

**Exploring the Role of Boston's Community Health Centers in
Improving Healthy Food Access**

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Abstract

Recent research suggests that inadequate access to healthy food may contribute to high rates of obesity and diet-related disease, particularly in low-income neighborhoods and communities of color. As a result, municipal governments and community-based organizations across the country have begun to organize an increasing number of healthy food access initiatives, which seek to improve the availability and affordability of healthy food in local communities. Up to this point, however, little research has been done to examine the extent to which Federally Qualified Health Centers (FQHCs) are involved in healthy food access initiatives. FQHCs have a longstanding history of engaging communities in efforts to address the social determinants of health and thus have the potential to be a valuable partner in efforts to improve healthy food access. This thesis uses qualitative interviews with health center staff in the city of Boston, MA, to explore health centers' motivations for getting involved in healthy food access initiatives and the challenges and resources that go along with such work. In addition, a geospatial analysis of healthy and unhealthy food store densities provides context for the current state of healthy food access in targeted health center neighborhoods. Ultimately, this thesis provides recommendations for how planners and policymakers can build upon the work of community health centers to improve health outcomes and secure food justice over the long-term.

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Chapter One: Introduction

Within the last half-century, obesity has become a serious public health concern in the United States (U.S. DHHS 2001; U.S. DHHS 2010). From 1960 to 1994, the prevalence of obesity (defined as body mass index greater than 30kg/m^2) in men and women rose steadily from 12.8 to 22.5 percent (Flegal et al. 1998). In recent years, the prevalence of obesity has increased at a much faster rate, from 23 percent in 1994 to 33 percent in 2008 (Ogden and Carroll 2010). The rapid increase in obesity rates has attracted national attention. In 2001, the U.S. Surgeon General declared obesity to be a “major public health problem” (U.S. DHHS 2001) and, in 2010, the Surgeon General released a *Vision for a Healthy and Fit Nation*, a document that outlines broad strategies to address the growing problem of obesity in the U.S. (U.S. DHHS 2010).

Obesity has received such attention because of its link to serious diseases. Persons who are obese have a higher risk for high blood pressure, high cholesterol, type II diabetes, coronary heart disease, stroke, gall bladder disease, osteoarthritis, sleep apnea, and respiratory problems, as well as endometrial, breast, colon, and prostate cancers (NIH 1998). For this reason, obesity is thought to contribute to an estimated 112,000 preventable deaths per year (Flegal et al. 2005) and costs the U.S. health care system an estimated \$147 billion annually (Finkelstein et al. 2009).

Although the prevalence of obesity has increased among adults of all ages, genders, and racial/ethnic groups, some subpopulations experience higher rates of obesity than others. From 2006 to 2008, non-Hispanic blacks in the U.S. had the

greatest prevalence of obesity (37.5%), followed by Hispanics (28.7%), and non-Hispanic whites (23.7%). Black and Hispanic women experienced higher rates of obesity than their male counterparts, while white men experienced slightly higher rates of obesity than white women (CDC 2009). Braveman (2009) contends that both human rights and practical reasons command that we address such disparities in health. First, health is essential for individual well-being and economic sufficiency, and thus, all people should have access to good health. Second, in order to reduce costs associated with obesity over the long-term, it is necessary to understand how factors such as race and socioeconomic status may influence or exacerbate the problem.

Research has shown that the primary preventable risk factors for obesity include poor diet and lack of physical activity (NIH 1998). Although the relationship between physical activity and obesity has been widely studied, the focus of this paper will be on the relationship between diet and obesity. Evidence from the Behavioral Risk Factor Surveillance System, a regular telephone health survey tracking health conditions and risk behaviors in the U.S., suggests that consumption of fruit and vegetables varies by income, education level, and race/ethnicity (BRFSS 2009). African Americans, Hispanics, individuals with low income, and individuals with only high school education consume fewer fruits and vegetables than whites, college-educated individuals, and middle- and high-income individuals (BRFSS 2009). Such differences in dietary patterns are the result of a complex mix of personal, cultural, and environmental factors, like

nutrition knowledge, ethnic background, and availability of healthy food in one's environment (Guthrie et al. 2005; Robinson 2008).

For much of the twentieth century, efforts to curb obesity focused on individual-level interventions, such as nutrition counseling and education, which are designed to improve personal eating habits (Robinson 2008). Since the 2000s, there has been a growing recognition of the need for environmental-level interventions such as the development of neighborhood grocery stores that acknowledge that the type and price of food available in one's environment may influence dietary habits. This shift was due in part to the rise of an alternative food movement in the 1990s that generated concerns about America's increasingly industrialized food system and its impact on the environment and human health (Alkon and Agyeman 2011). Whereas the food system had been largely invisible in the past, it quickly became a topic regularly discussed and promoted in the mainstream media, in bestselling books (Kingsolver 2007; Pollan 2006), and even by First Lady Michelle Obama (Let's Move 2012). Urban planners, who had largely overlooked the food system in the past, began to see its important links to land use, transportation, economic development, infrastructure, health, and the environment (Pothukuchi and Kaufman 2000).

At the same time, a growing body of research began to illustrate that urban areas, particularly low-income communities and communities of color, have inadequate access to fresh fruits and vegetables, particularly when compared to middle-class, white communities (Larson et al. 2009, Walker et al. 2010). Communities with limited food access were shown to have higher rates of obesity

and diet-related disease, leading some to suggest that neighborhood food environments may be connected to health outcomes. These claims have led to a subsequent increase in the number of organizations and municipalities using environmental-level interventions, such as farmers markets and community gardens, to improve healthy food choices within communities. The expectation is that with more healthy food available in the neighborhood environment, residents will alter their diets to include more fruits, vegetables, and whole grains, thereby reducing their risk for obesity and diet-related disease.

Federally Qualified Health Centers (FQHCs) have recently joined the movement to improve healthy food access in low-income communities and communities of color. FQHCs are non-profit health care providers that receive funding from the federal government to provide quality, affordable care to medically underserved populations (NACHC 2011). FQHCs, also referred to in this paper as “community health centers” or “health centers,” work to address health disparities by providing important primary and preventive health services to the uninsured and underinsured. Historically, health centers have sought not just to respond to personal medical conditions, but also to address some of the social determinants of health, including housing, nutrition, and employment (Lefkowitz 2007). To date, however, little research has been done to examine the extent to which community health centers are altering neighborhood foodscapes—i.e. the quality, affordability, and type of food available to a community—to improve eating habits and reduce the prevalence of obesity and diet-related disease. As this thesis will demonstrate, community health centers

offer a unique perspective and may prove to be valuable partners in the movement to improve healthy food access.

Thesis Goals

The goal of this research was to explore the role of Federally Qualified Health Centers (FQHCs) in improving access to healthy food choices in urban neighborhoods. In this project, I use the term “healthy food access” to describe access to foods that are not simply affordable and nutritious, but also culturally appropriate and personally acceptable (Just Food 2010; Slocum 2006). A growing body of literature suggests that a lack of healthy food access in low-income neighborhoods and communities of color may contribute to high rates of obesity and diet-related disease in these communities. While non-profits and municipal governments have received increased attention for their efforts to improve healthy food access in urban neighborhoods, little attention has been given to community health centers and the extent to which they are, or could be, involved in such efforts. To fill this gap, my research explored the following questions as they related to seven community health centers in urban neighborhoods of Boston, Massachusetts:

- Why are some community health centers engaged in healthy food access initiatives while others are not?
- What challenges exist for community health centers interested in or attempting to improve access to healthy food?

