Good Samaritan Medical Center

A STEWARD FAMILY HOSPITAL

Steward

Population Health Improvement Report 2015

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For more information about this report and our process, please visit our website http://www.steward.org/Community-Health or contact Paulo Gomes at Paulo.gomes@steward.org.

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Executive Summary

This report is a comprehensive analysis of health indicators for the Good Samaritan Medical Center (GSMC) service areas which include Brockton and nineteen neighboring communities, those being Abington, Avon, Bridgewater, Canton, Easton, East Bridgewater, Hanson, Holbrook, Mansfield, Middleboro, Norton, Randolph, Raynham, Sharon, Stoughton, Taunton, West Bridgewater and Whitman. Data was gathered by analyzing publicly available information, by reviewing community feedback gathered through focus groups, by conducting an extensive review of published literature on the health of the population residing in the region and in the Commonwealth of Massachusetts, and by surveying service providers. This data-driven methodology allows GSMC to investigate the resource requirements of the community in order to better streamline resources and inform community-based initiatives. The information from our 2015 Population Health Improvement Report (PHIR) can be used to highlight needs within the community and help develop targeted population health improvement strategies.

Our goal is to learn from community residents, particularly those most at-risk for experiencing health disparities, and implement programming that will give all individuals an opportunity to live a healthy life.[1] This is particularly true for those persons at greatest risk for health inequities, defined by the World Health Organization as, "avoidable inequalities in health between groups of people within countries and between countries", herein identified as high-priority populations. Through community-oriented best practices, GSMC collaborates with community partners to improve the health status of residents within our service area. We accomplish this by: addressing root causes of health disparities; educating community members on prevention and self care, particularly for chronic diseases such as cancer, heart disease, diabetes, obesity, substance use disorder; and addressing social determinants of health. GSMC continually seeks to maintain a community benefits program that aligns with the Triple Aim model developed by the Institute for Healthcare Improvement of; improving patient experience, improving population health, and reducing per capita cost.

Social determinants of health, including social, behavioral and environmental influences have become increasingly prevalent factors in addressing population health. Literature recommends linking health care and social service agencies in addressing social determinants of health to increase the efficacy of health promotion and chronic disease prevention programs. In particular, services related to housing, nutritional assistance, education, public safety, and income supports are areas for cross sector collaboration with health services in the community.[2] Multicultural communities face particularly complex issues when accessing and receiving treatment in their daily lives.

A key take away from this analysis is that collaboration on health promotion and chronic disease prevention among health and social services organizations is critical to the success of population health improvement strategies. From promoting access to affordable health care, creating a stable positive economic environment in the region, ensuring that those most at-risk have access to basic needs such as healthy food choices and housing, or creating access to a Community Health Worker (CHW) to assist in coordinating health and social services, GSMC is well poised to work on promoting and implementing community benefits programs that support our community members. The results and recommendations herein are designed to be the basis for strategic actions for GSMC and its community partners.

Introduction

Good Samaritan Medical Center (GSMC), founded in 1968, is part of the Steward Health Care System LLC, a community-based accountable care organization and community hospital network providing services in eastern Massachusetts, southern New Hampshire, and Rhode Island. Headquartered in Boston, Steward has approximately 18,000 employees, approximately 300,000 emergency department visits, and over one million annual physician visits.

GSMC is a 267-bed, acute-care Catholic hospital providing comprehensive inpatient, outpatient, and emergency services to Brockton and nineteen neighboring communities which include: Abington, Avon, Bridgewater, Canton, Easton, East Bridgewater, Hanson, Holbrook, Mansfield, Middleboro, Norton, Randolph, Raynham, Sharon, Stoughton, Taunton, West Bridgewater and Whitman. The hospital offers Centers of Excellence in oncology and cardiology, and specialized care in surgery, family centered obstetrics with Special Care Level II Nursery, substance abuse treatment, and advanced diagnostic imaging.

GSMC is committed to providing the highest quality care with compassion and respect to all members of our community. We strive to do so by delivering affordable health care to all in the communities we serve, by being responsible partners in the communities, and by serving as advocates for the poor and underserved in our region.

GSMC maintains a Community Health Department that focuses on integrating care across the spectrum of hospital, primary, and community-based care. Additionally, GSMC has a Community Benefits Advisory Committee comprised of hospital leadership, representatives of local health and human service organizations, faith-based organizations, a local community health center, and other agencies. This committee guides the planning and implementation of our community health initiatives.

Community Benefits Mission Statement

GSMC is committed to collaborating with community partners to improve the health status of community residents. We accomplish this by:

- addressing root causes of health disparities;
- educating community members on prevention and self care, particularly for chronic diseases such as cancer, heart disease, obesity, diabetes, substance use disorder; and
- addressing social determinants of health.

Community Benefits Statement of Purpose

The GSMC community benefits purpose is to:

- Improve the overall health status of people in our service area;
- Provide accessible, high quality care and services to all those in our community, regardless of their ability to pay;
- Collaborate with staff, providers and community representatives to deliver meaningful programs that address statewide health priorities and local health issues;
- Identify and prioritize unmet needs and select those that can most effectively be addressed with available resources;
- Contribute to the well-being of our community through outreach efforts including, but not limited to, reducing barriers to accessing health care, preventive health education, screenings, wellness programs and community-building; and
- Regularly evaluate our community benefits program.

Methods

GSMC applied a multi-dimensional approach to the collection of health and social demographic information from its service area. In accordance with this process, GSMC engaged various community partners to ensure that varying perspectives on health and social topics were explored and presented in this final report.

Health Indicators and Demographics – Data Analysis

In order to get a broader view of the health and sociodemographic trends in the GSMC region, our team collected health statistical data on key health indicators across the population. Data was pulled from the Massachusetts Department of Public Health Community Health Information Profile (MassCHIP) database, the Center for Disease Control and Prevention (CDC) website, as well as from the U.S. Census Bureau website for each city and/or town in the GSMC service area. Supplemental health indicators and demographic data can be found in Appendix A.

Key Informant Survey

A Key Informant Survey was developed and distributed electronically among members of select Community Health Network Areas (CHNAs), including Blue Hills Community Health Alliance and Greater Brockton Health Alliance, to ensure that the greater health and human service provider community had the opportunity to contribute information. Members of the CHNAs were asked to share the survey with colleagues within their respective organizations. In total, 1,985 individuals were given the opportunity to complete the survey, 188 individuals responded to the survey (9.5%), however only 117 of those surveys were completed in its entirety (5.9%). Only completed surveys were used as a basis for further analysis and reporting. Responses from a similar survey distributed by another CHNA, the Greater Taunton Health & Human Service Coalition, on behalf of our network affiliate Morton Hospital was also examined, but was ultimately excluded from the final analysis. The survey created by GSMC can be found in Appendix B.

Focus Group

The GSMC team conducted a total of three focus groups with participants residing within the service area, including Brockton (Plymouth County), Easton (Bristol County), and Randolph (Norfolk County). Each focus group was conducted in collaboration with a community organization in each county to improve local engagement and gather additional information on community attitudes on health and wellness. In total 37 participants took part in the focus groups. The goal was to collect information from participants that could be used to inform population health improvement strategies recommended in this report. A copy of the focus group questions can be found in Appendix C.

Literature Review

The GSMC team conducted a literature review of recent governmental, public policy, and scholarly works. The public health information was analyzed and a summary report which included common themes and public health trends among high-priority populations in the GSMC service area was created to inform this report.

Findings

Disparities persist with higher death rates for certain disease categories and by sociodemographic status. These disparities have remained relatively constant in recent years. As of 2013, cancer was the leading cause of death in Plymouth, Bristol and Norfolk Counties.[3] Black, non-Hispanic males had the highest incidence and mortality rates for cancer in Massachusetts in comparison to all other racial/ethnic groups. White, non-Hispanic females had the highest incidence rates for cancer, whereas Black, non-Hispanic females had the highest mortality rates for cancer, as noted in this report.

In total, seven communities in the GSMC service area had a higher heart disease death rate than the service area as a whole (22% mortality). Hanson had the highest percentage of heart disease mortality at 30.26% in 2012. East and West Bridgewater (neighboring towns whose mortality closely follow at 27.52% and 27.63%, respectively) are communities in which heart disease mortality surpasses that of cancer. The death rate per 100,000 for heart disease reached an average value of 157.2 in Plymouth County, 158.4 in Bristol County and 258.2 in Norfolk County between the years of 2011-2013.[4] Heart disease was the second leading cause of death in most towns within the GSMC service area.[5]

Prevalence of overweight and obese youth in the majority of the GSMC service area communities was above the state prevalence of 31.9%. Most notably, Randolph's prevalence of 41%, Brockton's prevalence of 40% and Holbrook also at 40%, were above the region and state percentages. When analyzing these results alongside chronic disease mortality, a trend between obesity rates and chronic disease mortality becomes evident, with most notable correlations in the communities of Randolph, Holbrook, Brockton and Taunton. Not surprisingly, Randolph, Brockton and to some degree Taunton and Holbrook are communities with large percentages of high priority populations.

For the purposes of this report, the prevalence of mental health disorders in the region is determined, here, by the hospitalization rate related to mental health disorders. Given their early age of onset and poor recognition and treatment rates, behavioral health conditions are arguably among the most chronic of illnesses. Both Brockton and Taunton had significantly higher age-adjusted rates per 100,000 than the state average. In data collected through the Key Informant Survey distributed to health and social service providers through CHNAs in the GSMC service area, respondents indicated that substance abuse treatment (ranked 2nd) and behavioral health services (ranked 3rd), as services that would most benefit their consumers, while access to a community health worker and care coordination were ranked highest as the most beneficial to consumers.

Our data point out that race, ethnicity, and socio-economic factors are indicators of health outcomes within the region. To take this into consideration and enhance efficacy of GSMC programs, GSMC will focus its efforts toward individuals and families who are at greatest risk for health inequities due to socio-economic and/or sociodemographic status, lack of access to health and social services, and lack of chronic disease self-management support. Community Health Workers providing care coordination services and facilitating access to social services are essential components of a population health improvement strategy, as indicated by participants in the focus groups conducted in Plymouth, Bristol and Norfolk Counties, and in responses gathered through the Key Informant Survey.

GSMC recognizes the effectiveness of the collective impact that comes from strategic partnerships, both medical and social, working together toward a common goal of improving health outcomes among all, but particularly for high priority populations. GSMC continuously strives to be a "Good Samaritan" to our neighbors, our community partners and our region. Together, we must work to improve the health and wellbeing of those at greatest risk for health inequities.

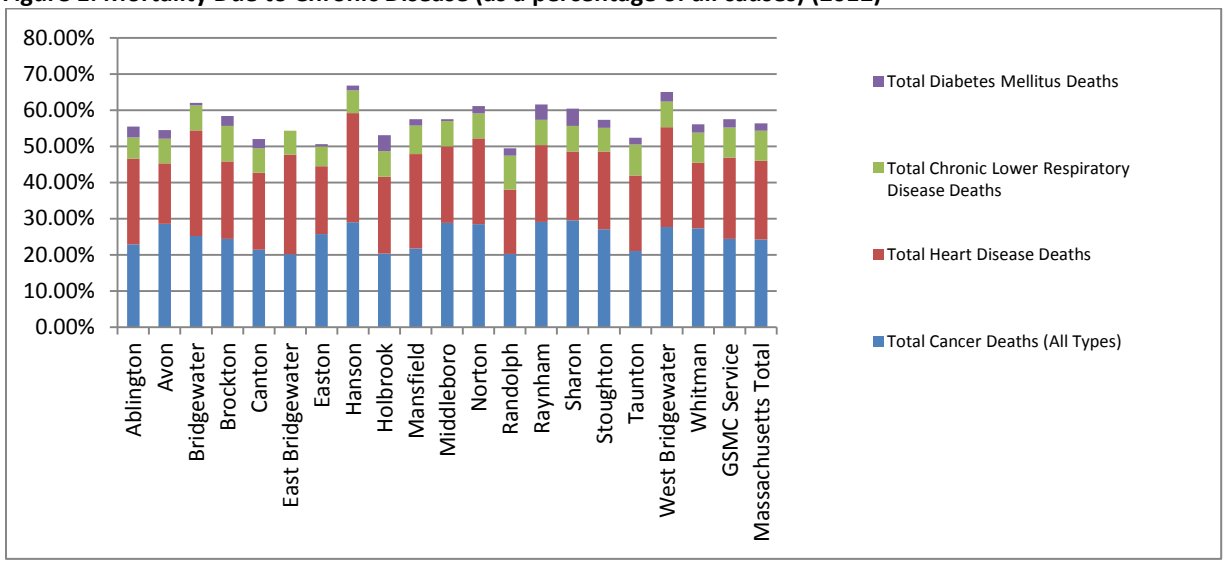
Chronic Disease

While chronic diseases are the most common causes of death and disability in the U.S., they are also among the most costly and preventable conditions facing individuals today. As of 2012, the number of U.S. adults living with one or more chronic conditions reached 117 million, with women showing a higher incidence of multiple chronic conditions than men.[6] Conditions such as heart disease, stroke, diabetes, cancer and chronic lung diseases, account for 7 out of 10 deaths in the U.S. each year.[7] Strengthening healthcare and public health systems, improving self-care management, and providing valuable tools and information to health care providers are crucial in the fight against chronic disease.[8]

In the focus groups conducted in Brockton (Plymouth County), Easton (Bristol County) and Randolph (Norfolk County), participants offered resounding agreement when asked whether chronic disease was "a major issue in the community, among friends and neighbors". When asked to identify the chronic diseases prevalent in their respective communities, participants noted that obesity, diabetes hypertension and stroke were most common; participants in Randolph also noted cancer as an issue.

Across the GSMC service area, chronic diseases account for at least half the deaths in the region. For the communities of Hanson, West Bridgewater and Bridgewater, chronic disease contributes to almost 70% of all death. Cancer and heart disease are the leading cause of death among chronic diseases. In most towns, cancer is the primary cause of death and heart disease is the second most frequent cause (Fig.1).

Figure 1: Mortality Due to Chronic Disease (as a percentage of all causes) (2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP)

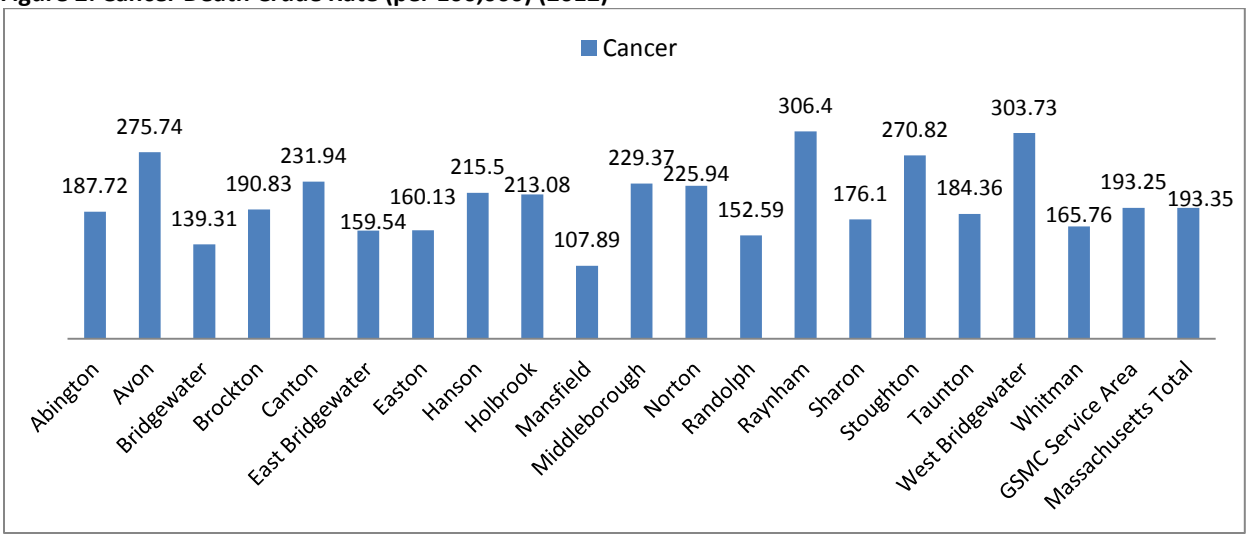
Cancer

The mortality rate of cancer in the majority of the GSMC service area are above state rate, and account for just under 30% of deaths in the same communities. In particular, Raynham reported 306 cancer deaths per 100,000, West Bridgewater reported approximately 304, Avon reported 275, and Stoughton recorded approximately 271 per 100,000; all of these rates are significantly above the state rate of 193 cancer deaths per 100,000 (Fig.2). Moreover, in 2012 total cancer deaths as a percentage of all-cause mortality in Sharon was 29.52%, in Raynham 29.08% and Hanson was 28.95%, compared to the state percentage of 24.17% (Fig.3). These communities represent the top three towns with the largest percentage of cancer deaths.

It is worth noting that disparities persist in specific-cause mortality within certain sociodemographic groups: for some racial groups, for the poor, for those with lower levels of education, and for those who

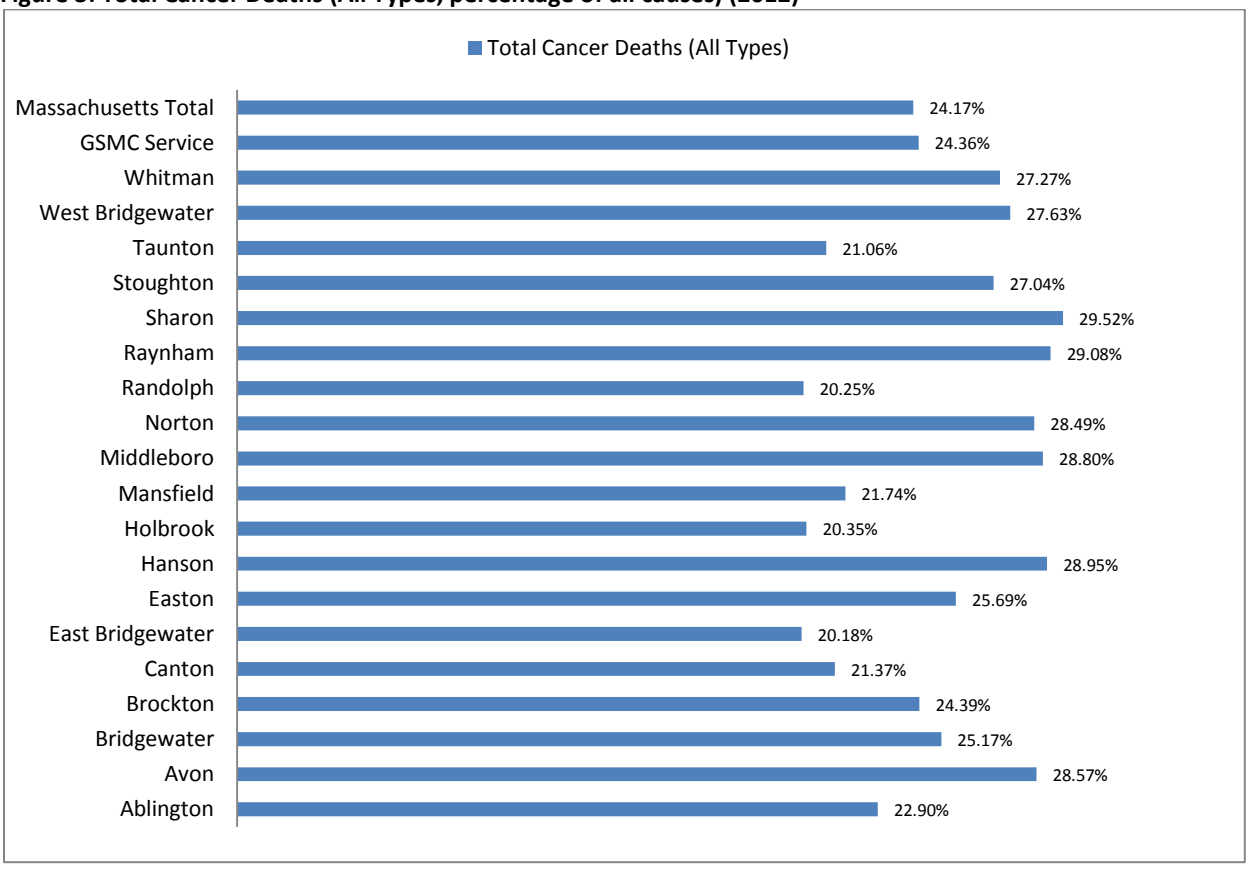
live in certain geographical areas. These disparities have remained relatively constant in recent years. Prostate cancer was reportedly the most common type of cancer for men between the years of 2007-2011 with 25,390 new cases diagnosed and an average of 5,078 annually.[9] The incidence rate per 100,000 for Black males at 244.8 was significantly higher than White at 138.8, Hispanic at 162.9 and Asian at 72.7 in the state of Massachusetts.[10] Breast Cancer showed the highest incidence for females accounting for 29% of newly diagnosed cases from 2007-2011.[11]

Figure 2: Cancer Death Crude Rate (per 100,000) (2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Figure 3: Total Cancer Deaths (All Types, percentage of all causes) (2012)



(SOURCE: US Census Bureau, Census 2013)

As of 2013, cancer was the leading cause of death in Plymouth, Bristol and Norfolk County.[12] Black, non-Hispanic males had the highest incidence and mortality rates for cancer in Massachusetts in comparison

to all other racial/ethnic groups. White, non-Hispanic females had the highest incidence rates for cancer, whereas Black, non-Hispanic females had the highest mortality rates for cancer.

