SOUTHCOAST
HEALTH SYSTEM

Community Needs Assessment
2013

Prepared By

CENTER FOR POLICY ANALYSIS
UNIVERSITY OF MASSACHUSETTS
DARTMOUTH

UNIVERSITY OF MASSACHUSETTS DARTMOUTH

CENTER FOR POLICY ANALYSIS

The University of Massachusetts Dartmouth Center for Policy Analysis is a multidisciplinary research unit that promotes economic, social, and political development by providing research and technical assistance to client organizations. The Center for Policy Analysis offers custom designed research and technical analysis in the areas of economic development, public management, program evaluation and polling research for government agencies, non-profit organizations, private businesses, and educational institutions. The Center for Policy Analysis strives to erode the walls between research and teaching by training students in the techniques of applied social science and by conducting university and community based educational programs. The Center for Policy Analysis does not pursue a predetermined research agenda, but is a flexible research organization responding on a timely basis to the problems and issues identified by client agencies.

Clyde W. Barrow, Ph.D., Political Science
Director

EXECUTIVE BOARD

David Borges, M.P.A., Public Administration
Associate Director/Senior Research Associate

Colleen Dawicki, M.P.P., Public Policy
Project Manager/Senior Research Associate

Chad Maguire, J.D., Law
Senior Research Associate

Joao Paraskeva, Ph.D., Education
Senior Research Associate

EXECUTIVE STAFF

David Borges, M.P.A., Public Administration
Associate Director/Senior Research Associate

Colleen Dawicki, M.P.P., Public Policy
Project Manager/Senior Research Associate

Robert Golder, UMass Dartmouth MPP Candidate,
Urban Initiative Graduate Research Assistant

Katya Starosina, UMass Dartmouth MPP Candidate,
Graduate Research Assistant

Nancy Trudel
Assistant to the Director

Correspondence and inquiries should be addressed to: Center for Policy Analysis, University of Massachusetts Dartmouth, 285 Old Westport Road, North Dartmouth, Massachusetts 02747-2300 (telephone: 508-990-9660; fax: 508-999-8374).

Copyright © Center for Policy Analysis. All rights reserved.
Cover Design: Lauren Butler.

Website URL: http://www.umassd.edu/cas/centers/cfpa/

The information and analysis in this report does not represent an official statement or view of the University of Massachusetts.

Polling and Program Evaluation Series No.110

About Southcoast Health System

Southcoast Health System, a not-for-profit charitable organization, is a leading provider of healthcare services in Southeastern Massachusetts and East Bay, Rhode Island. The organization includes the three hospitals that compose the Southcoast Hospitals Group — Charlton Memorial Hospital in Fall River, St. Luke's Hospital in New Bedford, and Tobey Hospital in Wareham - as well the Southcoast Visiting Nurse Association, Southcoast Physician Services, and Southcoast Primary Care.

Southcoast Hospitals is also affiliated with the MD Anderson Physicians Network, a quality management and best practices organization that delivers cancer management services through the MD Anderson Cancer Manager program. Southcoast Health System employs over 6,900 people and is the largest employer in Southeastern Massachusetts, directly accounting for nearly 2 out of every 100 jobs in the region.

Contents

Executive Summary ..... **i**
1.0 Overview **1**
1.1 Methods 1
1.2 Study Area Definition 2
2.0 Approach **3**
3.0 Social Determinants of Health **3**
3.1 Definition & Rationale 3
3.2 Geographic Analysis of Need 5
4.0 Demographic and Socioeconomic Analysis **7**
4.1 Demographic Analysis 7
4.11 Population Trends 7
4.12 Sex 9
4.13 Race and Ethnicity 10
4.14 Foreign Born Population 13
4.15 Limited English Proficiency 15
4.16 Age Cohort and Median Age 17
4.2 Socioeconomic Analysis 18
4.21 Educational Attainment 18
4.22 Per Capita Income 21
4.23 Median Household Income 22
4.24 Poverty 23
4.2 Economic Profile of Southcoast 26
4.21 Unemployment 26
4.22 Wages 27
5.0 HEALTH ASSESSMENT **28**
5.1 Clinical Care 28
5.1.1 Access to Care 28
5.1.2 Health Screening 29
5.1.3 Vaccination Rates 30
5.1.4 Access to Dental Care 30
5.2 Physical environment 31
5.2.1 Healthy Food 31
5.2.2 Access to Physical Fitness Amenities 32
5.2.3 Air Quality 32
5.2.4 Environmental Contamination 33
5.2.5 Crime 34
5.3 Health Behavior 35
5.3.1 Healthy Eating 35
5.3.2 Active Living 35
5.3.3 Healthy Weight 35
5.3.4 Smoking 36
5.3.5 Injury Prevention 37

5.3.6 Alcohol Use 37
5.3.7 Drug Use 37
5.4 Health Outcomes 38
5.4.1 Cardiovascular Health 38
5.4.2 Diabetes 41
5.4.3 Respiratory Health 41
5.4.4 Cancer 42
5.4.5 Mortality 43
5.5 Children's Health 45
5.5.1 Fetal and Infant Health 45
5.5.2 Lead Exposure 46
5.5.3 Abuse and Neglect 46
5.5.4 Hospitalizations 47
5.5.5 Substance Abuse 47
5.5.6 Healthy Weight 47
5.5.7 Mortality 47
5.6 Health Disparities 49
5.6.1 Racial and Ethnic Health Disparities 49
5.6.2 Income-Based Disparities 52
5.6.3 Education-Based Disparities 53
Sources 54

EXECUTIVE SUMMARY

Southcoast Health System, a not-for-profit charitable organization, is a leading provider of healthcare services in Southeastern Massachusetts and East Bay, Rhode Island. The organization includes the three hospitals that compose the Southcoast Hospitals Group — Charlton Memorial Hospital in Fall River, St. Luke's Hospital in New Bedford, and Tobey Hospital in Wareham - as well the Southcoast Visiting Nurse Association, Southcoast Physician Services, and Southcoast Primary Care. Southcoast Hospitals is also affiliated with the MD Anderson Physicians Network, a quality management and best practices organization that delivers cancer management services through the MD Anderson Cancer Manager program.

As a community-based health delivery system, Southcoast Health System continually strives to identify the priority health needs of the community and to ensure that its services are aligned with these needs. The Community Needs Assessment achieves this goal by documenting the major demographic, socioeconomic, and health trends among Southcoast residents and by engaging the community to develop information-driven priorities and strategies that can be implemented to improve the overall health of Southcoast residents. Specifically, the Community Needs Assessment includes three primary activities:

1. **Demographic and Socioeconomic Analysis:** Understanding the community by examining the region's people in terms of population, race, education, income, poverty, wages, and employment.

2. **Health Assessment:** Identifying major health issues and needs by analyzing a variety of health indicators, with a focus on health outcomes and disparities.

3. **Key Informant Interviews and Focus Groups:** Engaging stakeholders to provide qualitative analysis that enriches the primary data.

Overall, Fall River and New Bedford continue to lag the region in most socioeconomic metrics, including lower levels of educational attainment, higher poverty levels, and higher unemployment, although many of the region's towns also struggle with these issues, particularly in comparison to state averages. Residents also trail-their counterparts statewide on many health metrics, particularly in terms of health outcomes.

Following is a summary of the report's major findings.

Demographic and Socioeconomic Analysis

The region's total population has changed little over the past 10 years and is likely to grow slowly over the next decade, although the proportion of residents age 65 years and older continues to increase modestly. The population is less diverse in the Southcoast than it is statewide; 79.5% of Southcoast residents are white non-Hispanic, compared to 70.8% of residents across the state.

Perhaps the most significant demographic trend in the region is its changing racial makeup; from 2000 to 2010 the minority population increased by 5.6 percentage points region-wide, 8.2 percentage points in Fall River, and 11.0 percentage points in New Bedford. Hispanics account for a significant portion of this change; the number of Hispanics increased by 7.3 percentage points region-wide from 2000 to 2010, and by 4.1 percentage points in Fall River and 6.5 percentage points in New Bedford. Both cities also have pockets of undocumented immigrants, including South and Central Americans in New Bedford, although estimates vary widely as to the size of these groups. Portuguese speakers are being supplanted by Spanish speakers in the region's cities, although some

Portuguese-only speakers remain, particularly in Fall River and New Bedford but also in some of the region's suburbs such as Acushnet, Dartmouth, Fairhaven, and Westport.

The Southcoast has one of the lowest levels of educational attainment of any region in Massachusetts. Fall River and New Bedford have particularly low rates of educational attainment, although many of the region's suburban towns also have average educational attainment levels that are below the state average. The region and its cities of Fall River and New Bedford have made gains since 1980 in terms of the percentage of residents who have earned a high school diploma but still lag the state average considerably in terms of the percentage of residents with 4-year college degrees or above.

Per capita and median household income levels in the region are below state averages and Fall River and New Bedford have some of the highest poverty rates in the state and account for the majority of the region's poor in absolute numbers. Poverty and income are reflected in wages; there exists a significant wage gap between the Southcoast and the state and this gap continues to widen. The region's changing racial makeup and continued socioeconomic struggles place unique stresses on healthcare delivery, particularly in addressing health disparities based on race, income, and education.

Health Assessment: Major Findings

The following results represent the most significant findings based on the five categories included in the health assessment analysis: clinical care, physical environment, health behavior, health outcomes, and children's health, with a focus on health disparities.

Clinical Care

Clinical care data covers access to care, participation in health screenings, vaccination rates, and access to dental care.

Access

Generally speaking, Southcoast residents have access to care that is comparable to residents of Massachusetts as a whole:

- 87.1% of Greater Fall River and 86.6% of Greater New Bedford residents reported having a personal health care provider, compared to 87.8% of residents statewide. However, residents of Fall River (84.5%) and New Bedford (81.7%) who have a personal health care provider is below the state level.
- 86.2% of adults in Fall River, 84.7% in New Bedford, 89.1% in Greater Fall River, and 83.2% in Greater New Bedford have had a checkup in the past year, which compares to 78.8% statewide.

Cancer Screening

Screening for cancer among Southcoast residents is lower than the statewide percentage:

- 54.6% of Massachusetts adults have undergone a colonoscopy, which compares to 46.9% in Fall River and 43.7% in New Bedford. Screening for breast cancer and cervical cancer among women is also comparatively low in the region.

Clinical Care Health Disparities

Clinical care indicators that reflect health disparities based on race include cost as a barrier to care and participation in cancer screenings (see table below).

- In the Southcoast, the Hispanic population is particularly underserved in terms of clinical care; more cannot see a doctor due to cost and fewer have participated in cancer screenings when compared to non-minorities and even the Hispanic population statewide.

Clinical Care

	Cannot See a Doctor Due to Cost			Colorectal Cancer Screening			Mammogram Within Last Two Years			Pap Smear Within Last Three Years		
	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
Greater Fall River	7.4%	NA	21.3%	65.5%	NA	60.7%	87.1%	NA	79.9%	81.8%	NA	70.2%
Greater New Bedford	8.0%	NA	19.4%	66.4%	68.5%	57.8%	87.8%	84.7%	69.9%	80.9%	84.9%	79.0%
Massachusetts	5.4%	10.9%	16.7%	74.6%	71.2%	63.5%	84.3%	87.1%	84.4%	84.1%	87.0%	83.9%

Source: BRFSS, via MassCHIP Instant Topics (2010-2013)

In terms of clinical care disparities based on income, perhaps unsurprisingly access to and utilization of clinical care is more challenging to the Southcoast's lower income residents as compared to those earning more than $50,000 per year. For example, across the board a greater percentage of those with higher incomes have participated in health screenings, which mirrors statewide breakdowns between income groups. But in some cases, even fewer of the Southcoast's lower income residents engage in screenings than their lower income counterparts across Massachusetts, including breast exams, pap smears, and colonoscopies.

Since education levels are correlated with income levels, it follows that among those with lower levels of educational attainment there is less access to clinical care. Among those without a college degree, many more cannot see a doctor due to cost. Where participation in screening is concerned, some education-specific disparities include lower rates of clinical breast exams (particularly in Greater Fall River, where just 75% of this subgroup reports having had this exam), pap smears, and colonoscopies among those without a college degree.

Physical Environment

Not only is the health status of Southcoast residents influenced by availability of and access to clinical care, it is also affected by the physical conditions of the region: access to amenities that facilitate healthy eating and active living, air quality, and sources of environmental contamination. The analysis shows that Southcoast residents face environmental factors that may be a detriment to their health. For example:

- Residents of both Bristol and Plymouth counties have access to fewer grocery stores and supermarkets per capita as compared to Massachusetts as a whole (a combined rate of 17.5 per 100,000 residents, versus 19.8 statewide).
- Significant portions of Fall River and New Bedford are classified as food deserts where most residents live over 0.5 miles away from a grocery store or supermarket, while several neighborhoods of Acushnet, Fairhaven and Wareham have no access to such amenities within one mile.
- While fresh, healthy, affordable food can be hard for the region's residents to obtain, fast food options are abundant. In Bristol County, there are 65.6 fast food establishments per 100,000 residents and 60.0 per 100,000 in Plymouth County. While these rates are lower than that of the

state (71.9), there are nevertheless far more fast food establishments than there are grocery stores and supermarkets.

- Southcoast residents also have less access to recreation and fitness facilities than Massachusetts residents as a whole. In Bristol County there are 13.7 such facilities per 100,000 residents versus 15.9 statewide. Plymouth County residents have comparatively better access with 18.0 facilities for every 100,000 residents.
- The Southcoast is home to a number of sites that contain and/or generate contaminants that can negatively affect residents' health. Fall River is home to 427 contaminated sites, 71 of which present sufficient hazards as to limit activity on and use of these parcels; in New Bedford, 78 out of 583 brownfield sites are so limited.

Health Behavior

The health behavior analysis includes behaviors related to healthy eating, active living, smoking, injury prevention, and drug and alcohol use. Results include:

- Across the region, fewer than half of all adults reported engaging in physical activity for exercise regularly: just 45.7% in Greater Fall River and 49.5% in Greater New Bedford, compared to 53.0% in Massachusetts.
- Over three-quarters of Southcoast adults do not consume the recommended five servings daily of fruit and vegetables. In Greater New Bedford, just 13.8% of adults consume the recommended servings, compared to 19.9% of Greater Fall River residents and 18.8% of residents statewide.
- Since 2000, the population of Southcoast adults who are overweight or obese has increased dramatically—by as much as 25.0% in New Bedford alone. As of 2011, 65.7% of Greater Fall River adults and 66.7% of Greater New Bedford adults were overweight (defined as having a Body Mass Index of more than 25). Approximately half of this group weighed enough to qualify as obese (BMI>30).
- Smoking is much more prevalent among Southcoast adults as compared to incidence of this behavior statewide. More than a quarter of adults in the region are current smokers, compared to less than twenty percent statewide. Smoking is most prevalent in New Bedford, where 31.8% of adults are current smokers.

Health Behavior Disparities

In the areas of smoking, maintaining a healthy weight, and being diagnosed with high blood pressure or high cholesterol, the region's minority and low income groups are disproportionately affected even when compared to the same population groups statewide:

  - Approximately one-quarter of Southcoast Hispanics currently smoke, compared to roughly 20.0% of Whites and just 14.8% of Hispanics Massachusetts-wide. Particularly striking is the fact that 42.3% of Blacks in Greater New Bedford currently smoke, a rate almost double that of Whites and more than double the rate among Blacks in Massachusetts (17.5%) (see following table).
  - While all racial and ethnic groups in the Southcoast struggle with the ability to maintain a healthy weight, the region's Black and Hispanic populations struggle more—even when compared to the same racial and ethnic groups statewide. Obesity affects as many as 42.5% of Blacks and 33.5%

of Hispanics in Greater New Bedford, rates that exceed those of Greater Fall River (30.9% and 32.3%, respectively) and Massachusetts (30.6% and 29.1%) (see table below).

Health Behavior

	Current Smoker			Overweight			Obese		
	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
Greater Fall River	20.3%	20.0%	25.8%	60.3%	72.8%	70.4%	23.5%	30.9%	32.3%
Greater New Bedford	21.8%	42.3%	25.5%	62.0%	73.1%	67.8%	27.7%	42.5%	33.5%
Massachusetts	15.1%	17.5%	14.8%	57.9%	67.1%	65.0%	21.7%	30.6%	29.1%

Source: BRFSS, via MassCHIP Instant Topics (2010-2013)

Health Outcomes

Almost one-fifth of Southcoast residents report having fair or poor health: 27.5% in Fall River, 24.9% in New Bedford, 18.4% in Greater Fall River, and 21.8% in Greater New Bedford, compared to just 14.0% statewide. Health outcomes analyzed for this report relate to cardiovascular and respiratory health, physical and mental health, diabetes, and cancer incidence. Results include:

- The prevalence of heart disease in the Southcoast is higher than it is statewide. Hospitalization rates for heart disease are also higher than they are statewide, although these rates have fallen since 2000.
- Strokes are slightly more prevalent in the region than statewide. The percentage of adults who report they had a stroke increased from 2006 to 2010.
- The prevalence of asthma in the Southcoast is higher than it is statewide and hospitalization rates for asthma have increased since 2000.
- The prevalence of diabetes has grown in both the Southcoast and Massachusetts.
- The region's cancer incidence rate increased from 1990 to 2008, which may partly be a result of better detection.
- Southcoast adults reflect a slightly above-average rate of lifetime high blood cholesterol diagnoses. Hypertension is also more prevalent in this region than statewide and has increased across the region since 2001.

Health Outcomes Disparities

Heart-related conditions affect racial and ethnic subgroups somewhat differently:

- Hypertension was actually diagnosed among fewer Hispanics than Whites in the region, and in Greater Fall River, the diagnosis rate is on par with that of Hispanics in Massachusetts. On the other hand, the region's Hispanic population is particularly disproportionately affected by high cholesterol (see following below).

Heart-Related Conditions

	Hypertension			High Cholesterol		
	White	Black	Hispanic	White	Black	Hispanic
Greater Fall River	29.9%	33.0%	22.0%	39.0%	34.2%	49.8%
Greater New Bedford	30.7%	NA	24.8%	39.3%	NA	47.1%
Massachusetts	26.6%	30.2%	22.1%	36.3%	31.0%	37.0%

Source: BRFSS, via MassCHIP Instant Topics (2010-2013)

- Approximately four times as many Southcoast adults who earn less than $50,000 per year report having fair or poor health as compared to those who earn above that threshold (25.0% in Greater Fall River compared to 6.2% of higher earners; 22.5% in Greater New Bedford compared to 6.4% of those earning more than $50K).
- A significant difference in general health exists between those with and without a college degree; while fewer than nine percent of those with a degree report having fair or poor health, more than one-quarter of those with a high school degree or less report the same (27.1% in Greater Fall River and 25.0% in Greater New Bedford).

Children's Health

Not only does children's health predict and affect adult health and outcomes, but it also affects and predicts educational performance and outcomes, which in turn shapes the degree to which children can become healthy, productive adults.

Fetal and Infant Health

Fetal and infant health indicators relate to care, maternal behavior, and outcomes. In both Greater Fall River and Greater New Bedford, levels of care and outcomes are generally suboptimal compared to Massachusetts. The table below illustrates disparities in the region across racial and ethnic groups where perinatal health is concerned. When compared to their non-minority counterparts, infants in the Southcoast are disproportionately affected by early and adequate prenatal care, low birth weights, and births to teenage mothers.

- While more than four out of five White Southcoast infants received prenatal care in the first trimester, only 66.7% of Black infants did.
- Low birth weight in the region affects 7.7% of White infants in the Southcoast and 7.2% statewide, but low birth weight among Black and Hispanic infants is more prevalent. Low birth weight affected 13.3% of Black infants in Greater Fall River, 11.2% in Greater New Bedford; among Hispanic infants, the proportions were 9.5% and 13.6%, respectively.
- Teen births, an indicator of health outcomes for infants and adolescents in the region, affect racial and ethnic minorities in the Southcoast more disproportionately than statewide.

Fetal and Infant Health Disparities

	Began Prenatal Care During 1st Trimester			Adequate Prenatal Care			Low Birthweight			Tean Births (<20)		
	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
Greater Fall River	83.0%	66.7%	76.3%	88.0%	76.4%	84.3%	7.7%	13.3%	9.5%	8.2%	9.3%	19.0%
Greater New Bedford	81.5%	66.5%	63.5%	81.5%	73.5%	71.9%	7.5%	11.2%	13.6%	8.5%	13.7%	16.9%
Massachusetts	85.9%	72.3%	75.3%	86.8%	76.0%	79.2%	7.2%	10.8%	8.6%	4.0%	8.7%	15.5%

Source: MassCHIP Instant Topics (Kids Count and Perinatal Reports), 2009 data

1.0 OVERVIEW

Southcoast Health System conducts a Community Needs Assessment every three years to identify the most important health related issues in the Southcoast region. The Community Needs Assessment documents the major demographic, socioeconomic, and health trends among Southcoast residents, with a focus on clinical care, physical environment, health behavior, health outcomes, children's health, and health disparities. The analysis is enhanced by qualitative data gathered through key informant interviews and focus groups. The goal of the assessment is to inform data-driven objectives and strategies that can be used to improve the overall health of Southcoast residents.

1.1 METHODS

This report targets obstacles to healthy living and access to healthcare among the region's most vulnerable populations by examining health outcomes in a socioeconomic context, specifically race, income, and education since these are the most commonly used markers of socioeconomic status and frequently used predictors of health status (Alder 1994, Braveman 2005, Egerter 2008). Specifically, this report highlights vulnerable populations at the census tract level; areas with high levels of poverty (greater than 30% below the federal poverty level) and low levels of educational attainment (greater than 25% of residents without a high school diploma).[1] The report also highlights health disparities among different racial categories by community.

The Community Needs Assessment includes three primary activities:

1. **Demographic and Socioeconomic Analysis:** Understanding the community by examining the region's people in terms of population, race, education, income, poverty, wages, and employment.

2. **Health Assessment:** Identifying major health issues and needs by analyzing a variety of health indicators, with a focus on health outcomes and disparities.

3. **Key Informant Interviews and Focus Groups:** Engaging stakeholders to provide qualitative analysis that enriches the primary data.

These three tasks will establish a foundation for further analysis and activity that will be conducted over the next six months, including asset mapping that emphasizes the region's strengths and opportunities and additional community engagement efforts.

[1] A similar methodology is employed by CommunityCommons.org, a project of Advancing the Movement. See http://www.advancingthemovement.org and www.communitycommons.org.