- What resources are needed for a community health center to engage in efforts to improve access to healthy food?
- What lessons could be shared with urban planners and others who are interested in improving access to healthy food?

In addition, I used geographic information systems (GIS) to consider spatial relationships among targeted community health center locations, surrounding neighborhood demographics, and healthy food access. Ultimately, this project provides an in-depth, qualitative and spatial analysis of the extent to which community health centers in Boston are engaging in efforts to improve access to healthy food choices in urban neighborhoods. The information gathered is used to offer specific recommendations for urban planners and others who seek to improve the availability of healthy food in urban neighborhoods.

Chapter Two: Literature Review

There is general agreement among the health community that poor diet has played a significant role in the increasing prevalence of overweight and obesity in the U.S. over the last half-century (NIH 1998). Although rates of overweight and obesity have increased across all populations, non-whites and low-income individuals continue to be disproportionately affected (CDC 2009). It has been suggested that this disparity is partly attributable to inadequate access to healthy food in low-income communities and communities of color and that, by improving neighborhood food environments, dietary habits and health outcomes will also improve. In this chapter, I provide a review of the literature, first as it relates to the complex and multi-dimensional nature of diet and the subsequent challenge of developing effective interventions to improve diets. Second, I present a brief summary of the literature related to healthy food access, examples of community-based interventions designed to improve access, and some of the limitations and criticisms of this work. I then examine the historical roots of community health centers, the evolution of their structure and principles as they relate to community-based interventions, and the theoretical and practical overlaps between the work of community health centers and healthy food initiatives. Finally, I provide a brief rationale for selecting the city of Boston, Massachusetts, as the basis of this study.

The Complex Nature of Diet

Although poor diet is known to be a significant risk factor for obesity, less agreement exists about the most effective way to change or improve diets (NIH 1998). This is most likely because dietary patterns are shaped by complex and interrelated factors, including personal taste, nutrition knowledge, education level, household composition, cultural background, affordability of healthy food (both one's perception of affordability and actual cost), and availability of healthy food in one's environment (Guthrie et al. 2005; Robinson 2008). Robinson (2008) applies the socio-ecological model to describe varying levels of influence that shape diet: "Intrapersonal" factors, such as taste, personal habits, and nutritional knowledge and skills; "Interpersonal/Social" factors, such as culture, social traditions, role expectations; and "Organization, Community, and Public Policy/Physical Environment" factors, including environmental factors and policies that affect food access and availability. The socio-ecological model provides a useful framework for understanding factors that influence diet and suggests that a multi-dimensional approach may be necessary to improve eating habits.

Frieden (2010) uses a five-tier "health impact pyramid" to illustrate the multiple levels at which public health interventions can effect change. At the top of the pyramid are what Robinson might term "intrapersonal interventions," or strategies like education, counseling, and medical treatment, that are designed to create change at a personal level. These are situated in the smaller area of the pyramid because they have the potential to impact a small number of people.

Such interventions tend to be met with little resistance because responsibility for change rests on the individual. At the base of the pyramid are environmental-level and policy interventions, e.g. opening a supermarket to increase the availability of healthy food, which are designed to affect broader societal change. Since interventions like this attempt to make broader societal changes, they can often be met with political or community resistance and can be challenging to implement.

While the health impact pyramid provides a useful framework for understanding the types and impact potential of different interventions, it is important to consider how other factors like personal and cultural norms can influence an intervention's impact. For instance, Alkon and Agyeman (2011) point out that the significance of personal and cultural ties to certain food practices, or "foodways," should not be overlooked when considering environmental-level approaches to altering diets. Foodways are an expression of a person's identity or membership in a particular group and thus may be a powerful determinant of whether or not certain interventions resonate with those individuals or groups. For this reason, it is essential that strategies to improve diet are not only multi-dimensional, but also culturally sensitive.

Environmental-Level Interventions: Changing the Neighborhood Foodscape

Access to Healthy Food: A Growing Concern

Strategies to reduce obesity in the U.S. have traditionally been intrapersonal-level interventions, such as nutrition counseling and education

(Robinson 2008). In the early 2000s, however, increasing research began to suggest that inadequate access to healthy food choices could be linked to risk for overweight and obesity, thereby prompting a push for more environmental-level interventions. These studies, which examine the relationship between neighborhood context and obesity prevalence, indicate that areas with greater access to supermarkets and limited access to convenience stores and fast food restaurants tend to have lower rates of obesity (Larson et al. 2009; Walker et al. 2010). For instance, a national study of high-school age students found that increased availability of chain supermarkets was associated with significantly lower BMI and overweight among adolescents, while greater availability of convenience stores was associated with significantly higher BMI and overweight (Powell et al. 2007a). More recent studies suggest that limited access to healthy food may *not* be a major contributor to obesity and diet-related disease (An and Sturm 2012; Lee 2012). These studies, which examine differential access to food stores and risk for obesity among youth, found no significant relationship between access to healthy food and positive health outcomes. The cross-sectional nature of most food access research, however, prevents the development of a causal link between healthy food access and obesity and suggests that more research, particularly longitudinal studies, is needed to gain insight into the potential relationships between dietary habits and neighborhood context.

The term “food desert” has been used to describe areas that lack access to healthy foods (Cummins and Macintyre 2002) or, more specifically, areas that have an *imbalance* of food choices (MG 2010). Food imbalance occurs when an

area has few stores carrying healthy food options and, instead, has a “heavy concentration of nearby *fringe* food that is high in salt, fat, and sugar” (MG 2010, 3). Research indicates that food deserts disproportionately affect low-income neighborhoods and communities of color (Powell et al. 2007b; Walker et al. 2010). These areas have fewer large supermarkets and, instead, rely on small groceries and convenience stores (Moore and Diez Roux 2006; Raja et al. 2008), which may offer less variety and lower-quality healthy food (Glanz et al. 2007; Kaufman et al. 2007). In addition, some researchers have found that smaller stores tend to have higher prices than supermarkets, meaning healthy items are less affordable to low-income shoppers (Chung and Meyers 1999; Kaufman et al. 1997). Much of the existing food desert literature is based on the assumption that consumers shop at stores nearest to where they live, regardless of what type of foods are sold there; however, far less research has considered how factors, such as quality of goods (Topolski et al. 2003), time (Rose 2007), access to transportation (Clifton 2004), and personal and cultural tastes may impact a person’s ability or willingness to seek healthy food outside of the community.

