronic diseases, mental health, and substance use disorder.

When considering those with disproportionate and inequitable access to the social determinants of health, data identified people who are **Latino and Black, youth, older adults, people with lower incomes, women, people who have been involved in the criminal legal system, those with mental health and substance use disorders, and people with disabilities**.

"Structures of power get in the way. It's not a lack of resources, it's isolation of systems… you have to be intentional to understand this, the way structures interact with each other."
-Key Informant Interview, Public Health Official, Suffolk County

Geographic Areas of Concern

Within the Greater Boston Metropolitan Area, geographic regions that have higher proportion of people of color, low median family income, lower rates of high school graduation have higher rates of chronic illness, less ideal environmental conditions, and poorer health, leading to lower life expectancy and more sick days taken per year. There is more than a 20-year difference between Boston neighborhoods with the lowest life expectancy (Roxbury – 59), and the highest (Back Bay, Allston/Brighton – 84.5). In general, people living in Suffolk County have nearly the worst health (rank 12/14), while those living in Middlesex (rank 1/14) and Norfolk (rank 2/14) Counties have the best health in Massachusetts. People in the healthiest cities in the U.S. average 3.0 days with poor physical health in the last 30 days. Comparatively, those in Norfolk County experience 2.9 days of poor health, while those in Middlesex experience 3.0, Essex 3.3, Plymouth, 3.5, and Suffolk 3.6 *(County Health Rankings, 2016).*

Community and Hospital Resources to Address Identified Needs

Lack of Resources to Meet Basic Needs

- **Shriners Assist Charity Care Program**: Shriners Hospitals for Children provides financial assistance to children under 18 years of age who require inpatient or outpatient specialty medical care for whom additional costs would pose an undue financial burden on their family financial situation. All care is provided without regard for the family's ability to pay any or all of the costs related to their care.

- **Housing and Transportation** assistance are available through our association with Shriners International. While not guaranteed, we make our best effort to provide assistance with transportation and housing when it is needed.

Limited Availability of Pediatric Specialty Providers

- **Shriners Hospitals for Children** provides pediatric specialty care service to children under the age of 18 years not available at other hospitals in Massachusetts. The Boston Shriners Hospital is the only exclusively pediatric hospital in the northeast that is verified by the American Burn Association to provide highly specialized care for children with burn injuries. All care is provided without regard for the family's ability to pay for the cost of care.

Lack of Care Coordination

- **Care Management**: The Care Management team at Shriners Hospitals for Children-Boston develops purposeful, innovative, health care frameworks that build institutional continuity and support capacity building infrastructure for healthier communities through programs such as
    - **School Reentry Program**: After a traumatic injury and extended absence, returning to school can be difficult for many children. Our school re-entry specialists work to ease the transition back to the classroom through readiness training, teacher and staff education, and first-day class education, teaching classmates about a child's injury using age-appropriate techniques.
    - **Community reintegration program (Team Brave)**: Learning to re-enter the community after a traumatic injury is an important part of the healing process. Our therapists arrange field trips off-site with the goal of allowing patients to practice their coping skills, build self-confidence, build physical stamina, interact with peers, and have fun.

Regional Specialty Medical Education

- **Emergency Burn Care Education**: A special team of educational coordinators provides training to nurses, nursing students, school nurses, emergency medical technicians and paramedics. Training averages over 75 classes per year serving all of New England and eastern New York. Clinical staff from SHC-Boston regularly visit emergency department physicians and pediatricians throughout New England to provide pediatric burn education and spread the mission of Shriners to those in need. Many of the hospitals visited throughout the year have requested to have a physician or nurse present at their grand rounds and provide in-service training for their hospital's medical staff.
- **Thall Symposia**: Thall Symposia are made available twice annually through the generosity of the Abraham Thall and Sadye Stone Thall endowed fund. The symposium is named in honor and memory of Abraham Thall and Sadye Stone Thall by their daughter, Mrs. Diane L. Rothstein. Mrs. Rothstein wanted to create a living legacy to her parents that supported their passion for furthering education. This educational symposium addresses a broad spectrum of advances in pediatric burn care and psychological treatment techniques for optimizing the physical and emotional recoveries

of children affected by burns and other traumatic injuries. Thall Symposia are available for the clinical community, families, and patients.

Research

- **Shriners Hospitals for Children—Boston** works collaboratively with Massachusetts General Hospital to drive innovations in research regarding methods to identify infections and heal wounds, care for severely burned children, identify the genetic basis for cleft lip and palate, among many other lines of active research. Research is funded through the Shriners Hospitals for Children Research Foundation, National Institutes of Health, National Science Foundation, and many other state and national agencies.

Action Plan

2016 Action Plan

Our action plan from 2016 was to increase community awareness in order to address unmet pediatric burn medical needs by:

1. Partner with New Hampshire emergency department physicians, pediatricians, community health care centers and the general public to increase community awareness. Strategies included
    a. Meet with emergency department physicians, nurses, and community healthcare centers.
    b. Exhibit at health conferences and community healthcare events.
    c. Provide Shriners Hospitals for Children—Boston physicians to present at medical conferences
2. Meeting the communities unmet medical needs. Strategies included
    a. Working closely with community health centers and attending community health fairs to generate awareness
    b. Education emergency medical personnel by offering course materials, in-service training seminars.
    c. Disseminate burn awareness and burn safety information at public fairs and other family events.
3. Meeting patients unmet needs while at Shriners Hospitals for Children—Boston
    a. Patients that are referred to SHC-Boston with conditions not within the purview of Shriners services will be referred to Massachusetts General Hospital for definitive care.