Heart Disease

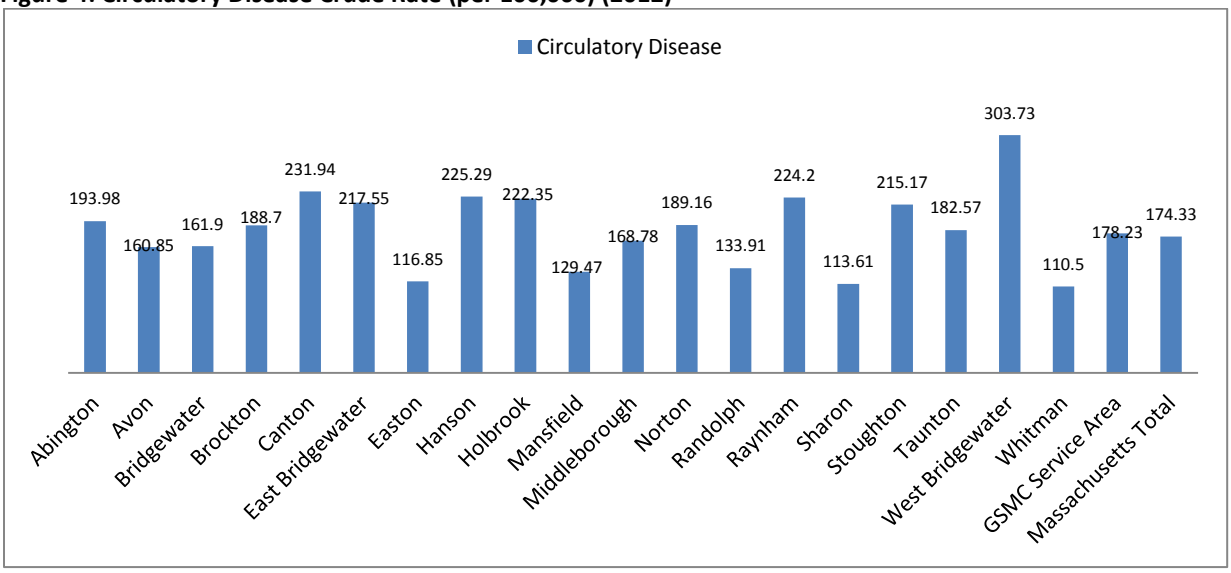
In Massachusetts, heart disease, stroke, and other diseases of the heart and blood vessels are responsible for approximately 35% of all deaths. Risk factors for heart attack include overall health status, lifestyle, and environmental factors, such as exposure to certain air pollutants, such as particulate matter. Exposure to particulate matter has been shown to increase the rate of heart attack, arrhythmias, and premature death.[13]

African Americans have more severe high blood pressure than Caucasians and a higher risk of heart disease. Heart disease risk is also higher among Mexican Americans, American Indians, native Hawaiians and some Asian Americans. This is partly due to higher rates of obesity and diabetes. Most people with a strong family history of heart disease have one or more other risk factors. The majority of people who die of coronary heart disease are 65 or older. Even after menopause, when women's death rate from heart disease increases, female mortality is not as great as in males. At older ages, women who have heart attacks are more likely to die within a few weeks of a cardiac event than their male counterparts.[14]

Several of the towns in the GSMC service area have a significant greater crude rate of circulatory disease, than the state crude rate of 174 per 100,000. West Bridgewater, Canton, Stoughton, East Bridgewater, Raynham, Holbrook and Hanson recorded higher crude rates than that of the state in 2012 (Fig.4).

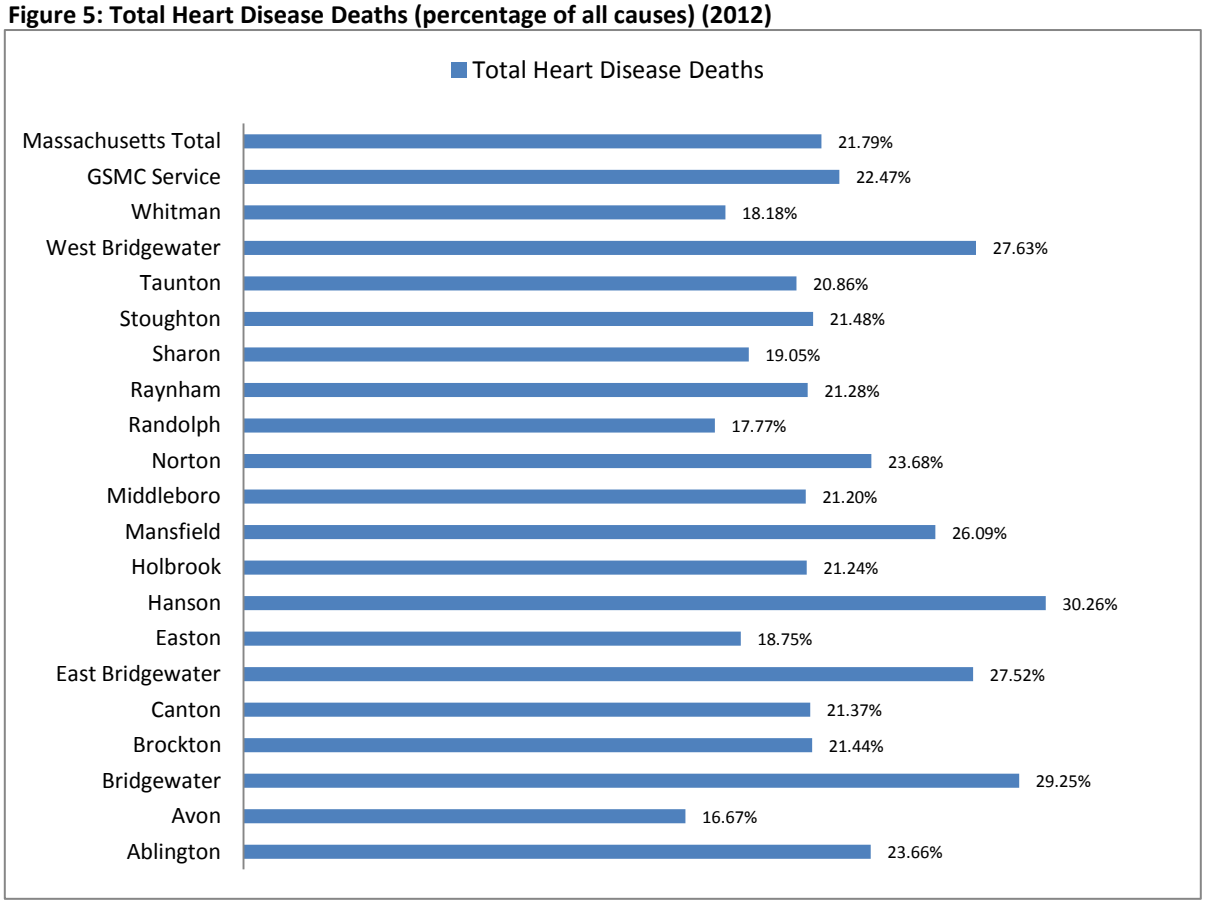
In total, seven communities in the GSMC service area had a higher percentage of heart disease mortality than the service area as a whole at 22.47%; itself modestly above the state at about 22%. Hanson had the highest percentage of heart disease death at (30.26% in 2012), followed by West Bridgewater and East Bridgewater (27.63% and 27.52%, respectively), which realized greater heart disease mortality than cancer mortality (Fig.5). The crude rate of death per 100,000 as a result of heart disease, reached a rate of 157.2 in Plymouth County, 158.4 in Bristol County and 258.2 in Norfolk County between the years of 2011-2013.[15] Heart disease was the second leading cause of death in most towns within the GSMC service area.[16]

Figure 4: Circulatory Disease Crude Rate (per 100,000) (2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Figure 5: Total Heart Disease Deaths (percentage of all causes) (2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

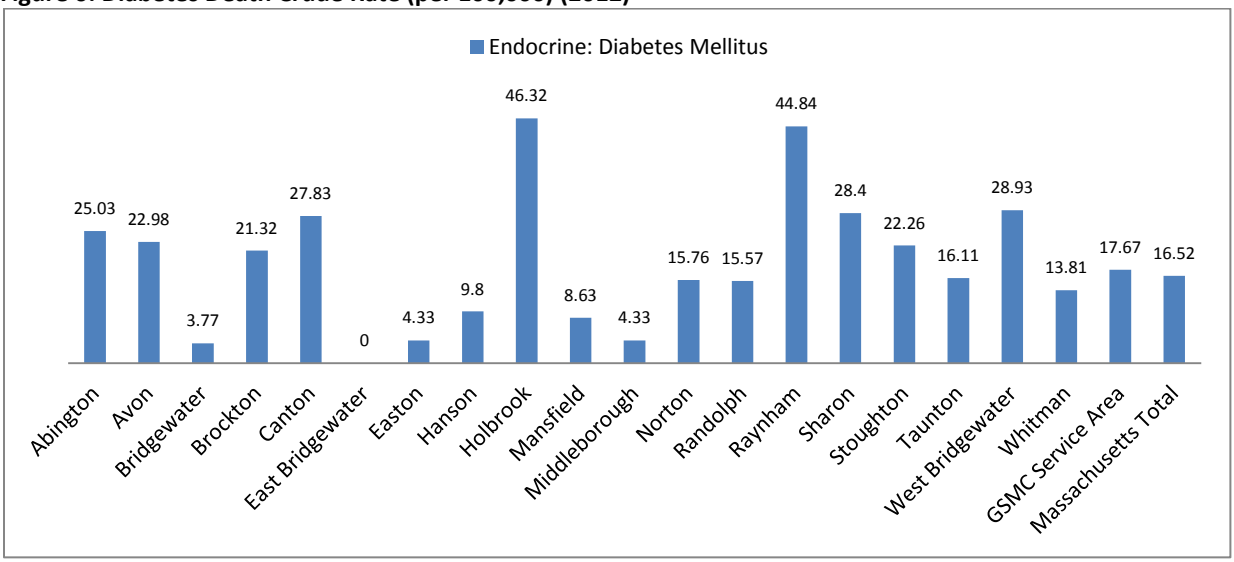
Diabetes

Recent data reveals significantly higher rates of hospitalization for heart attack and stroke among adults with diabetes in the U.S. Additionally, diabetes was rated the leading cause of kidney failure with a total of 228,924 individuals living on chronic dialysis or with a kidney transplant due to kidney failure as a result of diabetes. Individuals with diabetes are also more likely to suffer from mild to severe forms of neuropathy, hearing loss and non-traumatic lower-limb amputations.[17] An average of 86 million people in the U.S. indicated having prediabetes with 1.7 million people diagnosed with diabetes each year. About 208,000 people under the age of 20 years old have type 1 or type 2 diabetes. By 2050, it is estimated that 1 in 3 American adults will have diabetes if current trends continue to persist.[18]

The mortality rate was higher for males than females and disproportionately higher for the African American/Black population than for other racial and ethnic groups. In 2013, 8.5% of persons ages 18 and older in Massachusetts suffered from diabetes, with higher morbidity for persons who did not hold a high school diploma and for those living in households with an income less than $25,000.[19]

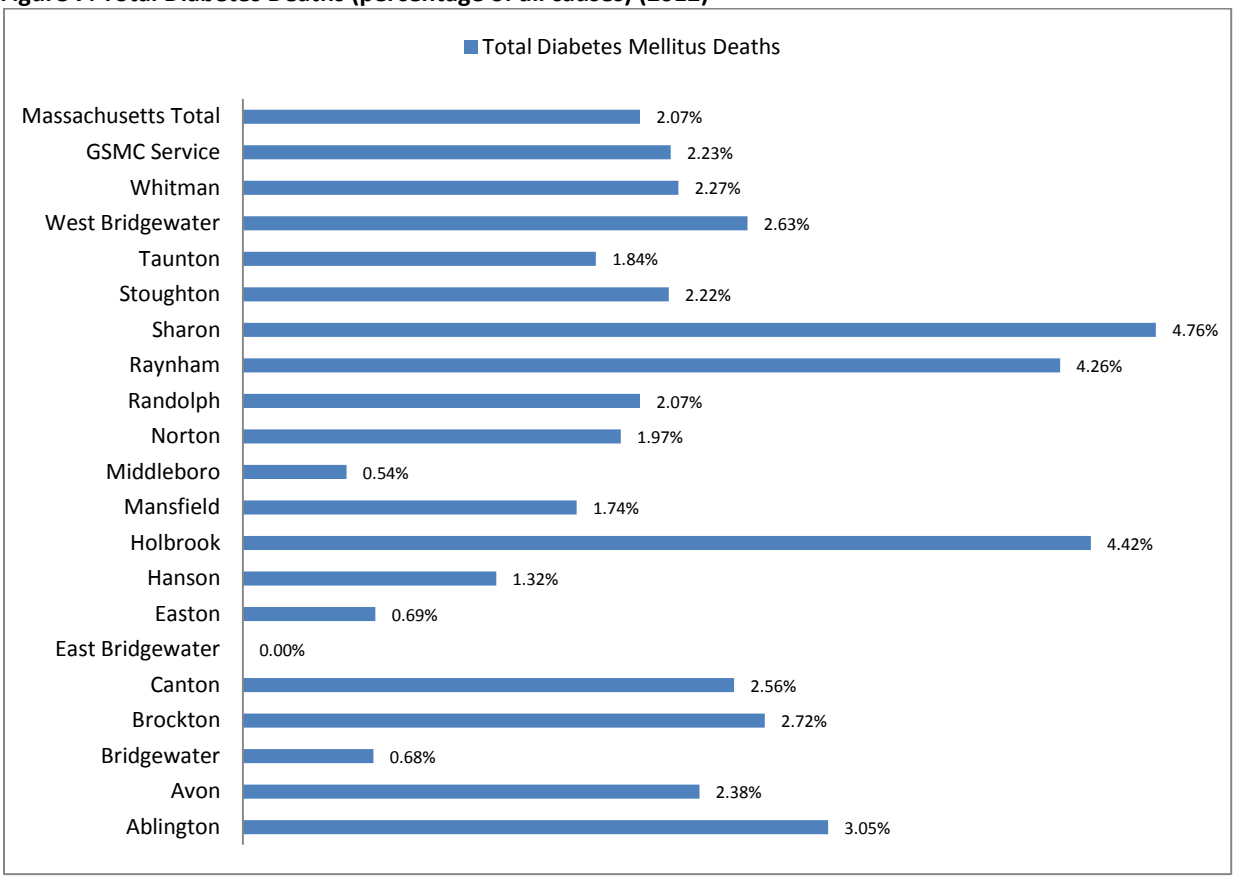
Most cities and towns recorded higher mortality rates than the state crude rate of 16.52 per 100,000. In particular, Holbrook, Raynham and West Bridgewater stand out with a large margin over the remainder of the GSMC service area and state crude rates (Fig.6). When considering diabetes mortality as a percentage of all deaths, we note that more than half of the cities and towns in the GSMC service area are above the state percentage of 2.07% in 2012. Sharon, at 4.76%, Holbrook at 4.42%, and Raynham at 4.26%, all recorded diabetes mortality more than twice the state's percentage (Fig.7). The percentage of diabetes mortality for the GSMC service area at 2.23% as a whole is slightly higher than the Massachusetts total (2.07%).

Figure 6: Diabetes Death Crude Rate (per 100,000) (2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Figure 7: Total Diabetes Deaths (percentage of all causes) (2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Obesity

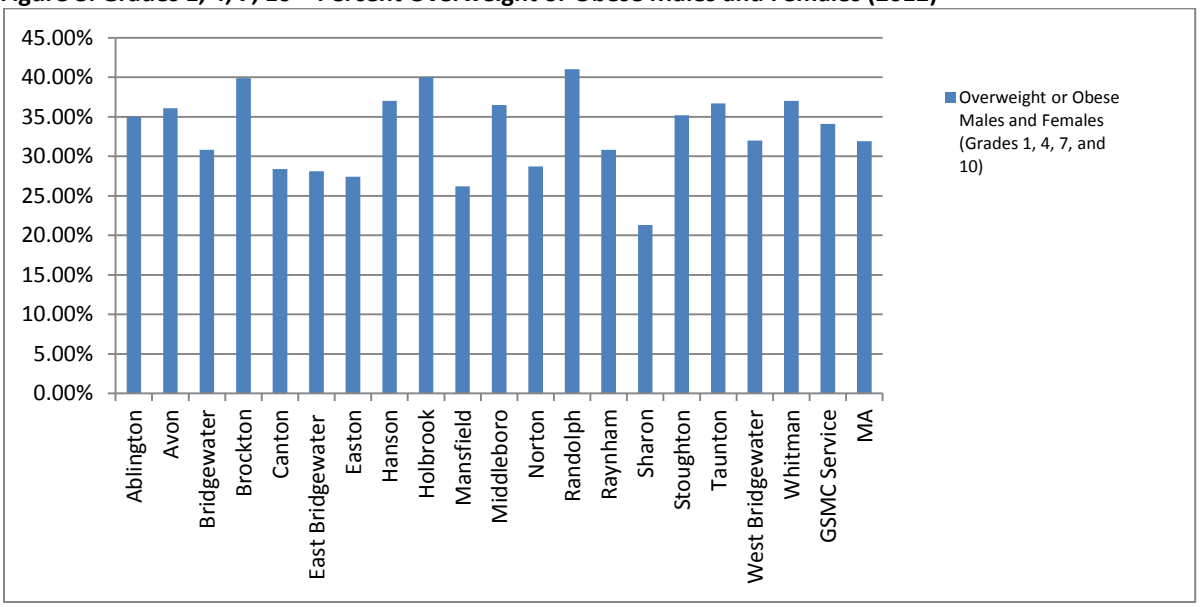
Recent estimates state that 1 in 4 Massachusetts high school and middle school students and more than half of Massachusetts adults are obese.[20] According to a recent study, over $3.5 billion of medical expenses in Massachusetts are the result of adult obesity.[21] Increasingly, more children are adopting behaviors that increase the risk for obesity and chronic disease. More than three-fourths of adults and an even higher number of adolescents do not consume an adequate amount of fruits and vegetables a day, while the majority of Massachusetts as a whole does not participate in the recommended amount

of physical activity.[22] In the focus group held in Brockton, participants identified obesity as the primary health concern within the community.

When stratifying obesity in youth among ethnic groups, the white non-Hispanic population had the lowest rate of obesity, 14.0% of youth aged 2 to 19 years in 2009–12, whereas the Black non-Hispanic and Hispanic populations had rates of 22.1% and 21.8%, respectively. Youth aged 2 to 19 years with private health insurance had the lowest rate of obesity, 14.6% in 2009–12. Those with public insurance and the uninsured had rates of 19.7% and 18.6%, respectively. Youth from families with incomes 400% to 499% of the poverty threshold had the lowest rate of obesity at, 11.3% in 2009–12.[23] This trend holds true across the adult population. Among Hispanic, Black and White adults age 20 and older, overweight and obesity affect more than 3 in 4 Hispanics and Blacks while, 2 in 3 Whites are considered overweight or obese. About half of Blacks and more than 1 in 3 Hispanics and Whites are considered to be obese[24].

Overweight and Obesity rates among youth in over half the cities and towns in the GSMC service area, were above the state at 31.9%. Most notably, Randolph at 41%, Brockton at 40% and Holbrook also at 40%, were above the region and state rate (Fig.8). When analyzing these results alongside mortality due to chronic disease, a clear trend between obesity rates and chronic disease mortality is observed most notably in Randolph, Holbrook, Brockton and Taunton. Not surprisingly, Randolph, Brockton and to some degree Taunton and Holbrook are communities with large groups of high priority populations.

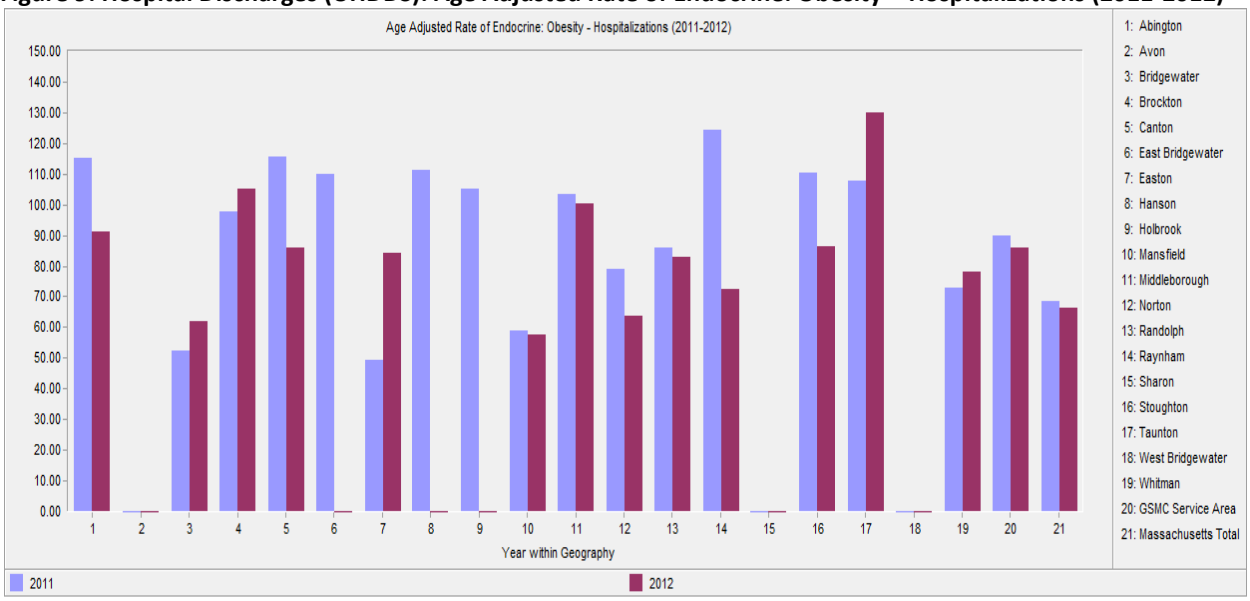
Figure 8: Grades 1, 4, 7, 10 – Percent Overweight or Obese Males and Females (2012)



(SOURCE: EOHHS – Status of Childhood Weight 2012)

From 2011 to 2012, the GSMC service area (as a whole) had a higher obesity-related hospitalization rate than the Commonwealth. Though some decrease in the rate of hospitalizations can be observed from 2011 to 2012, several communities had an increase in the number of hospitalizations. From 2011 to 2012 Easton had the most significant rate increase, followed by Taunton, Brockton and Whitman, all realized an increase in hospitalizations rates over the state average. Taunton had the highest age-adjusted obesity related hospitalization rate, at 130 per 100,000 that any other city or town in the GSMC service area (Fig.9).