Community-Based Interventions

The rising concern about healthy food access has spurred action at the national, state, and local level for environmental-level obesity interventions—what I refer to as community-based interventions—particularly in low-income communities and communities of color. The federal government has provided funding for local initiatives that seek to improve neighborhood food environments

(CDC 2009; U.S. DHHS 2010), while states have introduced bills that encourage healthy food retail and local food procurement (Kim and Blanck 2011). At the local level, both community-based organizations and government agencies have been actively involved in healthy food access initiatives (Bodor et al. 2010; Ohri-Vaspachi et al. 2009; Ver Ploeg et al. 2009).

City planners, in particular, have become increasingly involved in efforts to improve the neighborhood foodscape (APA 2011; Soma and Wakefield 2011), despite the lack of consideration for the food system in planning prior to the 2000s (Pothukuchi and Kaufman 1999). Together with community organizations, planners have identified a range of strategies—from the installation of community gardens to zoning changes that facilitate grocery store development—that are intended to increase access to healthy food and thereby change dietary habits and improve health outcomes (Ver Ploeg et al. 2009). One of the most frequently used strategies to improve healthy food access has been through farmers markets, as evidenced by their substantial increase over the past two decades. From 1994 to 2011, the number of markets increased from 1,755 to 7,175, with a significant 17 percent increase occurring between 2010 and 2011 alone (USDA 2011). Healthy corner store initiatives, which are projects “working with small business owners to make healthier choices easily available in underserved communities,” are also becoming more popular (PHLP 2009, 5). From 2005 to 2011, participants in the Healthy Corner Store Network increased from 40 to over 500, indicating the growing interest in these initiatives (PHLP 2009). These are just

two of the many community-based interventions being used to improve healthy food access across the U.S.

Limitations and Criticisms

One of the major limitations of healthy food initiatives is that, to date, few evaluations have been undertaken to determine their impact (Cheadle et al. 2010a; McCormack et al. 2010). This is due, in part, because healthy food initiatives are relatively new, and not enough time has passed to understand their impact. Cheadle et al. (2010a) provide insight into some of the other challenges to evaluation. First, due to the complex nature of diet, it is difficult to find a causal link between any one intervention and a change in dietary behavior. That is, a person's change in diet could be attributable to intrapersonal, interpersonal, or environmental reasons, not necessarily one specific intervention. Second, because environmental-level interventions have the potential to impact a broad population, it is difficult to ascertain who is affected by the intervention and who is not; thus, it is challenging to determine whether or not an intervention is effective. Finally, population-level evaluations that study the long-term impacts of an intervention like change in dietary habits or health outcomes are extremely costly and time-consuming. To address these challenges, Cheadle et al. (2010) recommend that evaluations focus on populations most directly exposed to an intervention. This could include tracking customers at a farmers market or surveying children affected by changes to a school lunch program to determine if the interventions have positive impacts.

As of 2011, only two studies have examined the effects of a change in food access on dietary habits (Cummins et al. 2005; Wrigley 2003). Both studies evaluated the impact of large supermarkets opening in food deserts in the United Kingdom. In Leeds, England, Wrigley (2003) found that diet improved (meaning more fruits and vegetables were consumed) among individuals who had previously purchased food from limited-range or budget stores, among individuals who lived in closest proximity to the new store, and among individuals with the poorest diets in the pre-intervention period. Cummins et al. (2005), however, noted little change in dietary habits or overall health among residents after a new store opened in a low-income neighborhood of Glasgow, Scotland. Other preliminary studies hypothesize that interventions such as farmers' markets (Young et al. 2011), healthy corner store initiatives (Bodor et al. 2010), and comprehensive strategies that include markets, education, and community gardening (Freedman et al. 2012; Ohri-Vaspachi et al. 2009) have the potential to improve dietary habits among residents, but their actual impact remains unclear. Such findings clearly indicate that more thorough evaluation methods are needed to determine the effects of a change in food access on dietary habits and health.

Although strategies to improve healthy food access are good intentioned, critics contend that alternative food initiatives, particularly those that promote local and organic food, reflect middle-class, white ideals more than the traditions and cultures of the communities they intend to serve (Guthman 2008). Organizations and activities of the alternative food movement often promote the ecological, community, and health benefits of an alternative food system, while

largely ignoring racial, class, and cultural implications (Alkon 2010; Alkon and Agyeman 2011; Guthman 2008; Slocum 2006). For instance, Alkon finds that the alternative food movement tends to “contain whitened discourse and practices,” such as an appreciation of gourmet food and concern for the environment, that “can inhibit the participation of people of color... and can constrain the ability of those food systems to meaningfully address inequality” (2010, 938).

This narrative is beginning to shift, however, as low-income communities and communities of color develop strategies to provide food for themselves in just and equitable ways. The term “food justice,” according to the New York non-profit Just Food, refers to “communities exercising their right to grow, sell, and eat [food that is] fresh, nutritious, affordable, culturally appropriate, and grown locally with care for the well-being of the land, workers, and animals” (Just Food 2010). The food justice movement seeks to empower communities to determine their own food needs and create strategies to address them (Alkon and Agyeman 2011).

The food justice movement shares many similarities with the environmental justice (EJ) movement, a movement composed of activists organizing around the claim that low-income communities and communities of color are disproportionately affected by environmental hazards and degradation (Taylor 2000). EJ activists work to address a number of issues such as the siting of hazardous waste facilities and chronic exposure to diesel exhaust that negatively impact communities already bearing more than their fair share of environmental burden. Similarly, food justice activists contend that inadequate

access to healthy food among low-income communities and communities of color is an environmental and social injustice that can be attributed to a history of economic inequality and institutional racism. According to Alkon and Agyeman, “the food justice movement combines an analysis of racial and economic injustice with practical support for environmentally sustainable alternatives that can provide economic empowerment and access to environmental benefits in marginalized communities” (2011, 6). The movement seeks not only to improve environmental sustainability through the provision of healthy food for all, but also to alter existing power structures so that communities have more control over food production, distribution, and procurement. To ensure the successful development of community-based food systems over the long-term, it is important that the alternative food movement be willing to acknowledge and address structural inequalities that exist throughout the food system (Slocum 2006).

Community Health Centers

Historical Roots

Community health centers are one entity among many in the U.S. working to reduce health disparities affecting racial and ethnic minorities, the poor, and the uninsured (Adashi et al. 2010). Community health centers are non-profit, community-directed health care providers that offer affordable, primary and preventative care to individuals and families regardless of insurance status or ability to pay (NACHC 2011). They are part of the “health care safety net,” a “mix of people and institutions that includes hospital emergency departments,

public hospitals... free clinics, and private physicians' offices, among others," that provide care to the uninsured and underinsured in America (Taylor 2004, 3).

Although community health centers existed informally in the early parts of the twentieth century, they did not become a formal piece of the country's health care safety net until the mid-1960s under Lyndon B. Johnson's War on Poverty (Corburn 2007; Lefkowitz 2007). A growing concern for the nation's poor, along with strong civil rights activism, made the community health center concept politically feasible where it previously would have been unrealistic (Lefkowitz 2007). The concept was first proposed by Jack Geiger, a Tufts University-trained physician who traveled to South Africa and saw firsthand a community-oriented primary care model transform an impoverished community (Geiger 2005). In 1965, he and Count Gibson, chair of the Preventive and Community Medicine Department at Tufts Medical School, received funding from the Office of Economic Opportunity (OEO) to pilot two community health centers—one in a rural Mississippi community and the other in a public housing project of Boston.