1.2 STUDY AREA DEFINITION

The geographic definition of the Southcoast region for this report is defined as Community Health Network Areas 25 and 26 (see Figure 1). A Community Health Network area (CHNA) is a local coalition of public, non-profit, and private sector groups that work together to build healthier communities in Massachusetts through community-based prevention planning and health promotion. To enhance readability of this report, CHNA 25 is typically referred to as "Greater Fall River," while CHNA 26 is referred to as "Greater New Bedford."

CHNA 25: Partners for a Healthier Community

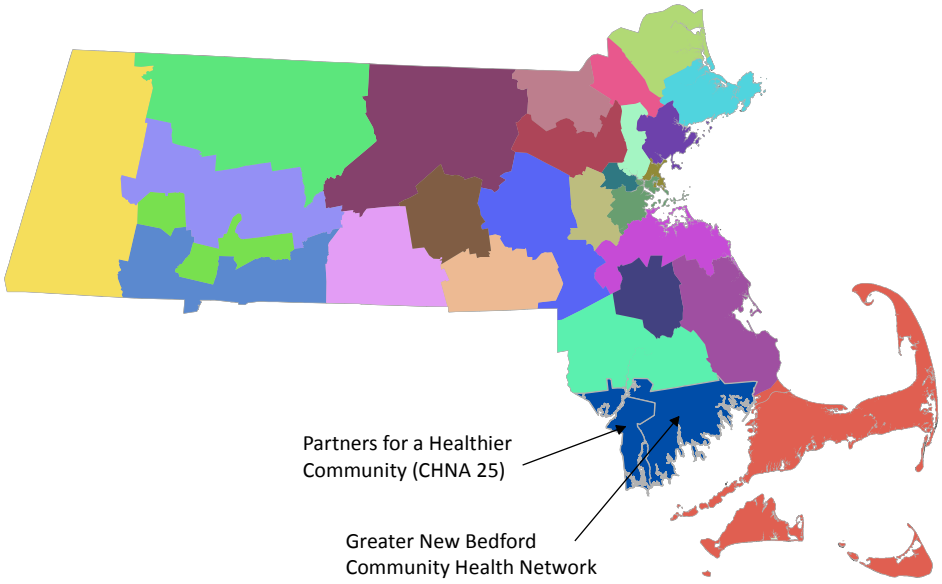
Communities: Fall River, Somerset, Swansea, Westport

CHNA 26: Greater New Bedford Community Health Network

Communities: Acushnet, Dartmouth, Fairhaven, Freetown, Marion, Mattapoisett, New Bedford, Rochester, Wareham

Figure 1

Study Area
CHNA 25 & CHNA 26



2.0 Approach

The Community Needs Assessment presents data on a variety of health indicators. However, the analysis goes a step further by presenting this data in the context of social determinants of health by highlighting disparities in terms of income, education, and race, factors which in turn affect health outcomes. The combination of highlighting disparities and identifying census tracts with vulnerable populations will allow Southcoast Health system to target policies and programs in the areas where they are needed most. The Assessment also provides context and validation to the health data through key informant interviews and focus groups.

Asset mapping that identifies the region's health-focused organizations will be conducted over the coming six months to provide information about the strengths and resources of the community and to identify organizations and services that are already doing work to address various needs. Asset mapping will be a valuable tool for Southcoast Health System to identify gaps and opportunities in care, while also providing the region's health care providers and health care-users with a comprehensive and dynamic overview of the region's health landscape. Center for Policy Analysis (CFPA) plans to involve as many providers as possible in developing the database so that the project is inclusive and comprehensive.

Lastly, CFPA and Southcoast Health System will engage the community in various settings throughout the project to report on the findings of the Community Needs Assessment and to further refine the analysis.

3.0 Social Determinants of Health

The link between health outcomes and socioeconomic background is well documented. A person's race, income, educational attainment, and other social determinants are among the best predictors of health status (Center for Disease Control 2012). On average, individuals who are poor, less educated, and a racial or ethnic minority have lower levels of health in comparison to their counterparts with higher incomes, higher levels of education, or who are white. Individuals on the lower rungs of the socioeconomic spectrum are also less likely to have health insurance. These factors place unique stresses on health systems, particularly those operating in urban areas (Fox 2004).

As hospitals have learned, the most effective strategy for alleviating these stresses and reducing inpatient demand is to proactively address the social determinants of health to prevent future demand. This includes identifying vulnerable populations and understanding their environments, including social and economic factors, the physical environment, and individual behavior. Many health systems have taken the lead in improving the health and well-being of residents by engaging community partners that understand these populations and environments as well as the community assets that promote the health and well-being of residents (Anderson 2004).

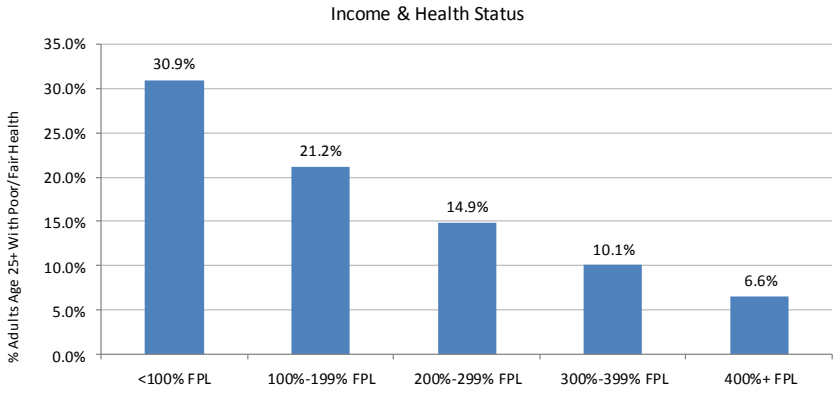
3.1 Definition & Rationale

The Centers for Disease Control and Prevention defines social determinants as the "complex, integrated, and overlapping social structures and economic systems that are responsible for most health inequities." These social structures and economic systems include the social environment, physical environment, health services, and structural and societal factors.[2]

[2] See http://www.cdc.gov/socialdeterminants/Definitions.html.

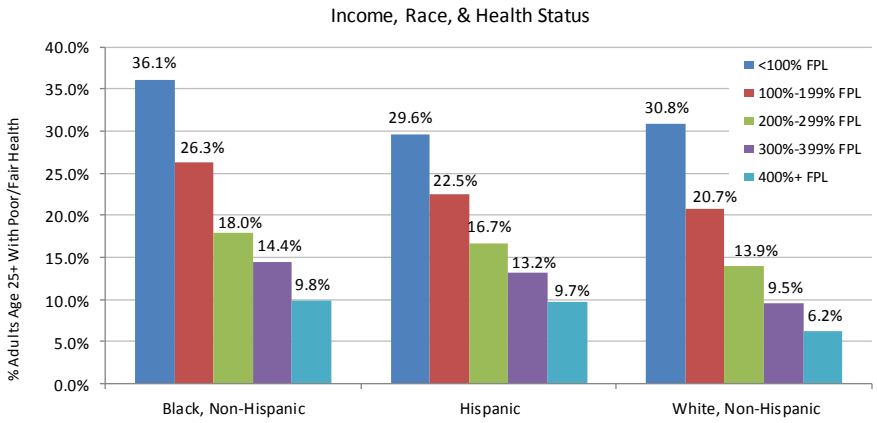
The Robert Wood Johnson Foundation Commission to Build a Healthier America notes that health status improves as income rises (see Figure 2) and this pattern holds true for African Americans, Hispanics, and Whites (see Figure 3). While adults who are poor are most likely to report being in poor or fair health, the report notes that "even adults with middle class incomes are less healthy than those with higher incomes" (Robert Wood Johnson Foundation 2009). This pattern is referred to by many as the socioeconomic gradient in health.

Figure 2



Note: FPL = Federal Poverty Level
Source: Robert Wood Johnson Foundation' Commission to Build a Healthier America,

Figure 3



Note: FPL = Federal Poverty Level
Source: Robert Wood Johnson Foundation' Commission to Build a Healthier America,
National Health Interview Survey data, 2001-2005 (see www.commissionhealth.org).

Behaviors are often cited as a primary factor in explaining the socioeconomic gradient. For example, the argument goes, poor people are more likely to engage in risky behaviors such as binge drinking and smoking, have poorer diets, and exercise less (North Carolina Institute of Medicine 2013). However, others highlight that quality and access to care as equally important factors that affect health; racial and ethnic minorities, the poor, and less educated often face more barriers to care and receive poorer quality of care when they can access it. The National Healthcare Disparities Report from the Agency for Healthcare Research and Methodology (mandated annually by Congress) concludes that while quality of care is improving, issues regarding access to care are actually increasing. The report points out that "These disparities may be due to differences in access to care, provider biases, poor provider-patient communication, or poor health literacy" (Agency for Healthcare Research and Quality 2012). In addition, a growing body of research indicates that living and working conditions, including housing quality,

exposure to pollution, worksite safety, access to healthy and affordable foods, and proximity to safe places to exercise have a significant effect on health than risky behaviors (National Research Council of the National Academies 2012).

3.2 GEOGRAPHIC ANALYSIS OF NEED

Figure 4 highlights the vulnerable populations footprint in the Southcoast, that is, census tracts that meet established thresholds for poverty and educational attainment. The region's vulnerable populations reside in the cities of Fall River and New Bedford – there are no vulnerable populations outside these areas as defined for this report. Figure 5 provides a closer look at the vulnerable population footprint in Fall River and New Bedford.

Figure 4

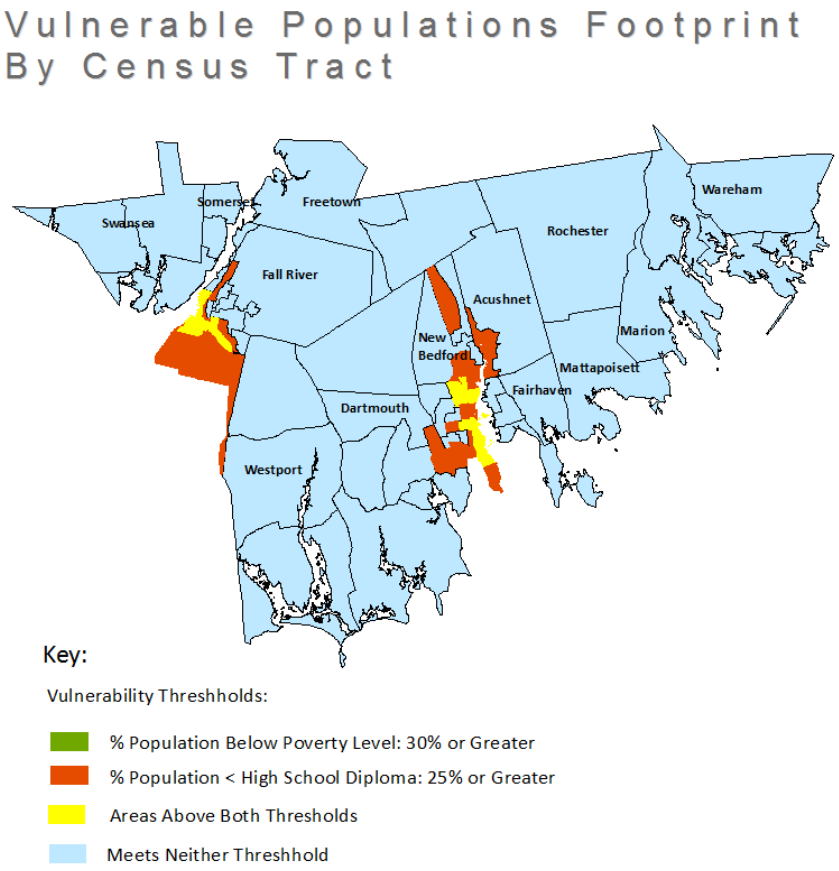
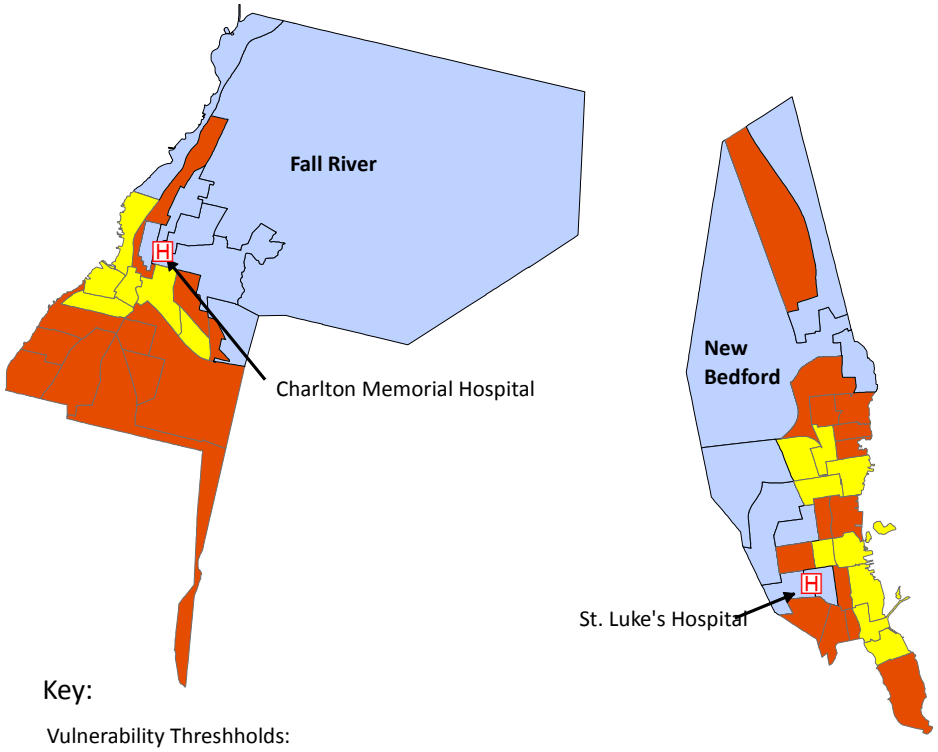


Figure 5

Vulnerable Populations Footprint

Fall River & New Bedford



Source: U.S. Census American Community Survey, 2007-2011 Estimates

4.0 DEMOGRAPHIC AND SOCIOECONOMIC ANALYSIS

The demographic and socioeconomic analysis presents a snapshot of the region's people in terms of population, race, education, income, poverty, wages, and employment. Where applicable, data is presented by community, by CHNA 25 (Partners for a Healthier Community) and CHNA 26 (Greater New Bedford Community Health Network), and the state. The analysis also includes a focus on demographic and socioeconomic trends in Fall River, New Bedford, and Wareham - the locations of Southcoast Health System's three hospitals and the communities facing the most challenging socioeconomic issues in the region.

4.1 DEMOGRAPHIC ANALYSIS

4.11 Population Trends

The Southcoast has a population of 340,312, with Fall River and New Bedford, the region's two cities, accounting for 54.1% of the total. While the Southcoast's population grew in each of the previous four decades, its rate of growth is slowing; between 2000 and 2010, the region's population increased by only 1.4%, while it increased by 3.1% statewide (see Table 1). Population is likely to continue to grow slowly in the region over the next decade, particularly due to poor economic conditions in the region's cities and relatively costly housing in its suburbs.

Table 1

Historical Population of the SouthCoast

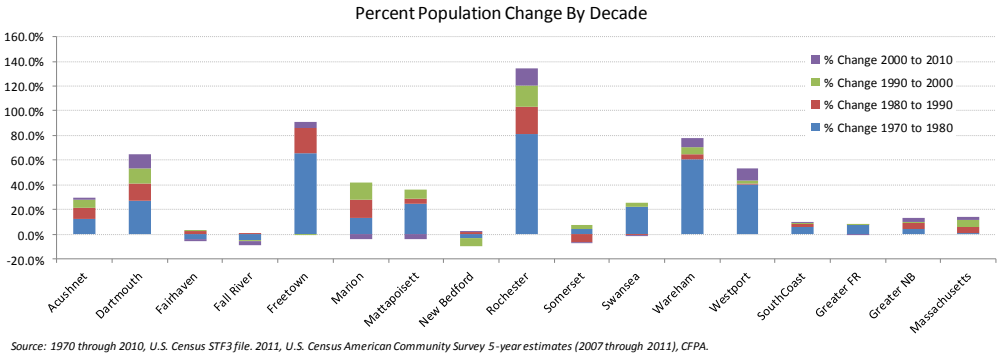
Municipality	1970	1980	1990	2000	2010	2011	% Change 1970 to 2010	% Change 2000 to 2010
Acushnet	7,767	8,704	9,554	10,161	10,303	10,299	32.7%	1.4%
Dartmouth	18,800	23,966	27,244	30,666	34,032	33,759	81.0%	11.0%
Fairhaven	16,332	15,759	16,132	16,159	15,873	15,915	-2.8%	-1.8%
Fall River	96,898	92,574	92,703	91,938	88,857	89,220	-8.3%	-3.4%
Freetown	4,270	7,058	8,522	8,472	8,870	8,828	107.7%	4.7%
Marion	3,466	3,932	4,496	5,123	4,907	4,926	41.6%	-4.2%
Mattapoisett	4,500	5,597	5,850	6,268	6,045	6,073	34.3%	-3.6%
New Bedford	101,777	98,478	99,922	93,768	95,072	95,006	-6.6%	1.4%
Rochester	1,770	3,205	3,921	4,581	5,232	5,159	195.6%	14.2%
Somerset	18,088	18,813	17,655	18,234	18,165	18,172	0.4%	-0.4%
Swansea	12,640	15,461	15,411	15,901	15,865	15,886	25.5%	-0.2%
Wareham	11,492	18,457	19,232	20,335	21,822	21,673	89.9%	7.3%
Westport	9,791	13,763	13,852	14,183	15,532	15,396	58.6%	9.5%
SouthCoast	**307,591**	**325,767**	**334,494**	**335,789**	**340,575**	**340,312**	**10.7%**	**1.4%**
Greater Fall River	**137,417**	**140,611**	**139,621**	**140,256**	**138,419**	**138,674**	**0.7%**	**-1.3%**
Greater New Bedford	**170,174**	**185,156**	**194,873**	**195,533**	**202,156**	**201,638**	**18.8%**	**3.4%**
Massachusetts	**5,689,170**	**5,737,093**	**6,016,425**	**6,349,097**	**6,547,629**	**6,512,227**	**15.1%**	**3.1%**

Source: 1970 through 2010, U.S. Census STF3 file. 2011, U.S. Census American Community Survey 5-year estimates (2007 through 2011), CFPA.
Note: 2011 data not included in percent change because data is a 5-year estimate (2007-2011).

Population Growth by Decade

Rochester and Freetown experienced the highest population growth on a percentage basis since 1970 (see Figure 6).

Figure 6

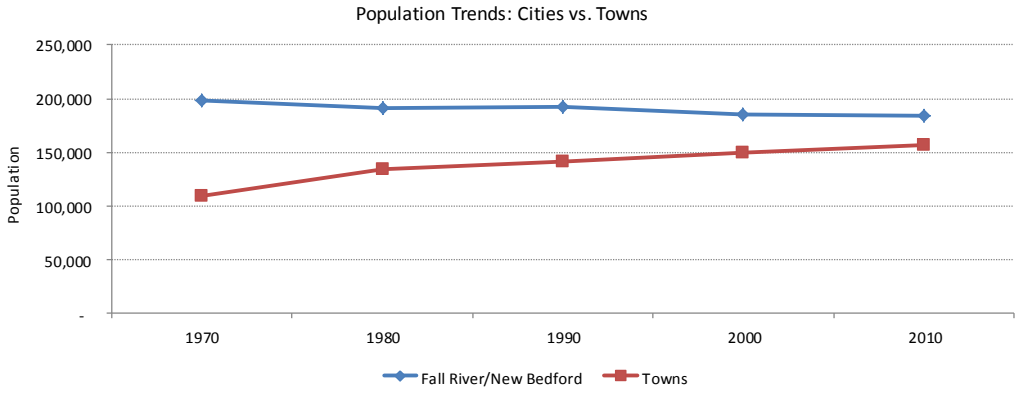


Source: 1970 through 2010, U.S. Census STF3 file. 2011, U.S. Census American Community Survey 5-year estimates (2007 through 2011), CFPA.

Population Growth and Development

As the previous two charts demonstrate, population growth and residential development have been uneven within the region; the total population in the cities of Fall River and New Bedford declined by 7.3% (-14,746 residents) between 1970 and 2010, while the Southcoast's suburban towns experienced population growth of 43.3% during the same period (+47,730 residents) (see Figure 7). The area's uneven growth pattern - population declines in the cities and population increases in its suburbs - is putting pressure on the physical infrastructure, school systems, and administrative capacities of many local governments.

Figure 7

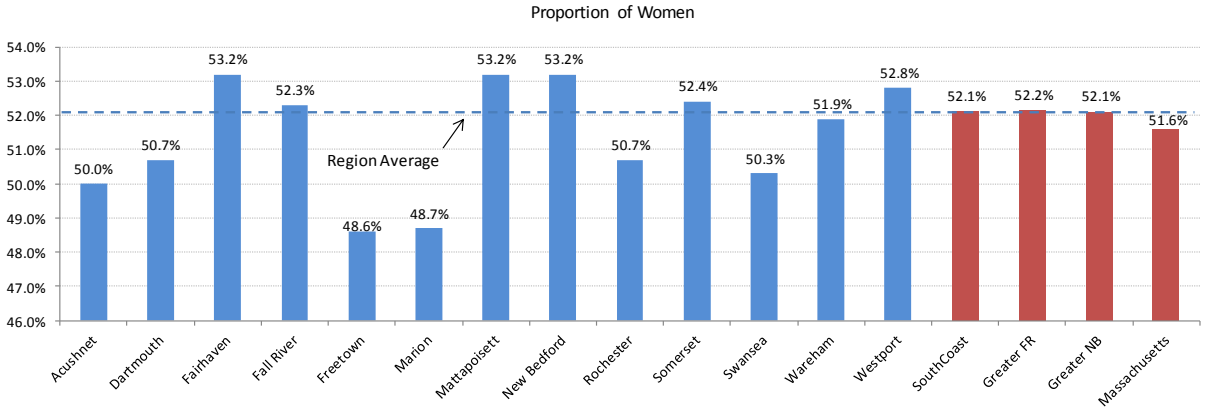


4.12 Sex

Women have unique health needs and utilize more medical services than men due in part to longer life expectancies, the need for reproductive care, and a greater likelihood of chronic disease and disability. Women are also more likely to have bear higher annual health care expenses and more likely to experience affordability challenges (Connors Center for Women's Health and Gender Biology 2013).