Figure 9: Hospital Discharges (UHDDS): Age Adjusted Rate of Endocrine: Obesity – Hospitalizations (2011-2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

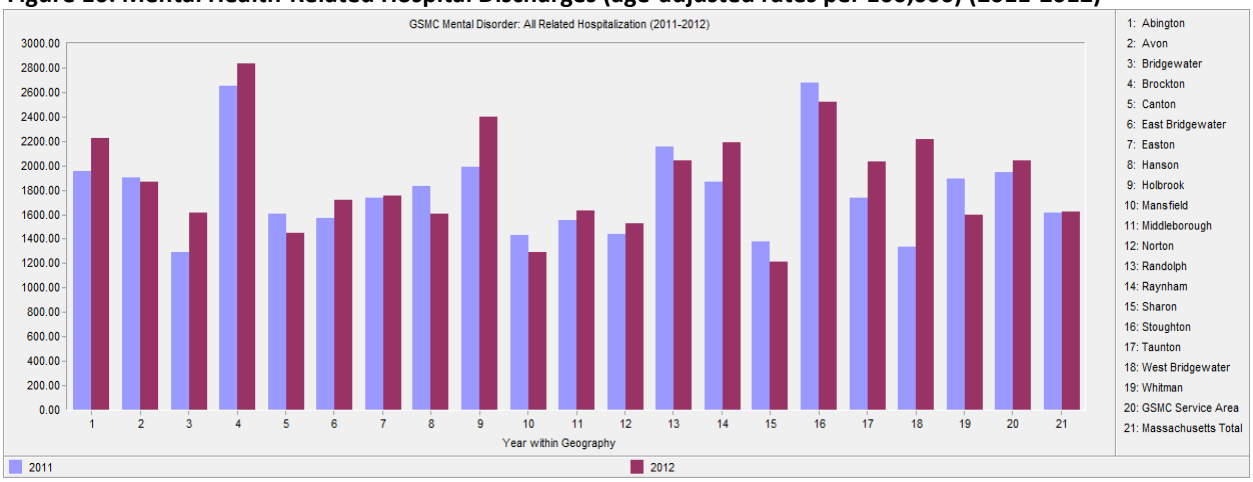
Behavioral Health

Behavioral health disorders (mental, emotional illnesses and addictions) account for nearly one third of the overall disease burden in the United States, eclipsing all other single health conditions, according to one report. The lifetime prevalence of any behavioral health disorder in the United States is approximately 50%, nearly double that of other industrialized and developing nations. While no comprehensive survey of global mental health is available, data from the World Mental Health Survey of 17 nations indicate that the United States has the highest prevalence of mental illnesses in the world and ranks second in the category of substance use. [25]

Behavioral health disorders are also likely to co-occur with other chronic physical illnesses, such as asthma and cardiac disease. There is evidence, that the presence of depression may be a risk factor for the development of type 2 diabetes. Given their early age of onset and poor rates of recognition and treatment, behavioral health conditions are arguably among the most chronic illnesses.[26] It is estimated that one-half of all chronic mental illness begins by the age of 14 with 1 in every 5 adults in America experiencing some type of mental illness. More specifically, about 16 million adults in the U.S. live with major depression which is the leading cause of disability around the world. Approximately 90% of individuals who die as a result of suicide suffer from mental illness.[27]

The majority of the cities and towns in the GSMC Service Area reported a higher rate of mental health-related discharges than the state average in both 2011 and 2012. In addition, mental health-related discharge rates in 11 communities in GSMC Service area have increased from 2011 to 2012. Between all of these areas, Brockton had the highest age-adjusted rate in both 2011 and 2012, with 1,289 discharges per 100,000 individuals and 1,338 discharges per 100,000 individuals for each respective year; both were comparatively greater than the state rates in 2011 (839 discharges per 100,000) and 2012 (846 discharges per 100,000) (Fig.10). Compared to 2009, mental health-related discharges increased in both Stoughton and Holbrook (the towns with the second and third highest discharge rates).

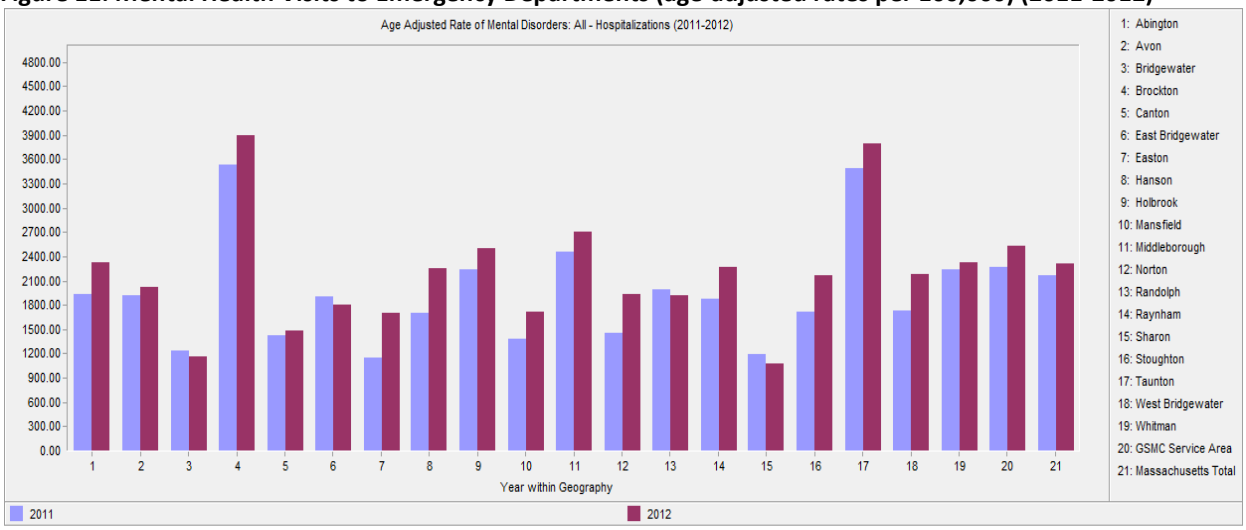
Figure 10: Mental Health-Related Hospital Discharges (age-adjusted rates per 100,000) (2011-2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

The prevalence of mental health disorders in the region can also be observed in the rate of mental health visits to the emergency department. Both Brockton and Taunton had higher age-adjusted rates per 100,000 compared to the Commonwealth overall (Fig.11). This trend has been maintained since last reported in 2009. In data collected through the Key Informant Survey, respondents indicated that substance abuse treatment (ranked 2nd most important) and behavioral health services (ranked 3rd), as services that would most benefit their consumers. These services were only eclipsed by access to a Community Health Worker and care coordination, which were both identified as chief priorities.

Figure 11: Mental Health Visits to Emergency Departments (age-adjusted rates per 100,000) (2011-2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Substance Use

Substance use disorders involving the overuse of alcohol and/or drugs not only affect individuals and their families, but also influence the community at large. Drug and alcohol use can lead to other chronic diseases such as diabetes and heart disease. Addressing the impact of substance use alone is estimated to cost Americans more than $600 billion each year. Prescription drugs, in particular, are abused and misused more often than any other drug, except marijuana and alcohol. This is fueled by misperceptions about the safety, increasing availability, and varied motivations for use. [28]

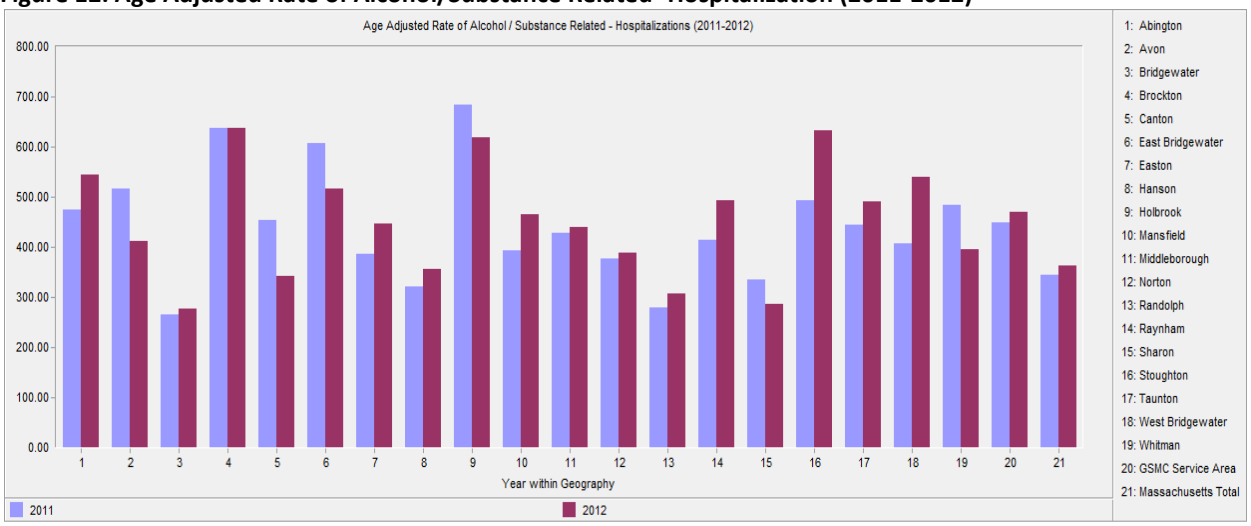
In 2013, the prevalence of binge drinking among individuals ages 18 and older in Massachusetts was 19.4% overall, 21.4% for those that were in their first three years of college, and 36.4% for young people between the ages of 18-24. The pervasiveness of this behavior changes when analyzed by race and ethnicity, though; the rate of binge drinking was higher for White individuals and second highest for Hispanics and third for Blacks.[29] Additionally, marijuana use among Massachusetts youth in middle school was recorded at 3.4% of those surveyed; for high school youth, however, this climbs to 24%. A higher percentage of males surveyed reported using marijuana at 29.4%, while female use of the drug was at 18.6%. Marijuana use was evenly distributed among youth surveyed, regardless of race.[30]

Similar to many other states in the U.S., Massachusetts is facing a public health epidemic in opioid addiction. In 2014 the estimated rate of unintentional opioid-related overdose deaths in Massachusetts, which includes deaths related to heroin, reached previously unseen levels. The estimated rate of 18.6 deaths per 100,000 residents for 2014 is the highest ever for unintentional opioid overdoses and represents a 251% increase from the rate of 5.3 deaths per 100,000 residents in 2000. The number of unintentional opioid overdose deaths in 2014, (including heroin, opioid-based prescription painkillers, and other unspecified opioids) reached 106 in Plymouth County, 121 in Norfolk County and 138 in Bristol County.[31]

When comparing to data reported in 2009, the three communities most affected by alcohol/substance related-hospitalizations remain the same. The Brockton age adjusted rate of alcohol/substance related-hospitalizations remained flat between 2011 and 2012 at 636 per 100,000, this is almost double the state rate for both those years at 353 per 100,000. The town of Stoughton reported a significant increase in such hospitalizations jumping from 494 per 100,000 in 2011, to 632 per 100,000 the second highest rate in the region. While a decline in such hospitalizations was reported in Holbrook during the same period, the rate of hospitalizations remained one of the highest in the GSMC service area at 618 per 100,000 in 2012, well over the state rate (Fig.12).

We should note that there was a drastic increase in alcohol and substance-related hospitalizations from 2011 to 2012. Most towns in GSMC service area recorded an upward trend in the rate of alcohol/substance related-hospitalizations during that period (Fig.12). Focus group participants in the town of Easton rated drug abuse as the major area of health concern within their community.

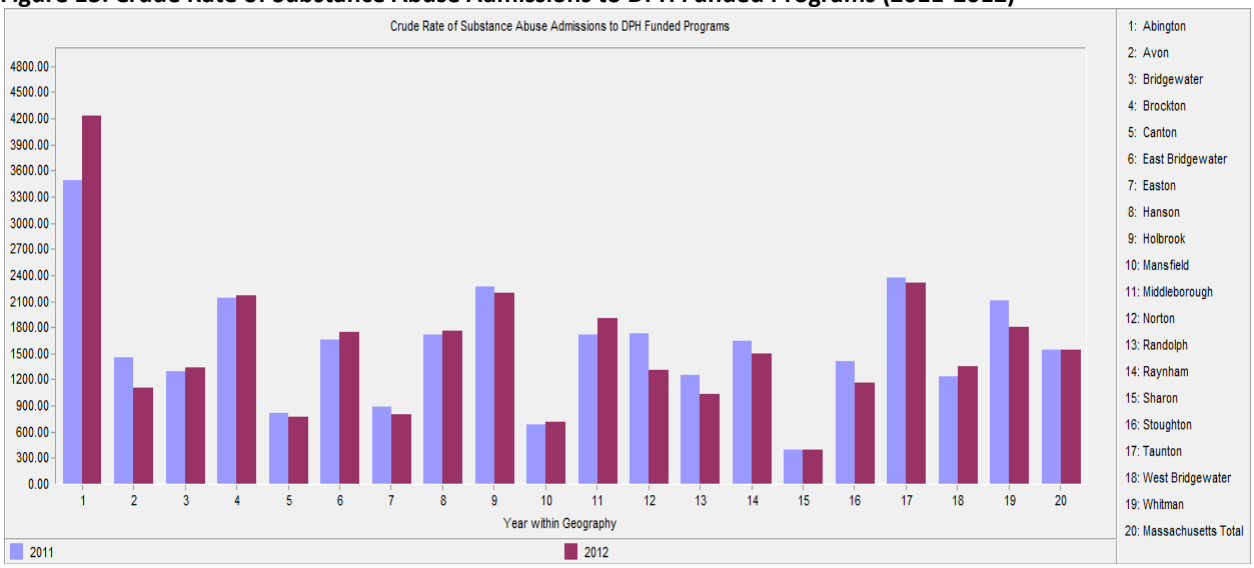
Figure 12: Age Adjusted Rate of Alcohol/Substance Related- Hospitalization (2011-2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Abington reported the highest rate of substance abuse admissions into Department of Public Health-funded substance abuse programs in 2011 and 2012. While, as a whole, most cities and towns in the GSMC service area recorded modest changes in either direction, Abington recorded a significant increase in the analysis year. Taunton, Holbrook and Brockton also recorded higher program admission rates than the Commonwealth (Fig.13).

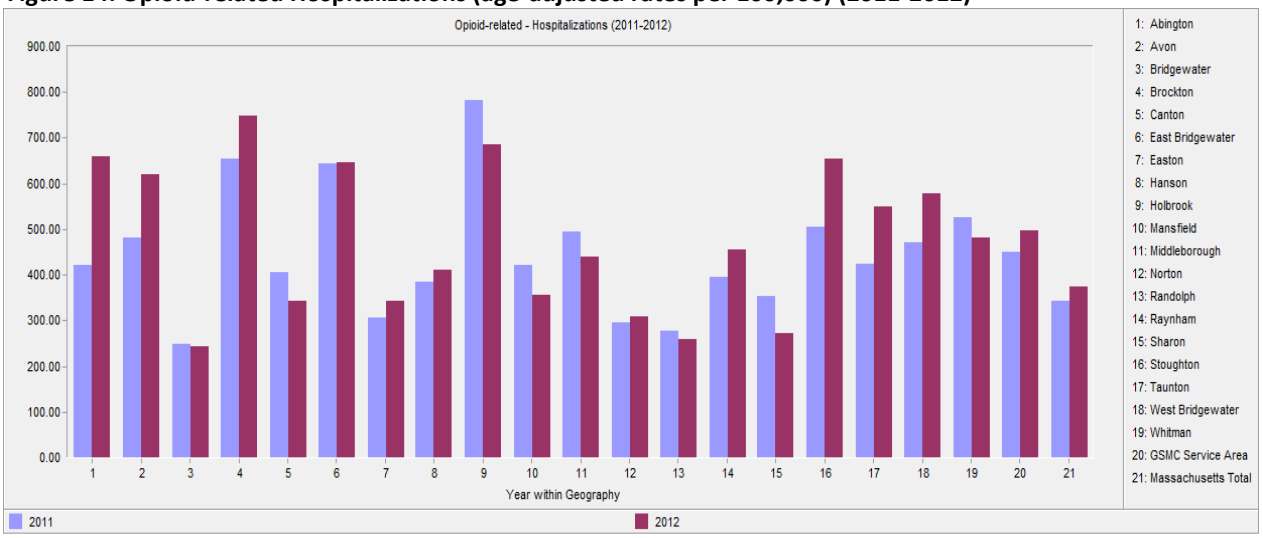
Figure 13: Crude Rate of Substance Abuse Admissions to DPH Funded Programs (2011-2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Approximately every community in the GSMC service area recorded an increasing trend of opioid-related hospitalizations between 2011 and 2012 (Fig.14). Over half the cities and towns, in GSMC service area, recorded higher age-adjusted rate of opioid-related hospitalizations than state rate at 375 hospitalizations per 100,000. The opioid-related hospitalizations rates were highest in Brockton, Holbrook and Stoughton which were about twice the state rate. However the increase was most notable and alarming in Abington where the rate of hospitalizations related to opioids climbs from 421 to 658 per 100,000 between 2011 and 2012 (Fig.14).

Figure 14: Opioid-related Hospitalizations (age-adjusted rates per 100,000) (2011-2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

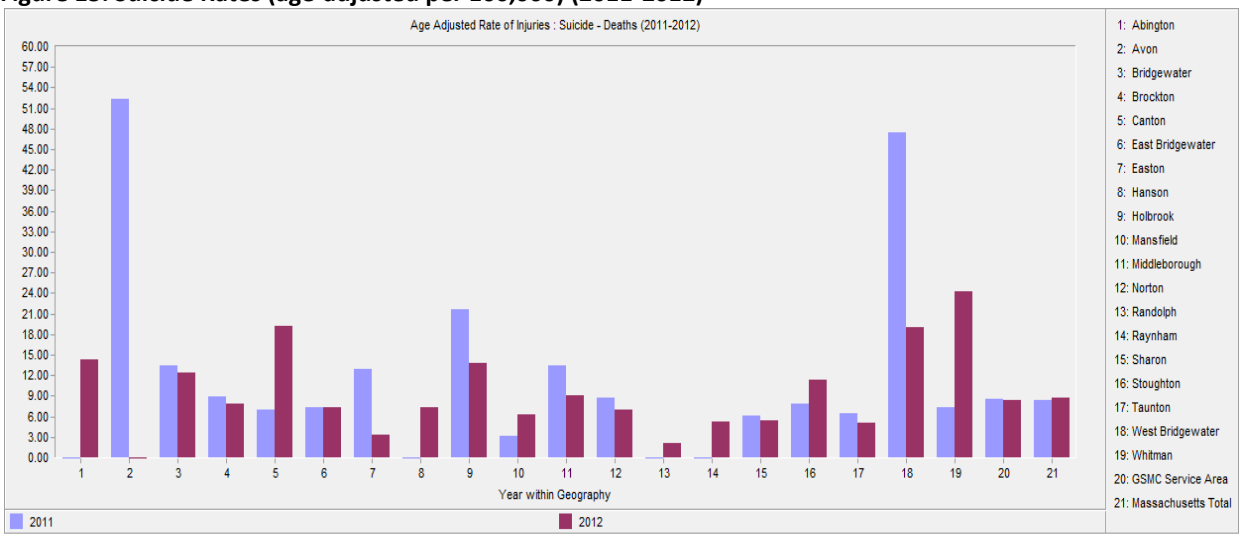
Suicide

Suicide and self-inflicted injuries among Massachusetts residents are a significant, yet largely preventable public health problem. During the period of 2003-2011, approximately 4,500 persons died of suicide in Massachusetts. Suicide rates increased an average of 4% per year. The overall increase was 35%; from 6.6 to 8.9.The increase in suicide rates was primarily among White, non-Hispanic males whose rates increased an average of 5% per year between 2003 and 2011. However, Massachusetts has lower rates of suicides compared to the US. The US age adjusted rate in 2010, the most recent year for which data are available, was 12.1 per 100,000 compared to 8.7 per 100,000 for Massachusetts. Of these suicides, 60% occur in persons between the ages of 35 and 64. Suicides among males exceeded females by 3 to 1. In 2012, there were 469 suicides among males compared with 155 among females. Among males and females, the highest rate of suicide was among those individuals 45-54 years of age.[32]

The circumstances present in the life of an individual provide useful information for what may have precipitated a suicide. In 2012 it was reported that 47% of suicides had a documented current mental health problem such as depression, while 34% were currently receiving some form of mental health treatment. Of these, 25% had a history of alcohol and/or other substance use, 16% had previously attempted suicide, while 16% identified issues with employment including unemployment, underemployment or social issues at work (such as increased pressure at work, feared for or recent layoff, and/or financial issues). A survey finding from the MA Youth Risk Behavior Survey also highlights the relationship between victimization and suicide attempt revealing that, as the number of victimization types experienced increases (such as bullying or being hurt physically by a date), so does the likelihood of student-attempted suicide.[33]

In the GSMC service area 8 communities had higher age-adjusted suicide rates than the GSMC service area as a whole and the state. In 2011, Avon at 53 deaths per 100,000, West Bridgewater with 48 per 100,000 and Holbrook at 22 per 100,000 had the highest suicide rates in the service area and many times over the state rate of 8.5 per 100,000. Bridgewater, Easton and Middleboro also recorded rates higher than the state. An alarming upward trend was recorded in 2012, in the towns of Whitman at 25 per 100,000, Canton at 19 deaths per 100,000 and Abington at 15 per 100,000, all well above the state rate of 8.6 suicide deaths per 100,000 persons. Noticeably, Avon decreased its rate from 53 per 100,000 to zero. West Bridgewater also recorded a decrease in its age-adjusted suicide rate from 48 deaths per 100,000 to 20 per 100,000 individuals (Fig.15).