The community health centers in Boston and Mississippi offered a unique form of health care previously unseen in the U.S. The core principles maintained that health centers would serve populations that had traditionally lacked access to care, utilize a multidisciplinary team of doctors and health professionals to meet a diverse range of needs, address both the individual and social determinants of health, and facilitate patient involvement that would lead to empowerment and community change (Geiger 2005; Lefkowitz 2007). Because community health centers focused on comprehensive care driven by community needs, the OEO

considered them to be an integral part of the War on Poverty. By 1971, the OEO had helped to establish 150 health centers across the U.S. (Lefkowitz 2007).

An Evolving Model of Care

Early community health centers emphasized the importance of providing comprehensive care that would address not only individual health but also social determinants of health, such as housing, nutrition, and economic opportunity. For example, in an effort to address the community's dual concerns about job opportunities and malnutrition, the first Mississippi health center established a 500-acre cooperative farm for residents to grow vegetables instead of cotton (Geiger 2005). Not all community health centers rose to that level of care, but many worked on social and environmental issues related to water sanitation, environmental toxins, and elderly housing (Geiger 2005).

Despite community health centers' early emphasis on comprehensive care, changing political forces led health centers to adapt their model over time (Lefkowitz 2007). Federal funding for health centers was threatened under Nixon and Reagan as the conservative administrations demanded that health centers become self-sufficient and rely more heavily on reimbursements from Medicare, Medicaid, and private insurance. Greater emphasis was placed on cost-effectiveness, which forced community health centers to improve management systems, streamline efficiency, and focus on the delivery of medical services. This meant less attention and resources were given to services like health education and environmental advocacy that addressed community needs (Geiger

2005; Lefkowitz and Todd 1999). Community health centers regained political backing in the 1990s, however, and have since maintained strong bi-partisan support and steady funding from the federal government. They continue to maintain their mission of reducing disparities of access to quality primary and preventive care for racial/ethnic minorities and low-income patients. In 2010, over 1,120 health center grantees provided care at over 8,100 service centers to nearly 19.5 million patients (UDS 2011).

Although funding cuts and political shifts have led community health centers to adjust their model, according to founder Jack Geiger, their “core principles are still in tact” (Geiger 2005, 319). Federal grant requirements ensure that the majority of board members are health center patients so that the health center remains responsive to community needs (Taylor 2004). Many health centers have sought non-federal funding sources that support the development of community-based interventions. For example, a community health center in Wisconsin is attempting to “link the environment, the economy, and community health through urban brownfield development and sustainable land-use planning” (McAvoy et al. 2004, 525). The health center has organized community visioning events in which residents determine how the redevelopment of formerly industrial sites could improve community health. Similarly, community health centers in California are using capital funds to build facilities that include neighborhood wellness centers and teaching kitchens (Dubbs 2010). Such examples illustrate that community health centers continue to find innovative ways to address the needs of whole communities.

A Role for Community Health Centers in Healthy Food Access Initiatives?

Community health centers throughout the U.S. have begun to join the effort to improve healthy food access in local communities (Cheadle et al. 2010b; Freedman et al. 2011; Friedman et al. 2011). Although little research has been done to examine the extent to which community health centers are actually involved, Freudenberg (2011) offers four areas in which public health professionals may be able to contribute to the food justice movement. First, public health professionals could create more opportunities for dialogue among food movement participants. Critics of the food movement assert that the low-income residents and people of color are often absent from the food movement conversation (Alkon and Agyeman 2011; Guthman 2008; Slocum 2006). Because community health centers work with the very people that healthy food access initiatives seek to engage, they may be able to bridge this gap by providing opportunities for local residents to join the conversation and “ensure that [health] interventions are contextually and culturally relevant” (Corburn 2007, 709).

Second, Freudenberg suggests that public health professionals may be able to contribute valuable resources to the food justice movement. For instance, community health centers that use nutrition counseling to address intrapersonal factors influencing diet and health may be aware of opportunities to integrate such programs with environmental-level interventions. Additionally, because community health workers are often trusted members of the community, they can help ensure that other professionals are culturally competent and that interventions are relevant to the community (Martinez et al. 2011).

Third, public health professionals may be able to develop leadership and organizations for the food justice movement. Community health centers are, at least in principle, committed to working with and empowering local residents to develop interventions that address the social and environmental determinants of health (Geiger 2005). As such, they could potentially work with local residents to advocate for greater access to healthy food or provide institutional support for residents who want to start a healthy food program. Health centers may also be able to support the work of food justice organizations by providing them with resources like nutrition knowledge and public health expertise.

Finally, Freudenberg suggests that public health professionals could help evaluate policies and programs related to healthy food access to ensure their effectiveness. Because community health centers are interested in creating positive community change, they may be willing to invest time and resources to evaluate healthy food access initiatives. At the same time, it is important to remember that finances, institutional capacity, and other interests may constrain a community health center's ability or willingness to engage in evaluation or other activities recommended by Freudenberg. Despite these concerns, the potential role for community health centers in the food justice movement should not be dismissed. Indeed, as this thesis will demonstrate, some community health centers have already begun to engage in the movement to create a healthier, more equitable food system.

Rationale for Selecting Boston as the Basis of this Study

Community health centers in the city of Boston, Massachusetts, were chosen as the focus of this study. This selection was partly out of convenience because, as the researcher, I wanted to be able to visit the health centers and conduct interviews in person. Boston provided a logical choice for the study, as I live just north of the city and could easily access health centers via public transit. Upon further research, however, it became apparent that a unique history of community health activism exists in Boston—a history that led to the establishment of the first community health center in the U.S. and a long-term commitment to improving public health throughout the city—and that, more recently, Boston has become a leader in the movement to improve access to healthy food. It is this combination of leadership in community health activism and healthy food access that makes Boston an ideal focus for this research.

Boston, like many cities in the mid-twentieth century United States, was a city highly segregated by race and class. Not only did low-income residents and people of color live in neighborhoods with appalling housing conditions, inadequate city services, and low-quality schools, but many of these residents also lacked access to quality health care services. Whereas in 1940, 65 percent of physicians practiced medicine in Boston's neighborhoods, by 1961, only 40 percent of doctors practiced in neighborhoods, while the majority practiced in hospitals (Lefkowitz 2007). This meant that low-income residents and people of color were left with little to no accessible health care in their neighborhoods and

that they had to travel long distances, often to hospital emergency rooms, to receive medical care.