Over fifty-two percent (52.1%) of the region's population is female, which compares to 51.6% of the population statewide (see Figure 8). The proportion of women for selected areas of the region has remained relatively stable since 2000, with none of these areas experiencing a percentage point change of more than one percent (see Figure 8).

Figure 8

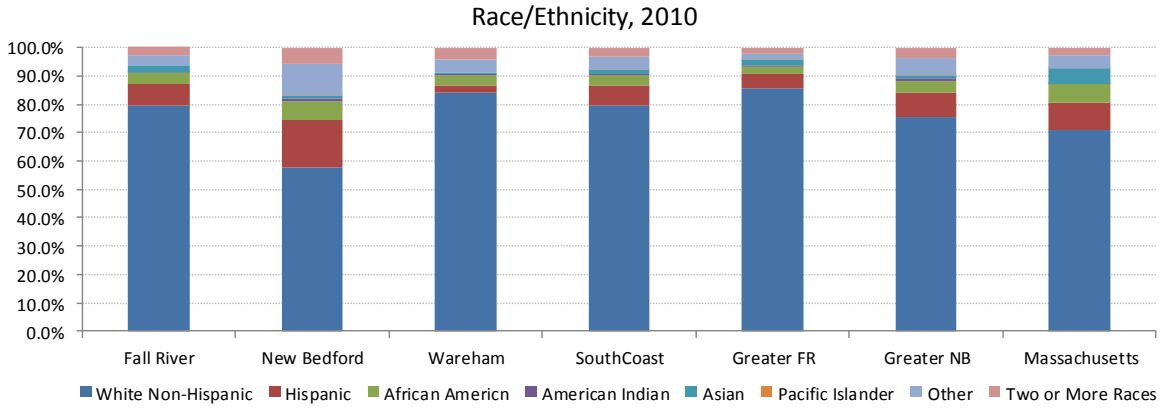


Source: 1970 through 2010, U.S. Census STF3 file. 2011, U.S. Census American Community Survey 5-year estimates (2007 through 2011), CFPA.

4.13 Race and Ethnicity

The population is less diverse in the Southcoast than it is statewide; 79.5% of Southcoast residents are white non-Hispanic, compared to 70.8% of residents across the state (see Figure 9). Additionally, 7.3% of Southcoast residents are Hispanic, 3.5% are African American, 0.5% are American Indian, 1.4% are Asian, 0.03% are Pacific Islander, 4.6% are some other race, and 3.1% are two or more races.

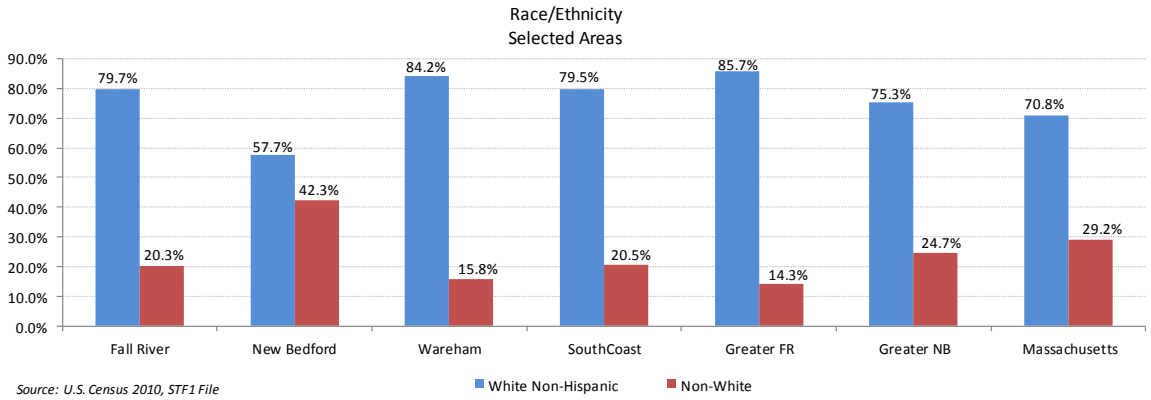
Figure 9



Source: U.S. Census 2010, STF1 File

New Bedford is the most racially diverse of the region's communities, with 42.3% of its population being non-white. This compares to 20.3% of residents in Fall River and 15.8% of residents in Wareham (see Figure 10).

Figure 10



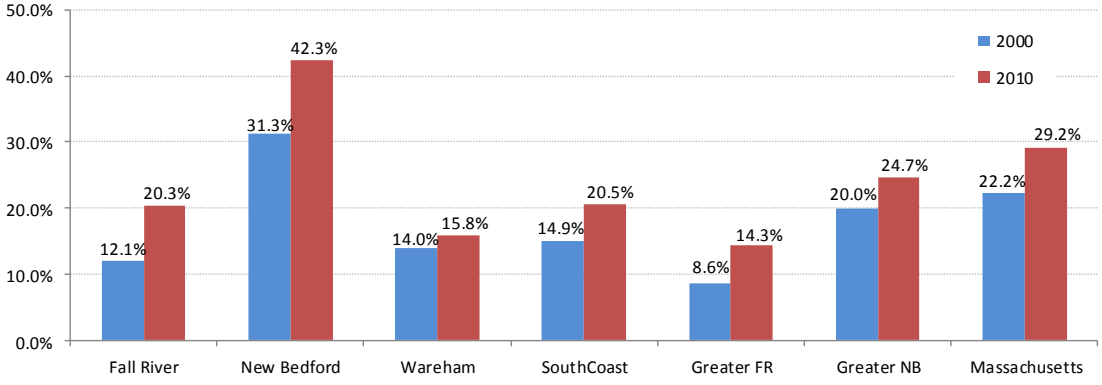
Source: U.S. Census 2010, STF1 File

Shifting Racial and Ethnic Landscape

The racial makeup in the Southcoast is changing; from 2000 to 2010 the minority population increased by 5.6 percentage points region-wide, 8.2 percentage points in Fall River, and 11.0 percentage points in New Bedford (see Figure 11). Hispanics account for a significant portion of this change; the number of Hispanics increased by 7.3 percentage points region-wide from 2000 to 2010, and by 4.1 percentage points in Fall River and 6.5 percentage points in New Bedford. Both cities also have pockets of undocumented immigrants, including South and Central Americans in New Bedford, although estimates vary widely as to the size of these groups.

Figure 11

Change in Minority Population
Selected Areas

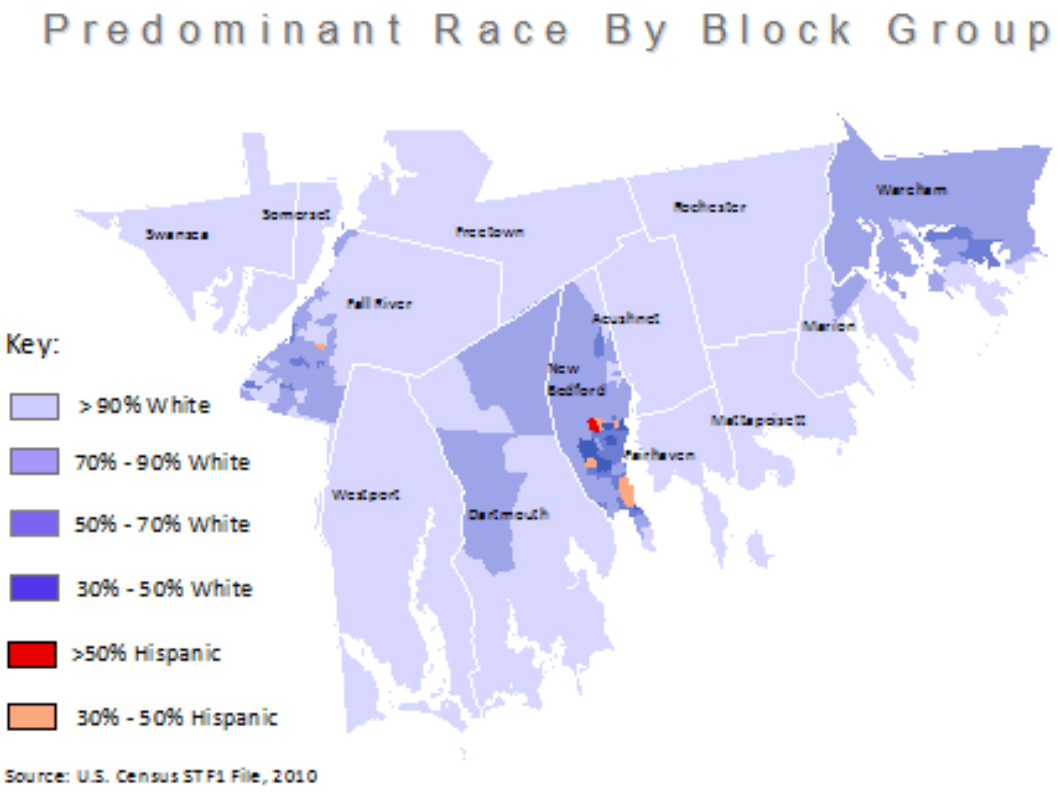


Source: U.S. Census 2000 & 2010, STF1 File

Both Fall River and New Bedford were once home to large numbers of Portuguese, many who emigrated from the Azores during the late 1960s and early 1970s. While the Portuguese still comprise a significant portion of each city's population, the change in racial and ethnic minorities over the past three decades, particularly the number of Hispanics, has required the region's health systems to refocus on a different cultural population who have specific needs and cultural attitudes toward health.

Figure 12 shows the predominant race by block group for the Southcoast. The largest racial minority populations are found in the region's cities, particularly in New Bedford, which contains block groups with significant portions of Hispanics (see Figure 13 and Figure 14).[3]

Figure 12



[3] Wareham not broken out because the town does not contain any block groups with a plurality of racial minorities.

Figure 13

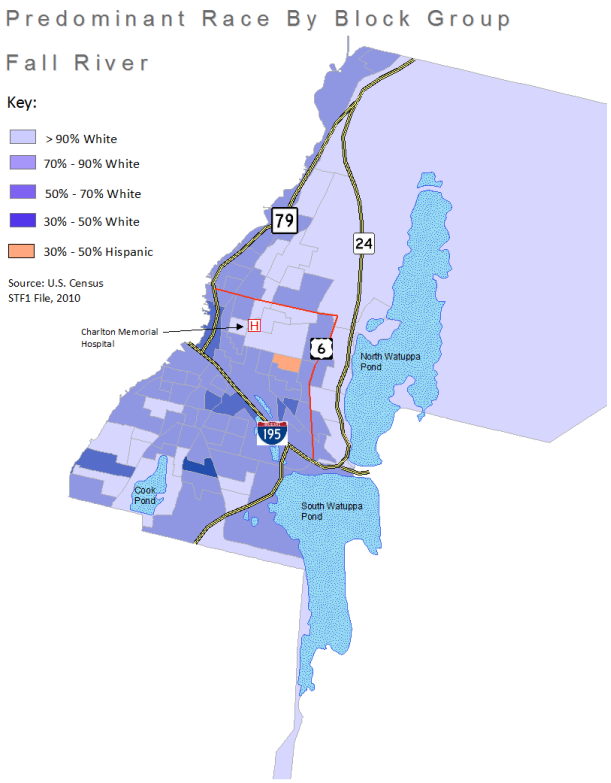
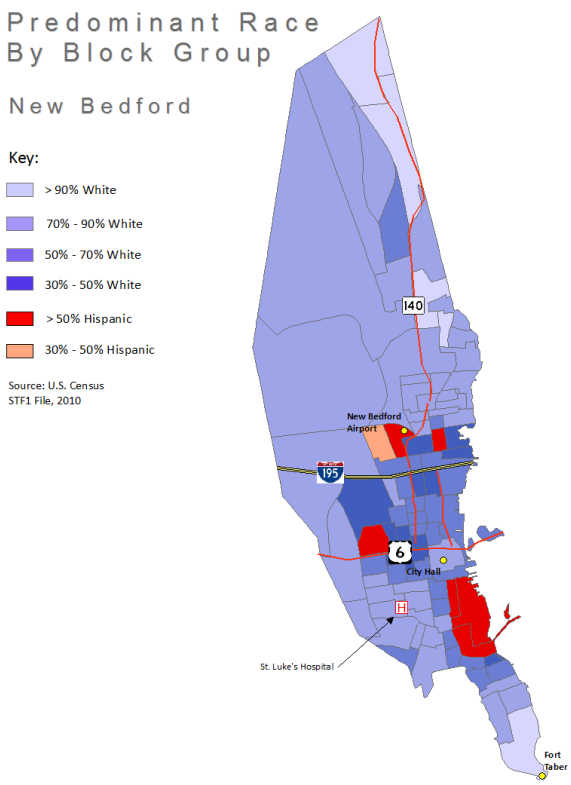


Figure 14

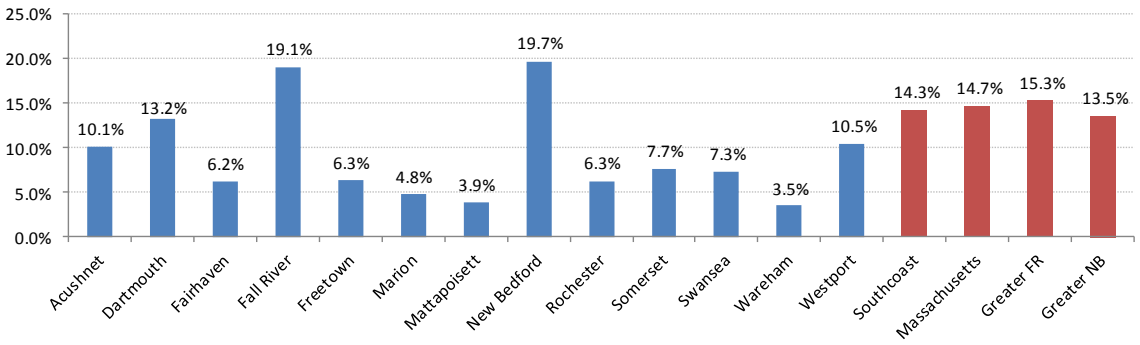


4.14 Foreign Born Population

The Southcoast has always been an attractive place to settle for immigrants. Over fourteen percent (14.3%) of residents in the region are foreign-born, which is just under the statewide average of 14.7%. New Bedford (19.7%) and Fall River (19.1%) have the highest percentage of foreign-born residents in the region (see Figure 15).

Figure 15

Percent Foreign-Born Population



Source: U.S. Census American Community Survey 5-year estimates (2007-2011), CFPA.

Figure 16 maps the percentage of foreign-born residents by block group for the Southcoast. The largest foreign born populations are found in the region's cities (see Figure 17 and Figure 18).[4]

Figure 16

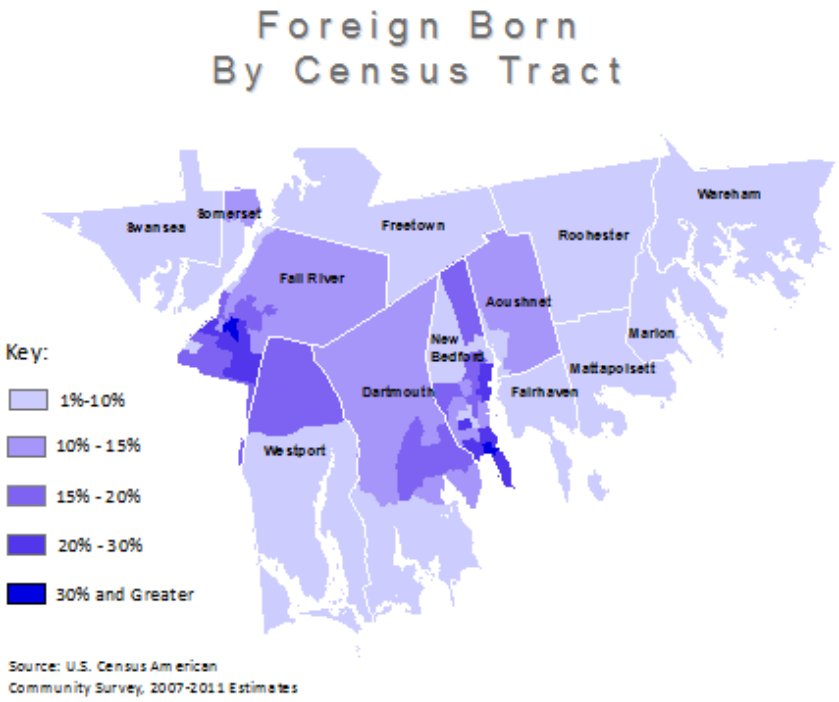


Figure 17

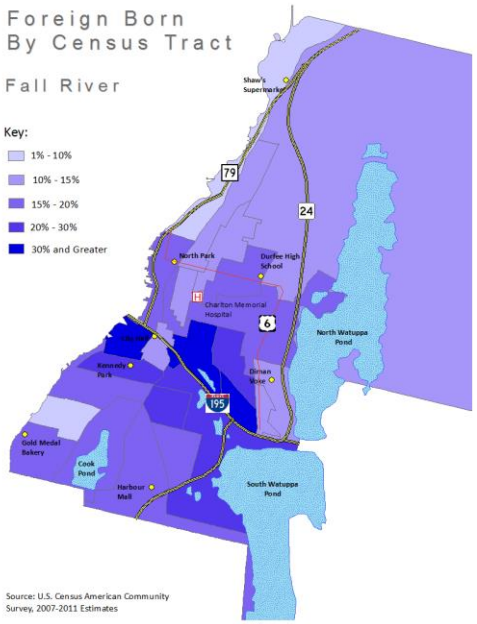
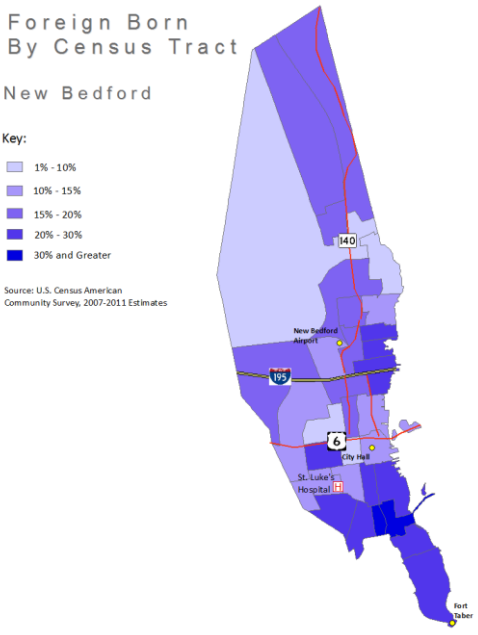


Figure 18



[4] Wareham not broken out because the town does not contain a significant level of foreign born residents.

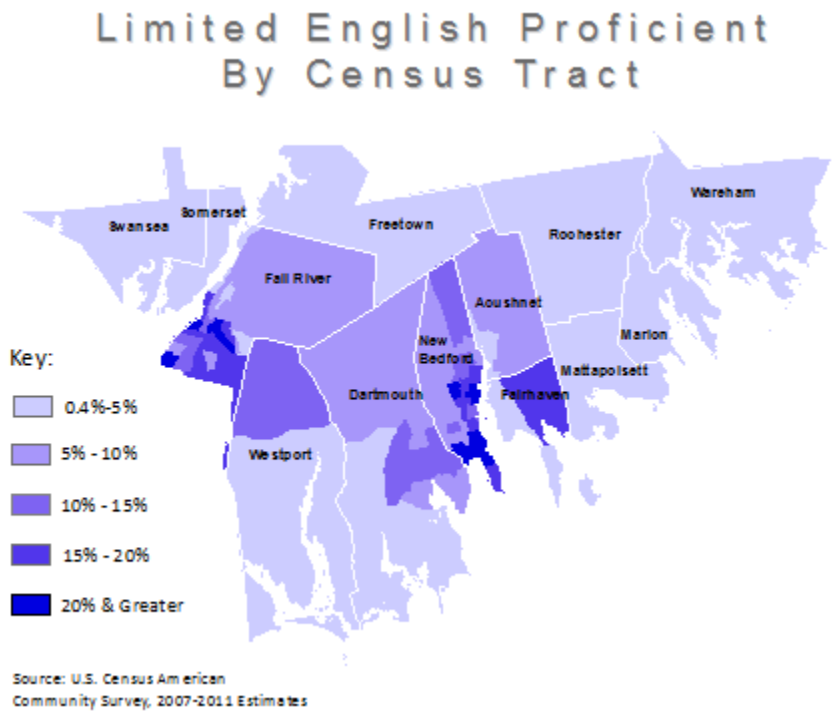
4.15 Limited English Proficiency[5]

Language barriers can have had a negative impact in terms of access to health care, quality of care, and health status/health outcomes (Baker 1998, Derose 2000, Wilson 2006). Although most residents in the region speak English, many reside in ethnic neighborhoods, where native tongues are commonly spoken and where residents have access to television, radio, and newspapers in their native language and where they can find employment with little interaction outside their established ethnic boundaries. The existence of these enclaves does not encourage residents to become fluent in English.

As noted, Portuguese speakers are being supplanted by Spanish speakers in the region's cities, although some pockets of Portuguese speakers remain, particularly in Fall River and New Bedford but also in some of the region's suburbs such as Acushnet, Dartmouth, Fairhaven, and Westport.

Figure 19 maps the percentage of residents who are limited English proficient (LEP) by census tract. In Fall River and New Bedford, census tracts with a high percentage of LEP residents have large Hispanic populations, while in the suburbs non-English speakers are primarily Portuguese (see Figure 20 and Figure 21).

Figure 19



[5] Limited English Proficiency represents a person's own perception of his or her own English-speaking ability. The Census Bureau does not define limited English proficiency or non-limited English proficient populations. The Census Bureau reports data based on the four categories of English-speaking ability: very well, well, not well, and not at all.