2016 Action Plan Results

During 2016-2019, Shriners Hospitals for Children—Boston developed programs such as the School Reentry Program, Community Reintegration Program, expanded our Charity Assist program, and offered innumerable clinical education opportunities at physician practices, urgent care centers, emergency departments, and fire and medical emergency response teams. Examples include yearly courses on Advanced Burn Life Support (ABLS), annual Thall Symposium, grand rounds presentations at regional medical centers, and much more. Physician liaisons from SHC-Boston, working in collaboration with our marketing and communication

team, created and distributed burn and cleft lip and palate educational materials for physician offices, emergency rooms, and fire and medical emergency response centers.

Written Comments on 2016 Community Health Needs Assessment

Shriners Hospitals for Children Community Health Needs Assessment and implementation was made widely available to the public on Shriners Hospitals for Children website at https://www.shrinershospitalsforchildren.org/shc/chna

In addition to posting the Community Health Needs Assessment, contact information including email were listed. No comments or questions were received specifically with regard to the published Community Health Needs Assessment. However, we have received multiple positive responses from physicians, other clinicians, families, and patients regarding the high quality of care and education that goes beyond what would be received in other settings.

2019 Action Plan and Performance Measures

Based on the results of this 2019 Community Health Needs Assessment, the Shriners Hospitals for Children—Boston will take the following actions in response to prioritized community needs:

Lack of resources to meet basic needs

Action: Shriners Hospitals for Children—Boston will provide **financial assistance** to children under 18 years of age who require inpatient or outpatient specialty medical care for whom additional costs would pose an undue financial burden on their family financial situation.

Performance Measure: Total cost of charity care provided

Action: Shriners Hospitals for Children—Boston will provide assistance with **transportation** and **housing** to children under 18 years of age who require inpatient or outpatient specialty medical care at Shriners Hospitals for Children or whom additional costs would pose an undue financial burden on their family financial situation.

Performance Measure: Total number of children provided assistance with transportation and/or housing

Limited availability of pediatric specialty care providers

Action: Shriners Hospitals for Children-Boston will provide **pediatric specialty medical care** for burns, complex skin, scare, and wound conditions, and clef lip and palate to children under the age of 18 years. The Boston Shriners Hospital is the only exclusively pediatric hospital in the northeast that is verified by the American Burn Association to provide highly specialized care for children with burn injuries. All care is provided without regard for the family's ability to pay for the cost of care.

Performance Measure: Total number of children cared for

Action: Shriners Hospitals for Children-Boston will develop a regional network of TeleHealth access to specialty pediatric burn, skin, and cleft lip and palate providers to reduce need for transportation and improve access to high quality specialized care.

Performance Measure: Total number of affiliate TeleHealth sites; total number of TeleHealth encounters.

Lack of care coordination

Action: Shriners Hospitals for Children-Boston will **provide enhanced care management** for children under the age of 18 years with burns, complex skin, scare, and wound conditions and their families to reduce the social challenges of recovering from an injury.

Performance Measure: Total number of children utilizing specialized care management programs (e.g. Team Brave, School Reentry Program).

Lack of regional access to specialty medical education on pediatric burn care

Action: Shriners Hospitals for Children-Boston will provide basic and advanced **education on burn, skin, and wound care** for nurses, nursing students, school nurses, emergency medical technicians, paramedics, physicians, residents, firefighters, and other community health care and emergency response personnel.

Performance Measure: Total number of educational programs offered

Lack of research on pediatric medical issues

Action: Shriners Hospitals for Children-Boston will fund and perform innovative basic and clinical **research on burn, skin, and wound care** to enhance the state of current knowledge on pediatric care.

Performance Measure: Total number of research projects; total funding dollars

Conclusion

The Shriners Hospital for Children - Boston primary service area of Middlesex, Suffolk, Essex, Norfolk, and Plymouth Counties in Massachusetts continues to experience social and economic challenges that contribute to the high rates of chronic conditions and other health conditions identified in this needs assessment. These social and economic factors also contribute to the health inequities observed among vulnerable populations, including children; older adults; Latinos; Blacks; people with low incomes; women; people with mental health and substance use disorders; people involved in the criminal legal system; people experiencing homelessness; and people living with disabilities. Additional data is needed to better understand the needs of these populations in order to reduce inequities.

The primary areas where Shriners Hospitals will continue to drive change in community health include

- **Access to highly specialized pediatric health care** without regard for the family's ability to pay for the cost of care
- Limited **assistance with transportation and housing** within the capacity of Shriners Hospitals for Children and Shriners International.
- Local and regional **education for medical providers** and emergency response personnel for burn first aid and care of burns, skin conditions, and cleft lip and palate
- Enhanced **care management** that addresses the social needs of children returning to home, school, or community following a traumatic injury resulting in a severe burn.
- Development of **collaborations** with local and regional health care providers and community agencies to support education and knowledge regarding prevention, first response, and ongoing care of children with burns.

2019 Community Health Needs Assessment Report Available Online or in Print

The 2019 Community Health Needs Assessment is available at: INSERT LINK

This 2019 Community Health Needs Assessment and associated action plan were reviewed and approved by the Shriners Hospitals for Children—Boston Board of Governors on 06/20/2019.

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