In the early 1960s, Jack Geiger and Count Gibson, affiliates of Tufts University School of Medicine, conducted a survey at the Columbia Point public housing development in South Boston and found that residents were suffering from untreated health conditions. They made the case for improved health care services at the housing development and, in 1965, were given funds from the federal Office of Economic Opportunity to establish the first community health center in the United States at Columbia Point. The health center (later renamed Geiger Gibson Community Health Center after its founders) proved successful and quickly gained support from Massachusetts Senator Ted Kennedy. This not only prompted the start of long-term federal funding for health centers, but also generated a movement among community activists, teaching hospitals, and even city government to advocate for the establishment of community health centers in neighborhoods with inadequate access to health care. By 1971, 19 health centers had been established in Boston, and today, the city is home to a total of 26 federally funded health centers (Lefkowitz 2007). These health centers, which were built on residents' concerns for neighborhood health, continue to be important community institutions that provide comprehensive health care, community services, and employment to residents across the city.

Boston provides a useful basis for this study, not only because of its unique history of community health activism, but also because of its more recent leadership in the movement to improve access to healthy food. Both the

municipal government and community-based organizations are involved in an increasing number of healthy food initiatives throughout the city. At the municipal level, the City is engaged in projects like urban agriculture zoning, which would alter the municipal zoning code to allow three vacant properties in Dorchester to be farmed “with the goal of producing fresh, healthy food for sale in the community” (City of Boston 2011), and *Healthy on the Block*, a program that helps neighborhood corner stores increase their stock of healthy, affordable food. The Food Project, a prominent not-for-profit organization in Boston, engages youth in social change through a number of sustainable agriculture programs, including community supported agriculture (CSA) programs and community gardens (Food Project 2012).

Boston has also seen a substantial increase in the number of farmers markets over the past decade, with the number of markets increasing from 13 in 2004 to 28 in 2011 (City of Boston 2012). Many of these markets accept government benefits, such as Supplemental Nutrition Assistance Program benefits (SNAP, also known as food stamps) and Women Infants, and Children (WIC) coupons, which make healthy fruits and vegetables more accessible to residents with lower incomes. In addition, the Boston Bounty Bucks (BBB) program helps to make food at farmers markets more affordable by providing a 50 percent discount to SNAP users on purchases up to twenty dollars. Many community health centers, which often provide health care to low-income residents, are finding ways to take advantage of programs like BBB and connect clients to healthy food choices. Because Boston has a history of community health activism

and is now becoming a leader in the healthy food movement, it seems worthwhile to examine the extent to which community health centers are involved in efforts to improve access to healthy food.

In conclusion, this chapter provides a review of the literature as it relates to three major areas of study. First, it shows that, because human diets are shaped by a complex set of factors, multi-dimensional interventions may be needed to alter dietary habits and reduce the prevalence of obesity. Environmental-level interventions, while they may be difficult to implement, have the potential to impact a broad population and should thus be considered when attempting to address obesity and diet-related disease. Second, this chapter details the growing concern about healthy food access in urban communities and provides examples of strategies being used to address this concern. While efforts like farmers markets and healthy corner store initiatives have the potential to improve diet, more evaluations are needed to determine their actual impact. Perhaps more importantly, such initiatives must become more inclusive and work to address racial and economic injustices that persist throughout the food system. Third, this chapter provides a brief history of community health centers and describes how, despite changes over time, they continue to support their commitment to reducing health disparities in underserved communities. This close connection to communities, along with institutional resources and opportunities for leadership development, make health centers potentially valuable partners in the movement to improve healthy food access. Boston's community health centers, in particular, provide a highly relevant unit of analysis for this study, as the city has a

longstanding history of community health and food movement activism.

Together, the literature review provides the historical and theoretical foundation for this thesis, in which I use qualitative and spatial analysis to examine the existing and potential role for community health centers in the food justice movement.

Chapter 3: Methodology

Previous research has illustrated that inadequate access to healthy food may contribute to risk for obesity and that environmental-level interventions may be necessary to improve long-term health outcomes. Although non-profits and municipal governments have received increased attention for their efforts to improve healthy food access, little attention has been given to the role of community health centers in healthy food access initiatives. In an effort to address this gap, this project used qualitative analysis and spatial mapping to explore the role of community health centers in improving access to healthy food choices in urban neighborhoods of Boston, Massachusetts. This chapter includes a detailed description of the research methods used to complete the study.

Qualitative Research Methods

For the purposes of this project, only Federally Qualified Health Centers (FQHCs), or community health centers that receive funding from the federal government, were included in the study. To understand the extent to which such community health centers are involved in addressing issues of food access, it is necessary to first clarify what is meant by “involvement.” In this project, I defined involvement in healthy food access initiatives as an FQHC that 1) organizes a community farmers market, or 2) organizes a healthy corner store initiative. Many health centers are involved in healthy food and nutrition programs that fall outside of this relatively narrow definition of “involvement” but still relate to issues of healthy food access. Thus, in order to understand the range of projects being implemented, community health centers that promote, but

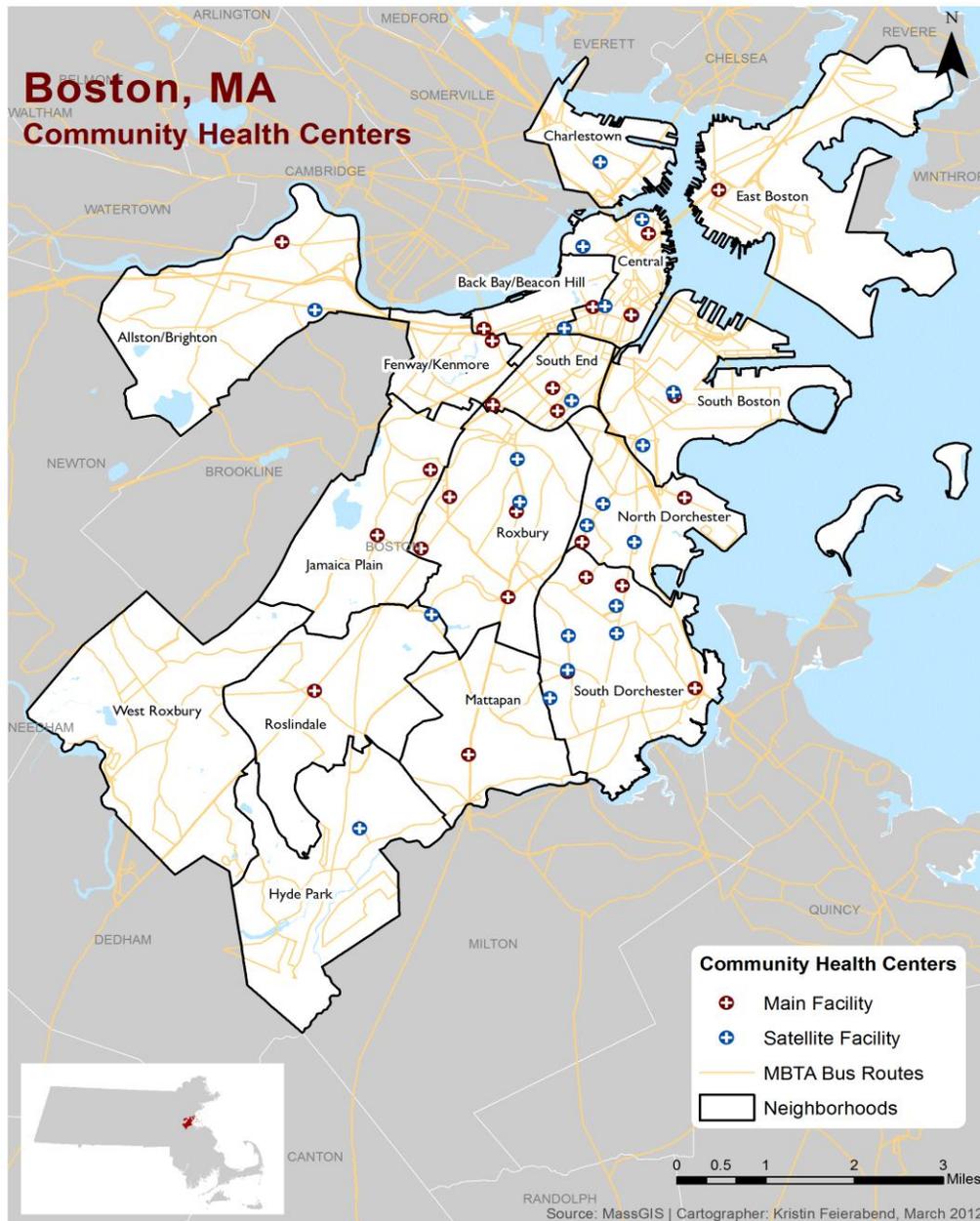
do not actively organize, initiatives like farmers markets and healthy corner stores were also targeted for this study.