Figure 20

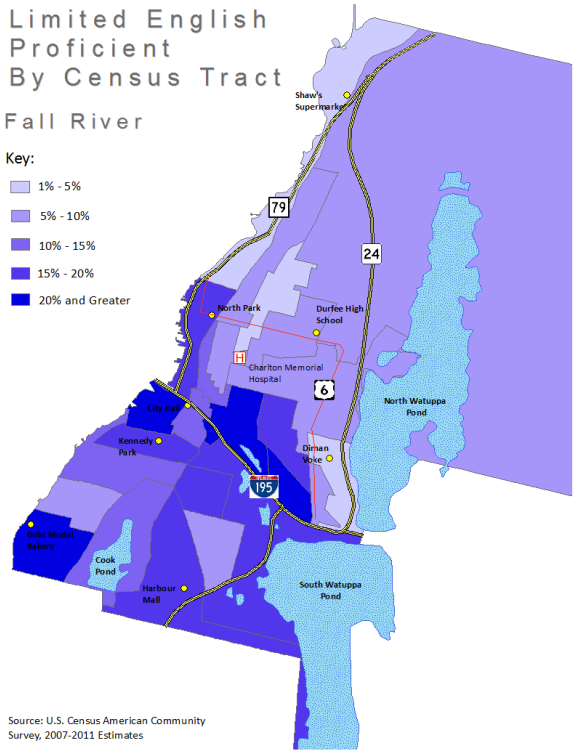
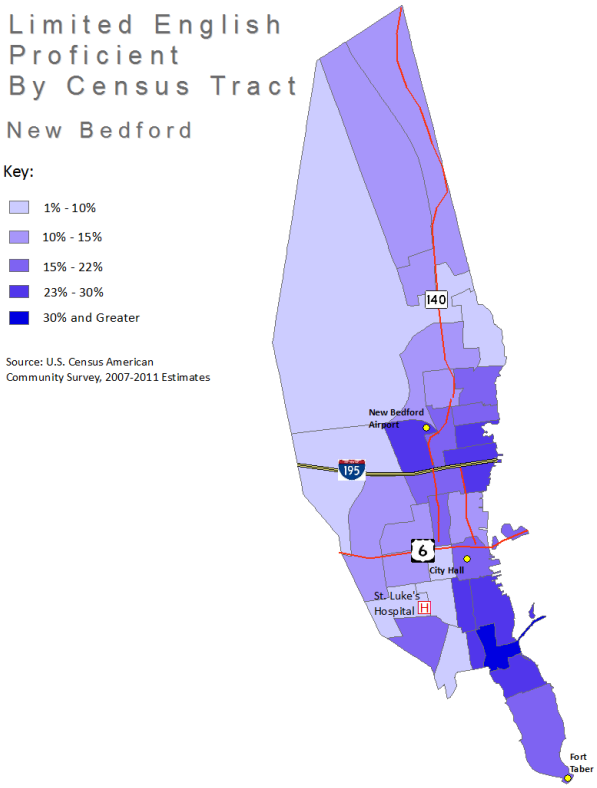


Figure 21



4.16 Age Cohort and Median Age

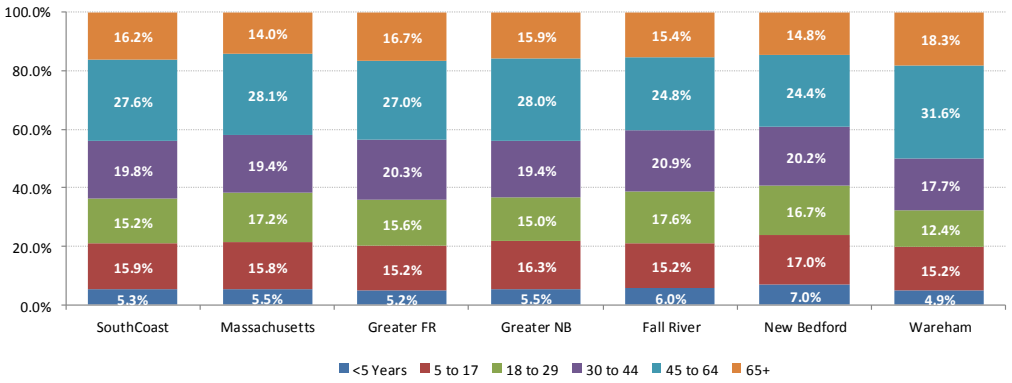
The aging population nationally, statewide, and regionally will have major implications for the delivery of healthcare. The U.S. population age 65 and over increased by 36% from 2000 to 2010 and the U.S. Census Bureau estimates that by 2030 there will be about 72.1 million older persons in the country - twice the number in 2000. Older adults will be increasingly racially and ethnically diverse and rates of chronic disease are expected to rise because older adults have higher rates of chronic disease. All of these factors create challenges for healthcare delivery.

Age Cohort

Age cohorts in the Southcoast are similar to statewide averages, although the Southcoast has a slightly higher percentage of residents age 65 and older in comparison to the state (see Figure 22). Population cohorts have remained relatively stable over the past two decades.

Figure 22

Age Cohort



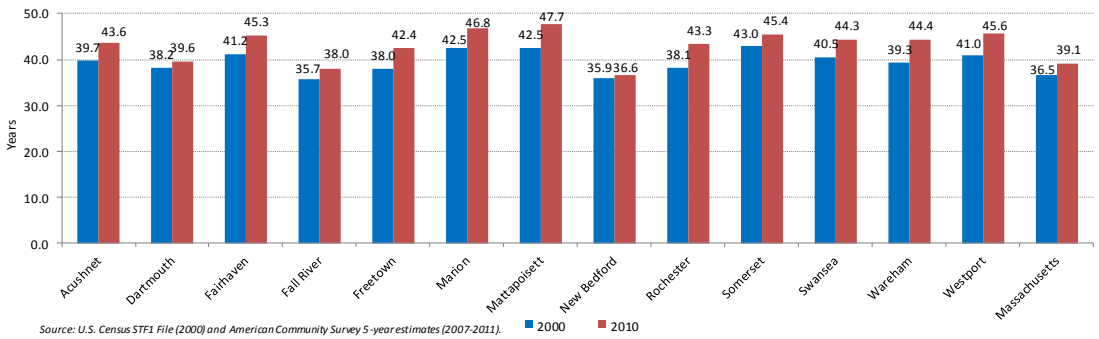
Source: U.S. Census Bureau, 2007-2011 American Community Survey, CFPA.

Median Age

Each of the Southcoast's towns has a median age above the statewide median, while the median ages in Fall River and New Bedford are slightly below the statewide median (see Figure 23).[6]

Figure 23

Median Age



Source: U.S. Census STF1 File (2000) and American Community Survey 5-year estimates (2007-2011).

[6] Data not available for the Southcoast.

4.2 SOCIOECONOMIC ANALYSIS

Fall River and New Bedford continue to lag the region in most socioeconomic metrics, including lower levels of educational attainment, higher poverty levels, and higher unemployment, although many of the region's towns also struggle with these issues, particularly in comparison to state averages.

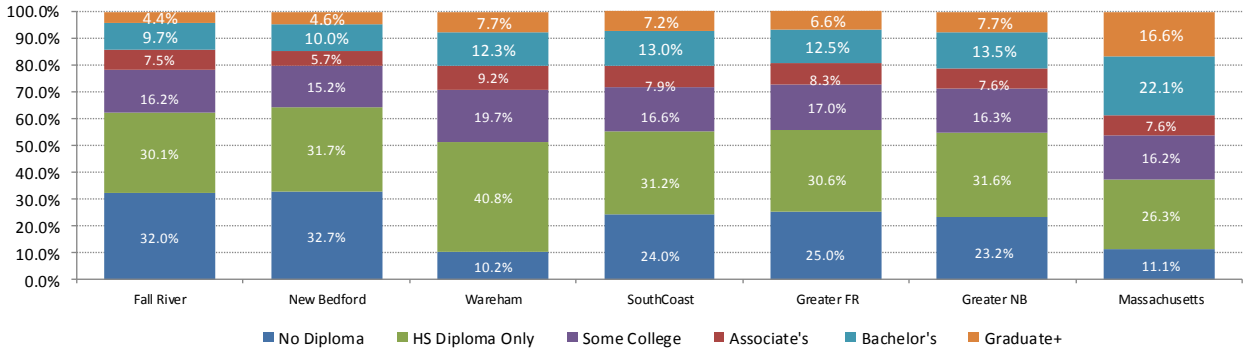
4.21 Educational Attainment

Massachusetts has the second most educated population in the country and one of the most educated populations in the world. In contrast, the Southcoast region has one of the lowest levels of educational attainment of any region in Massachusetts. Fall River and New Bedford have particularly low rates of educational attainment, although many of the region's suburban towns also have average educational attainment levels that are below the state averages.

More than twice the percentage (24.0%) of Southcoast residents 25 years of age and older do not have a high school diploma in comparison to residents statewide (11.1%), while 76.0% have earned a high school diploma. Significantly, in an economy that requires increasingly high levels of skills and education, the percentage of Southcoast residents who have earned a bachelor's degree or higher (20.2%) is a little more than half the state average (38.7%) (see Figure 24). Low levels of education are particularly evident in the region's cities: 32.0% of residents in Fall River and 32.7% of residents in New Bedford have no diploma, compared to 11.1% statewide. Conversely, only 14.1% of Fall River residents and 14.6% of New Bedford residents have a Bachelor's degree or higher.

Figure 24

Educational Attainment



Source: U.S. Census Bureau, 2007-2011 American Community Survey (residents 25 years of age and older), CFPA.

Residents without a High School Diploma by Census Tract

There is a significant percentage of Southcoast residents without a high school diploma (see Figure 25, Figure 26, and Figure 27). While this result is partly due to an influx of newer immigrants, it is also a consequence of low high school graduation rates in Fall River and New Bedford across nearly all racial and ethnic populations; for the Class of 2012, only 69% of Fall River high school students and 55% of New Bedford high school students graduated within four years. The 4-year graduation rates in many of the region's suburban communities are also below state averages.

Figure 25

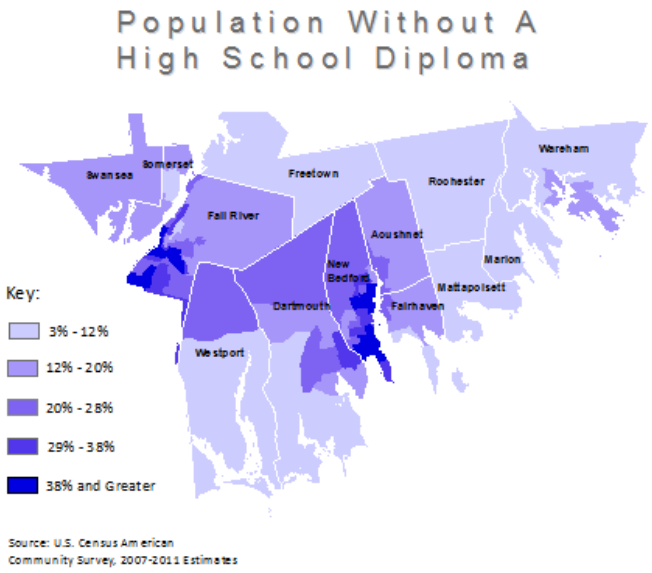


Figure 26

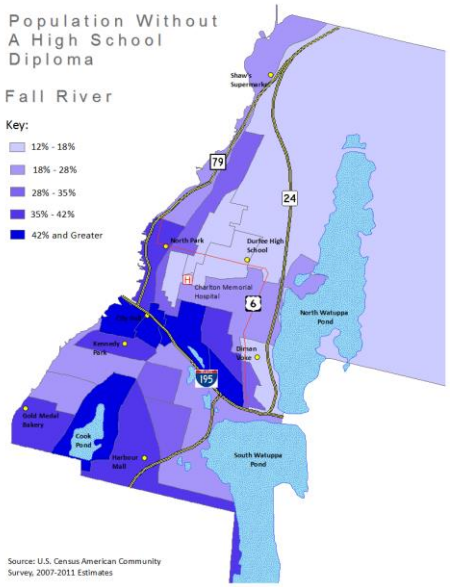
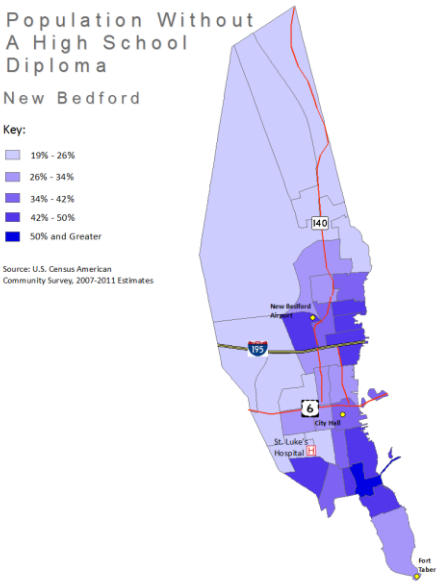


Figure 27

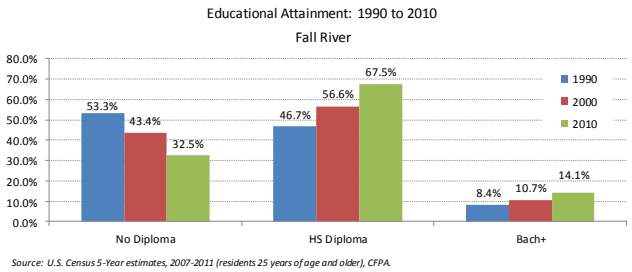


Educational Attainment Historical Trends

The Southcoast and its cities of Fall River and New Bedford have made gains since 1980 in terms of the percentage of residents who have earned a high school diploma; a 20.8 percentage point increase in Fall River, a 16.1 percentage point increase in New Bedford, and a 17.6 percentage point increase region-wide, compared to a gain of 8.7 percentage points for the state (see Figure 28, Figure 29, Figure 30, and Figure 31).

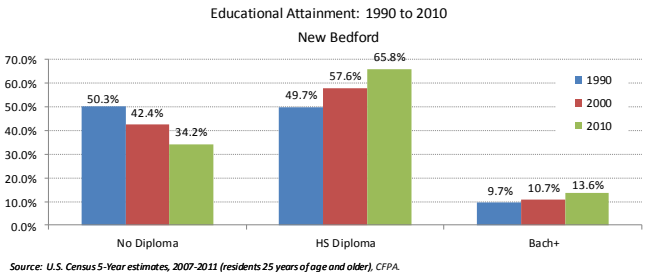
Conversely, despite historically low percentages who have earned a 4-year degree or above, the percentage point increase among Southcoast, Fall River, and New Bedford residents earning a 4-year degree or higher from 1980 to 2010 is lower than the state as a whole; a 5.7 percentage point increase in Fall River, 3.9 percentage point increase in New Bedford, and a 7.2 percentage point increase region-wide, all lower than the statewide gain of 11.1 percentage points. It will be interesting to track over the next decade how the increase in high school graduation rates over the past 20 years in Fall River, New Bedford, and the Southcoast translates in to residents going on to earn 4-year degrees or graduate degrees.

Figure 28



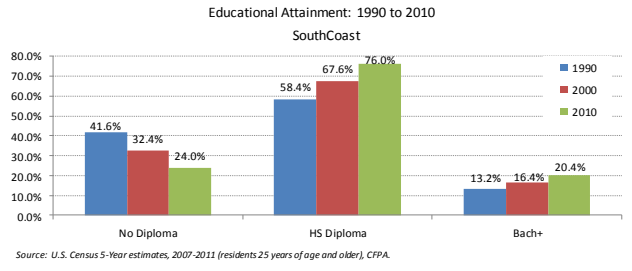
Source: U.S. Census 5-Year estimates, 2007-2011 (residents 25 years of age and older), CFPA.

Figure 29



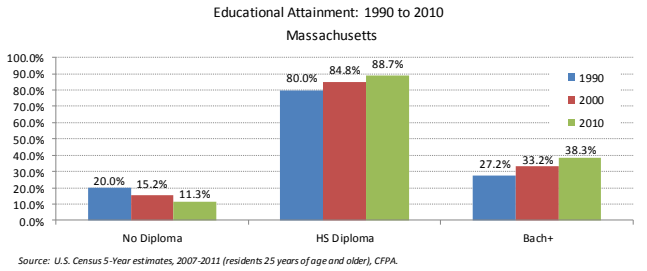
***Source: U.S. Census 5-Year estimates, 2007-2011 (residents 25 years of age and older),** CFPA.*

Figure 30



Source: U.S. Census 5-Year estimates, 2007-2011 (residents 25 years of age and older), CFPA.

Figure 31



Source: U.S. Census 5-Year estimates, 2007-2011 (residents 25 years of age and older), CFPA.

4.22 Per Capita Income[7]

Per capita and median household income levels in the region are below state averages; per capita income estimates for the region are $26,358, which is 75.2% of the state average per capita income of $35,051. Per capita income ranges from a low of $21,118 in Fall River to $43,383 in Marion (see Figure 32).

Figure 32

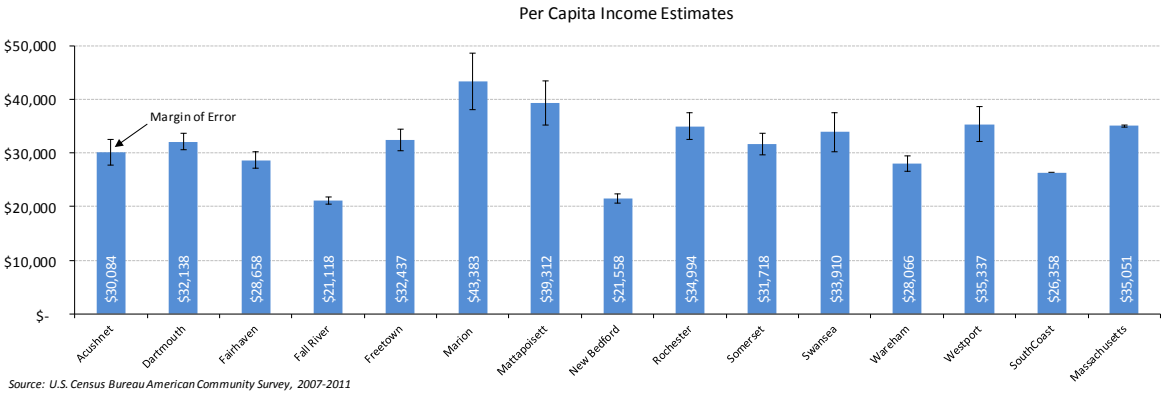
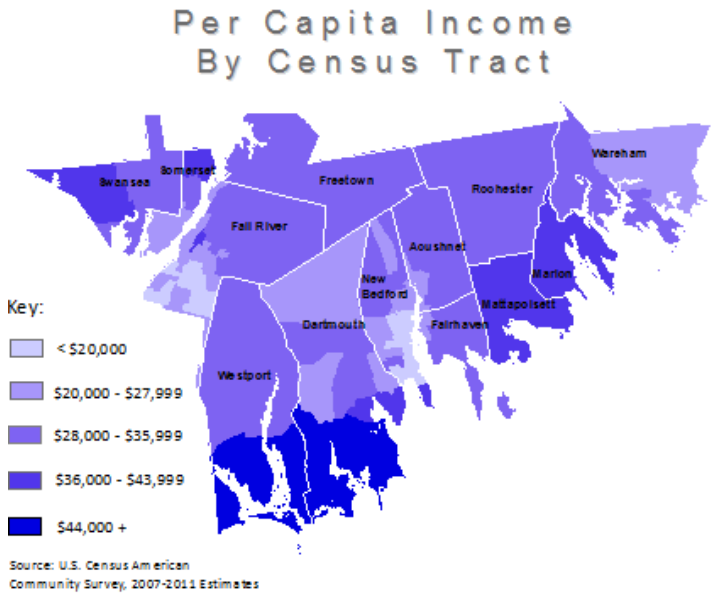


Figure 33, Figure 34, and Figure 35 illustrate per capita income by census tract for Fall River and New Bedford.

Figure 33



[7] Income data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error.

Figure 34

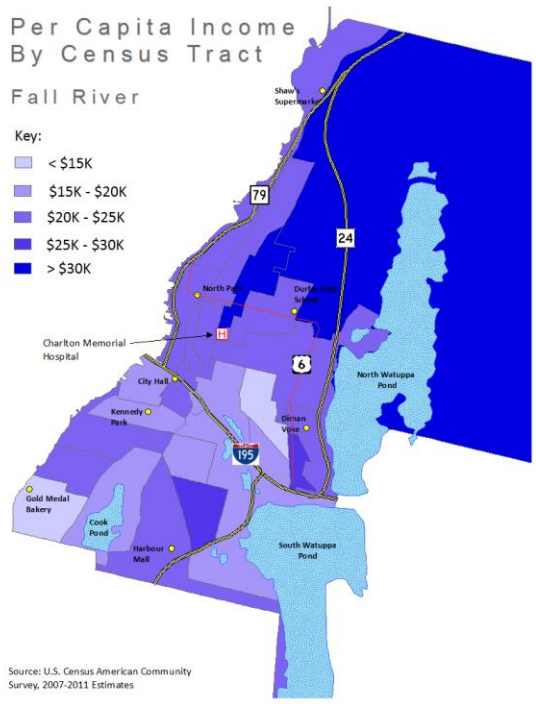
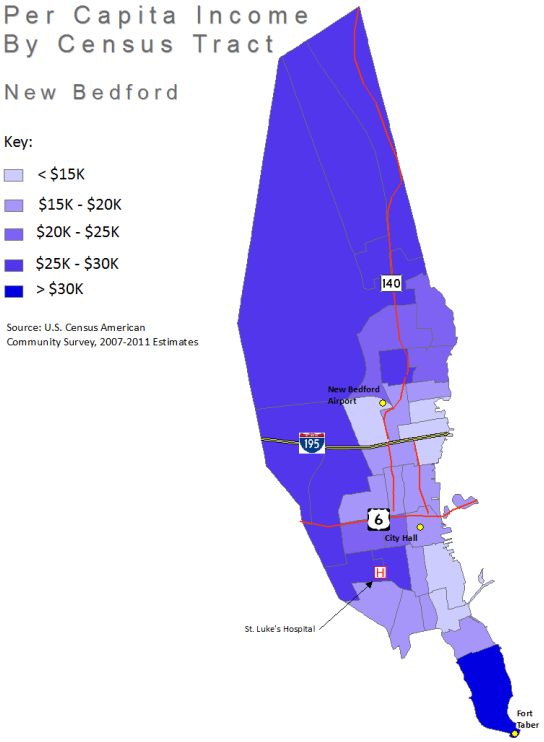


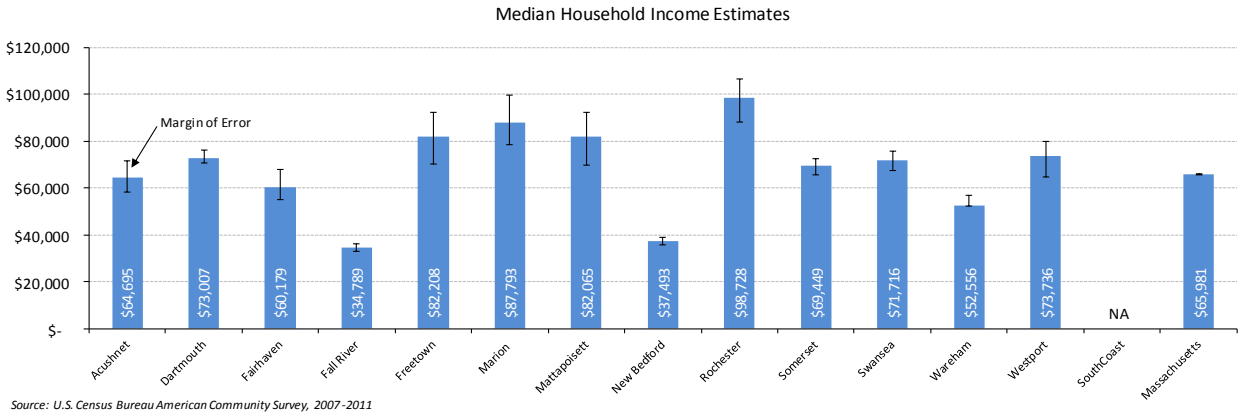
Figure 35



4.23 Median Household Income

Median household incomes in the region range from a low of $34,789 in Fall River to a high of $98,728 in Rochester (see Figure 36). While eight of the region's fourteen cities and towns have median household incomes that are above the state average, 68% of its residents live in the five communities where the median household income is below the statewide figure.