Figure 15: Suicide Rates (age-adjusted per 100,000) (2011-2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Crime

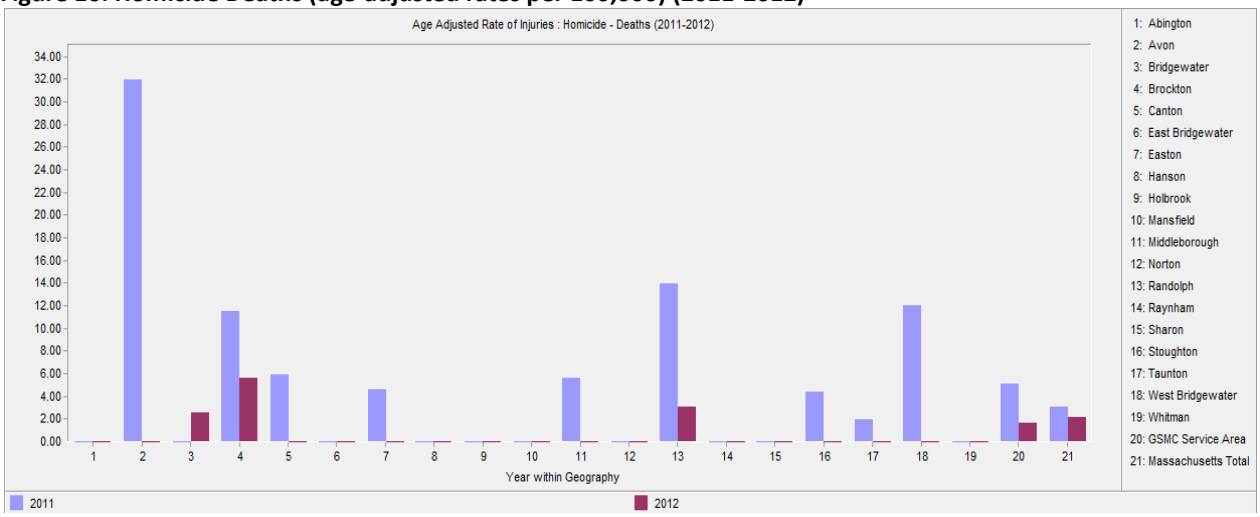
Injury and violence prevention are top priorities in addressing social determinants in public health and population management, both in general and in Massachusetts in particular. Injury among Massachusetts residents was the third leading cause of death, including unintentional, self-inflicted and assault-related injury.[34] Beyond their immediate consequences, injuries and violence have a significant impact on the well-being of Americans by contributing to premature death, disability, poor mental health, high medical costs and lost productivity. The effects of injuries and violence extend beyond the injured person or victim of violence to family members, friends, coworkers, employers, and communities.[35]

Violent crime in Massachusetts, as measured by the cumulative number of murders, forcible rapes, robberies, and aggravated assaults, has followed a pattern consistent with the national figures. Most notably, violent crime declined over the one-year period from 2011 to 2012, reflecting an overall downward trend during the past quarter century. This reduction is reflected in the volume, or raw counts of crimes, as well as the rates of crime, which accounts for population adjustments over time. According to one report compiled by the Massachusetts Executive Office of Public Safety and Security, the statewide volume of violent crime decreased 3% from calendar years 2011 to 2012, with a decline in murder (33% decrease) and aggravated assault (4% decrease); the volume of both forcible rapes and robberies remained consistent from one year to the next with a decline of less than 1%.[36]

Of the 26,819 violent offenses committed in Massachusetts during 2012, the overwhelming majority were aggravated assaults (18,424), followed by robberies (6,669), forcible rapes (1,603), and murders (123). These figures are proportionate to national percentage of violent crimes for 2011. Moreover, while the numbers and percentages of each of the four offense categories have changed from one year to the next, the ranking has remained consistent over time; aggravated assaults are the most frequently occurring violent crime, followed distantly by robberies, then forcible rapes, and murders.[37]

The homicide death rate in GSMC Service area also indicates decline year over year. Most communities in the GSMC service area were below the state age-adjusted rate per 100,000 from 2011 to 2012. However, in 2011, Avon (32 per 100,000), Randolph (14 per 100,000) and West Bridgewater (12 per 100,000), clearly stand out with higher age-adjusted rates than the state rate (3 per 100,000) during the same year. In 2012 only Brockton, Bridgewater and Randolph recorded homicide death rates above the state rate (Fig.16).

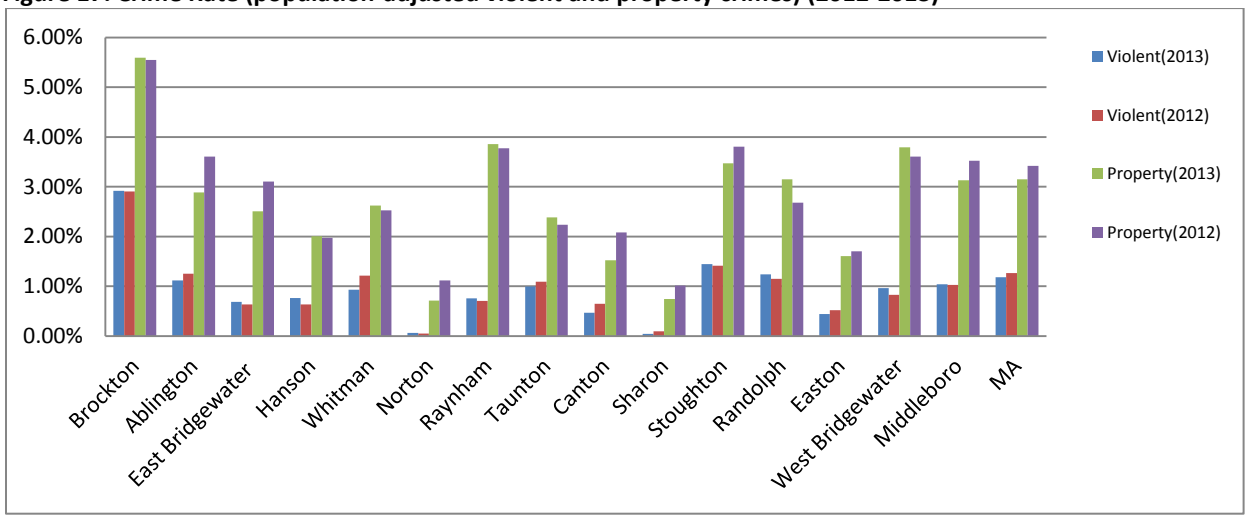
Figure 16: Homicide Deaths (age-adjusted rates per 100,000) (2011-2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Based on population-adjusted crime rates in 2012 and 2013, Brockton, Stoughton and Randolph (to a lesser extent) had higher violent crime rates than other cities and towns in GSMC service area. The population-adjusted property crime rate was above the state rate in several communities but more noticeably in Brockton, Raynham and West Bridgewater (Fig.17).

Figure 17: Crime Rate (population-adjusted violent and property crimes) (2012-2013)



(SOURCE: FBI CIUS 2013)

When asked, "What are the areas of health concern within the community," focus group participants in Brockton ranked pedestrian or "street" safety as their second highest concern and public safety as the fourth. Regarding "street" safety, participants expressed that expansion of neighborhood watch, enhanced education on street safety practices, public forums on how to be safe while walking on streets, and educating kids on how to be safe, were all key strategies to address "street" safety. With regards to public safety, participants indentified "stop glamorizing crime," and "more culturally knowledgeable role models and mentors," as critical to public safety. When asked the same question, participants in the focus group held in Randolph identified domestic violence as a major concern, and community partnerships between health agencies and faith community leadership for community based discussions as a possible method to address the issue. Focus group participants in Easton, comparatively, ranked sexual assault as a major area of health concern within the community. This group suggested structured afterschool activities for youth, sexual education, and parent education and support as strategies to respond to the issue.

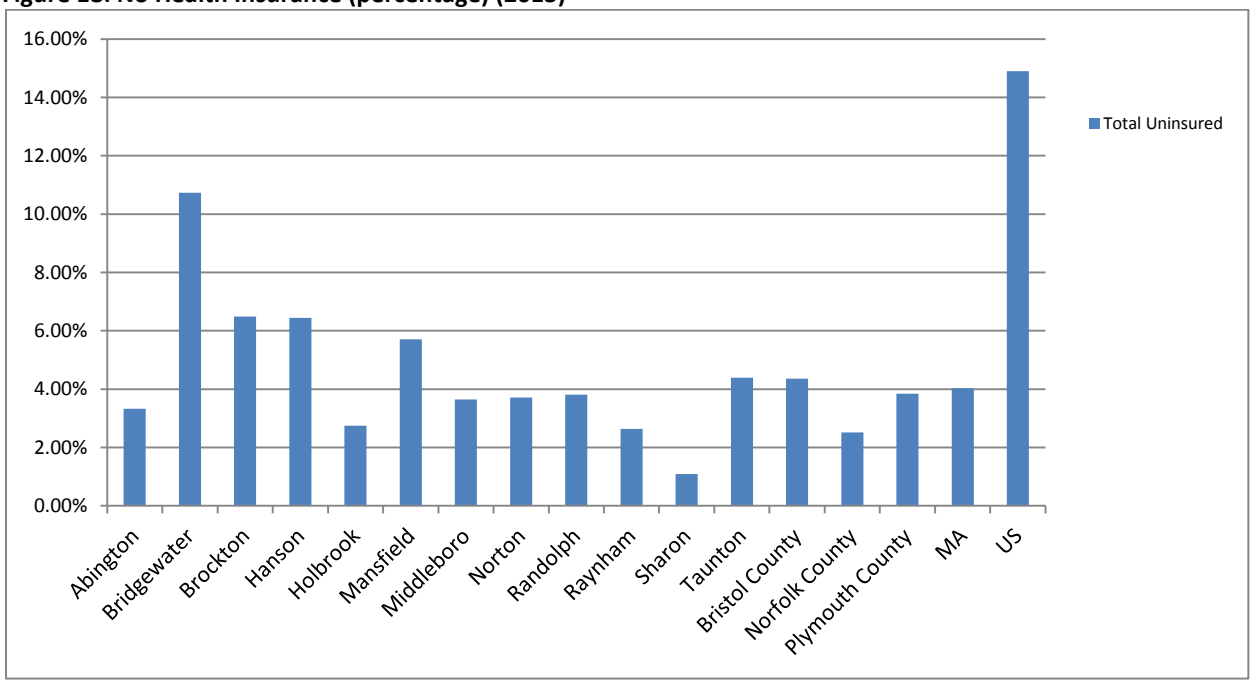
Access to Health Care

Access to health services encompasses four components: coverage of care, access to services, service timeliness, and an adequate workforce. Lack of adequate coverage makes it difficult for people to get the health care they need and, when they do get care, burdens them with overwhelming costs. Current policy efforts focus on the provision of insurance coverage as the principal means of ensuring access to health care among the general population.[38]

Current policy efforts focus on the provision of insurance coverage as the principal means of ensuring access to health care among the general population. People with a usual source of care, such as a primary care provider (PCP), have better health outcomes and fewer disparities and costs. PCPs can develop meaningful and sustained relationships with patients, providing integrated services while practicing in the context of family and community. This allows for the primary care practice to influence social factors that influence healthcare outcomes (and health disparities), while providing care. And finally, service timeliness and adequate workforce are both critical to the health care system's ability to provide health care quickly and with the adequate competence to meet a recognized need. Actual and perceived difficulties or delays in receiving care when patients are ill or injured likely reflect significant barriers to care.[39]

When held against these measures, access to care in the GSMC service area, especially in regard to health insurance coverage, is better than in the United States as a whole, with fewer uninsured (as a percentage of the population) in the service area compared to national values in 2013 (Fig.18). However, when comparing areas with higher percentages of individuals without health insurance, Bridgewater (10.73% uninsured), Brockton (6.49% uninsured), Hanson (6.44% uninsured), and Mansfield (5.71% uninsured) are disproportionately populated with uninsured individuals compared to the Commonwealth at 4.03% uninsured individuals (Fig.18).

Figure 18: No Health Insurance (percentage) (2013)

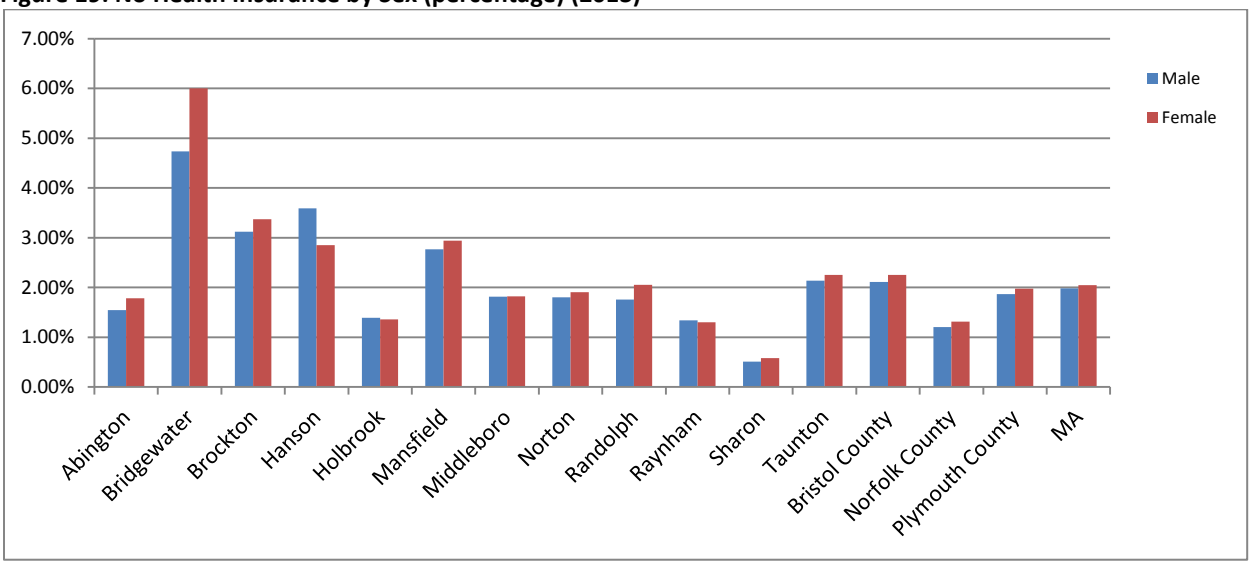


(SOURCE: US Census Bureau, Census 2013)

When stratifying the population by gender, we note that, in 2013, women were more likely to be uninsured within the service area (Fig.19). Compared to 2010, the percentage of uninsured men decreased for this year, while the percentage of women increased. In particular for Bridgewater, the

population of uninsured females (6%) was higher than the percentage of men (5%). It is unclear what variables drive this change, but the large number of college students in the town of Bridgewater may be worth considering as a potential driver. In Hanson, more males (3.7%) were uninsured compared to females at (2.9 %) (Fig.19).

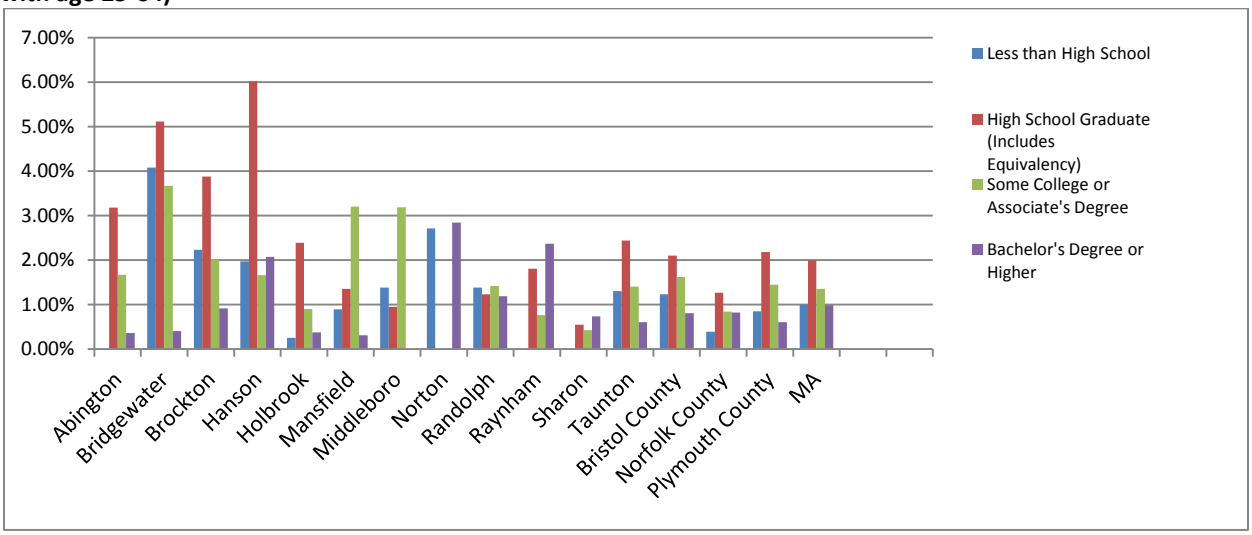
Figure 19: No Health Insurance by Sex (percentage) (2013)



(SOURCE: US Census Bureau, Census 2013)

There is a noted fluctuation between communities for uninsured populations across the GSMC service area. When considering uninsured populations based on educational attainment in 2013 for those ages 25-64, we note that those that had completed high school or an equivalency program only, had the highest percentage of individuals that were uninsured. With very few exceptions across the GSMC service area, those with some college or a Bachelor Degree or higher generally fared better and had lower percentages of uninsured among other populations (Fig. 20).

Figure 20: No Health Insurance by Education Attainment (ages 25-64) (2013) (percentage over all population with age 25-64)



(SOURCE: US Census Bureau, Census 2013)

When asked to rank "largest obstacles to healthy living among [local] consumers," respondents to the Key Informant Survey ranked the cost of care as the biggest obstacle. Access to a primary care was ranked fourth as a health and wellness service that would most benefit consumers. As previously noted,

access to a community health worker and care coordination, both key in primary care service delivery, were ranked as most beneficial to consumers.

Underserved populations

According to the Massachusetts Department of Public Health, underserved populations include individuals that have limited access to primary care services, which may include groups of people who face economic, cultural or linguistic barriers to health care and reside in a specific geographic area. Many of these barriers to care can be characterized as social determinants of health. Social determinants of health, including social, behavioral and environmental influences have become increasingly prevalent factors in addressing population health. Literature recommends linking health care and social service agencies in addressing social determinants of health.[40] In particular, services related to housing, nutritional assistance, education, public safety, and income supports are areas for cross sector collaboration with health services in the community.[41] Multicultural communities face particularly complex issues when accessing and receiving treatment in their daily lives.

As noted in the table below, the GSMC service area is much more diverse than the Commonwealth overall, according to 2013 US Census data (Table 1). In particular, data from the city of Brockton highlights a population that, in 2013, was 48.3% White, 38.3% Black, 9.6% Hispanic and 7.1% identifying as some other race. In the town of Randolph, 44% of the population identified as Black, 37.1% identified as White, 14.5% was Asian, and 5.1% was identified as Hispanic in the same year. The two aforementioned communities are identified as majority minority communities.

Table 1: Race Distribution (2013)

	% White	% Black	% American Indian/ Alaskan	% Asian	% Native Hawaiian/ Other Pacific Islander	% Some Other Race	% Two or More Races	% Hispanic (not race)
Abington	92.8%	3.6%	0.2%	2.1%	0.0%	0.5%	0.7%	2.3%
Bridgewater	86.3%	8.0%	0.0%	1.3%	0.0%	1.2%	3.2%	6.1%
Brockton	48.3%	38.3%	0.3%	2.1%	0.0%	7.1%	4.0%	9.6%
Hanson	98.5%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	1.2%
Holbrook	86.2%	9.3%	0.2%	2.0%	0.0%	0.7%	1.8%	9.3%
Mansfield	92.3%	0.5%	0.1%	2.2%	0.0%	1.6%	3.3%	3.5%
Middleborough	94.0%	1.1%	0.8%	0.1%	0.0%	0.9%	3.2%	3.2%
Norton	83.6%	6.8%	0.0%	5.8%	0.0%	1.3%	2.5%	4.8%
Randolph	37.1%	44.0%	0.1%	14.5%	0.0%	2.6%	1.6%	5.1%
Raynham	78.1%	10.1%	0.0%	5.7%	0.0%	0.0%	6.1%	4.3%
Sharon	82.0%	3.3%	0.0%	9.3%	0.0%	0.8%	4.6%	2.2%
Taunton	89.4%	5.2%	0.3%	1.0%	0.0%	2.1%	2.0%	5.8%
Bristol County	88.8%	3.5%	0.2%	2.0%	0.0%	2.9%	2.6%	6.3%
Norfolk County	81.9%	6.0%	0.1%	9.1%	0.0%	1.2%	1.7%	6.6%
Plymouth County	85.9%	8.6%	0.2%	1.3%	0.0%	2.1%	2.0%	3.3%
GSMC Service Area	66.7%	22.8%	0.2%	3.7%	0.0%	3.7%	2.9%	5.4%
Massachusetts	80.5%	6.9%	0.2%	5.6%	0.0%	4.1%	2.7%	9.9%

(SOURCE: US Census Bureau, Census 2013)

In 2014, within the public school system, the race and ethnicity distribution in Randolph and Brockton are markedly different from other communities in the GSMC service area (Table 2). In the public school

system, Randolph data highlights a 51.6% Black population, followed by 17.3% Asian and 15% White population, with a Hispanic student population over double the state average at 11.7%. Brockton data reports 55.2% of the student population as Black, 14.9% Hispanic and almost double the state percentage of those identified as multi-race at 4.4%. The towns of Avon and Taunton also record higher percentages of Hispanics and Blacks many times the state percentage, as noted in Table 2.