In 2011, the Massachusetts League of Community Health Centers identified 26 FQHCs operating throughout 14 neighborhoods of Boston (Figure 3.1). I conducted a preliminary web search of all 26 community health centers to identify those involved in efforts to improve healthy food choices in the community. Three community health centers met the criteria for actively organizing healthy food access initiatives and were targeted as primary cases for the study. Convenience sampling was used to develop a list of community health centers that do not actively organize healthy food access initiatives to serve as secondary cases for the study. I used PolicyMap, an online geographic information system, to map median household income, race, and ethnicity for all census tracts in Boston. I then generated a list of eight community health centers to serve as secondary cases based on their proximity to the primary cases (where possible) and their location in neighborhoods with similar median household income and race/ethnicities to the primary cases. Five of the eight health centers were selected as priority secondary cases for inclusion in the study; three were selected as alternatives in case of non-response from priority secondary cases.

After developing a list of potential community health centers for the study, I contacted health center staff via phone call to schedule interviews. The contact person for each community health center varied by the type of programs offered. For community health centers actively organizing healthy food access initiatives, I reached out to community health specialists and healthy food access program

coordinators. For health centers not actively organizing such initiatives, I contacted nutrition services directors and senior nutritionists. At least three phone calls were made to each contact before assuming non-participation in the study. For those who agreed to participate, phone calls were followed up with an e-mail confirming the date and details of the interview.

Figure 3.1: Boston Community Health Centers



Seven of the eleven FQHCs targeted for interviews were included in the final study (Figure 3.2). Three health centers were identified as actively organizing healthy food access initiatives and were selected as primary cases for this study. Two of these were located in Dorchester, and one was located in East Boston. Table 3.1 shows the healthy food initiatives organized by each health center. Each of the three primary cases was matched with a health center that promotes but does not actively organize healthy food access initiatives. Where possible, secondary cases were located in close proximity to the primary cases and in neighborhoods with similar racial, ethnic, and income make-up. Because East Boston has only one Federally Qualified Health Center, it was not possible to match it with another FQHC based on proximity. It was also difficult to find a secondary case with similar racial, ethnic, and income make-up because East Boston has a substantial Hispanic population not present in other areas of the city. In the end, I selected a health center in Jamaica Plain to serve as a secondary case because the neighborhood has a large Hispanic population; however, it should be noted that median household income, education levels, and country of origin differed somewhat between the two neighborhoods. The other secondary cases were located in Dorchester and Roxbury, both of which have similar characteristics to the primary cases. Although the secondary cases do not actively organize healthy food access initiatives, they offer a range of programs to improve healthy eating habits, such as grocery store tours, healthy cooking classes, and diabetes support groups. A seventh community health center was included in this study as a “hybrid” case because it does not actively organize a

healthy food access initiative, but it currently lends its facilities to a winter farmers market and has organized a summer market in the past.