Figure 36



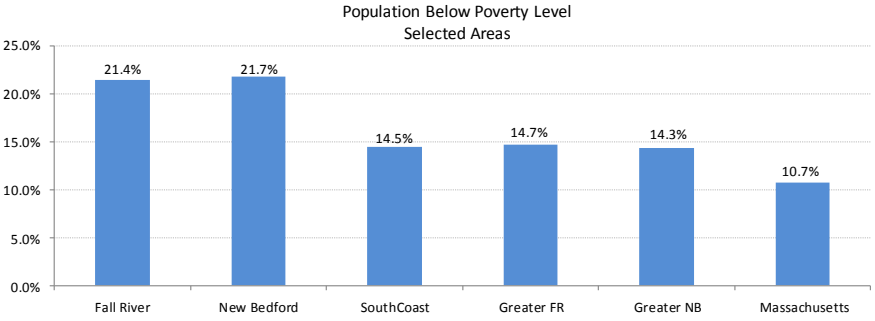
Source: U.S. Census Bureau American Community Survey, 2007-2011

4.24 Poverty

Persons Below the Poverty Level

Poverty is one of the primary social determinants of health. Fall River and New Bedford have some of the highest poverty rates in the state: 21.4% of Fall River residents and 21.7% of New Bedford residents are below the U.S. Census Bureau's poverty threshold, which compares to 14.5% for the Southcoast and 10.7% statewide (see Figure 37).[8] Importantly, not only do Fall River and New Bedford have the highest poverty rates in the region, but these cities also account for the majority of the region's poor in absolute numbers.

Figure 37



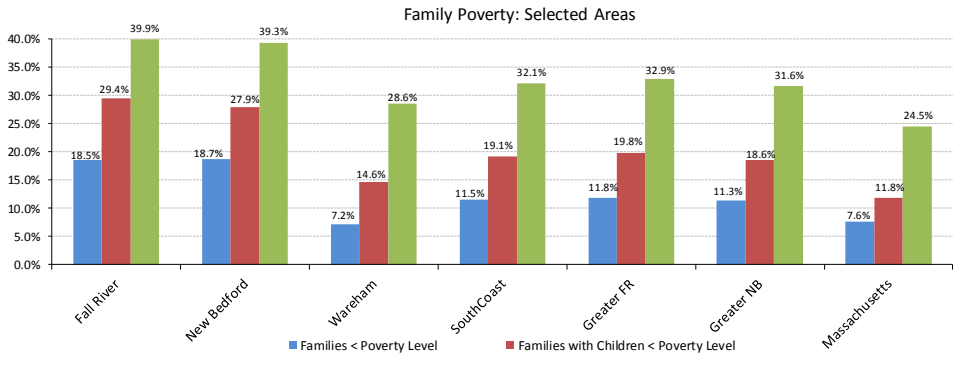
Source: American Community Survey 5-year estimates (2007 through 2011), CFPA.

Family Poverty

Family poverty levels in the Southcoast as a whole are higher than the state average with rates highest in the region's cities (see Figure 38):

- 11.5% of Southcoast families live below the federal poverty level compared to 7.6% of families statewide.
- 19.1% of Southcoast families with children live below the federal poverty level compared to 11.8% of families statewide.
- 32.1% of Southcoast female headed by females live below the federal poverty level compared to 24.5% statewide.

Figure 38



Source: U.S. Census American Community Survey (2007-2011), CFPA

[8] Data not reported for smaller communities due to the high margin of error for these smaller populations.

Figure 39, Figure 40, and Figure 41 present the percentage of families below the poverty level in the Southcoast, Fall River, and New Bedford by census tract.

Figure 39

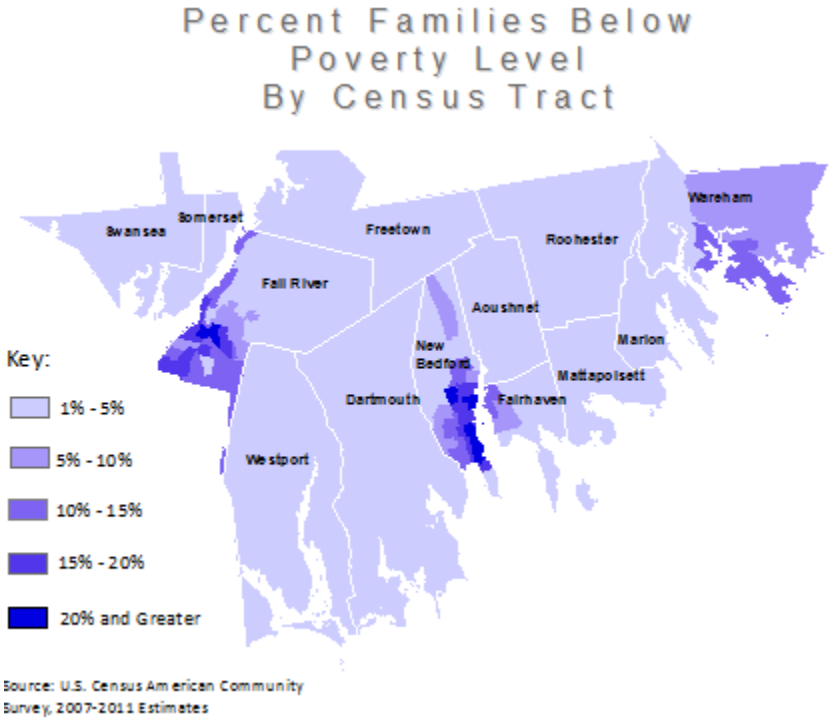


Figure 40

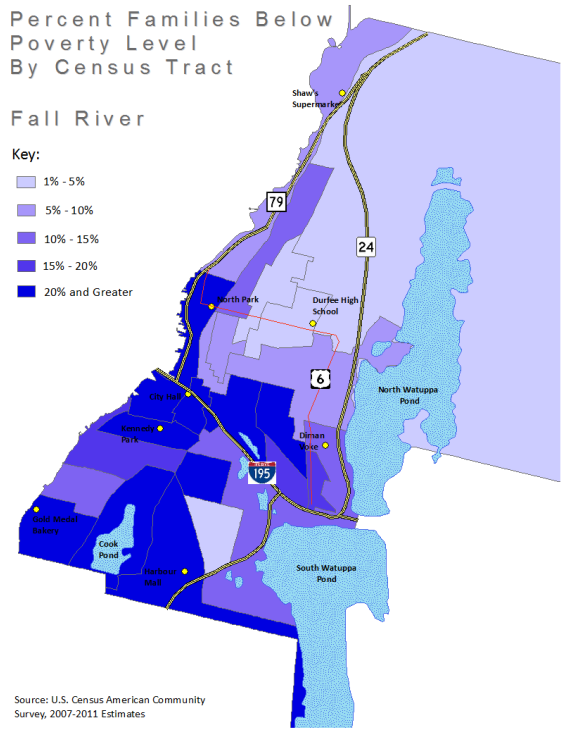
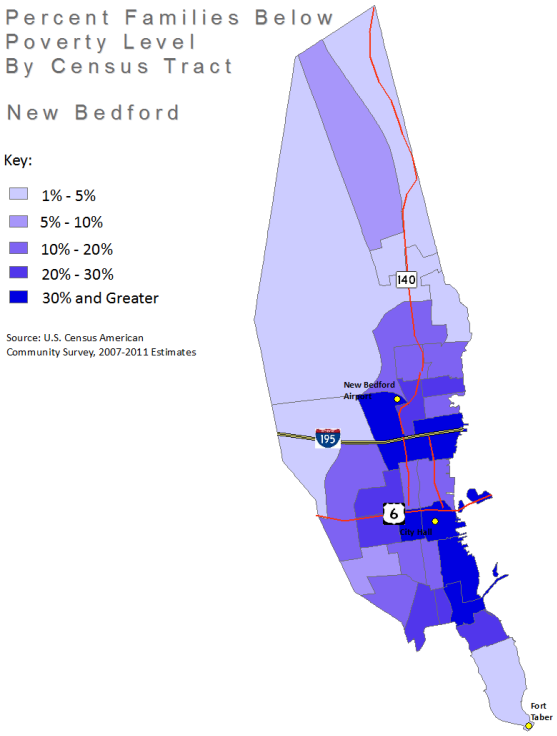


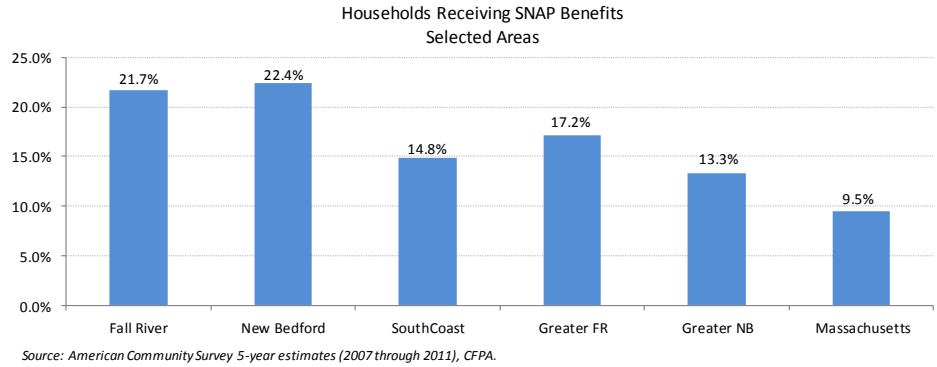
Figure 41



Supplemental Nutritional Assistance Program (SNAP)

SNAP offers nutrition assistance to eligible, low-income individuals and families. It is estimated that 14.8% of Southcoast households receive SNAP benefits annually, which compares to 9.5% of households statewide, 21.7% of households in Fall River and 22.4% of households in New Bedford (see Figure 42).

Figure 42

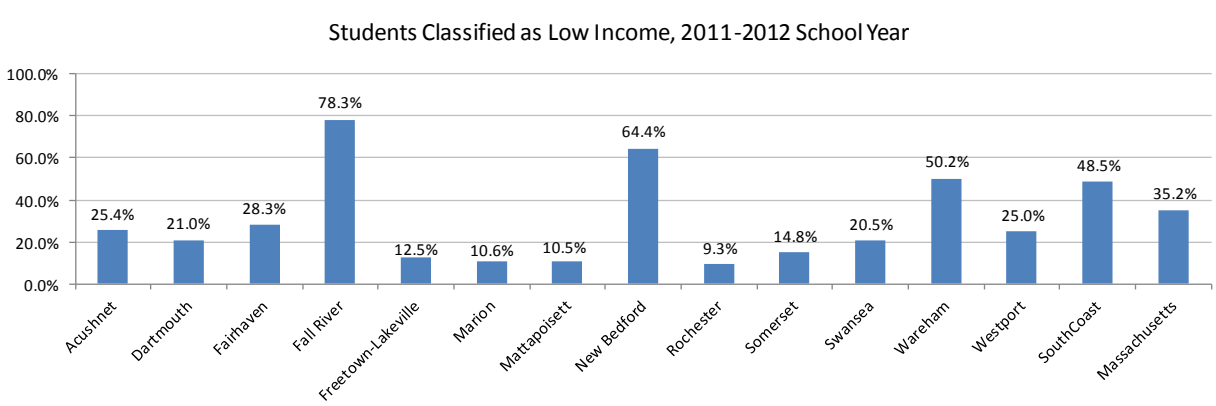


Source: American Community Survey 5-year estimates (2007 through 2011), CFPA.

Students Below the Poverty Level

Nearly half (48.5%) of students in the Southcoast are classified as low-income by the Massachusetts Department of Elementary and Secondary Education (School Year 2011-2012), compared to 35.2% of students statewide (see Figure 43).[9] Over seventy-eight percent (78.3%) of students in Fall River and 64.4% of students in New Bedford are classified as low-income.

Figure 43



Massachusetts Departmebt of Elementary and Secondary Education

[9] Indicates the percentage of students who meet ANY ONE of the following definitions of low-income: The student is eligible for free or reduced price lunch, the student receives Transitional Aid to Families benefits, or the student is eligible for food stamps (data as of October 1, 2011).

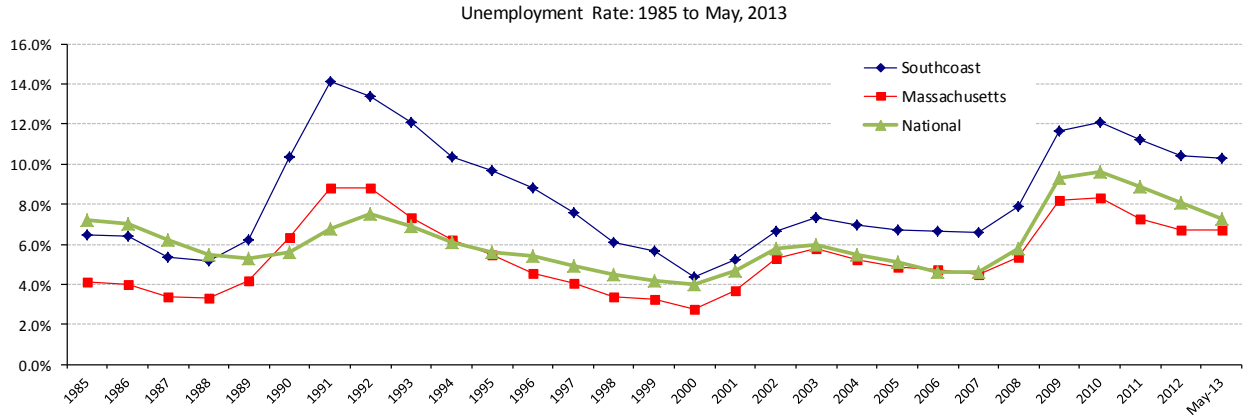
4.2 ECONOMIC PROFILE OF SOUTHCOAST

The Southcoast's economic base was historically dependent on manufacturing jobs located in the cities and, consequently, its economy has been extremely volatile with wide fluctuations in unemployment levels between peaks and troughs of the business cycle. Over the past two decades, the New Bedford and Fall River areas have struggled with the structural shocks of de-industrialization and the transition to a post-industrial economy, as evidenced in the shift from "blue-collar" manufacturing to services. Currently, health care, educational services, retail trade, and business services are four of the most rapidly expanding employment sectors in the region and they are projected to remain at the forefront of the region's employment growth, while opportunities for new growth exist around a renewal of high-tech manufacturing.

4.21 Unemployment

Average unemployment rates in the region are historically higher than the statewide average throughout the business cycle and much of the difference is driven by high unemployment rates in Fall River and New Bedford. While the region's unemployment rate declined steadily during the 1990s and slowly closed the gap with the statewide unemployment rate, this gap is increasing once again. The 2012 annual average unemployment rate in the Southcoast was 10.4%, which compares to a statewide average unemployment rate of 6.7% and a national rate of 8.1% (see Figure 44). Annual unemployment rates in Fall River (13.0%) and New Bedford (12.5%) were significantly higher than the state average in 2012.

Figure 44



Source: Massachusetts Executive Office of Labor and Workforce Development, U.S. Bureau of Labor Statistics (LAUS data, not seasonally adjusted)

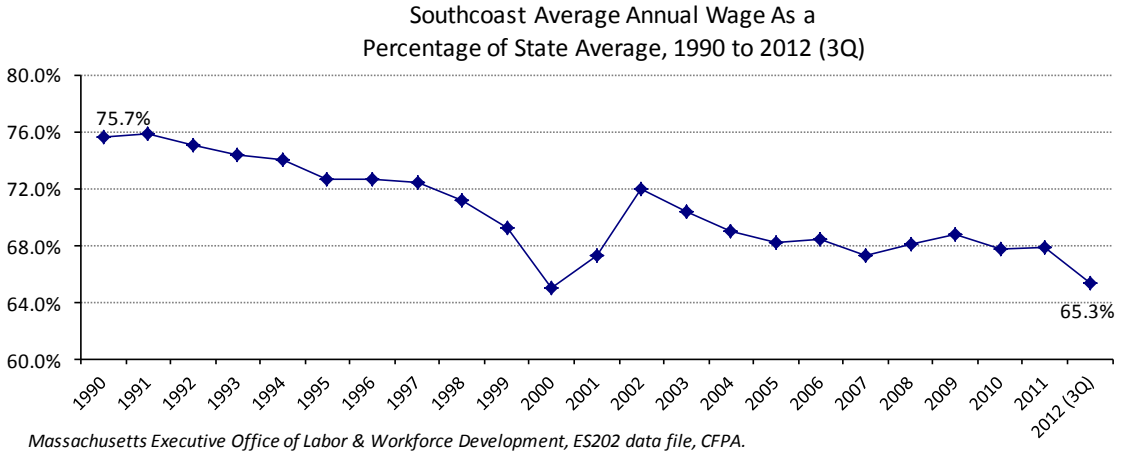
4.22 Wages

Annual average wages in The Southcoast range from a low of $31,304 in Swansea to $47,164 in Fairhaven and Marion (see Figure 45).[10] There exists a significant wage gap between the Southcoast and the state and this gap continues to widen; the ratio of Southcoast wages to the statewide average wage was 65.3% in 2012 (3Q), a decline from 75.7% in 1990 (see Figure 46).[11]

Figure 45

Source: Massachusetts Executive Office of Labor & Workfoce Development, ES202 data file, CFPA.

Figure 46



Massachusetts Executive Office of Labor & Workforce Development, ES202 data file, CFPA.

[10] The ES202 dataset reports employment and wages by place of work, not by the city or town in which employees live.
[11] The wage gap is defined as the average annual wage in the Southcoast as a percentage of the state average annual wage.

5.0 HEALTH ASSESSMENT

The health assessment presents a variety of indicators that measure residents' health and overall well-being. Health indicators are presented across six categories: clinical care, physical environment, health behavior, health outcomes, children's health, and health disparities. Data for this analysis is primarily derived from the Massachusetts Department of Public Health's MassCHIP database, including data from the Behavioral Risk Factor Surveillance System (BRFSS).[12]

5.1 CLINICAL CARE

The topic of clinical care covers access to care, participation in health screenings, vaccination rates, and access to dental care.

5.1.1 Access to Care

Generally speaking, Southcoast residents have access to care that is comparable to residents of Massachusetts as a whole. Access to care is determined according to the following indicators: percentage of adults with a personal health care provider, percentage of adults who could not see a doctor due to cost, and percentage of adults who had a checkup in the past year.

When it comes to having a relationship with a care provider, residents of the Southcoast are well served as compared to Massachusetts as a whole: 87.1% of Greater Fall River and 86.6% of Greater New Bedford residents reported having a personal health care provider, compared to 87.8% of residents statewide.[13] However, residents of Fall River (84.5%) and New Bedford (81.7%) with a personal health care provider is below the state level.

Another area in which health care access is improving for Southcoast residents is reflected by the proportion of adults who reporting having had a checkup in the past year: 86.2% in Fall River, 84.7% in New Bedford, 89.1% in Greater Fall River, and 83.2% in Greater New Bedford, which compares to 78.8% statewide (see Figure 47). Similarly, the proportion of Southcoast adults as a whole who report being unable to see a doctor due to cost has declined over the past decade for each of these areas (see Figure 48). As with many of the health indicators this assessment is measuring, however, residents in the cities of New Bedford and Fall River have greater barriers to care. For example, 14.5% of New Bedford residents needed to see a doctor but could not due to cost.

Figure 47

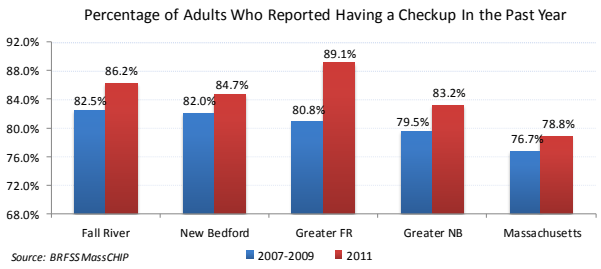
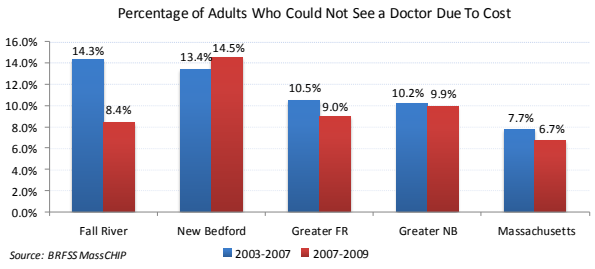


Figure 48



[12] Generally the most recent BRFSS data is reported in the analysis. However, the Massachusetts Department of Public Health sometimes combines BRFSS years to decrease the data's margin of error. In these cases we report the multi-year data when it is determined that the margin of error is too high for single year reporting.

[13] BRFSS – Health care access, 2002-07. Most recent available.

5.1.2 Health Screening

The degree to which Southcoast residents access and participate in health screenings reflects issues of access, awareness, and even incidence of negative health outcomes. Health screening data collected through BRFSS reflects utilization of screening for cancers, blood cholesterol, and HIV.

Cancer Screening

Four types of cancer screenings are tracked for Fall River, New Bedford, and both Southcoast CHNAs. The proportion of the region's adults who undergo a colonoscopy to screen for colorectal cancer is lower than the statewide percentage; 54.6% of Massachusetts adults have undergone a colonoscopy, which compares to 46.9% in Fall River, 43.7% in New Bedford, 51.4% in Greater Fall River, and 47.3% in Greater New Bedford. Screening for breast cancer and cervical cancer among women is also comparatively low in the region (see Table 2).