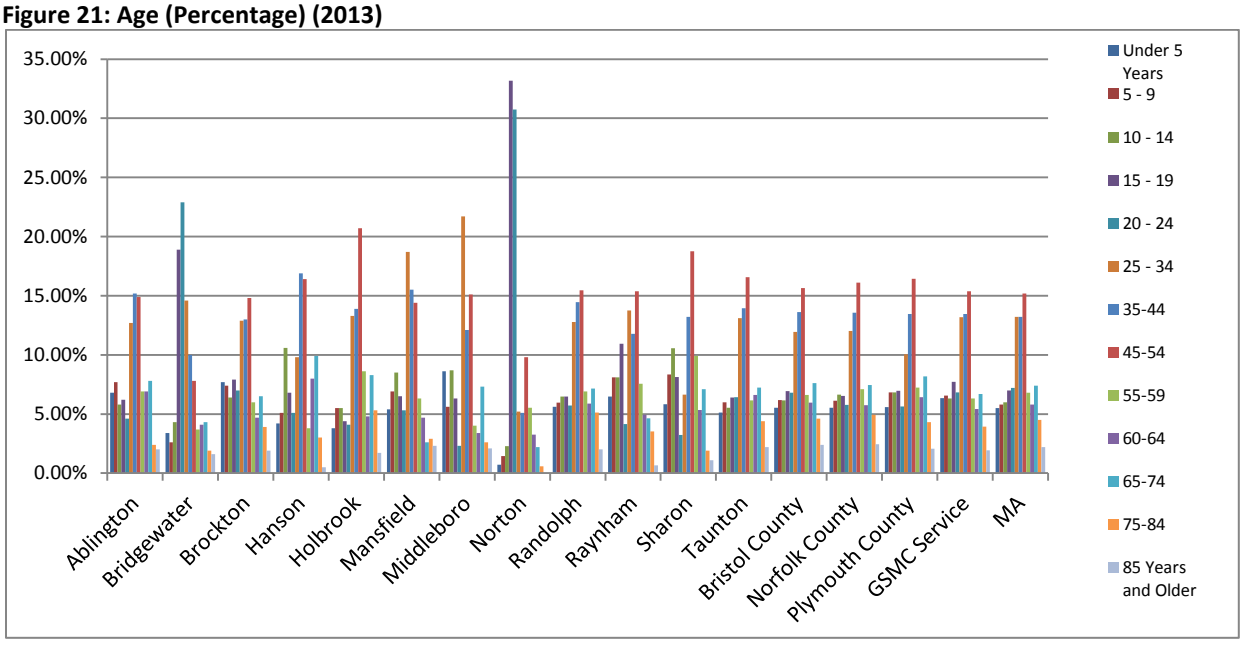
Table 2: Race Distribution in Public School Population (2014)

	%White	% Black	% Hispanic	% Asian	% Other	% Multi-Race
Abington	91.6%	8.7%	17.9%	6.3%	0.4%	3.1%
Avon	55.9%	8.7%	17.9%	6.3%	0.8%	3.1%
Bridgewater-Raynham	88.8%	3.4%	2.7%	1.4%	0.0%	3.7%
Brockton	22.5%	55.2%	14.9%	2.3%	0.6%	4.4%
Canton	72.9%	10.2%	3.6%	9.3%	0.3%	3.7%
East Bridgewater	93.3%	2.2%	1.2%	0.5%	0.5%	2.3%
Easton	85.8%	4.7%	3.5%	3.0%	0.3%	2.7%
Holbrook	62.2%	16.9%	9.6%	4.4%	0.4%	6.5%
Mansfield	86.5%	2.9%	3.3%	4.4%	0.4%	2.5%
Middleborough	89.7%	2.0%	3.5%	1.0%	0.6%	3.3%
Norton	91.8%	1.5%	2.3%	1.9%	0.4%	2.1%
Randolph	15.0%	51.6%	11.7%	17.3%	0.4%	3.9%
Sharon	63.4%	4.9%	4.0%	23.5%	0.2%	4.0%
Stoughton	63.9%	19.6%	7.7%	5.4%	0.5%	3.0%
Taunton	71.2%	11.4%	11.2%	1.4%	0.5%	4.3%
West Bridgewater	91.4%	2.5%	1.8%	1.5%	0.3%	2.5%
Whitman-Hanson	91.9%	1.9%	2.8%	0.8%	0.4%	2.1%
GSMC Service Area	89.3%	2.0%	3.3%	1.4%	0.4%	3.7%
Massachusetts	87.2%	3.3%	5.5%	0.6%	0.5%	2.8%

(SOURCE: MA Dept of Elementary and Secondary Education, 2014, Enrollment by Race/Gender Report- DISTRICT)

In 2013, the age distribution within GSMC area communities was consistent with state average. Norton and Bridgewater, however, had large portions of their populations at younger age groups. Norton had a combined 64% population of individuals between 15 and 24 years of age, while Bridgewater had about 24% of its population between 20 and 24 years old (Fig.21). Middleboro data shows a larger proportion of its population between the ages of 75 and 84 (about 21%); this is several times greater than the state and service area percentages (Fig.21).

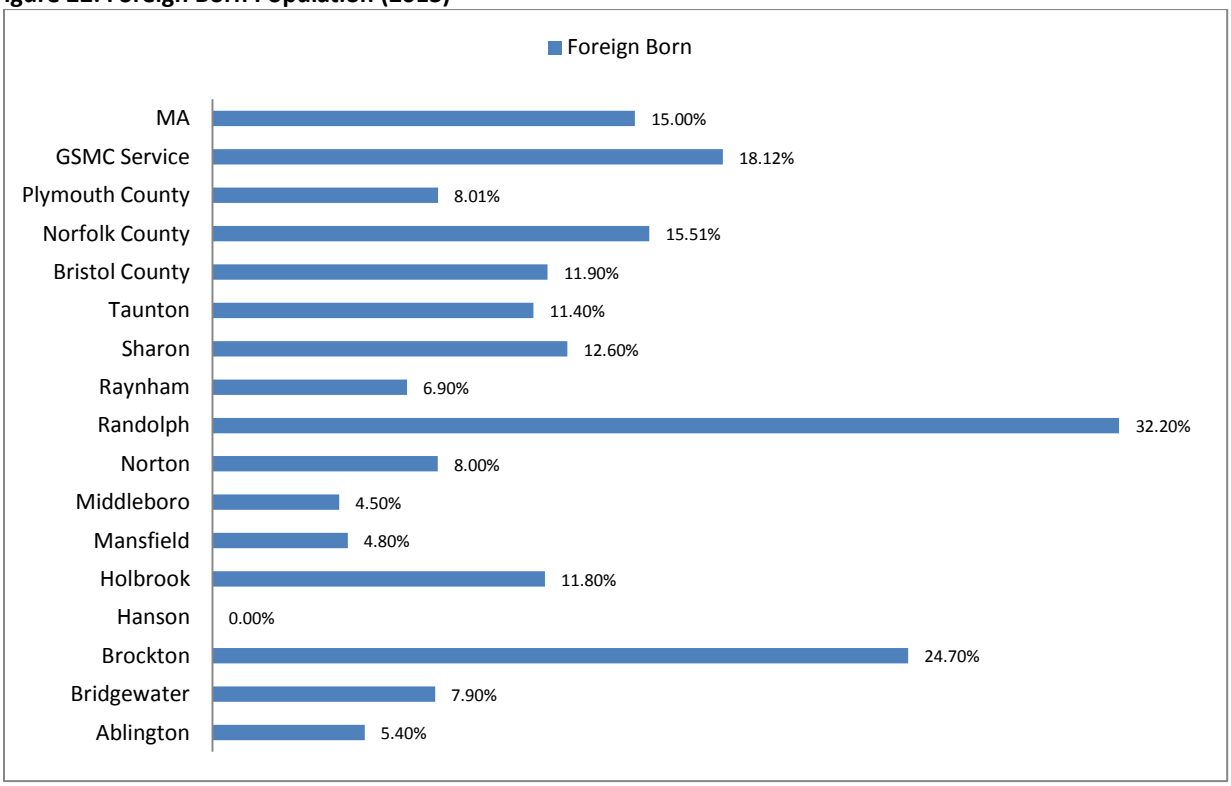
Figure 21: Age (Percentage) (2013)



(SOURCE: US Census Bureau, Census 2013)

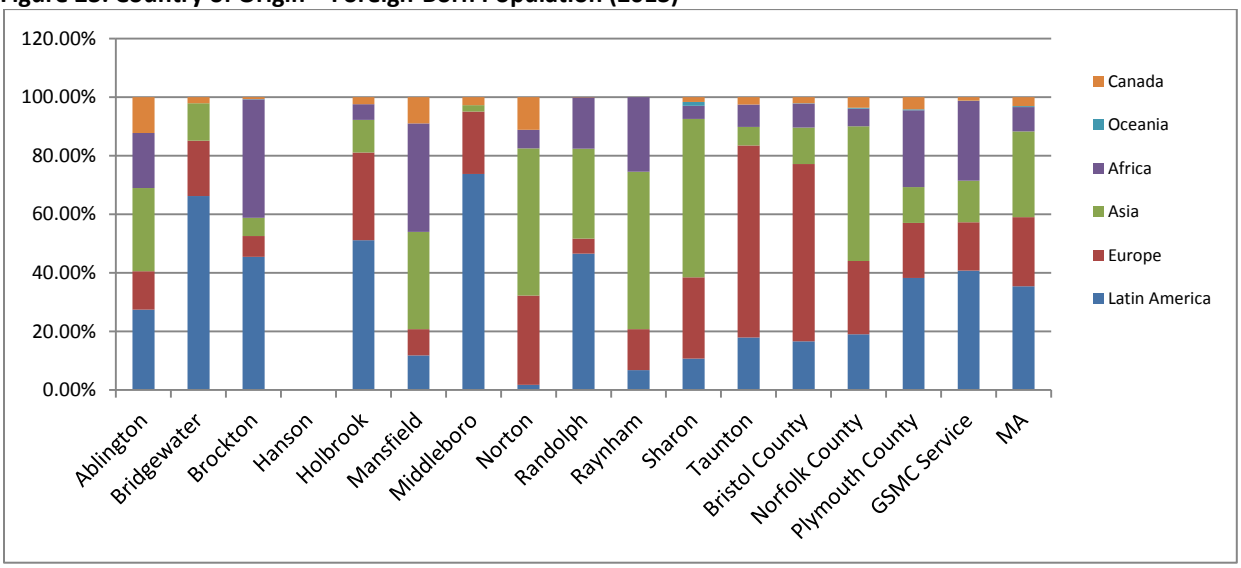
Most cities and towns in the service area reported smaller percentages of foreign-born population when compared to the state (Fig. 22). The region of origin, for those foreign-born populations, is an important factor to consider when examining ethnic and linguistic distribution. We note that the distribution of origin is quite diverse across the service area. Across various communities, Latin America appears to be a predominant region of origin among foreign-born populations, most notably in Bridgewater, Brockton, Holbrook, and Middleboro. Taunton stands out having almost 70% of its foreign-born population originating from Europe. Raynham recorded a proportionally larger segment of its foreign-born population originating from Asia (Fig. 23).

Figure 22: Foreign Born Population (2013)



(SOURCE: US Census Bureau, Census 2013)

Figure 23: Country of Origin – Foreign-Born Population (2013)



(SOURCE: US Census Bureau, Census 2013)

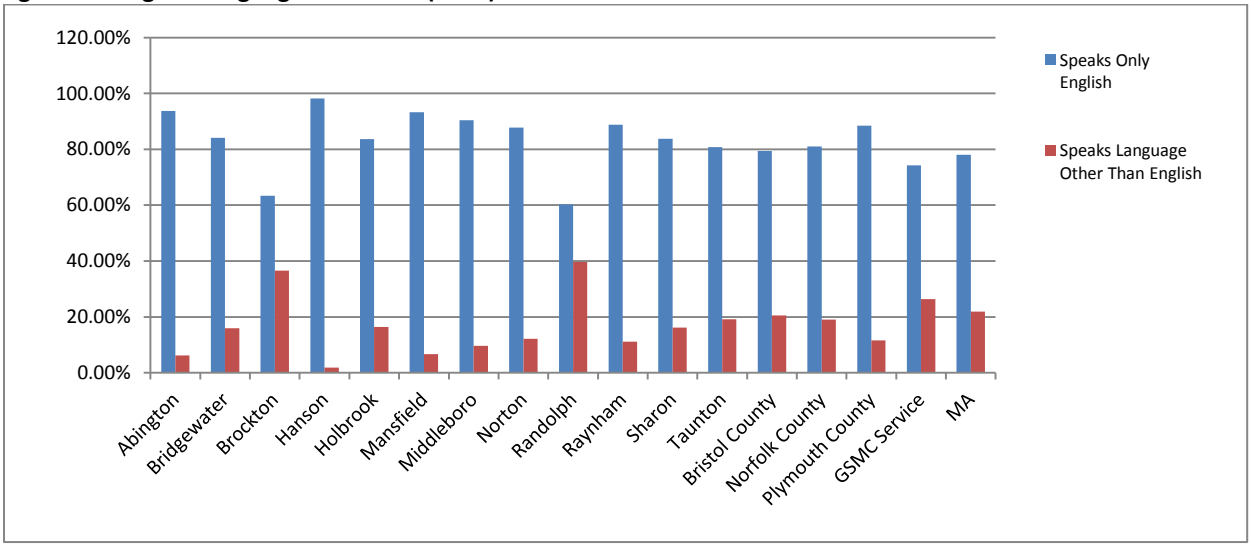
As noted in the table below, most cities and towns are at or above the state average of 78% English-only speakers. Randolph, Brockton and Taunton deviate from the norm with more people speaking non-English languages at home than the Massachusetts average. Randolph reported 39.7% of its population speaking a language other than English at home, with 20.9% speaking an Indo-European language and about 12.8% speaking an Asian/Pacific Island language. Brockton reported 36.6% speaking a language other than English at home with about 26.6% using an Indo-European language. Taunton and Bridgewater also had large non-English speaking populations specific to Into-European languages (14.4% and 10.8%, respectively), both above the state percentage of 3.4% (Table 3).

Table 3: Distribution of Language Spoken at Home (2013)

	English Only	Other than English	Less than well	Spanish	Less than well	Other Indo-European	Less than well	Asian Pac Is.	Less than well	Other	Less than well
Abington	93.76%	6.24%	1.90%	1.05%	0.22%	2.26%	1.00%	1.53%	0.29%	1.41%	0.40%
Bridgewater	84.11%	15.89%	5.21%	3.25%	1.00%	10.82%	2.81%	1.46%	1.04%	0.36%	0.36%
Brockton	63.39%	36.61%	17.46 %	7.60%	2.75%	26.55%	13.68%	1.78%	0.84%	0.68%	0.20%
Hanson	98.20%	1.80%	0.00%	1.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Holbrook	83.65%	16.35%	0.00%	1.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Mansfield	93.31%	6.69%	2.46%	1.79%	0.18%	2.82%	1.65%	1.05%	0.43%	1.03%	0.20%
Middleboro	90.39%	9.61%	3.36%	2.20%	0.12%	7.30%	3.24%	0.11%	0.00%	0.00%	0.00%
Norton	87.79%	12.21%	3.81%	3.16%	0.07%	3.84%	0.36%	5.17%	3.38%	0.04%	0.00%
Randolph	60.30%	39.70%	17.55 %	3.54%	1.09%	20.92%	9.31%	12.82 %	6.81%	2.42%	0.35%
Raynham	88.85%	11.15%	3.51%	2.29%	1.15%	5.41%	1.03%	3.44%	1.33%	0.00%	0.00%
Sharon	83.82%	16.18%	4.14%	1.36%	0.45%	6.73%	1.26%	6.36%	2.17%	1.73%	0.26%
Taunton	80.84%	19.16%	8.37%	3.59%	1.01%	14.38%	6.87%	0.54%	0.30%	0.66%	0.20%
Bristol County	79.42%	20.58%	8.06%	4.32%	1.73%	14.47%	5.62%	1.30%	0.60%	0.49%	0.11%
Norfolk County	80.97%	19.03%	6.83%	2.68%	0.64%	8.07%	2.47%	6.89%	3.39%	1.39%	0.34%
Plymouth County	88.44%	11.55%	4.52%	2.53%	0.81%	7.78%	3.27%	0.88%	0.35%	0.37%	0.09%
GSMC Service	74.31%	26.42%	11.79 %	4.91%	1.62%	17.52%	8.45%	3.06%	1.55%	0.98%	0.24%
MA	78.09%	21.91%	8.87%	8.06%	3.46%	8.86%	3.17%	3.81%	1.87%	1.18%	0.38%

(SOURCE: US Census Bureau, Census 2013)

Figure 24: English Language Indicators (2013)



(SOURCE: US Census Bureau, Census 2013)

Across the region, focus group participants noted that community members of “different cultures”, “non-English speakers” and low income individuals are currently being underserved in their respective communities. Focus group participants in Easton specifically, noted that individuals with “special needs” either due to physical ailment, mental illness or substance dependency are underserved in the community. Transportation services, more flexibility and availability of medical appointments beyond the traditional service hours were identified as strategies to address access to care issues. Furthermore, communication across sectors and via various channels for all and particularly those for whom the English language may be an obstacle was noted as a key strategy. Another point worth noting is that social determinants of health was ranked second as what service providers in the region believe to be the one of the biggest obstacles to healthy living among their consumers.

Discussion and Recommendations

Good Samaritan Medical Center is well positioned to partner with other community-bases organizations and coalitions to address the following key strategic priorities to improve health outcomes and wellness in the region:

- Chronic Diseases
    - Cancer
    - Heart Disease
    - Diabetes
    - Obesity
- Behavioral Health
    - Mental Illness
    - Substance Use Disorders
    - Crime
- Access to Health Care
    - Underserved Populations
    - Social Determinants of Health
        - Education, food security, social services support

Recognizing the valuable work that the Massachusetts Department of Public Health's Division of Prevention and Wellness has put forth through its 2012 Coordinated Health Promotion and Chronic Disease Prevention Plan (the Plan), GSMC will take steps to promote the Plan across the region and within the community health coalitions it partners with. GSMC will endeavor to align its community benefits priorities and goals with those identified in the Plan and, when appropriate, adopt the goals therein identified to ensure our success in addressing community health issues from coordinated regional strategies with public health and population health management agencies.

GSMC recognizes the effectiveness of the collective impact that comes from varying organizations working together towards a common goal of improving health outcomes among all community members, particularly for high priority populations.

Our data reveals that race, ethnicity and socio-economic factors are indicators of health outcome within the region. GSMC will focus efforts toward individuals and families who are most vulnerable due to: socio-economic status, lack of access to health and social services, and lack of chronic disease self-management support. According to participants in all focus groups conducted and responses gathered through the Key Informant Survey, care coordination services and access to social services provided/led by community health workers are essential components of a population health management strategy for this region. GSMC will continue to collaborate with its many community partners in order to address the issues identified. GSMC continuously strives to be a "Good Samaritan" to our neighbors, our community partners and our region. Together we will work to improve the health and wellbeing of those most likely to face health inequities.

Chronic Disease

Cancer

Community-Wide Recommendations

- Pursue partnerships with the *American Cancer Society* and/or other cancer education and prevention organizations in the community to advance disease prevention and management
- Partner with civic and/or faith-based community organizations to reach high priority populations and provide appropriate screenings and prevention education

Health System Recommendations

- Provide free cancer screening programs in communities more susceptible to cancer and with higher disease burden and mortality rates in order to increase early diagnosis of cancers and treatment
- Offer a smoking cessation program
- Offer cancer prevention education and/or informational materials in target communities
- Participate in community-based cancer awareness campaigns in the region
- Offer cancer support group

Cancer mortality in the majority of the GSMC service area communities are above state values; together, cancer accounts for nearly 30% of all deaths in the area. In particular, Raynham (306 cancer deaths per 100,000), West Bridgewater (nearly 304 per 100,000), Avon (275 per 100,000), and Stoughton (nearly 271 per 100,000) each have cancer mortality rates above the state mortality values of 193 cancer deaths per 100,000 (Fig. 2). Moreover, in 2012, total cancer deaths as a percentage of all causes were 29.52% in Sharon, 29.08% in Raynham, and 28.95% in Hanson. These communities represent the top three towns with the largest percentage of total deaths attributed to cancers.

Despite national efforts, disparities persist, with higher specific-cause mortality for some sociodemographic groups when stratified by race, wealth, education, and neighborhood. These disparities have remained constant in recent years. As of 2013, cancer was the leading cause of death in Plymouth, Bristol and Norfolk Counties.[42] Black, non-Hispanic males had the highest incidence and mortality rates for cancer in Massachusetts compared to all other racial/ethnic groups. White, non-Hispanic females had the highest incidence rates for cancer, whereas Black, non-Hispanic females had the highest mortality rates for cancer.