Figure 3.2: *Community Health Centers Included in Study*

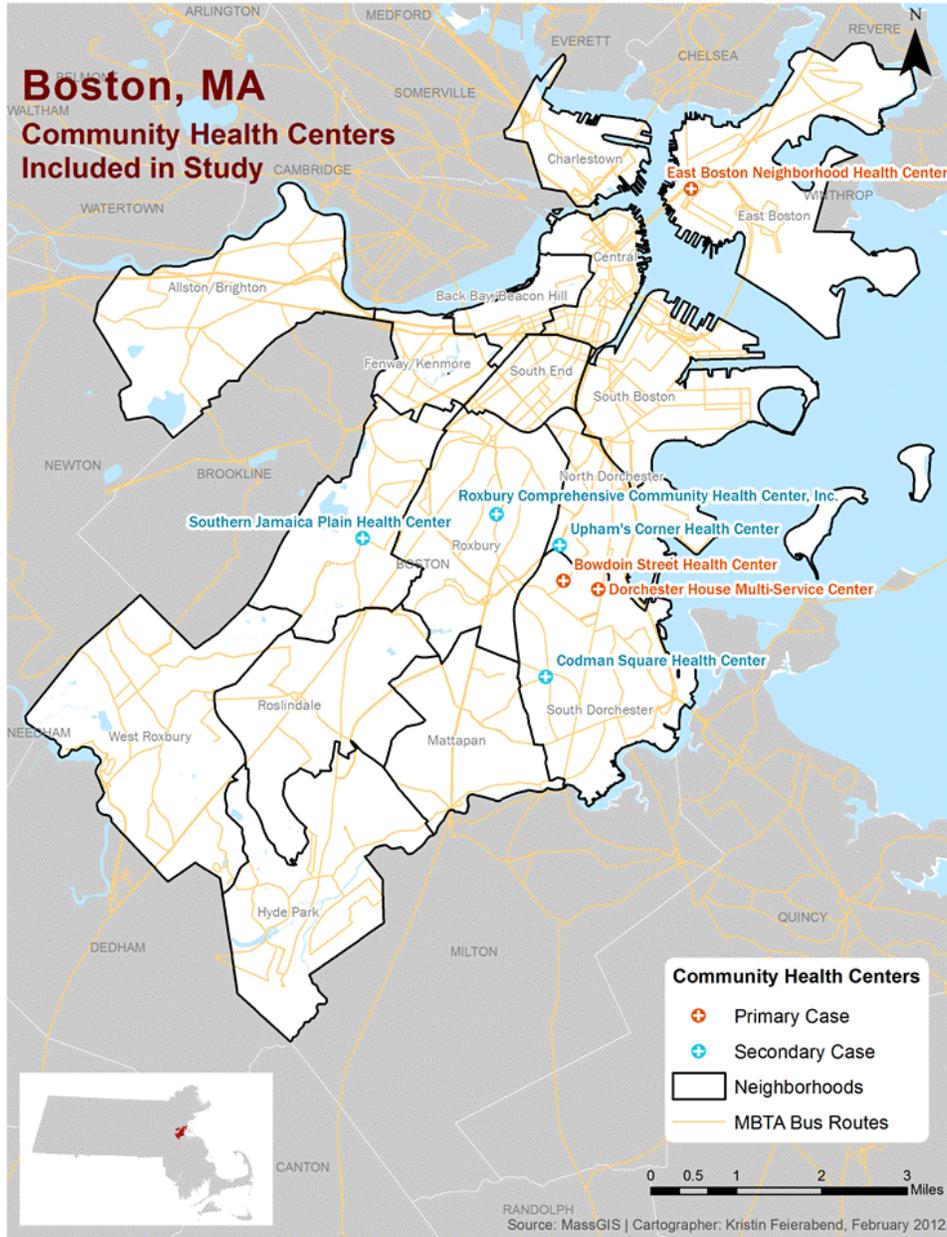


Table 3.1: Community Health Centers Included in Study

Community Health Center	Neighborhood	Year Est.	Patients Served (annual)	Patient Visits (annual)	Healthy Food Access Initiatives
Primary Cases: Actively Organize Healthy Food Access Initiatives					
Bowdoin Street Health Center	Dorchester	1972	11,000	Not publicly available	Farmers Market Healthy Corner Store Subsidized CSA Youth Program
Dorchester House Multi-Service Center	Dorchester	1974	Over 20,000	Over 110,000	Farmers Market Workplace CSA
East Boston Neighbrhd Health Center	East Boston	1970	Over 50,000	Over 300,000	Community Garden Farmers market Healthy Corner Store Subsidized CSA Youth Program
Hybrid Case					
Codman Square Health Center	Dorchester	1979	Over 20,000	Over 100,000	Provide facilities for winter farmers market
Secondary Cases: Promote Healthy Food Access Initiatives					
Southern Jamaica Plain Health Center	Jamaica Plain	1971	10,000	45,000	n/a
Roxbury Comprhnsve Health Center	Roxbury	1969	Over 8,000	Over 59,000	n/a
Upham's Corner Health Center	Dorchester	1972	Over 12,500	Over 240,000	n/a

A total of seven interviews were conducted (three with health centers actively organizing food access initiatives, four with health centers not actively organizing food access initiatives). Interviewing a limited number of community health centers allowed for an in-depth analysis of current efforts to improve healthy food access. All interviews were conducted in person at the community health center sites. Interview questions related to health centers' reasons for engaging or not engaging in efforts to improve healthy food access, the resources

they see necessary to engage in such efforts, challenges they have experienced or anticipate experiencing, and, if applicable, lessons learned from their process (see Appendix A). Interviews were recorded with each interviewee's permission and ranged from 35 minutes to two hours in length. All interviews were transcribed and reviewed to identify trends, patterns, and unique perspectives. Because the bulk of this project took place from January through April, I was unable to visit any health center farmers markets, which operate July through October.

GIS Methods

In addition to qualitative analysis, this thesis used geographic information systems (GIS) to explore spatial relationships among targeted community health centers, surrounding neighborhood demographics, and locations of healthy and unhealthy food stores in the community. For the purposes of this analysis, I use the term "healthy food stores" to refer to grocery stores or supermarkets and the term "unhealthy food stores" to refer to convenience stores. Similar categories have been used by other researchers conducting spatial food store analyses in the past (Moore and Diez-Roux 2006; Walker et al. 2010), however, these categories are not without their limitations. As other researchers have shown (Farley et al. 2009), these categories are based on generalizations that may not always be accurate; in some cases, healthy foods can be sold at convenience stores, and unhealthy food is almost always sold at grocery stores. So, while this analysis provides a useful starting point for understanding healthy food access in Boston,

an in-depth analysis of the products sold at these food stores would provide a more nuanced understanding of the present state of the city’s foodscape.

GIS data for community health center locations (2007), MBTA bus routes (2008), and town boundaries (2009) was retrieved from MassGIS. I collected demographic and socioeconomic data from the U.S. Census Bureau (2010) for all census tracts within Suffolk County, Massachusetts. Race/ethnicity data was retrieved from 2010 Census Summary File 1 (SF1), and median household income was retrieved from the American Community Survey 2006-2010. The 2010 TIGER/Line Shapefile provided census geography for all census tracts in Suffolk County, Massachusetts.

Business information for all food stores was collected from Reference USA (2012), a comprehensive U.S. business database, using North American Industry Classification System (NAICS) codes. Table 3.2 provides a description of the stores included in this analysis. Reference USA does not specify the currency of its business data but notes that it is “continuously updated.” I assumed that the data had been updated within the past three years, which was sufficiently current for my analysis. Information downloaded for all groceries and convenience stores included: company name, address, city, state, zip code, square

Table 3.2: Food Stores included in GIS Analysis

Food Store	NAICS Code	Type of Stores Included
Supermarkets & Grocery Stores	445110	Supermarkets and grocery stores retailing foods, such as canned and frozen foods; fresh fruits and vegetables; and fresh and prepared meats, fish, and poultry.
Convenience Stores	445120	Convenience stores or food marts (except those with fuel pumps) primarily engaged in retailing a limited line of goods that generally includes milk, bread, soda, and snacks.

footage, annual sales volume range, primary NAICS code and description, and latitude and longitude specifying store locations.

The goal of the spatial analysis was to map the density of different types of food stores throughout Boston to, first, see if any spatial patterns in food store density emerge, and second, determine whether or not food store density correlated with variables like race, ethnicity, or income. ArcGIS10, a standard geographic information system (GIS) software package, and GeoDa, a free spatial analysis program, were used to organize, manipulate, and display this data. Food store locations were mapped using latitude and longitude (XY coordinate) data obtained from Reference USA (2012). Spatial analyst tools were used to create raster images showing the density of food stores per square mile. I then created database files to link raster images to census data; this resulted in maps showing average food store density by census tract. After the maps had been prepared, I used GeoDa to regress mean food store density with demographic variables to determine if statistically significant correlations existed. Scatter plots were used to visualize these relationships.

Partway through my analysis, it became apparent that spatial patterns were potentially being obscured by aggregate grocery store data, which included grocery stores of all sizes. To examine this issue more closely, I separated grocery store data into the following four subcategories based on annual sales volume (asv): Less than \$500,000 asv, \$500,000-1 million asv, \$1-20 million asv, and \$20-100 million asv. The decision to create distinct categories based on grocery store size was similar to a distinction made in an analysis by Dunkley et

al. (2004), though their study used number of employees as a proxy for store size, as opposed to annual sales volume. Once grocery store data had been grouped appropriately, I repeated the previous analysis, creating raster images and linking rasters to census data to show average food store density by census tract.

This project fills a gap in the existing literature by providing an in-depth, qualitative and spatial analysis of community health centers engaged in efforts to improve access to healthy food choices in urban neighborhoods of Boston. Information gathered from this study was used to provide specific recommendations for urban planners and others seeking to improve the availability of healthy food in their community.