Table 2

Proportion of Adults Participating In Cancer Screening

	Colonoscopy	Mammogram*	Breast exam*	Pap smear
Fall River	46.9%	61.4%	77.7%	77.5%
New Bedford	43.7%	68.7%	80.6%	82.7%
Greater Fall River	51.4%	66.8%	80.7%	79.6%
Greater New Bedford	47.3%	72.3%	83.5%	82.2%
Massachusetts	54.6%	69.5%	86.1%	85.0%

*adult women only

Source: BRFSS, MassCHIP (colonoscopy & mammography: 2002-07; breast exam & pap smear: 2002-06)

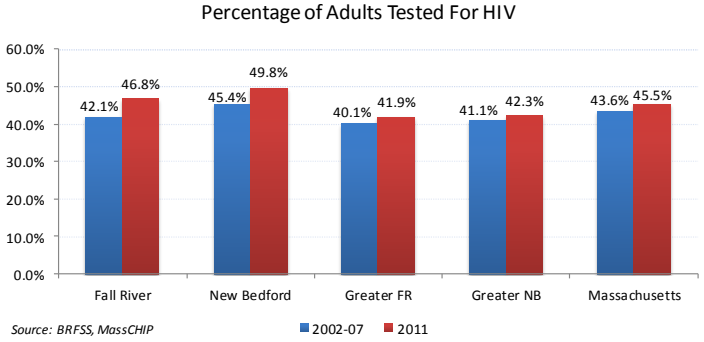
Cholesterol Screening

Southcoast residents are on par with the population of the state when it comes to having blood cholesterol checked: 82.5% of Greater Fall River adults and 89.8% of Greater New Bedford residents have had their cholesterol checked within the past five years, compared to 83.7% of Massachusetts adults. Among New Bedford residents, the rate also tops the statewide rate at 84.2%.[14]

HIV Testing

HIV testing rates have increased slightly over the last decade across the Southcoast, and in the cities of Fall River and New Bedford, this increase has meant that a greater proportion of adults are tested as compared to the population statewide (see Figure 49).

Figure 49



[14] Source: 2011 BRFSS; Fall River data not available.

5.1.3 Vaccination Rates

Two indicators are available to gauge the degree to which Southcoast residents access and avail of vaccinations against flu and pneumonia. Interestingly, flu shot rates vary considerably in the Southcoast: 70.7% of Fall River-area residents had a flu shot within the past year, compared to just 54.6% of those living in Greater New Bedford (in Massachusetts, the proportion was 66.9%).[15] Pneumonia vaccination rates follow a similar pattern, though the region is on par with rates statewide; 33.3% of Massachusetts adults have been vaccinated in their lifetimes, compared to 39.5% in Greater Fall River and 33.4% in Greater New Bedford.

5.1.4 Access to Dental Care

Dental health, and gum disease in particular, is linked to health outcomes like diabetes, heart disease, and stroke, and maternal dental health is shown to affect neonatal outcomes.[16] Limited data is available to gauge access to dental care in the Southcoast, but that which is available indicates that the region is underserved in this area. While 77.8% of Massachusetts residents reported a dental visit in the past year, just 66.4 % of Fall River residents and 67% of New Bedford residents visited a dentist.[17] In Bristol County, which encompasses both cities, the rate was 75%, while Plymouth County (which includes Marion, Mattapoisett, Rochester, and Wareham) residents visited the dentist at rate above that of the state (83 %).[18]

[15] 2011, BRFSS.
[16] http://www.healthypeople.gov/2020/LHI/oralHealth.aspx.
[17] BRFSS 2008.
[18] CHNA data not available; BRFSS 2006-10 via Community Commons.

5.2 PHYSICAL ENVIRONMENT

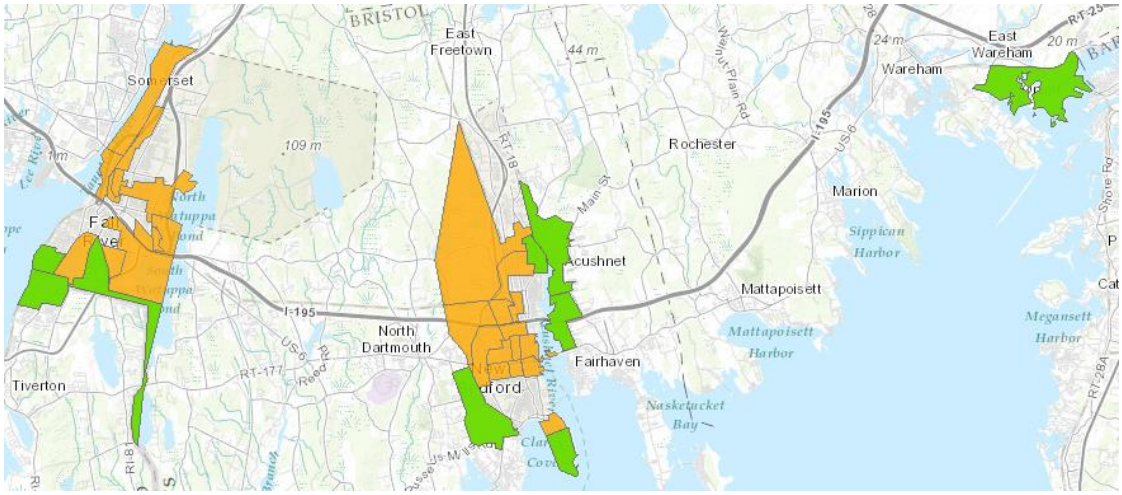
Not only is the health status of Southcoast residents influenced by availability of and access to clinical care, it is also affected by the physical conditions of the region: access to amenities that facilitate healthy eating and active living, air quality, and sources of environmental contamination.

5.2.1 Healthy Food

Access to healthy food influences the ability of Southcoast residents to exhibit healthy eating behaviors and thus reduce the risk of diet-related health outcomes like diabetes and heart disease. Residents of both Bristol and Plymouth counties have access to fewer grocery stores and supermarkets per capita as compared to Massachusetts as a whole (a combined rate of 17.5 per 100,000 residents, versus 19.8 statewide).[19] Bristol County's rate is just 16.4, and this lower density results in a number of food deserts—or low-income neighborhoods with no ready access to fresh, affordable food. Significant portions of Fall River and New Bedford are classified as food deserts where most residents live over 0.5 miles away from a grocery store or supermarket, while several neighborhoods of Acushnet, Fairhaven and Wareham have no access to such amenities within one mile (see Figure 50).

Figure 50

Southcoast food deserts[20]



While fresh, healthy, affordable food can be hard for the region's residents to obtain, fast food options are abundant. In Bristol County, there are 65.6 fast food establishments per 100,000 residents and 60.0 per 100,000 in Plymouth County. While these rates are lower than that of the state (71.9), there are nevertheless far more fast food establishments than there are grocery stores and supermarkets.[21]

[19] US Census Bureau, County Business Patterns: 2011 (via Community Commons).

[20] USDA Food Environment Atlas. Orange denotes low-income Census tracts where most residents have no access to a grocery store or supermarket within 0.5 miles; green denotes no access within one mile.

[21] US Census Bureau, County Business Patterns: 2011 (via Community Commons).

5.2.2 Access to Physical Fitness Amenities

An active lifestyle can significantly promote positive health outcomes, but the ability to exercise can be influenced by factors like walkability and access to parks and recreation facilities.

Walkable neighborhoods—that is, communities where residents have many amenities nearby that can be easily reached on foot—encourage people to accomplish more day-to-day tasks on foot, which in turn promotes exercise and reduces obesity. Research has shown that people who live in walkable places weigh 6-10 pounds less than their peers in less amenity-rich neighborhoods.[22] Walk Score is a tool developed to measure walkability by neighborhood and city; it does this by scoring a neighborhood on a 0-100 scale influenced by the number, type, and proximity of amenities. Table 3 illustrates the Walk Scores of Southcoast cities and towns.

Table 3

Walkable Communities

	Score	Description
Acushnet	62	Somewhat Walkable
Dartmouth	23	Car-Dependent
Fairhaven	68	Somewhat Walkable
Fall River	62	Somewhat Walkable
Freetown	2	Car-Dependent
Marion	49	Car-Dependent
Mattapoisett	80	Very Walkable
New Bedford	65	Somewhat Walkable
Rochester	38	Car-Dependent
Somerset	37	Car-Dependent
Swansea	37	Car-Dependent
Wareham	69	Somewhat Walkable
Westport	31	Car-Dependent

Source: MassCHIP Instant Topics (Kids Count and Perinatal Reports)

Southcoast residents also have less access to recreation and fitness facilities than Massachusetts residents as a whole. In Bristol County there are 13.7 such facilities per 100,000 residents versus 15.9 statewide. Plymouth County residents have comparatively better access with 18.0 facilities for every 100,000 residents.[23]

5.2.3 Air Quality

Air quality is linked to respiratory health and can influence the incidence of asthma, bronchitis, damage to the nervous system, organ damage, cardiovascular problems, and cancer. Air quality is measured by ozone, particulate matter in the air, and sources of air pollution in the region.

Ozone, which is influenced by emissions from industrial and energy-producing facilities, motor vehicles, and chemicals, can induce difficulty breathing, asthma attacks, and reduced lung function, particularly in populations already struggling with respiratory challenges.[24] The incidence of poor air quality days on which ozone exceeds the National Ambient Air Quality Standard is very low in the region: in 2012, there were no days on which this standard was exceeded in Bristol or Plymouth County. In fact, the last year in which unhealthy levels were

[22] http://unews.utah.edu/old/p/072808-1.html.
[23] US Census Bureau, County Business Patterns: 2011 (via Community Commons).
[24] http://www.epa.gov/glo/health.html.

reached in Bristol County was 2006, where there were two days on which the standard was exceeded. [25] There were four such days in this county in 2003. This suggests that air quality has generally improved in the Southcoast.

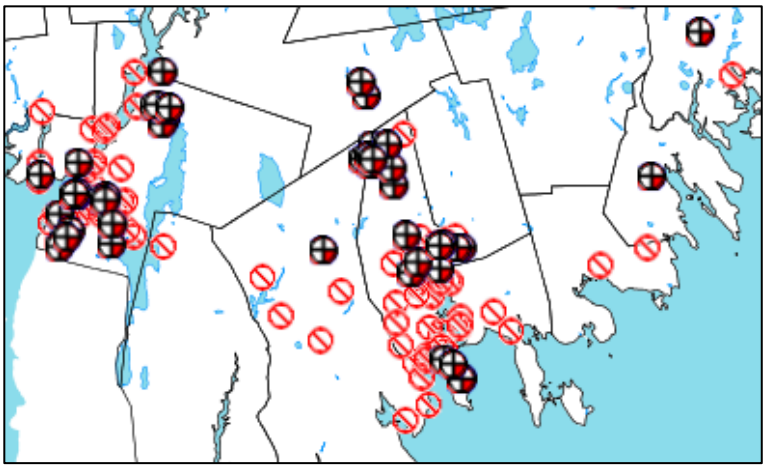
5.2.4 Environmental Contamination

In addition to air pollutants, the Southcoast is home to a number of sites that contain and/or generate contaminants that can negatively affect residents' health. This is influenced in part by the industrial histories of Fall River and New Bedford, which were home to many manufacturing facilities that used toxic chemicals and metals that were often released into the water and soil. While some facilities continue to emit contaminants, many are now classified as brownfields—sites that are no longer used, but cannot be reused until their contamination is remediated.

Notably, the region is home to seven Superfund sites: that is, brownfields that have been determined to represent significant enough contamination and risk that they qualify for federal funds to expedite cleanup. These include New Bedford Harbor and Fairhaven's Atlas Tack site.[26] Many more brownfields are scattered throughout the region, with heavy concentrations in Fall River and New Bedford. Though the extent of contamination on these sites is not significant enough to qualify them for federal aid (like that which has been provided through the Superfund program), these brownfields affect residents' health both through the possibility of exposure to contamination as well as the blight these sites can inflict on neighborhoods. Fall River is home to 427 contaminated sites, 71 of which present sufficient hazards as to limit activity on and use of these parcels; in New Bedford, 78 out of 583 brownfield sites are so limited.[27] Figure 51 illustrates two sources of environmental contamination in the Southcoast: sites with activity and use limitations (denoted by a "no" symbol) and facilities that use large quantities of toxic materials in their operations (denoted by target symbol).

Figure 51

Toxic and Contaminated Sites[28]



[25] EPA Air Compare, 2012: http://www.epa.gov/aircompare/compare.htm.

[26] EPA, Superfund sites where you live (http://www.epa.gov/superfund/sites/index.htm)

[27] Southcoast Urban Indicators Project (see http://southcoastindicators.org/).

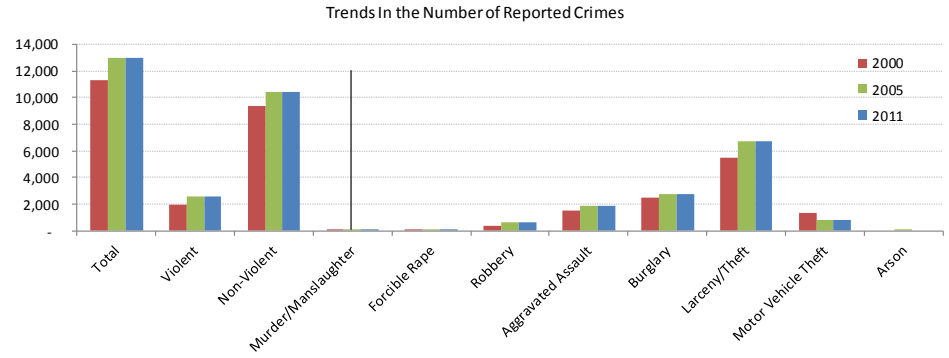
[28] http://maps.massgis.state.ma.us/map_ol/ej.php

5.2.5 Crime

Crime rates are both a predictor and a consequence of important economic and social indicators such as drug use, perceived and actual levels of safety, economic conditions, and changing demographics. The number of crimes reported in the Southcoast increased by 14.9% from 2000 to 2011, although they have declined by 3.6% since 2005 (see Figure 52).

- 12,971 crimes in the Southcoast were reported to police in 2011; 2,595 (20.0%) violent crimes and 10,376 (80.0%) non-violent crimes.
- Property crimes such as larceny/theft (6,724 crimes or 51.8%) and burglary (2,760 crimes or 21.3%) accounted for the majority of crimes in the Southcoast.
- Fall River and New Bedford accounted for 67.6% of the total crimes reported in the region, while the two cities accounted for 54.1% of the Southcoast's total population.

Figure 52

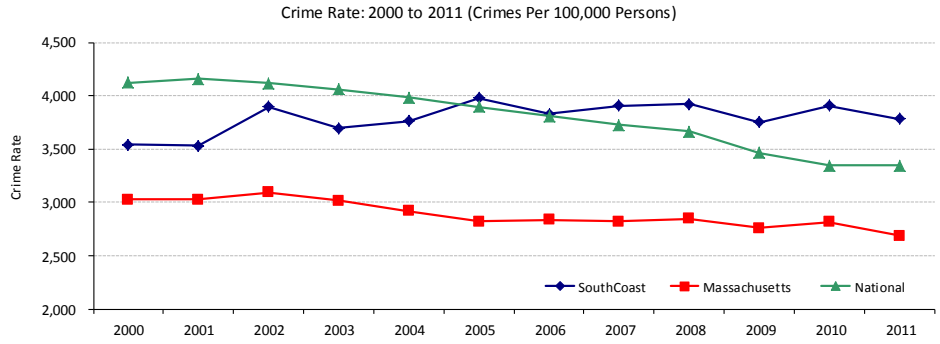


Source: FBI Uniform Crime Reporting Program

Crime Rate

The crime rate measures the number of crimes per 100,000 persons. While crime rates have declined at the state and national levels since 2000, the crime rate in the Southcoast increased by 8.0% from 2000 to 2011, which has been fueled primarily by violent crimes (see Figure 53).

Figure 53



Source: FBI Uniform Crime Reporting Program

5.3 HEALTH BEHAVIOR

Health behavior is defined as the actions taken by individuals or groups thereof to change or maintain their health status or to prevent illness or injury.[29] This category includes behaviors related to healthy eating, active living, smoking, injury prevention, and drug and alcohol use.

5.3.1 Healthy Eating

Over three-quarters of Southcoast adults do not consume the recommended five servings daily of fruit and vegetables. In Greater New Bedford, just 13.8% of adults consume the recommended servings, compared to 19.9% of Greater Fall River residents and 18.8% of residents statewide.[30] Notably, the proportion of adults in the region (and in Massachusetts) who consume the recommended servings of fruit and vegetables has declined since 2000, by as much as 80% in Greater New Bedford (from 24.9% to 13.8% in eleven years).

5.3.2 Active Living

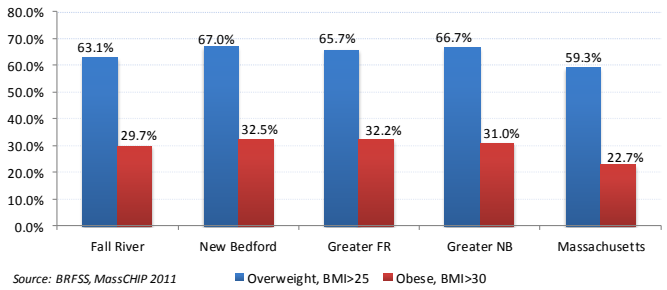
Higher rates of the region's adults engaged in physical activity for exercise over the span of a month: 73.1% of those in Greater New Bedford and 65.5% of Greater Fall River residents, compared to 76.5% of Massachusetts adults as a whole. Adults in the city of Fall River exercise at particularly low rates, with just 55.9% reporting engaging in exercise in the past month.[31] Across the region, fewer than half of all adults reported engaging in physical activity for exercise regularly: just 45.7% in Greater Fall River and 49.5% in Greater New Bedford, compared to 53.0% in Massachusetts.[32]

5.3.3 Healthy Weight

The ability to maintain a healthy weight is both a health behavior and a health outcome associated with nutrition and physical activity. Since 2000, the population of Southcoast adults who are overweight or obese has increased dramatically—by as much as 25% in New Bedford alone. As of 2011, 65.7% of Greater Fall River adults and 66.7% of Greater New Bedford adults were overweight (defined as having a Body Mass Index of more than 25). Approximately half of this group weighed enough to qualify as obese (BMI>30): 32.2% in Greater Fall River and 31.0% in Greater New Bedford. Comparatively, 59.3% of Massachusetts adults were overweight in 2010, and 22.7% were obese (see Figure 54).

Figure 54

Healthy Weight



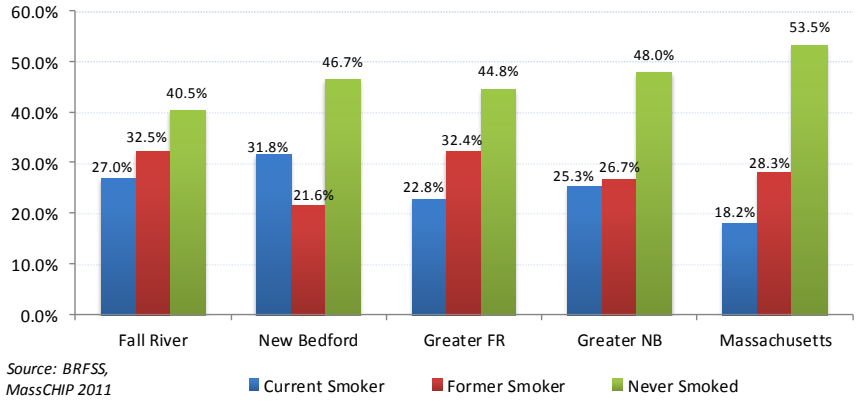
[29] http://www.cdc.gov/workplacehealthpromotion/glossary/index.html#H
[30] BRFSS 2011, via MassCHIP
[31] BRFSS 2011, via MassCHIP
[32] BRFSS 2009, via MassCHIP

5.3.4 Smoking

Smoking is much more prevalent among Southcoast adults as compared to incidence of this behavior statewide. More than a quarter of adults in the region are current smokers, compared to less than twenty percent statewide. Smoking is most prevalent in New Bedford, where 31.8% of adults are current smokers. Figure 55 illustrates current smoking behavior across the region.

Figure 55

Smoking Prevalence



Source: BRFSS, MassCHIP 2011

Secondhand smoke exposure is also more prevalent in our region, with almost one-quarter of Southcoast adults allowing smoking in their home: while just 19.5% of Massachusetts residents allow smoking in their homes either sometimes or always, 23.9% and 29.4% of Greater New Bedford and Greater Fall River residents, respectively, allow this exposure to secondhand smoke.[33]

Fewer Southcoast adults have tried or plan to quit smoking than Massachusetts residents as a whole. While 60% of the state's smokers have tried quitting before and 37% reported plans to quit smoking in the next 30 days, rates among Greater New Bedford residents are 54.4% and 28.1%, respectively.[34]

Southcoast Healthy Housing and Workplace Initiative

The Southcoast Healthy Housing and Workplace Initiative (SCHHWI) seeks to improve heart and lung health in Fall River, New Bedford, and Wareham by promoting smoke-free public and subsidized housing, worksites, and mental health and substance use treatment facilities. The two-year initiative, which began in January 2013, is funded by the Centers for Disease Control's Community Transformation Grant.

As part of the project, over 5,000 surveys were mailed to public housing residents in Fall River, New Bedford, and Wareham to gauge smoking behaviors and readiness to quit smoking. Over 1,500 completed surveys were returned of which approximately 25% were smokers. Preliminary results show that a large percentage of smokers in public housing are trying to quit; 56% tried to quit in the past year, 53% are thinking of quitting smoking for good, and 32% are interested in learning more about the harmful effects of smoking or exposure to secondhand smoke.

[33] BRFSS 2011, via MassCHIP

[34] Greater Fall River data not available; BRFSS 2011, via MassCHIP

In terms of secondhand smoke, 13% of respondents (smokers and non-smokers) report they were exposed to secondhand smoke in their home in the past week. Most households have a smoking policy in place, although only 74% never allow smoking in their home.

On the policy side, 53% of respondents strongly agree that it is okay for their Housing Authority to prohibit smoking in tenants' homes if that is necessary to keep secondhand smoke out of other tenants' homes, while 17% agree, 10% disagree, 13% strongly disagree, and 7% are not sure. Smokers are less supportive of this policy, although there is some support for prohibiting smoking even among smokers.