GSMC should continue its strategic cancer awareness, screening and prevention efforts. Through its various community partnerships, GSMC should continue to engage target populations in order to promote and increase access to cancer screenings in the communities most impacted by cancer mortality. GSMC should also continue to leverage its medical staff and other resources to provide cancer prevention education and, when appropriate, provide translated materials to limited-English proficient (LEP) community members.

Heart Disease

Community-Wide Recommendations

- Pursue partnerships with the *American Heart Association* and/or other cardiovascular disease education and prevention organizations in the community to advance disease prevention and management
- Partner with civic and/or faith-based community organizations to reach high priority populations and provide appropriate screenings and prevention education

Health System Recommendations

- Provide free blood pressure screening programs in communities more susceptible to heart disease and with higher disease burden and mortality rates in order to increase early diagnosis and treatment
- Offer a smoking cessation program
- Offer heart attack and stroke prevention education and/or informational materials in target communities
- Participate in community-based heart health and stroke awareness campaigns in the region
  Serve as a Community Training Center using American Heart Association standards for employees, physicians, and community professional healthcare workers for cardiac education and CPR certification

In Massachusetts, heart disease, stroke, and other cardiovascular and circulatory system diseases are responsible for approximately 35% of all deaths in the state. Risk factors for heart attack include overall health status, lifestyle (including activity and nutrition), and environmental factors, including exposure to certain air pollutants, such as particulate matter, which has been shown to increase the rate of heart attack, arrhythmias, and premature death.[43]

Heart disease was the second leading cause of death in most towns within the GSMC service area.[44] In total, seven communities in the GSMC service area had a higher heart disease death rate than the service area as a whole (22.47%). Hanson had the highest prevalence of heart disease death (30.26% in 2012). Members of the East Bridgewater and West Bridgewater communities are both more likely to die of heart disease than they are of cancer (Fig.5). The crude death rate per 100,000 due to heart disease, reached 157.2 in Plymouth County, 158.4 in Bristol County and 258.2 in Norfolk County between the years of 2011 and 2013.[45]

GSMC should continue to leverage its resources and medical staff to provide heart disease prevention education to community members. When appropriate, GSMC should provide blood pressure screenings in the community and promote heart health and stroke prevention through partnerships with community-based organizations providing services to target populations in the GSMC service area. GSMC should implement a chronic disease self-management program to assist community members in learning how to manage their health condition and improve quality of life.

Diabetes

Community-Wide Recommendations

- Pursue partnerships with the *American Diabetes Association (ADA)* and/or other diabetes education and prevention organizations in the community to advance disease prevention and management
- Partner with civic and/or faith-based community organizations to reach high priority populations and provide appropriate screenings and prevention education

Health System Recommendations

- Promote use of the ADA and/or CDC diabetes type 2 and prediabetes screening tools by community members
- Offer diabetes type 2 prevention and self-management programs in communities more susceptible to diabetes type 2 and with higher disease burden and mortality rates in order to increase early diagnosis and management
- Participate in community-based diabetes awareness campaigns in the region

Recent data shows higher rates of hospitalization for heart attack and stroke among adults with diabetes in the U.S. Additionally, diabetes was the leading cause of kidney failure, with a total of 228,924 individuals living on chronic dialysis or with a kidney transplant due to kidney failure as a result of diabetes. The number of deaths due to diabetes was higher for males than for females, and disproportionately higher for the African American/Black population than for others.

Most cities and towns in the GSMC service area recorded higher mortality rates than the state crude rate. In particular, Holbrook, Raynham and West Bridgewater stand out with a large margin over the GSMC service area and state crude rates (Fig.6). When considering diabetes mortality as a percentage of all deaths, more than half of the cities and towns in the GSMC service area are above the state value. To best address this, GSMC should seek to increase awareness among primary care providers for the diabetes management programs in the community. Working together with the American Diabetes Association, GSMC should promote the use of diabetes type 2 screening tools to foster awareness and prevention. Through the implementation of a chronic disease self-management program, GSMC will be able to assist community members learn how best to manage their health and avoid health complications. GSMC should continue to make available diabetes management information in various languages and through various media channels, as appropriate.

Obesity

Community-Wide Recommendations

- Promote physical activity and healthy eating objectives as identified by the 2012 *Coordinated Health Promotion and Chronic Disease Prevention Plan*
- Partner with civic and/or faith-based youth support organizations to reach high priority populations to provide nutrition education

Health System Recommendations

- Offer nutrition education in communities more susceptible to obesity and with higher disease burden to increase healthy eating
- Promote physical activity by supporting community programs aimed at creating opportunities for youth and adults to lead active lifestyles
- Support access to fruits and vegetables through programs designed to increase consumption of healthy foods
- Participate in obesity prevention campaigns in the region

Researchers estimate that more than half of adults and 1 in 4 high school and middle school students in MA suffer from obesity.[46] According to a recent study, over $3.5 billion of medical expenses in Massachusetts are due to adult obesity.[47] Increasingly, more children are adopting behaviors that are risk factors for obesity and its health-related effects that lead to chronic disease. More than three-fourths of adults and an even higher number of adolescents consume an inadequate amount of fruits and vegetables each day, while the majority of Massachusetts does not participate in the recommended amount of physical activity.[48]

GSMC should continue to grow and develop its strategic partnership with the Federation of Massachusetts Farmers Markets to provide the Steward Vegetable Voucher Program. Additionally, GSMC should continue to offer its support to local farmers markets in the region to promote access to locally grown fruits and vegetables. GSMC has long been supportive of fitness organizations for youth and adults and should continue to partner with such organizations to offer nutrition education to community members using such facilities. GSMC should continue to advocate for increase access to healthy food options available in public institutions and promote sound public health policies aimed at addressing the issue.

Behavioral Health

Mental Illness

Community-Wide Recommendations

- Advocate for inclusion of screenings for mental illness within schools systems
- Promote mental illness awareness and access to treatment to decrease stigma surrounding mental illness
- Pursue collaboration with the *National Alliance on Mental Illness, health insurers,* and/or other mental health education organizations in the community to advance disease management

Health System Recommendations

- Maintain Behavioral Health Navigator program in the Emergency Department
- Engage community-based service providers to learn of and promote services that may be available to community members in need of services
- Implement strategic partnerships with community organizations that are able to provide services to community members, particularly high priority populations
- Collaborate with health and human service organizations to develop a comprehensive care plan that would be accessible to providers at all points of care

Most cities and towns in the GSMC Service Area reported a higher rate of mental health-related discharges than the state in both 2011 and 2012. In addition, mental health-related discharge rates in 11 communities in GSMC Service area increased during the same time frame. Among these, Brockton had the highest age-adjusted rate in both 2011 at 1,289 discharges per 100,000 individuals and 2012 with 1,338 discharges per 100,000 individuals. Both rates were significantly greater than those of the state at 839 discharges and 846 discharges per 100,000 in 2012 (Fig.10).

The prevalence of mental health disorders in the region can also be observed in the rate of all hospitalizations related to mental health disorders. Both Brockton and Taunton had significantly higher age-adjusted rates per 100,000 compared to the state (Fig.11). This trend has continued since last reported in 2009. In data collected through the Key Informant Survey, respondents prioritized access to a community health worker and care coordination as the most beneficial services, followed by substance abuse treatment (ranked 2nd) and behavioral health services (ranked 3rd). Due to early age of onset and poor rates of recognition and treatment, behavioral health conditions are arguably among the most chronic of illnesses.

GSMC should continue to collaborate with community-based organizations that can provide services to mentally ill patients. GSMC should also work with community coalitions to remove the stigma associated with mental illness. GSMC should serve as a host site for support groups for community members and caregivers. GSMC should promote the creation and availability of an inter-agency comprehensive care plan for this population.

Substance Use

Community-Wide Recommendations

- Promote the expansion of substance use screenings such as Screening, Brief Intervention, and Referral to Treatment (SBIRT) and/or similar interventions within schools systems
- Promote substance use awareness, prevention and access to treatment
- Support community-based substance abuse prevention coalitions

Health System Recommendations

- Promote best practices in substance use disorder treatment across the continuum of care
- Engage community-based service providers to learn of and promote services that may be available to community members in need of services
- Continue collaborations and expand access to support groups for patients and caregivers

The majority of the GSMC service area realized an increase in the rate of alcohol and substance related-hospitalizations and emergency room visits during 2011 and 2012. In alignment with this data, focus group participants in the town of Easton rated drug abuse as the major health concern within their community. With this, too, nearly every community in the GSMC service area reported an increasing trend of opioid-related hospitalizations between 2011 and 2012. Over half the cities and towns, in GSMC service area, recorded higher age-adjusted rate of opioid-related hospitalizations than state rate of 375 hospitalizations per 100,000. The opioid-related hospitalizations rates were highest in Brockton, Holbrook and Stoughton, which were about twice the state rate.

GSMC should promote the use of substance use disorder treatment best practices. GSMC should continue to partner with community organizations to promote increased access to screening for potential substance abuse. In addition to collaborating with community-based service providers working in various local settings, GSMC should also continue to offer free use of hospital space for a wide variety of support groups including Alcoholics Anonymous and Narcotics Anonymous.

Crime

Community-Wide Recommendations

- Maintain partnership with Safe Corners Program
- Partner and support community-based coalitions focused on addressing public safety and violence prevention such as Brockton's Promise-Safe Places
- Support violence prevention and crime reduction campaigns in the region
- Collaborate with mentoring programs aimed at providing support and violence prevention education to high priority youth

Health System Recommendations

- Continue to partner and support community-based violence and crime prevention coalitions working with high priority communities
- Support opportunities for violence prevention education to community members, hospital security personnel and emergency staff
- Continue collaborations and expand access to support groups for patients and caregivers such as domestic and partner violence survivors

Violent crime in Massachusetts, as measured by the cumulative number of murders, forcible rapes, robberies, and aggravated assaults, has followed a pattern consistent with the national figures. Most notably, violent crime declined over the one-year period from 2011 to 2012, reflecting an overall downward trend during the past quarter century.

Despite the overall decline in crime rates across the state, several towns recorded much higher age-adjusted homicide death rates in comparison to the state (3 per 100,000) in 2011. Avon reported a rate of 32 per 100,000, the town of Randolph observed a rate of 14 per 100,000, and West Bridgewater recorded 12 per 100,000 during the same year. In 2012, only Brockton, Bridgewater and Randolph recorded homicide death age-adjusted rates above the state benchmark (Fig.16). Based on population-adjusted crime rates in 2012 and 2013, Brockton, Stoughton and Randolph had higher violent crime rates than other cities and towns in GSMC service area. The population-adjusted property crime rate was above the state rate in several communities, but more noticeably in Brockton, Raynham and West Bridgewater (Fig.17).

To address the issue of violence in the community, GSMC should continue its strategic partnerships with violence and crime prevention community organizations. To curtail the incidence of violence, GSMC should identify and partner with programs designed to support youth enrichment activities and violence prevention. The hospital should continue to provide training for staff, which supports de-escalation, crisis intervention and provide support to victims of violence and their families.

Access to Health Care

Underserved Populations

Community-Wide Recommendations

- Continue to support health care reform
- Collaborate with organizations working to remove barriers to care for high priority populations

Health System Recommendations

- Provide assistance to community members seeking to apply for public health insurance coverage provided through MassHealth
- Support and expand a Community Health Worker program designed to provide community to clinical care linkage and care coordination
- Link community members with a primary care provider
- Support students entering the medical field, especially those seeking to enter primary care practice

In 2013, the percentage of uninsured in most of the communities that make up the GSMC service area, are favorable to the US. However, when comparing areas with higher percentages of individuals without health insurance, Bridgewater (10.73%), Brockton (6.49%), Hanson (6.44%), and Mansfield (5.71%) exceed the state benchmark of 4.03% uninsured (Fig. 18).

When considering uninsured populations based on educational attainment in 2013 for those ages 25-64, we note that those that had completed high school or an equivalency program only, had the highest percentage of individuals that were uninsured. With very few exceptions across the GSMC service area, those with some college or a Bachelor Degree or higher generally fared better and had lower percentages of uninsured among other populations (Fig. 20).

When asked to rank "the biggest obstacles to healthy living among your consumers," respondents to the Key Informant Survey ranked the cost of care as the biggest obstacle. Access to primary care was ranked fourth as a health and wellness service that would most benefit consumers. Care coordination and access to a community health worker, both key in primary care service delivery, were ranked as most beneficial to consumers.

GSMC should leverage its physician relations and communications resources to publicize community benefits programs and partnerships. Materials should be translated where possible and outreach efforts should include various media. Such efforts, in reaching internal and external audiences, could serve to address unmet health needs of the uninsured populations. Community Health Workers are trusted members of the community with a solid understanding of community health needs and how to address those needs in a manner that is culturally competent; as such, Community Health Workers would be tremendous assets to GSMC by facilitating access to health and social services, improving quality and the patient experience.

Social Determinants of Health

Community-Wide Recommendations

- Continue partnerships with community-based organizations working to address the social determinants of health

Health System Recommendations

- Support and expand partnerships with community-organizations engaged in creating opportunity for higher learning and developing a skilled labor force
- Continue to support community-based organizations addressing food security
- Continue collaboration with the Medical-Legal Partnership

Social determinants of health, including social, behavioral and environmental influences, have become increasingly prevalent factors in addressing population health. Literature recommends linking health care and social services to address social determinants of health. In particular, services related to housing, nutritional assistance, education, public safety, and income support, are areas for cross-sector collaboration between health services in the community.

Addressing the social determinants of health should be an imperative function of any community benefits program. GSMC should continue to partner and support organizations that actively implement programs that foster education, promote a highly skilled labor force, address issues of food security and provide social services to high-priority populations. Specific attention should be focused on those who are more likely to have limited access to stable housing, safe and supportive environments and higher learning opportunities.

Limitations

Data collected for analysis was derived from publicly accessible, governmental sources. Some data sources lacked information on certain towns. Often, these were towns with smaller population size. Data presented in this report is the most recently available at the time of the creation of this report. As such, some of the relative changes, though classified as increases or decreases, are qualitative valuations relative to state values, Though it would have been preferable to have more recent data with statistical evaluation for significance (p-value) and correlation (r-value), we were limited to currently available datasets.

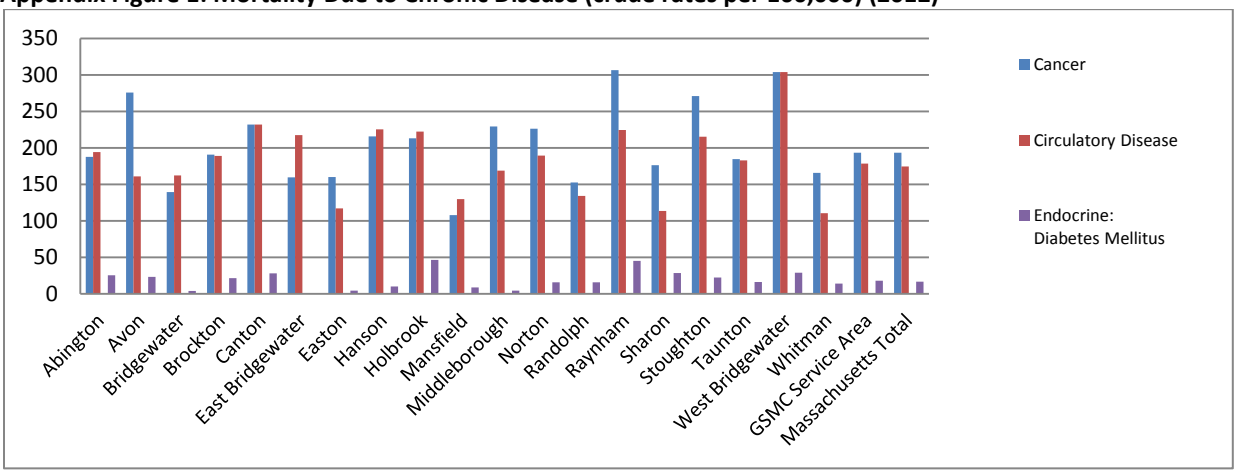
Although the community focus groups provide valuable information, serving as important tools for data collection, there are some limitations to consider. Focus group data is qualitative in nature and reflect only the views and opinions of a small sample. Focus groups are limited to the views and opinions of the participants and are not all-inclusive of the various perspectives of the larger populations; they do not constitute complete data for the communities in which focus groups were held.

Though the intent of this project was to capture the views and opinions of all or most health and human service providers within the GSMC service area, there were also limitations to the survey distribution methodology for the survey. The survey was distributed via email by the CHNAs that encompass cities and towns in the GSMC service area, to be circulated to its membership. Not all health and human service providers within the service area are members of CHNAs, some may have been excluded due to a lack of access to computer-based technology. Some providers had a longer period of time to access and respond to the survey as the survey distribution was ultimately at the control and discretion of the respective CHNA leadership. Furthermore, the survey was distributed to service providers within the GSMC email database. In total, 1,985 individuals were given the opportunity to complete the survey, 188 individuals responded to the survey (9.7%), however only 117 of those surveys were completed in its entirety (5.8%). Only completed surveys were used as a basis for further analysis and reporting. Additionally, the sample of service providers many not accurately represent the larger provider population.

Appendix A. Supplemental Health Indicators and Demographic Data

Health Indicators

Appendix Figure 1: Mortality Due to Chronic Disease (crude rates per 100,000) (2012)

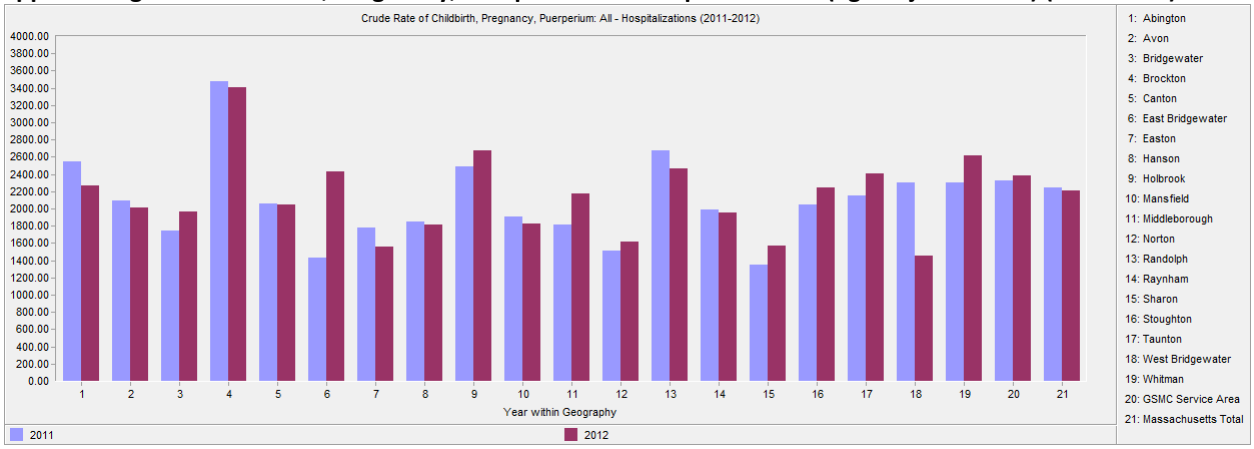


(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Appendix Figure 2: Asthma-Related Hospitalizations (age-adjusted rates per 100,000) (2011-2012)

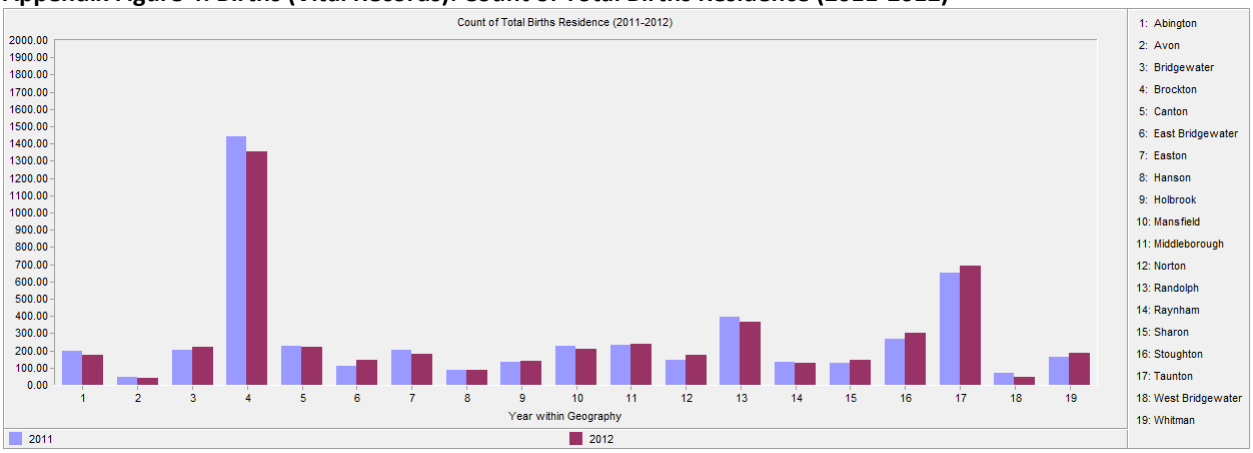
(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Appendix Figure 3: Childbirth, Pregnancy, Puerperium: All Hospitalizations (age-adjusted rate) (2011-2012)