5.3.5 Injury Prevention

One data point related to injury prevention is available for health behavior analysis: the proportion of adults who report wearing seatbelts always (or nearly always). Once again, Massachusetts residents as a whole are more risk-averse than their Southcoast counterparts, with 89.0% reporting that they are regular seatbelt users. Meanwhile, 83.9% and 83.2% of Greater New Bedford and Greater Fall River residents wear seatbelts regularly. Residents of Fall River (79.8%) and New Bedford (80.4%) wear their seatbelts even less.

5.3.6 Alcohol Use

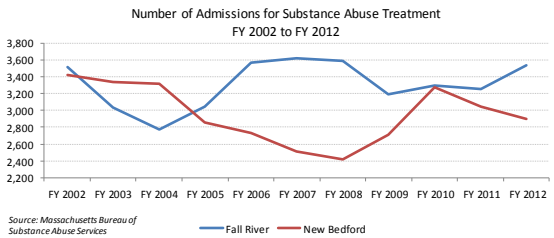
Southcoast residents exhibit similar patterns of alcohol use as residents of Massachusetts as a whole. The proportion of adults who report binge drinking (defined as consuming 5+ drinks on an occasion for men or 4+ drinks for women) within the past 30 days is 18.2% in Greater Fall River and 16.7% in Greater New Bedford (17.8% is the statewide rate).[35]

Rates of heavy drinking, or consuming an average of more than two drinks per day (men) or more than one drink per day (women), are actually slightly lower in the Southcoast as compared to Massachusetts. The proportion of adults who report drinking this amount regularly is 6.6% in Greater Fall River and 5.9% in Greater New Bedford, compared to 6.7% across the state.

5.3.7 Drug Use

Drug use is measured by the number of reported admissions to substance abuse treatment programs for Fall River and New Bedford residents that were reported to the Bureau of Substance Abuse Services. In FY 2012, there were 3,540 admissions to substance abuse treatment admissions from individuals reporting Fall River as their place of residence and 2,901 from New Bedford (see Figure 56). These figures represent 3.45% and 2.84% respectively of all substance abuse admissions statewide.[36] Admissions declined by 0.6% in Fall River and by 15.2% in New Bedford between FY 2002 and FY 2012.

Figure 56



[35] BRFSS 2010, via MassCHIP. Data for Wareham not available.

[36] These statistics represent admissions to treatment and not distinct individuals.

5.4 HEALTH OUTCOMES

Almost one-fifth of Southcoast residents report having fair or poor health: 27.5% in Fall River, 24.9% in New Bedford, 18.4% in Greater Fall River and 21.8% in Greater New Bedford, compared to just 14.0% statewide.[37] The outcomes analyzed in this section relate to cardiovascular and respiratory health, physical and mental health, diabetes, cancer incidence, and mortality. Indicators include reported diagnoses (via BRFSS) as well as hospitalizations for these conditions.

5.4.1 Cardiovascular Health

In 2009, cardiovascular diseases represented 15% of all hospitalizations in Greater Fall River and Greater New Bedford, versus 14% statewide.[38] Indicators of cardiovascular health in the Southcoast region include incidence of high blood cholesterol, hypertension, heart disease, heart attacks, and stroke. Cardiovascular health can be mitigated by health behaviors that include healthy eating, active living, and weight control. It is also influenced by screening for high cholesterol.

High Blood Cholesterol

Southcoast adults reflect a slightly above-average rate of lifetime high blood cholesterol diagnoses: while 34.3% of Massachusetts residents have been so diagnosed, 42.9% of residents in Fall River, 40.0% of residents in New Bedford, 40.5% of residents in Greater Fall River, and 36.7% of residents in Greater New Bedford have been diagnosed with high blood cholesterol in their lifetime.[39]

Hypertension

Hypertension, or high blood pressure, is also more prevalent in this region than statewide and has increased across the region since 2001 (see Table 4). On the other hand, a greater proportion of the region's adults diagnosed with hypertension report that they are currently taking medication to manage this condition in comparison to residents statewide; 85.2% in Fall River, 77.3% in New Bedford, 83.2% in Greater Fall River and 81.1% in Greater New Bedford, versus 76.9% statewide.[40] Hospitalization rates are also higher in the region and these rates have increased since 2000 (see Figure 57).

Table 4

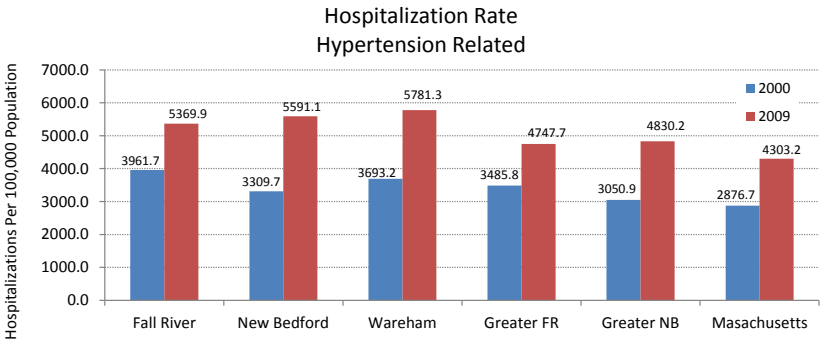
Diagnosed With Hypertension in Lifetime

	2001	2011
Fall River	30.1%	33.1%
New Bedford	31.6%	37.3%
Greater Fall River	31.4%	33.2%
Greater New Bedford	26.3%	34.9%
Massachusetts	23.6%	29.2%

Source: BRFSS, via MassCHIP

[37] BRFSS 2011, via MassCHIP.
[38] Hospital Discharges (UHDDS) 2009, via BRFSS. Data for Wareham not available.
[39] BRFSS 2011, via MassCHIP
[40] BRFSS 2011, via MassCHIP

Figure 57



Source: Massachusetts Department of Public Health, MassCHIP (age adjusted rate)

Heart Disease

Heart disease is a broad term used to describe a range of diseases that affect one's heart. The prevalence of heart disease in the Southcoast is higher than it is statewide; 9.3% in Fall River, 8.2% in New Bedford, 9.5% in Greater Fall River, and 8.3% in Greater New Bedford, compared to 6.8% statewide (see Table 5). Hospitalization rates are also higher in the region, although these rates have fallen since 2000 (see Figure 58).

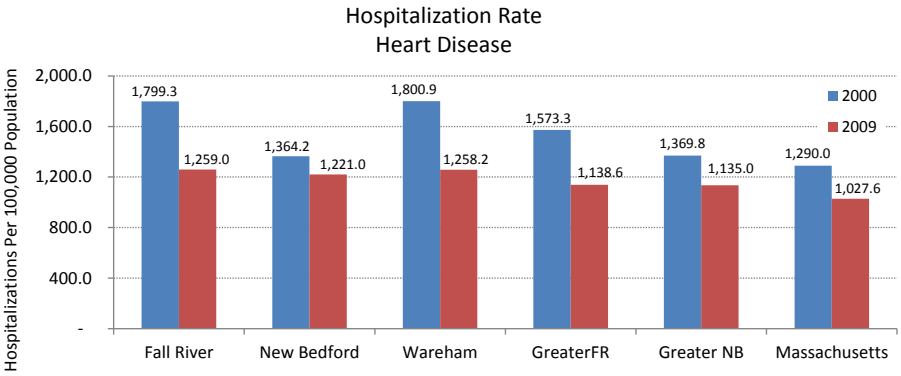
Table 5

Prevalence of Heart Disease Among Adults

	Percent
Fall River	9.3%
New Bedford	8.2%
Greater FallRiver	9.5%
Greater NewBedford	8.3%
Massachusetts	6.8%

Source: BRFSS, via MassCHIP (2005-2007 Average)

Figure 58

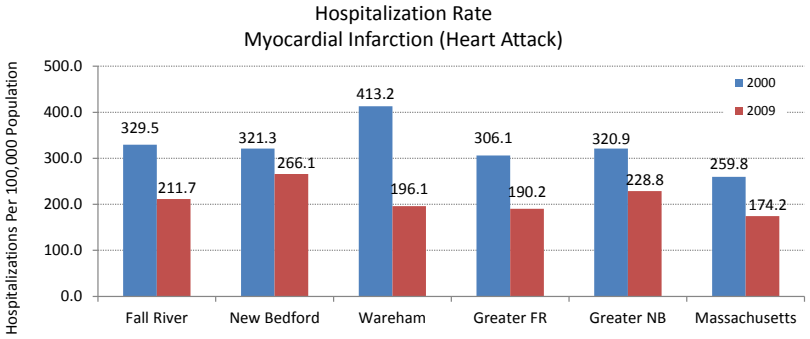


Source: Massachusetts Department of Public Health, MassCHIP (age adjusted rate)

Heart Attack Hospitalization Rates

Hospitalization rates for heart attacks, or myocardial infarction, declined for all study areas from 2000 to 2009 (see Figure 59).[41] Prevalence data for heart attacks is not available.

Figure 59

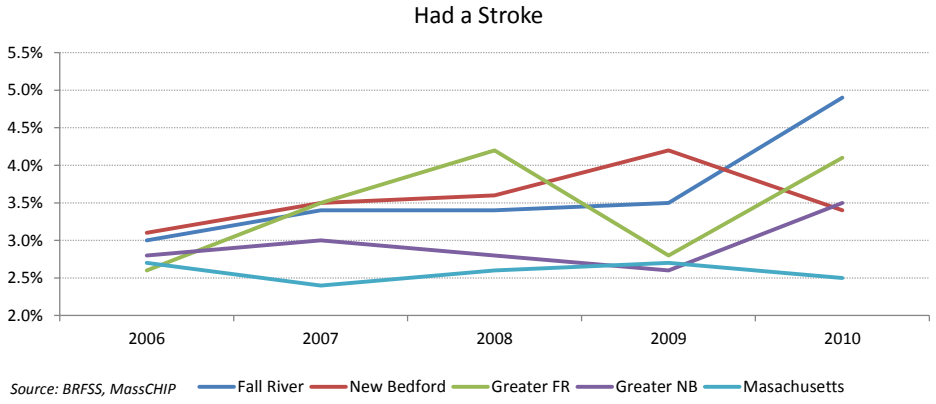


Source: Massachusetts Department of Public Health, MassCHIP (age adjusted rate)

Stroke

Strokes are slightly more prevalent in the Southcoast than statewide. Among adults in 2010, 4.9% in Fall River, 3.4% in New Bedford, 4.1% in Greater Fall River, and 3.5% in Greater New Bedford report having had a stroke in their lifetimes. This compares to 2.5% of residents statewide. The percentage of adults who report they have had a stroke increased in each study area from 2006 to 2010, while the percentage declined slightly at the statewide level (see Figure 60).

Figure 60



[41] Conclusions for the Wareham data should be made with caution due to broad confidence intervals.

5.4.2 Diabetes

Since 2000, diabetes has grown in prevalence in both the Southcoast and Massachusetts. Currently, 7.5% of the state's adults had or have diabetes, compared to 10.0% of Fall River residents, 10.8% of New Bedford residents, 10.3% of Greater Fall River residents, and 7.5% of Greater New Bedford residents (see Table 6). Of those who currently have diabetes, over one-quarter take insulin to manage the condition: 26% in Greater Fall River and 29.5% in Greater New Bedford (28.9% do so statewide).[42] Data for Fall River and New Bedford are not available.

Table 6

Diagnosed With Diabetes in Lifetime		
	2000	2010
Fall River	8.4%	13.8%
New Bedford	8.2%	12.3%
Greater Fall River	6.1%	10.4%
Greater New Bedford	7.6%	9.0%
Massachusetts	5.8%	7.4%

Source: BRFSS, via MassCHIP

5.4.3 Respiratory Health

Respiratory health is reflected by incidence of asthma. The prevalence of asthma in the Southcoast is higher than the statewide percentage of 15.3%; 23.7% in Fall River, 22.4% in New Bedford, 20.6% in Greater Fall River, and 17.5% in Greater New Bedford (see Table 7). Hospitalizations rates are also higher in the region and these rates have increased since 2000 (see Figure 61).

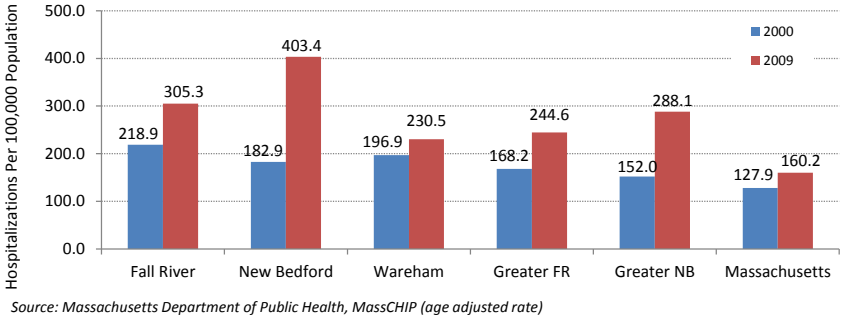
Table 7

Diagnosed With Asthma In Lifetime	
	Percent
Fall River	23.7%
New Bedford	22.4%
Greater FR	20.6%
Greater NB	17.5%
Massachusetts	15.3%

Source: BRFSS, via MassCHIP (2011)

Figure 61

Hospitalization Rate
Asthma



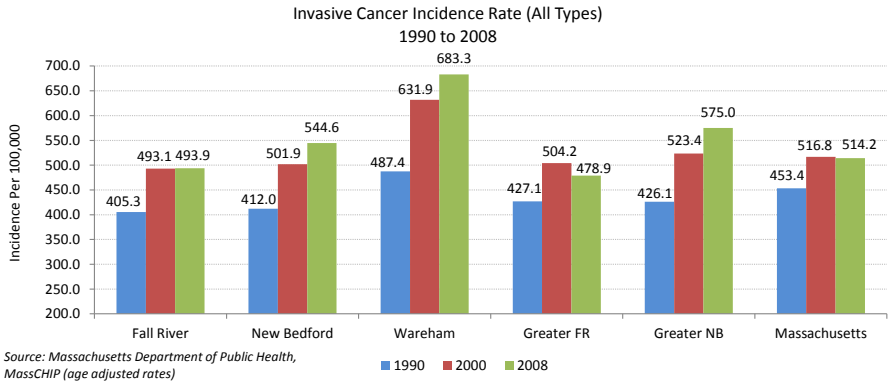
Source: Massachusetts Department of Public Health, MassCHIP (age adjusted rate)

[42] BRFSS 2010-13, via MassCHIP Instant Topics (Cardiovascular)

5.4.4 Cancer

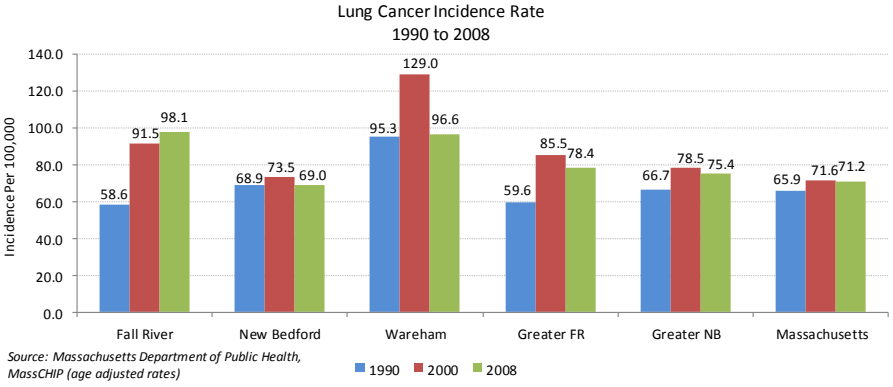
Cancer incidence rates for all types of cancer vary by geography. While Wareham has the highest incidence rates, this result should be interpreted cautiously due to the high margin of error. Most importantly, the incidence rate increased in each area from 1990 to 2008, which may partly be a result of better detection (see Figure 62).

Figure 62



Incidence rates for lung cancer are presented due to the relatively high percentage of Southcoast residents who smoke. The general trend is that lung cancer incidence has increased since 1990, with the rate in Fall River increasing the most (see Figure 63). While Wareham has one of the highest lung cancer incidence rates, this result should be interpreted cautiously due to the high margin of error.[43]

Figure 63



[43] Incidence rates for other types of cancer such as breast cancer and lung cancer are not included due to the high margin of error of the data.

5.4.5 Mortality

This section presents the mortality rates per 100,000 population for all causes of death, heart disease, and diabetes. Mortality rates for all causes of death have declined throughout the Southcoast and statewide since 1999 (see Figure 64).[44] However, mortality rates are lower statewide in nearly every instance when compared to the region.

Figure 64

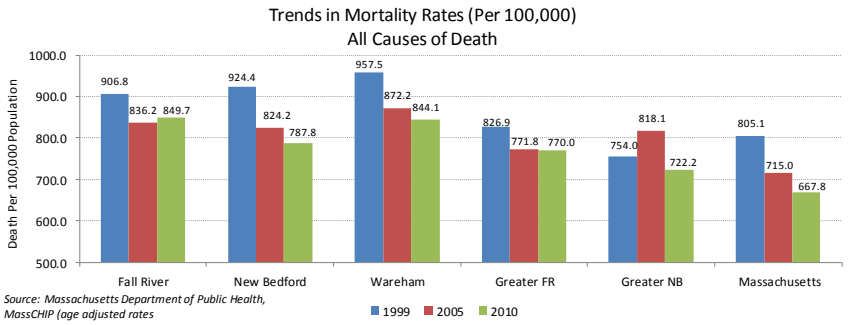
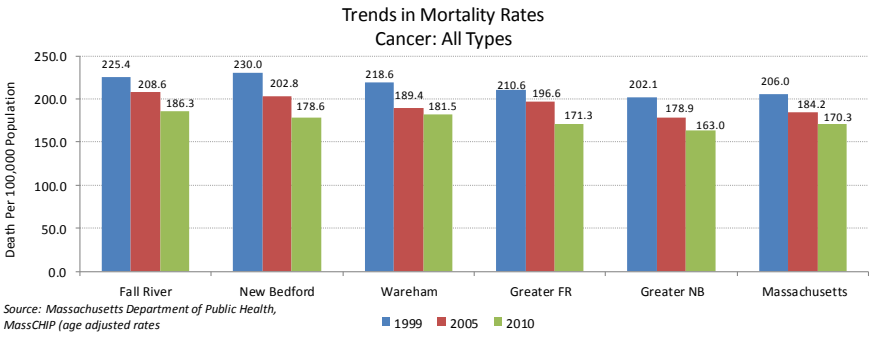


Figure 65 shows that while the incidence rate for cancer overall has increased in some of the Southcoast communities, the mortality rates for cancers are declining.[45]

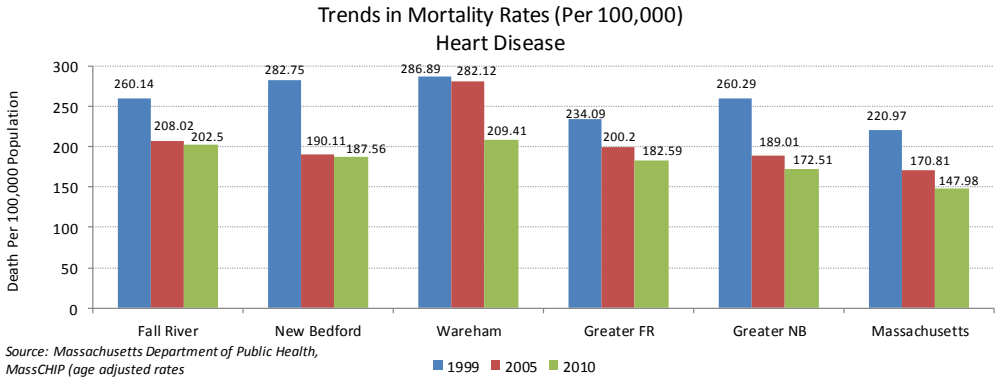
Figure 65



[44] Conclusions for the Wareham data should be made with caution due to broad confidence intervals.
[45] The latest year of data for cancer incidence is 2008, while the latest year of data for mortality is 2010.

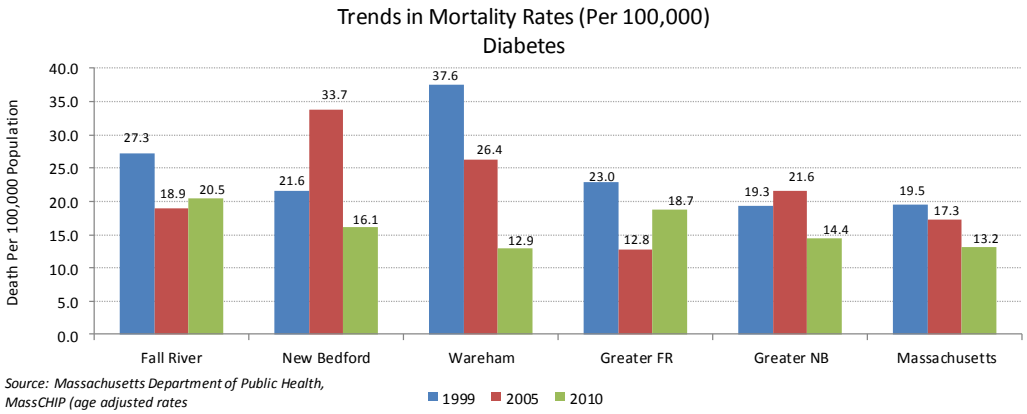
Similarly, mortality rates for heart disease and diabetes have declined throughout the Southcoast and statewide since 1999 although rates in the Southcoast remain higher than the statewide average (see Figure 66 and Figure 67).

Figure 66



Source: Massachusetts Department of Public Health, MassCHIP (age adjusted rates

Figure 67



Source: Massachusetts Department of Public Health, MassCHIP (age adjusted rates

5.5 CHILDREN'S HEALTH

Children's health encompasses the care, environment, behavior, and outcomes of children ranging from prenatal to age 18. Not only does children's health predict and affect adult health and outcomes, but it also affects and predicts educational performance and outcomes, which in turn shapes the degree to which children can become healthy, productive adults.

5.5.1 Fetal and Infant Health

Fetal and infant health indicators relate to care, maternal behavior, and outcomes. In both Greater Fall River and Greater New Bedford, levels of care and outcomes are generally suboptimal compared to Massachusetts. First, fewer infants' mothers begin prenatal care during the first trimester: 81.2% in Greater Fall River and 76.5% in Greater New Bedford, compared to 83.0% statewide (see Table 8). Similar proportions of infants born in the region were determined to have adequate prenatal care except for New Bedford, where only 76% of infants received adequate prenatal care compared to 85% statewide (see Table 8). Among infants receiving some level of prenatal care, 63% of that care was publicly financed for mothers in Greater Fall River and 47% in Greater New Bedford, which compares to 36% statewide.

The prevalence of gestational diabetes is slightly higher in Greater Fall River (7.7%) and Greater New Bedford (4.9%) than statewide (4.7%). Particularly alarming is the percentage of mothers who smoked during their pregnancy: 17.0% in Greater Fall River and 13.4% in Greater New Bedford, compared to 6.8% statewide (see Table 8).

Table 8

Fetal and Infant Health

	Began Prenatal Care During 1st Trimester (2009)	Adequate Prenatal Care (2010)	Gestational Diabetes (2009)	Mother Smoked During Pregnancy (2009)
Fall River	No data	85.0%	No data	No data
New Bedford	No data	76.0%	No data	No data
Wareham	No data	90.0%	No data	No data
Greater Fall River	81.2%	86.4%	7.7%	17.0%
Greater New Bedford	76.5%	80.1%	4.9%	13.4%
Massachusetts	83.0%	85.0%	4.7%	6.8%

Source: MassCHIP Instant Topics (Kids Count and Perinatal Reports)

Neonatal health outcomes are reflected by prematurity and birth weight. This is an indicator within which there is some divergence in the region: while Greater Fall River has fewer premature births (7.6%) compared to Massachusetts (8.7%), Greater New Bedford has more (9.7%). The opposite effect appears where low birth weight is considered, a condition present in 7.8% of Massachusetts infants compared to 8.4% in Greater Fall River and 7.1% in Greater New Bedford.

Table 9

Neonatal Outcomes

	*Premature Births	**Low Birthweight
Fall River	No data	8.7%
New Bedford	No data	5.1%
Wareham	No data	7.6%
Greater Fall River	7.6%	8.4%
Greater New Bedford	9.7%	7.1%
Massachusetts	8.7%	7.8%

**Source: MassCHIP Instant Topics, 2009*
*** Source: MassCHIP Instant Topics, 2010*

Both Greater Fall River and Greater New Bedford have lower rates of infant mortality, or deaths among infants under one year old per 1,000 live births, as compared to the state. The Massachusetts rate is 4.4, compared to 4.0 in Greater Fall River and just 2.9 in Greater New Bedford.[46] After delivery, far fewer Southcoast mothers begin to or plan to breast feed as compared to the state average: just 50.6% in Greater Fall River and 65.1% in Greater New Bedford, compared to 82.0% across Massachusetts.[47]

5.5.2 Lead Exposure

The risk and incidence of lead poisoning in the Southcoast is above average and likely skewed by higher risk and incidence in the region's cities. A likely contributing factor is the fact that lead paint (the primary source for exposure in children) is only present in older houses, which are particularly prevalent in the cities of Fall River and New Bedford. Table 10 illustrates the degree to which lead exposure and poisoning affects children in Greater Fall River, Greater New Bedford, each city individually, and Massachusetts as a whole.

Table 10

Lead Poisoning Cases Per 1,000 Screened

	2010
Fall River	No data
New Bedford	No data
Wareham	No data
Greater Fall River	7.6%
Greater New Bedford	9.7%
Massachusetts	8.7%

Source: MassCHIP Instant Topics, 2010

5.5.3 Abuse and Neglect

There were 5,956 children in the Southcoast who were reportedly abused or neglected in 2009. Cumulatively, this means 7.5% of the region's children were involved in reports of abuse or neglect, compared to 5.2% of Massachusetts children as a whole. Verified investigations of abuse and neglect result in data that shows 4.1% of our region's children were verifiably abused or neglected (compared to 2.2% statewide). Particularly high rates of reported and verified instances of abuse and neglect were documented in New Bedford, where 11.8% of children were involved in allegations of abuse and 7.4% of the city's children were verifiably abuse or neglected.[48]

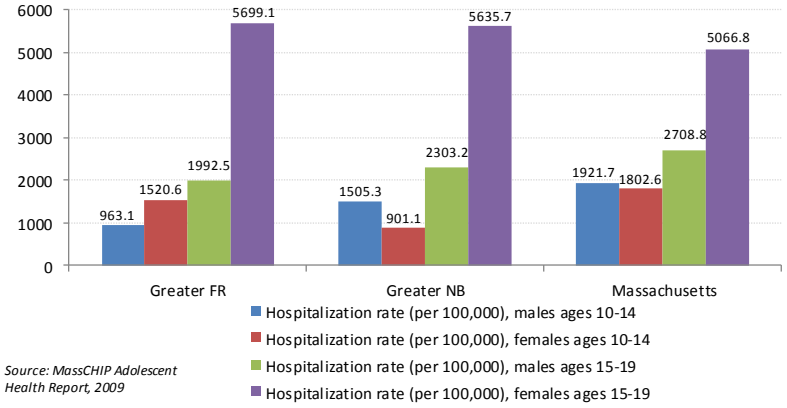
[46] Instant topics – Kids Count, 2010
[47] Instant topics - Perinatal Report, 2009
[48] Instant topics – Kids Count, 2010; calculations by author based on population reported in source.

5.5.4 Hospitalizations

Hospitalization data is available on younger (ages 10-14) and older (ages 15-19) adolescents in the region; rates are based on hospitalizations per 100,000 in the relevant age group. With the exception of females ages 15-19, the Southcoast has adolescent hospitalization rates that are lower than Massachusetts rates. Figure 68 illustrates rates in Greater Fall River, Greater New Bedford, and Massachusetts for both sexes and groups of adolescents.

Figure 68

Abuse and Neglect



Source: MassCHIP Adolescent Health Report, 2009

5.5.5 Substance Abuse

Data is available to measure admissions to Department of Public Health funded substance abuse treatment programs among males and females ages 15-19. While hospitalizations in the region are comparatively lower than statewide rates, substance abuse treatment admissions are generally above state levels. Among males, rates per 100,000 for males ages 15-19 are 1,401 in Greater Fall River, 1,022 in Greater New Bedford, and 1,265 in Massachusetts. Among females, rates are 1,315 in Greater Fall River, 768 in Greater New Bedford, and 700 in Massachusetts.[49]

5.5.6 Healthy Weight

School districts in Massachusetts track and report on Body Mass Index of their students to determine the degree to which students are overweight, obese, or of healthy weight. Using the school districts of Fall River and New Bedford as indicators of the region (not all Southcoast districts have available data), it appears that fewer students in the region are of healthy weights when compared with the state: 60.7% in Fall River and 63.6% in New Bedford, versus 64.4% statewide. Obesity is prevalent among 17.4% of Fall River students and 19.2% of New Bedford students; in Massachusetts, 16.3% of students are obese.[50]

5.5.7 Mortality

Child mortality—that is, deaths among young people under the age of 20 per 100,000—is less prevalent in the Southcoast when compared to Massachusetts, where the rate is 35.5. In Greater Fall River, the child mortality

[49] Instant topics - Adolescent Health Report, 2009.
[50] Instant topics - Essential School Health service Data Report, 2010.

rate is 34.3, while in Greater New Bedford, the rate is 26.1. Among the larger communities in the region, Wareham has a startlingly high rate: 79.0 in 2010.

Mortality rates related to injury-related deaths are also available for the region's children. Greater Fall River has a rate below that of the state—6.2 versus 9.3—while Greater New Bedford's rate is higher than both (12.1). Once again, Wareham has a particularly high rate of 19.8, while the region's cities have rates of 4.7 (Fall River) and 16.3 (New Bedford) (see Table 11).

Table 11

Mortality Rate (<20 Years)

	Total Deaths	Injury-Related Deaths
Fall River	42.1	4.7
New Bedford	24.5	16.2
Wareham	79.0	19.8
Greater Fall River	34.3	6.2
Greater New Bedford	26.1	12.1
Massachusetts	35.5	9.3

Source: BRFSS, via MassCHIP, 2010

5.6 HEALTH DISPARITIES

Health disparities refer to differences in health behaviors, access, and outcomes among population subgroups—particularly those groups of racial and ethnic minorities, those classified as low-income, and those with lower levels of educational attainment.

5.6.1 Racial and Ethnic Health Disparities

Fetal and Infant Health Disparities

Table 12 illustrates disparities in the region across racial and ethnic groups where perinatal health is concerned. When compared to their non-minority counterparts, infants in the Southcoast are disproportionately affected by early and adequate prenatal care, low birth weights, and births to teenage mothers. For example, while more than four out of five White Southcoast infants received prenatal care in the first trimester, only 66.7% of Black infants did.

Low birth weight in the region affects 7.7% of White infants in the Southcoast and 7.2% statewide, but low birth weight among Black and Hispanic infants is more prevalent. Low birth weight affected 13.3% of Black infants in Greater Fall River, 11.2% in Greater New Bedford; among Hispanic infants, the proportions were 9.5% and 13.6%, respectively.

Teen births, an indicator of health outcomes for infants and adolescents in the region, affect racial and ethnic minorities in the Southcoast more disproportionately than statewide; among Whites, 8.2% of births in Greater Fall River 8.5% in Greater New Bedford, and 4.0% statewide are born to teen mothers; among Blacks, 9.3% in Greater Fall River, 13.7% in Greater New Bedford, and 8.7% statewide were born to teen mothers; among Hispanics, 19.0% of births in Greater Fall River, 16.9% in Greater New Bedford, and 15.5% statewide were born to teen mothers.

Table 12

Fetal and Infant Health Disparities

	Began Prenatal Care During 1st Trimester			Adequate Prenatal Care			Low Birthweight			Teen Births (<20)		
	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
Greater Fall River	83.0%	66.7%	76.3%	88.0%	76.4%	84.3%	7.7%	13.3%	9.5%	8.2%	9.3%	19.0%
Greater New Bedford	81.5%	66.5%	63.5%	81.5%	73.5%	71.9%	7.5%	11.2%	13.6%	8.5%	13.7%	16.9%
Massachusetts	85.9%	72.3%	75.3%	86.8%	76.0%	79.2%	7.2%	10.8%	8.6%	4.0%	8.7%	15.5%

Source: MassCHIP Instant Topics (Kids Count and Perinatal Reports), 2009 data

Clinical Care

Clinical care indicators that reflect health disparities in our region include cost as a barrier to care and participation in cancer screenings. In the Southcoast, the Hispanic population is particularly underserved in this area: more cannot see a doctor due to cost and fewer have participated in cancer screenings when compared to non-minorities and even the Hispanic population statewide (see Table 13).

Table 13

Clinical Care

	Cannot See a Doctor Due to Cost			Colorectal Cancer Screening			Mammogram Within Last Two Years			Pap Smear Within Last Three Years		
	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
Greater Fall River	7.4%	NA	21.3%	65.5%	NA	60.7%	87.1%	NA	79.9%	81.8%	NA	70.2%
Greater New Bedford	8.0%	NA	19.4%	66.4%	68.5%	57.8%	87.8%	84.7%	69.9%	80.9%	84.9%	79.0%
Massachusetts	5.4%	10.9%	16.7%	74.6%	71.2%	63.5%	84.3%	87.1%	84.4%	84.1%	87.0%	83.9%

Source: BRFSS, via MassCHIP Instant Topics (2010-2013)

Health Behavior

In the areas of smoking, maintaining a healthy weight, and being diagnosed with high blood pressure or high cholesterol, the region's minority groups are disproportionately affected even when compared to the same population groups statewide. Regarding smoking, approximately one-quarter of Southcoast Hispanics currently smoke, compared to roughly 20.0% of Whites and just 14.8% of Hispanics Massachusetts-wide. Particularly striking is the fact that 42.3% of Blacks in Greater New Bedford currently smoke, a rate almost double that of Whites in this sub-region and more than double the rate among Blacks in Massachusetts (17.5%) (see Table 14).

While all racial and ethnic groups in the Southcoast struggle with the ability to maintain a healthy weight, the region's Black and Hispanic populations struggle even more—even when compared to the same racial and ethnic groups statewide. Obesity affects as many as 42.5% of Blacks and 33.5% of Hispanics in Greater New Bedford, rates that exceed those of Greater Fall River (30.9% and 32.3%, respectively) and Massachusetts (30.6% and 29.1%) (see Table 14).

Table 14

Health Behavior

	Current Smoker			Overweight			Obese		
	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
Greater Fall River	20.3%	20.0%	25.8%	60.3%	72.8%	70.4%	23.5%	30.9%	32.3%
Greater New Bedford	21.8%	42.3%	25.5%	62.0%	73.1%	67.8%	27.7%	42.5%	33.5%
Massachusetts	15.1%	17.5%	14.8%	57.9%	67.1%	65.0%	21.7%	30.6%	29.1%

Source: BRFSS, via MassCHIP Instant Topics (2010-2013)

Heart Related Conditions

Heart-related conditions affect racial and ethnic subgroups a bit differently. Hypertension was actually diagnosed among fewer Hispanics than Whites in the region, and in Greater Fall River, the diagnosis rate is on par with that of Hispanics in Massachusetts. On the other hand, the region's Hispanic population is particularly disproportionately affected by high cholesterol: 49.8% in Greater Fall River have been so diagnosed and 47.1% in Greater New Bedford, compared to 37% statewide and approximately 39% of Whites in the Southcoast (see Table 15).

Table 15

Heart-Related Conditions

	Hypertension			High Cholesterol		
	White	Black	Hispanic	White	Black	Hispanic
Greater Fall River	29.9%	33.0%	22.0%	39.0%	34.2%	49.8%
Greater New Bedford	30.7%	NA	24.8%	39.3%	NA	47.1%
Massachusetts	26.6%	30.2%	22.1%	36.3%	31.0%	37.0%

Source: BRFSS, via MassCHIP Instant Topics (2010-2013)

Health Outcomes

Health outcome breakdowns by race and ethnicity inform the degree to which subgroups experience poor physical health and the degree to which mortality rates and causes vary. Southcoast racial and ethnic subgroups mirror those of the state when it comes to individuals reporting having fair or poor health, but to a greater extreme: while more Hispanics report having fair or poor health in comparison to other groups, the proportion in the Southcoast is 40.1% in Greater Fall River and 45.2% in Greater New Bedford, compared to 26.0% of Hispanics statewide.[51] A larger proportion of the region's Hispanic population also report worse mental health outcomes, with 18% across the Southcoast reporting feeling sad, blue, or depressed for more than 15 days over the past month.[52] This compares to fewer than 10% of the region's White population and 12.8% of Hispanics statewide.

Mortality

Data regarding mortality's effects on racial and ethnic minorities is only available for Massachusetts cities; however, as noted in the demographic section of this assessment, the Southcoast's minority population is largely concentrated in the cities of Fall River and New Bedford.

Areas in which minority groups have disproportionately higher mortality rates are in the areas of :

- heart disease, a rate of 644.6 among Blacks in New Bedford, compared to 187.1 among Whites and 177.3 among Blacks across Massachusetts,[53]
- cancer, among Blacks, a rate of 323.7 in Fall River and 409.7 in New Bedford, compared to rates below 190 among Whites in both sub-regions and a rate of 191.4 in Massachusetts,
- stroke, among Blacks in Fall River and New Bedford

[51] Instant topics – BRFSS Special Reports: General health status, 2002-07
[52] Instant topics – BRFSS Special Reports: General health status, 2002-07
[53] Instant topics – Race/Ethnicity Report, Mortality, 2008-10

- diabetes, among Blacks and Hispanics in New Bedford; rate for both groups is well above Massachusetts rates for the same racial and ethnic groups
- chronic obstructive pulmonary disease (COPD), among Blacks in New Bedford (a rate of 62.6, well above the rate for Blacks in Massachusetts of 18)

Among all causes of death for all ages, the mortality rate for Blacks in both Fall River and New Bedford is well above the rates for Whites and Hispanics in both cities and, once again, considerably higher than the rate for the Black population in Massachusetts. In Fall River the rate is 1,061.5 and in New Bedford it is 2,108.4. Comparatively, the mortality rate for Blacks in Massachusetts is 784.1 per 100,000.

5.6.2 Income-Based Disparities

Data collected via BRFSS allows for analysis based on whether the respondent's income is less than or more than $50,000. Generally, health access and outcomes are better for those with higher incomes and risk behaviors are more prevalent among those making less than $50,000.[54]

Fetal and Infant Health Disparities

Data is not available to determine the degree to which perinatal health disparities exist based on income levels.

Clinical Care

Perhaps unsurprisingly, access to and utilization of clinical care is more challenging to the Southcoast's lower income residents as compared to those earning more than $50,000 per year. For example, cost is a more of a barrier for those of lower incomes when a doctor's care is needed. Across the board, a greater percentage of those with higher incomes have participated in health screenings, which mirrors statewide breakdowns between income groups. But in some cases, even fewer of the Southcoast's lower income residents engage in screenings than their lower income counterparts across Massachusetts, including breast exams, pap smears, and colonoscopies.

Health Behavior

Smoking is much more prevalent among the Southcoast's lower income residents, even when compared to those in the same income category statewide: as many as 32.9% of lower income residents in Greater Fall River and 26.1% of those in Greater New Bedford currently smoke, compared to fewer than 20.0% in both regions among those who earn more than $50,000. Exercise is less prevalent among those of lower incomes by a margin of as many as 20 percentage points in Greater Fall River, where 60.9% of lower earners exercise as compared to 80.4% of those earning more (in Greater New Bedford the rates are 70.8% and 85.6%, respectively).

Notably, greater proportions of higher income Southcoast residents engage in binge drinking and are overweight when compared to those earning less than $50,000, highlighting the fact that in some cases, health risk behaviors are not exclusive to the region's low-income residents.

[54] The most recent data for income disparities is 2002-2007 (BRFSS special Reports).

Health Outcomes

In the Southcoast, approximately four times as many people who earn less than $50,000 per year report having fair or poor health as compared to those who earn above that threshold (25.0% in Greater Fall River compared to 6.2% of higher earners; 22.5% in Greater New Bedford compared to 6.4% of those earning more than $50K). This gap narrows but holds true among reports of poor physical and mental health and experiencing feelings of sadness or depression for at least half of the month.

5.6.3 Education-Based Disparities

Because education levels are closely aligned with income, many education-based disparities align closely with income-based disparities. [55]

Fetal and Infant Health Disparities

Data is not available to determine the degree to which perinatal health disparities exist based on education levels.

Clinical Care

Since education levels are correlated with income levels, it follows that among those with lower levels of educational attainment there is less access to clinical care. Among those without a college degree, many more cannot see a doctor due to cost. Where participation in screening is concerned, some education-specific disparities include lower rates of clinical breast exams (particularly in Greater Fall River, where just 75% of this subgroup reports having had this exam), pap smears, and colonoscopies among those without a college degree.

Health Behavior

Comparatively fewer Southcoast residents with a college degree engage in health risk behaviors compared to those without a degree. This group has fewer smokers (approximately 12%, versus as many as 33% of those without a college degree who smoke in Greater Fall River), fewer people who are overweight or obese, and many more who engage in physical activity for exercise. Those with a college degree also have a higher rate of consuming the recommended daily serving of fruit and vegetables when compared to those without a college degree (nearly 30%, compared to less than 20%).

Health Outcomes

A significant difference in general health exists between those with and without a college degree: while fewer than nine percent of those with a degree report having fair or poor health, more than one-quarter of those with a high school degree or less report the same (27.1% in Greater Fall River and 25.0% in Greater New Bedford). This difference holds true among those who have experienced more than 15 days of poor physical and mental health and among those who have experienced more than 15 days of feeling sad, blue, or depressed. In each case, at least double the proportion of those without a college degree experiences each condition as compared to those with a college education.

[55] The most recent data for education disparities is 2002-2007 (BRFSS special Reports).

SOURCES

Adler, Nancy E. "Socioeconomic Status and Health: The Challenge of the Gradient." *American Psychologist. 49* (1) *(*1994): p. 15.

Agency for Healthcare Research and Quality. "National Healthcare Disparities Report." 2012. Publication # 13-0003.

Anderson, Ron J., and Paul J. Boumbulian, Sue Pickens. "The Role of U.S. Public Hospitals in Urban Health." *Academic Medecine* Volume 79 - Issue 12 (2004): 1162-1168.

Baker, David, and Ron D. Hayes, Puebla Fortier. "Interpreter Use and Satisfaction with Interpersonal Aspects of Care for Spanish-Speaking Patients." *Medical Care* 1998 Oct; 36(10): 1461–70.

Braveman, Paula A., and Catherine Cubbin, Susan Egerter, et al. "Socioeconomic Status in Health Research: One Size Does Not Fit All." *Journal of American Medical Association*, 294(22): 2879-88, 2005

Center for Workforce Studies. "The Impact of the Aging Population on the Health Workforce in the United States: Key Findings. (2006). School for Public Health. University at Albany, New York.

Centers for Disease Control and Prevention. "CDC Health Disparities and Inequalities Report- United States 2012." U.S. Department of Health. June 2012. Vol. 60

Commission on Social Determinants of Health (CSDH). "Closing the Gap in a Generation: Health Equity Through Action On the Social Determinants of Health. Final report of the Commission on Social Determinants of Health." 2008. World Health Organization: Geneva.

Connors Center for Women's Health and Gender Biology, Brigham & Women's Hospital. "Ensuring the Health Care Needs of Women: A Checklist for Health Exchanges." February 2013.

Derose, Kathryn, and David Baker. "Limited English Proficiency and Latinos' Use of Physician Services." *Medical Care Research and Review* 2000 Mar; 57(1): 76–91.

Egerter Susan, et al. "America's Health Starts with Healthy Children: How Do States Compare?" Robert Wood Johnson Foundation Commission to Build a Healthier America (RWJF CBHA), 2008 (available at www.commissiononhealth.org)

Fox, Claude, and Thomas G. Morford, Amy Fine, Chris Gibbons. "The Johns Hopkins Urban Health Institute: A Collaborative Response to Urban Health Issues." *Academic Medecine.* 2004;79:1169 –1174.

National Research Council of the National Academies. "Improving Health in the U.S.: The Role of Health Impact Assessment." 2012. The National Academies Press. Washington, D.C.

North Carolina Institute of Medicine. "Prevention for the Health of North Carolina: Prevention Action Plan. Healthy North Carolina 2020." February, 2013.

Robert Wood Johnson Foundation, Commission to Build a Healthier America. *"*Issue Brief 5: Race and Socioeconomic Factors." April 2009.

Wilson, Elisabeth, et al. "Effects of Limited English Proficiency and Physician Language on Health Care Comprehension." *Journal of General Internal Medicine.* 2005. Volume 20, Issue 9, pp .800–806.