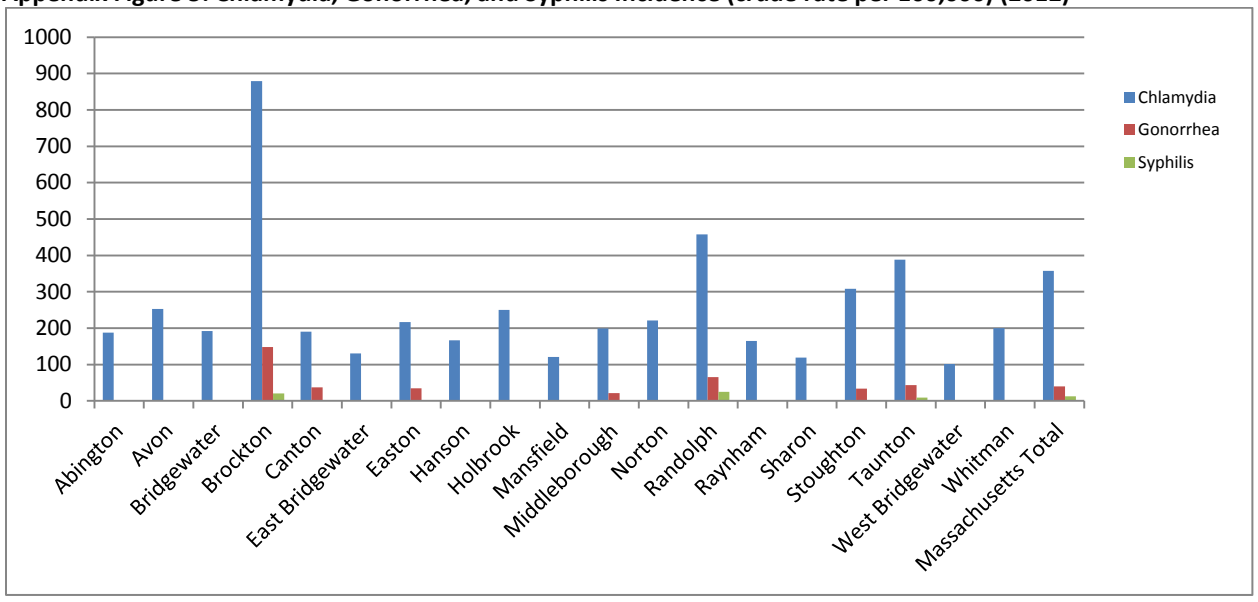
(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Appendix Figure 4: Births (Vital Records): Count of Total Births Residence (2011-2012)



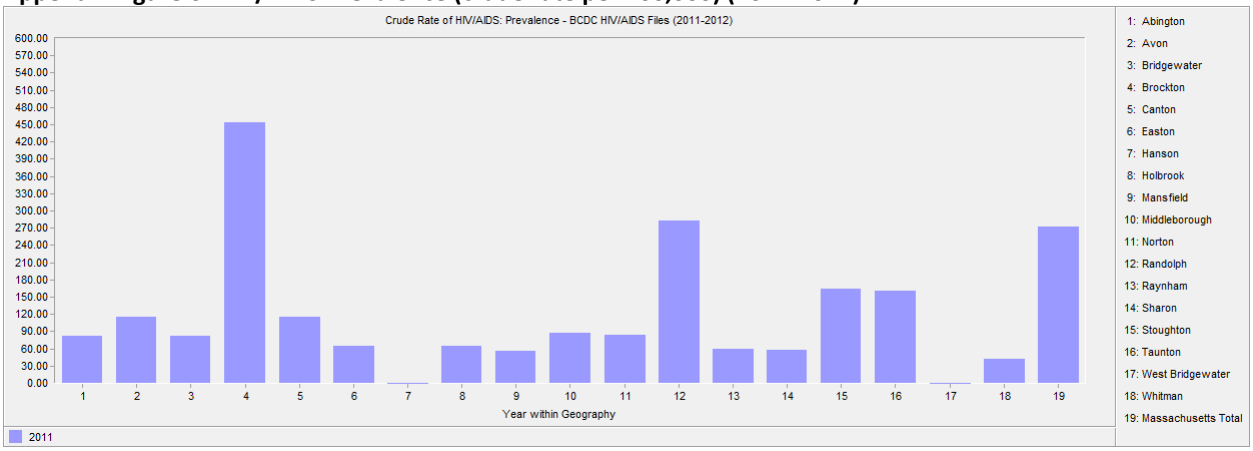
(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Appendix Figure 5: Chlamydia, Gonorrhea, and Syphilis Incidence (crude rate per 100,000) (2012)



(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Appendix Figure 6: HIV/AIDS Prevalence (crude rate per 100,000) (2011-2012)

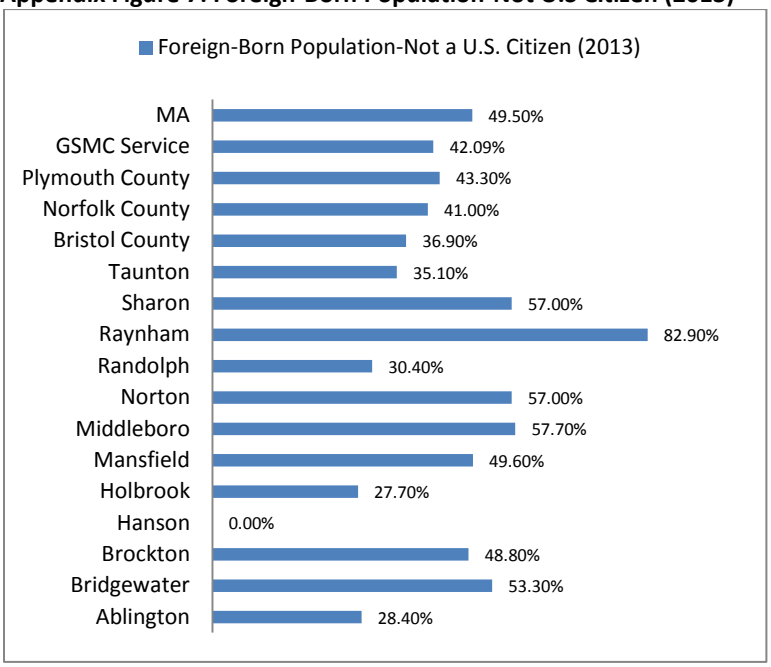


(SOURCE: Massachusetts Department of Public Health, MassCHIP, BRFSS)

Demographic Data

Social

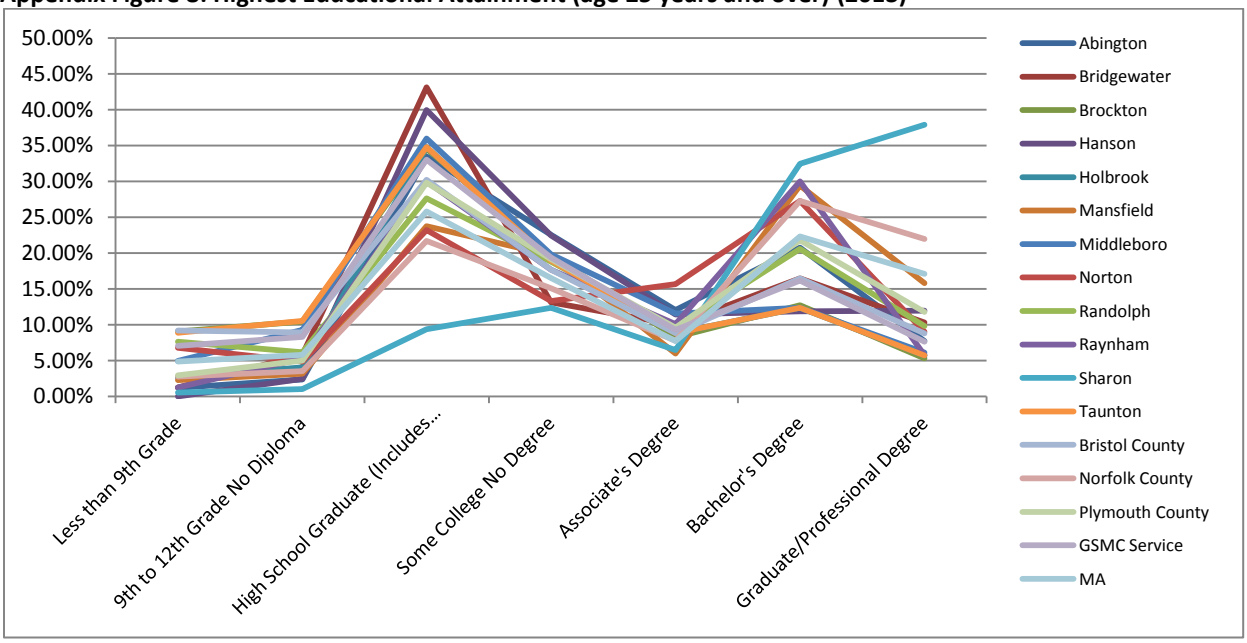
Appendix Figure 7: Foreign-Born Population-Not U.S Citizen (2013)



(SOURCE: US Census Bureau, Census 2013)

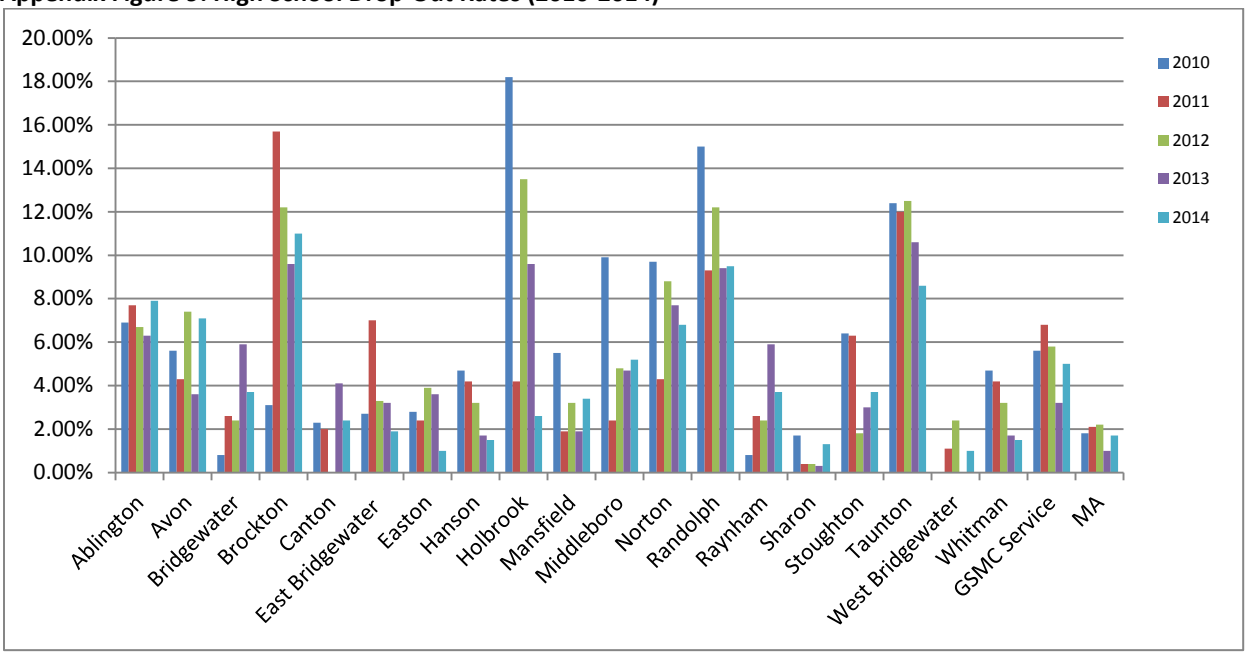
Education

Appendix Figure 8: Highest Educational Attainment (age 25 years and over) (2013)



(SOURCE: US Census Bureau, Census 2013)

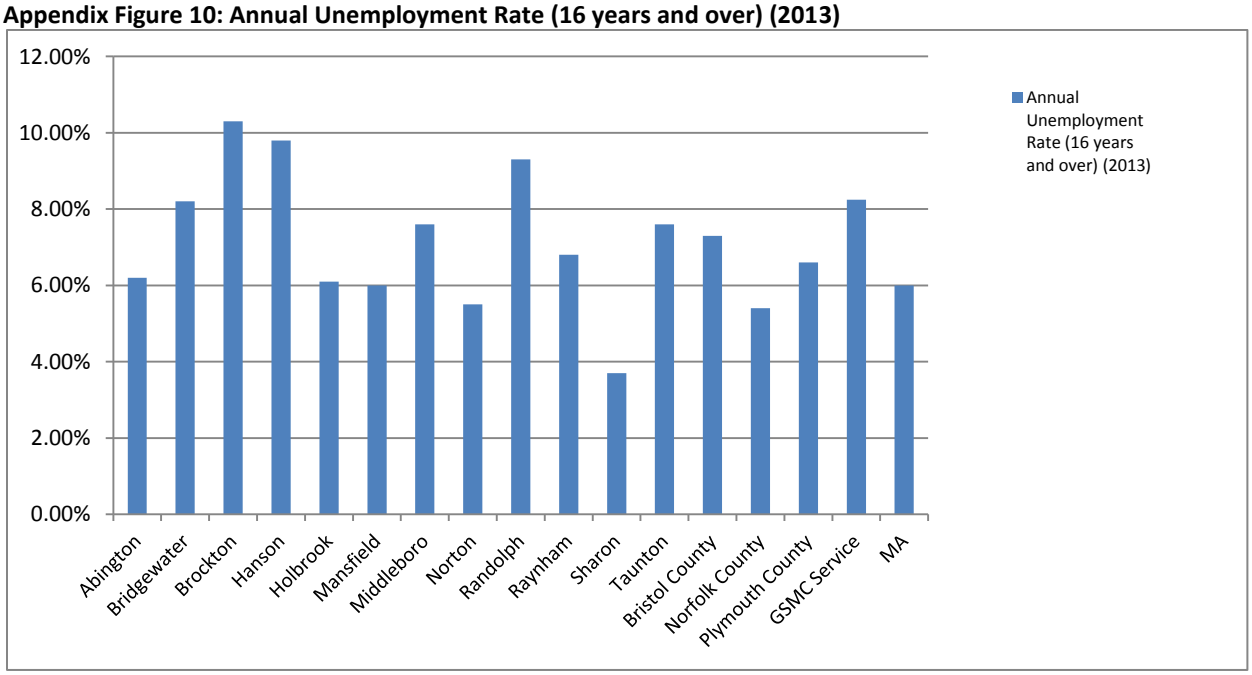
Appendix Figure 9: High School Drop-Out Rates (2010-2014)



(SOURCE: MA Department of Education)

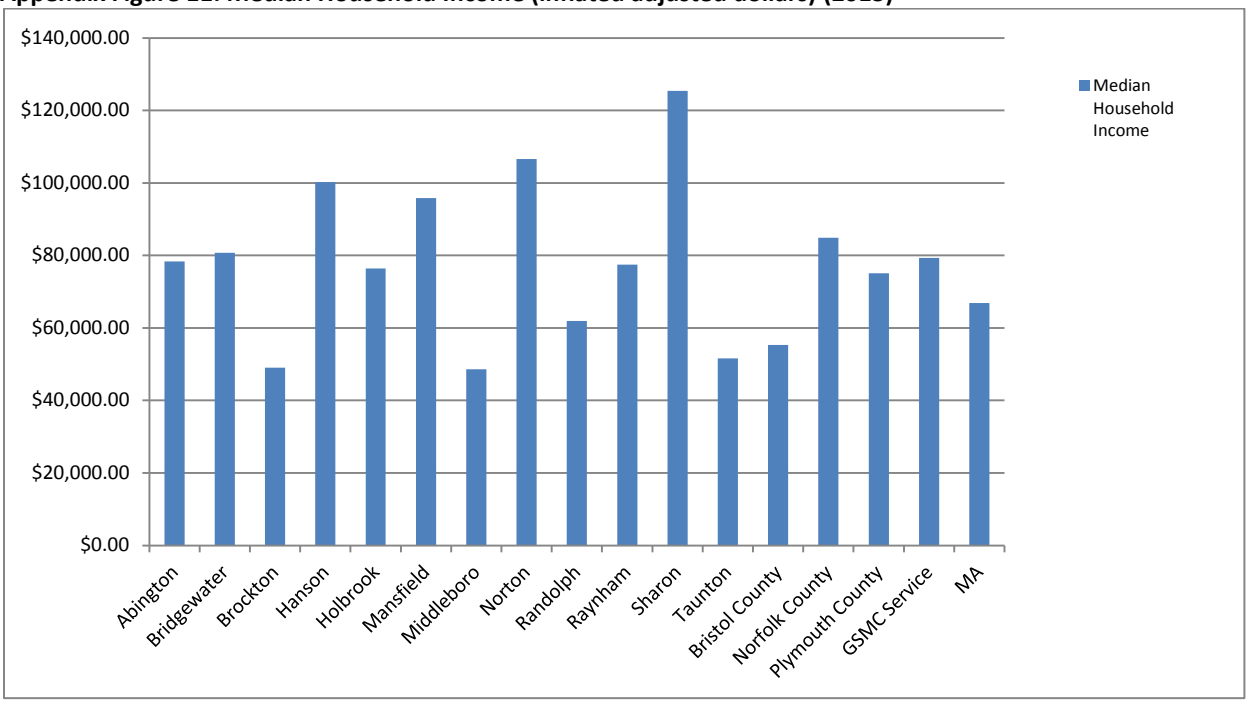
Economics

Appendix Figure 10: Annual Unemployment Rate (16 years and over) (2013)



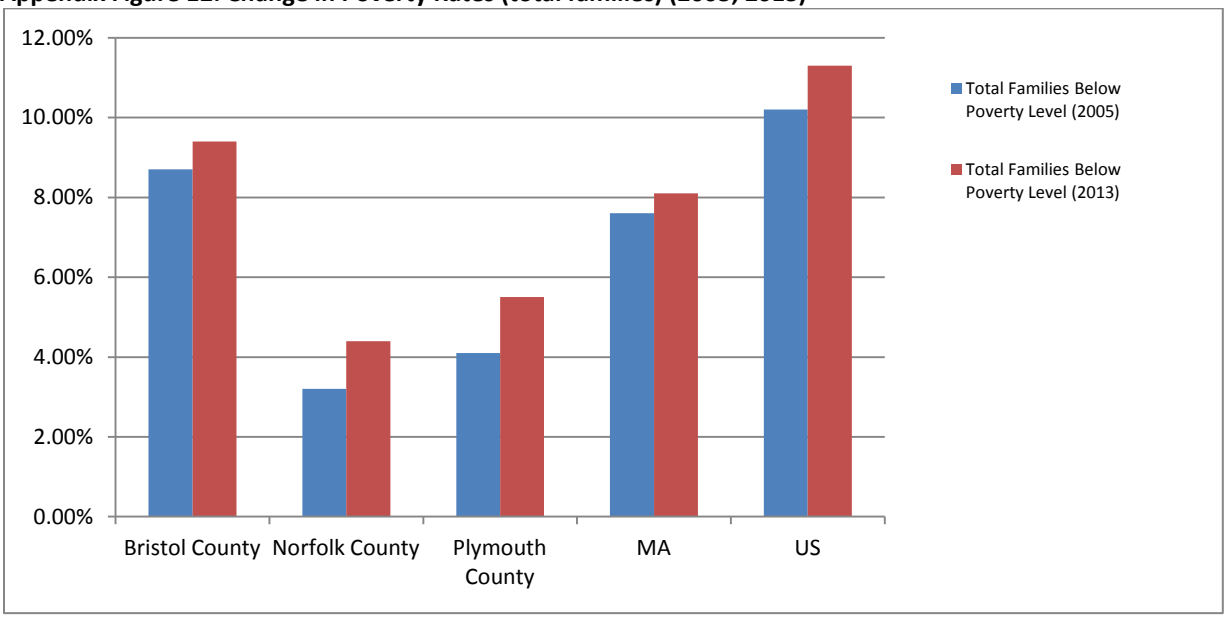
(SOURCE: US Census Bureau, Census 2013)

Appendix Figure 11: Median Household Income (inflated adjusted dollars) (2013)



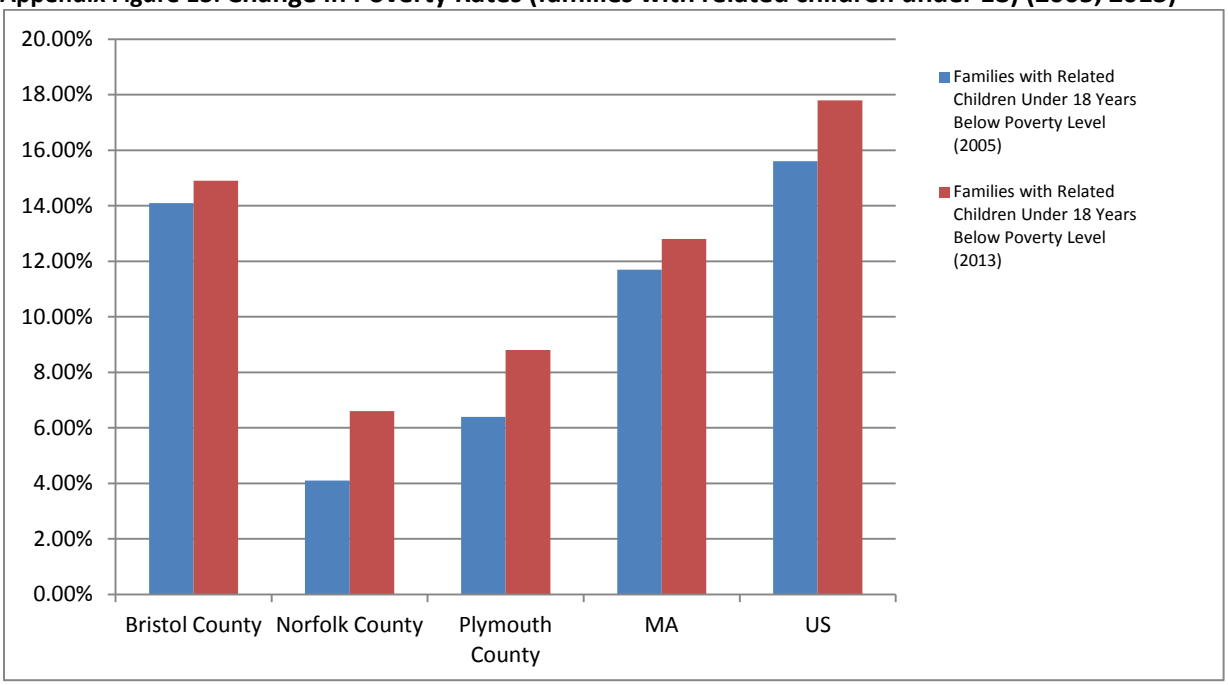
(SOURCE: US Census Bureau, Census 2013)

Appendix Figure 12: Change in Poverty Rates (total families) (2005, 2013)



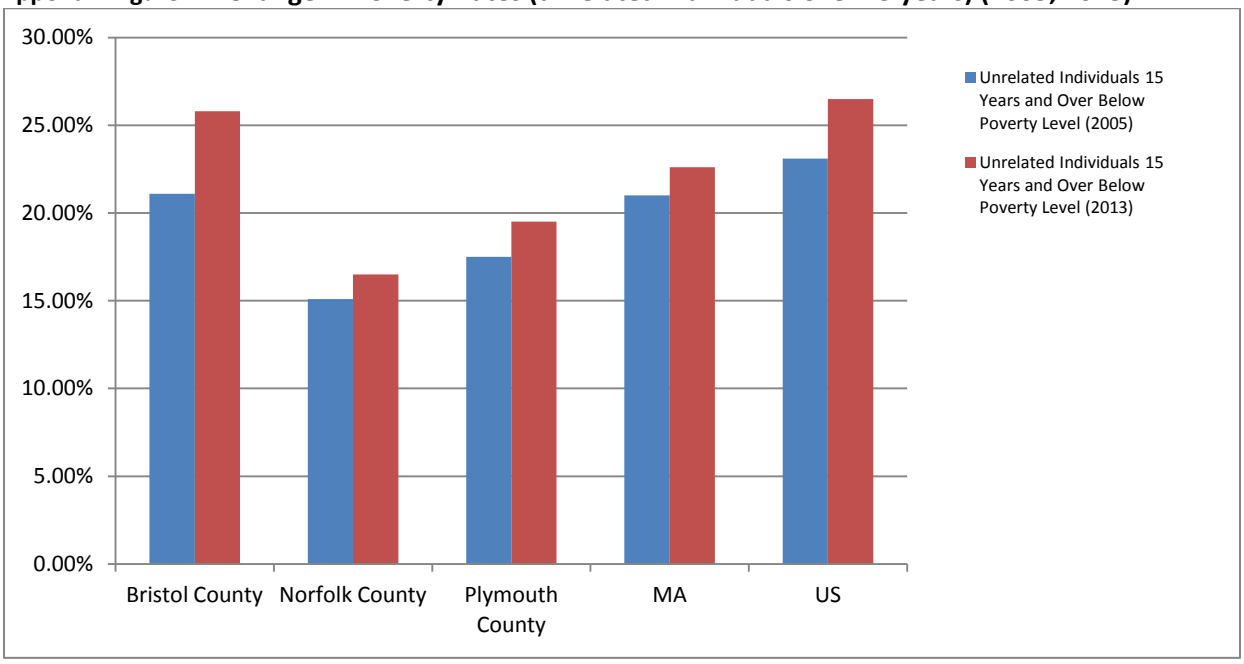
(SOURCE: US Census Bureau, Census 2013)

Appendix Figure 13: Change in Poverty Rates (families with related children under 18) (2005, 2013)



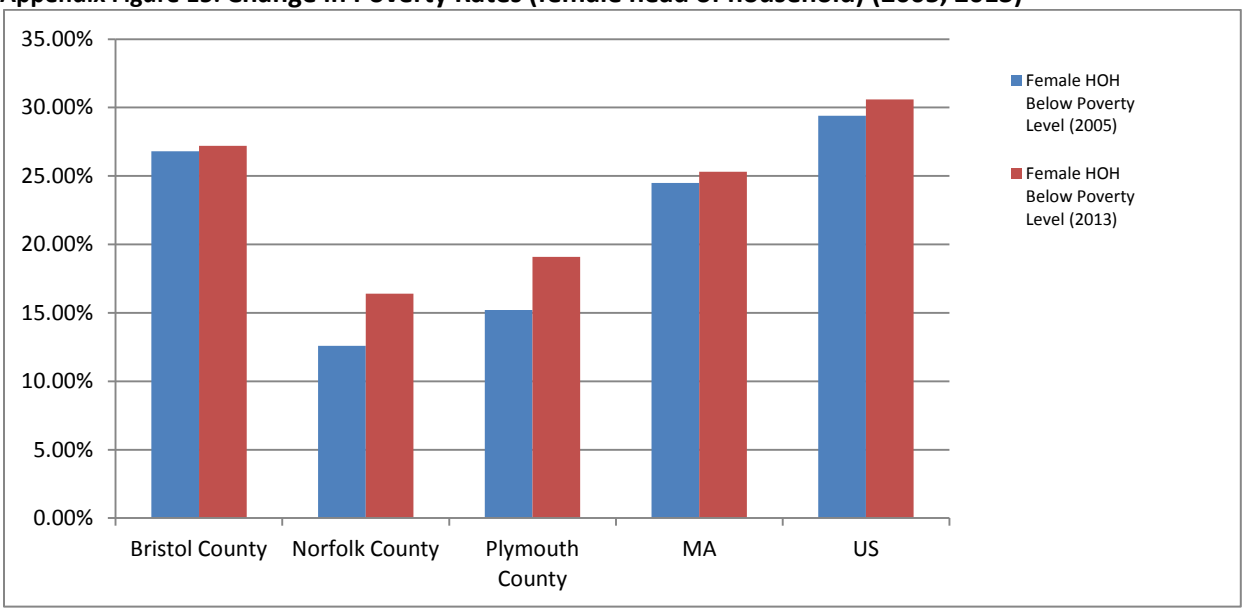
(SOURCE: US Census Bureau, Census 2013)

Appendix Figure 14: Change in Poverty Rates (unrelated individuals over 15 years) (2005, 2013)



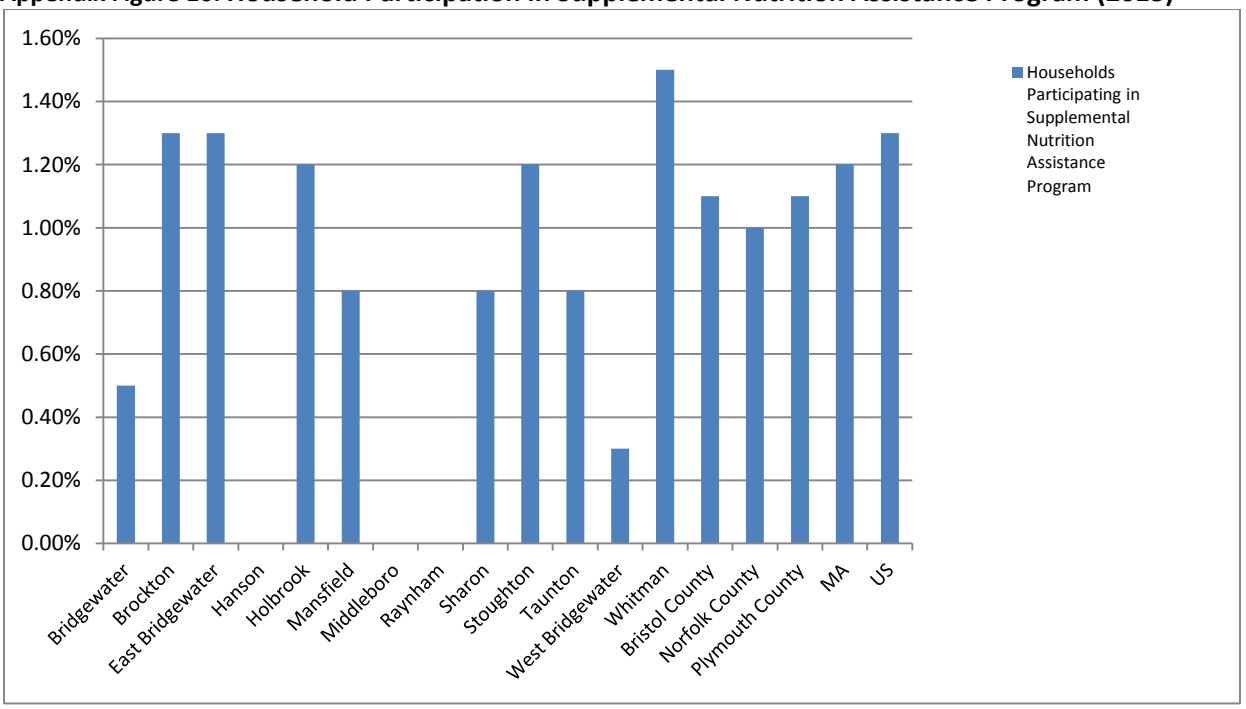
(SOURCE: US Census Bureau, Census 2013)

Appendix Figure 15: Change in Poverty Rates (female head of household) (2005, 2013)



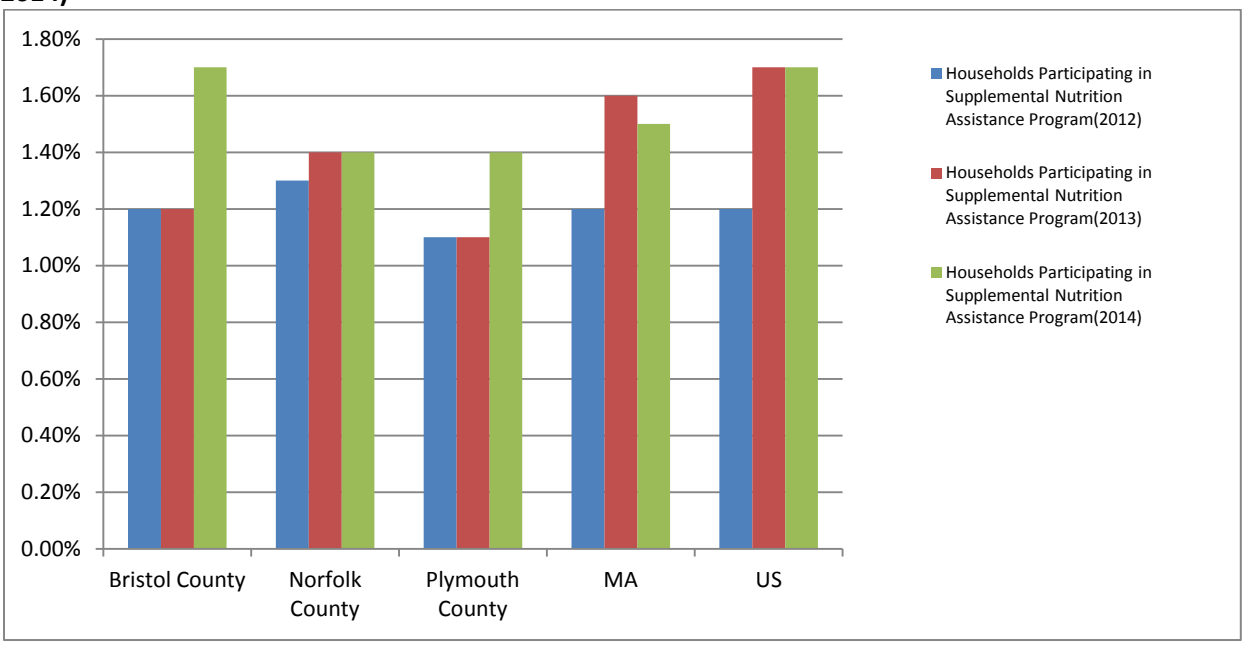
(SOURCE: US Census Bureau, Census 2013)

Appendix Figure 16: Household Participation in Supplemental Nutrition Assistance Program (2013)



(SOURCE: US Census Bureau, Census 2013)

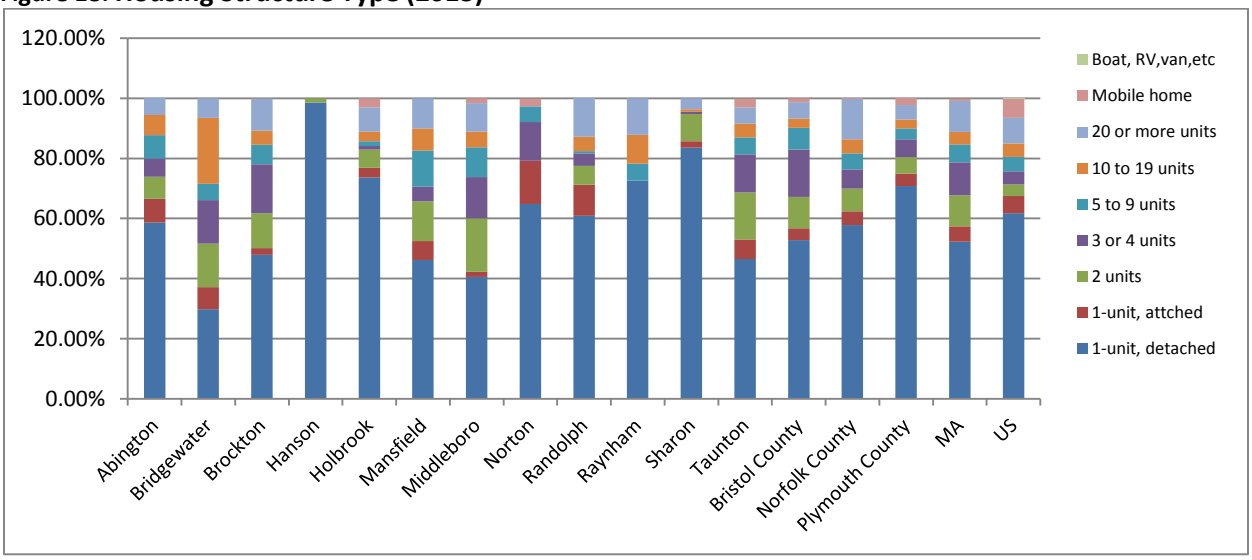
Figure 17: Change in Household Participation in Supplemental Nutrition Assistance Program (2012, 2014)



(SOURCE: US Census Bureau, Census 2013)

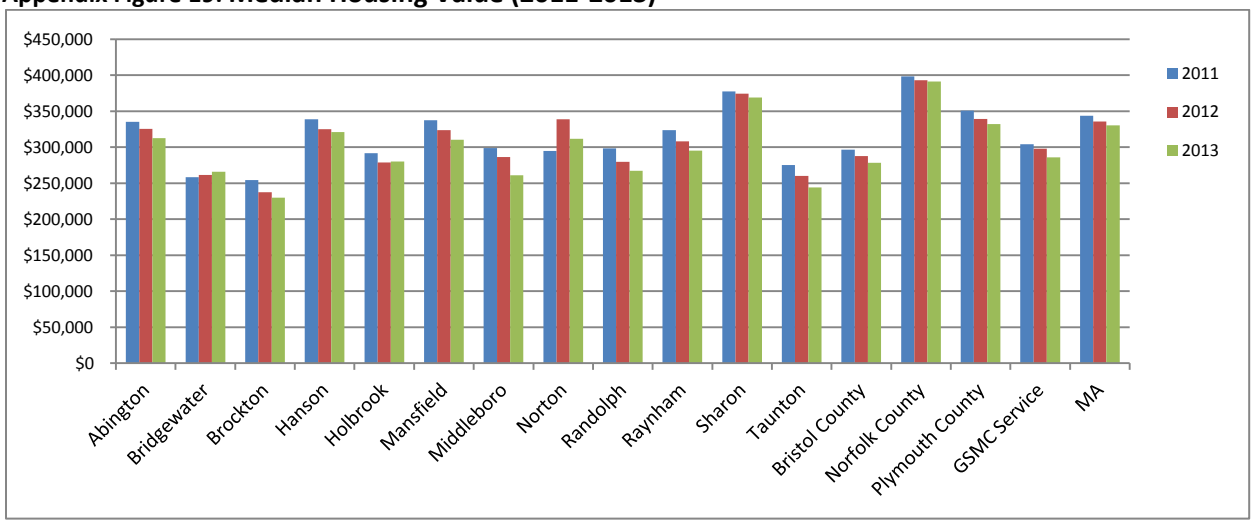
Housing

Figure 18: Housing Structure Type (2013)



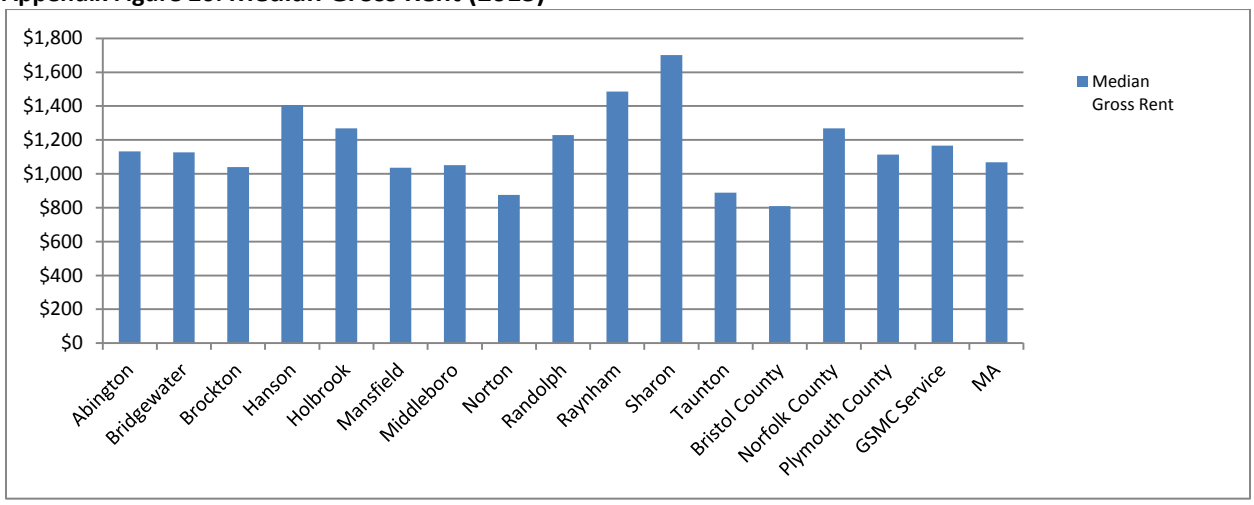
(SOURCE: US Census Bureau, Census 2013)

Appendix Figure 19: Median Housing Value (2011-2013)



(SOURCE: US Census Bureau, Census 2013)

Appendix Figure 20: Median Gross Rent (2013)



(SOURCE: US Census Bureau, Census 2013)

Appendix B. Key Informant Survey

*Community Health Needs Assessment- Key Informant Survey**

Introduction

In an effort to continuously improve community health services in the region, Good Samaritan Medical Center (GSMC) is conducting a survey of your perception of community health. For the purpose of this survey, we define community health services as community-level strategies applied to help communities prevent disease and promote healthy living. The survey is designed to collect community-level information on services currently available, your perceptions on the population served, as well as your opinions on community health concerns that may be present among health services consumers.

Please take a moment to complete this brief survey. The feedback provided will serve to inform next steps as we strive to provide the necessary health and wellness services that will benefit our region. The information provided through this survey will be kept confidential. Only aggregated responses will be noted in the resulting community health needs assessment.

Thank-you

About your Organization

1. In what county (or counties) does your organization primarily provide services?
2. In what city does your organization provide the majority of services?
3. What kind of services does your organization primarily provide?
4. Name of the organization you work for?

Health Services Consumers

5. To the best of your knowledge, from what county (or counties) do the majority of your consumers come from?
6. To the best of your knowledge, what are the general social demographics of consumers served by your organization?
7. In what city or town(s) do the majority of your consumers reside?
8. What do you perceive as the major health concerns of your consumers?

Community Health Perceptions

9. In your opinion, what are the major health concerns in the community where you provide services?
10. Please rank what you believe to be the biggest obstacles to healthy living among your consumers (1 being the greatest obstacle).
11. Please rank what health and wellness services would most benefit your consumers (1 being of greatest benefit).

About Us

12. How knowledgeable are you of the community health services Good Samaritan Medical Center provides in your community?
13. Overall, how satisfied are you with the way Good Samaritan Medical Center is addressing community health in your community?
14. Please provide any suggestions you may have as to how Good Samaritan Medical Center could best address community health issues.

** For a complete copy of aggregated survey responses contact Good Samaritan Medical Center*

Appendix C. Focus Group Questions

*Focus Group Questions**

1. Is there a sense of community where you live?
    a. Why or why not?
2. What is healthy about your community?
3. What kinds of health and human services are easily accessible in the community?
4. What kinds of health and human services do you feel are missing and would be beneficial in the community?
5. In your view, what are the top three areas of health concern within the community?
6. What are some strategies that could address these concerns?
7. What do you think of when you hear the term Community Health Worker?
    a. What impact would a CHW have on the health of the community?
8. What populations would you identify as underserved within the community?
9. What do you feel are the biggest obstacles to health access for your community?
10. Is behavioral health a major issue within your community?
11. Are chronic diseases a major issue in your community?
    a. What is the impact in your community?
12. What services do you perceive as being most needed within the community?
13. In what ways is Good Samaritan Medical Center serving the community well?
14. In what ways could Good Samaritan Medical Center serve the community better?
15. What is the number one thing that the Good Samaritan Medical Center can do to improve the health and quality of life of the community?

** For complete copies of the focus group summaries please contact Good Samaritan Medical Center*

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