Chapter 4: Results

The purpose of this study was to explore the role of Boston's community health centers in improving access to healthy foods in urban neighborhoods. The first part of this chapter calls on Boston Public Health Commission annual reports to demonstrate the extent to which health disparities continue to persist in Boston across racial, ethnic, class, and neighborhood boundaries. This is followed by the results of a geospatial analysis that illustrate relationships between neighborhood demographics and food store locations. While time did not allow for an in-depth analysis of spatial relationships, these maps provide a starting point for thinking about challenges and opportunities in improving neighborhood foodscapes.

The second part of this chapter summarizes the findings from seven interviews conducted with community health center staff that work with clients to improve healthy eating habits and/or improve neighborhood foodscapes. These interviews were intended to answer the following research questions:

- Why are some community health centers engaged in healthy food access initiatives while others are not?
- What challenges exist for community health centers interested in or attempting to improve access to healthy food?
- What resources are needed for a community health center to engage in efforts to improve access to healthy food?

These interviews not only explain motivations for health centers' involvement in healthy food access initiatives, but they also reveal some of the

key challenges experienced by community health centers when organizing such initiatives. At the same time, these interviews shed light on many important resources that make it possible to organize and maintain healthy food access initiatives and point to the valuable role health centers can play in improving access to healthy food.

Health of Boston

Since 1996, the Boston Public Health Commission (BPHC) has published an annual report providing statistics about residents' access to health care, health behaviors, and health conditions such as asthma, cardiovascular disease, and stroke. Despite efforts that have been taken to improve health outcomes in the city, *Health of Boston 2011* indicates that health disparities continue to exist, often across racial, ethnic, and class lines, and that Whites, on average, experience better health than Black and Latino residents (BPHC 2011). In addition, BPHC found that, "health experiences vary dramatically among Boston neighborhoods, suggesting that when it comes to health, place matters" (BPHC 2011, 3). Table 4.1 provides a demographic and socioeconomic profile for fifteen neighborhoods of Boston, and Table 4.2 shows obesity prevalence and diet-related health behaviors and conditions across those same neighborhoods. It is important to note that, although differences in health were not always statistically significant across neighborhoods, there is a general pattern of lower-income communities of color experiencing poorer health than higher-income neighborhoods that are less diverse.

Table 4.1: Demographic & Socioeconomic Profile of Boston Neighborhoods, 2005-2009

Neighborhood	Population	Race/Ethnicity (%)				Median Household Income (\$)	Residents Living Below Poverty Level (%)	Residents Speaking English at Home (%)
		Asian	Black	Latino	White			
BOSTON	617,594	8.9	22.3	17.5	47.0	64,546	17	66
Allston/Brighton	70,974	15	3	9	70	55,842	10	64
Back Bay/Beacon Hill/West End	38,154	9	3	5	81	71,356	11	80
Charlestown	18,236	7	-	9	79	76,898	16	83
East Boston	43,814	3	2	47	44	42,487	13	34
Fenway/Kenmore	32,610	10	6	10	71	29,889	36	73
Hyde Park	35,419	2	45	18	32	54,300	10	62
Jamaica Plain	31,559	5	13	21	58	68,039	15	68
Mattapan	18,317	-	83	10	-	44,376	23	68
North Dorchester	79,049	9	42	18	21	35,466	27	54
North End	12,969	3	-	4	91	74,834	10	84
Roslindale	37,035	3	12	21	61	65,817	14	66
Roxbury	52,642	7	50	23	18	28,490	38	63
South Boston	35,352	4	3	7	83	61,565	16	84
South Dorchester	47,817	5	44	11	33	47,460	16	70
South End/Chinatown	42,073	22	11	11	53	54,778	27	63
West Roxbury	28,808	5	10	9	75	73,737	5	75
<i>*Bold text indicates neighborhoods with over 40% Black and/or Latino population</i>								
Source: Health of Boston 2011 (US Census Bureau, American Community Survey 2005-2009)								

Table 4.2: Diet-Related Health Behaviors and Outcomes by Neighborhood						
Neighborhood	Adults Consuming Recommended Daily Fruits and Veg., % (2008)	Adults with Diabetes, % (2006/2008 combined)	Diabetes Mortality, rate per 1,000 (2006, 2007, 2008 combined)	Heart Disease Mortality, rate per 1,000 (2008)	High Blood Pressure, % (2006/2008 combined)	Obese Adults, % (2008)
BOSTON	28	6	20.3	158.3	22	23
Allston/Brighton	32	5	14	126.6	14	22.4
Back Bay/Beacon Hill/Downtown/North End/West End	37	4 ⁻	<10	57.9*	18	7.6 ⁻
Charlestown	22	6	26.4	270.2 ⁺	24	19.7
East Boston	22⁻	5	18.1	136.8	18	29.6
Fenway	25	3 ⁻	15.1	104.9	13	6.8 ⁻
Hyde Park	21	6	43.2⁺	282.3⁺	31	28.0
Jamaica Plain	33	4	18.0	77.2	18	15.4
Mattapan	35	10	22.3	130.5	30	39.9⁺
North Dorchester	21	8	32.3	205.4⁺	26	32.6
Roslindale	27	5	48.6 ⁺	212.3 ⁺	21	21.4
Roxbury	29	8	51.0⁺	360.9⁺	31⁺	31.0
South Boston	28	4	15.5	156.7	22	17.8
South Dorchester	25	7	17.2	112.2	24	32.0
South End/Chinatown	26	5	28.7	158.0	16	16.7
West Roxbury	30	6	14.0	155.5	28	23.1
* indicates statistically higher than Boston overall; ⁻ indicates statistically lower than Boston overall						
* North End= 152.2 and was not included in this rate						
<i>Bold text indicates neighborhoods with over 40% Black and/or Latino population</i>						
Source: <i>Health of Boston 2010</i> (Boston Behavioral Risk Factor Survey 2008, Boston Behavioral Risk Factor Surveillance System, Boston Public Health Commission)						

To reduce health inequities throughout the city, BPHC has emphasized the need to address the social determinants of health, i.e. “the social factors, and the physical conditions in which people live, learn, play and work, that contribute to their health experience... [including] income, education, employment, housing, [and] exposure to racism and discrimination” (BPHC 2011, 2). Understanding and acknowledging the ways in which such social and place-based factors shape health outcomes are important first steps to reducing health disparities in the long-term. Boston’s community health centers can be an important resource in this regard, as many have worked to address both the individual and social determinants of health throughout the city’s neighborhoods for over 40 years.

GIS Results

Geographic information systems (GIS) was used to explore healthy and unhealthy food store densities to determine the current state of healthy food access in targeted health center neighborhoods. For the purposes of this analysis, “healthy food stores” refers to grocery stores or supermarkets, and “unhealthy food stores” refers to convenience stores. The maps below show the demographic make-up of Boston’s neighborhoods and provide a basis for comparison for the food store density maps. Most of the target health centers are located in neighborhoods with a large Black and/or Hispanic population (Figures 4.1a-b).

Figure 4.1a: Black Population of Boston, MA

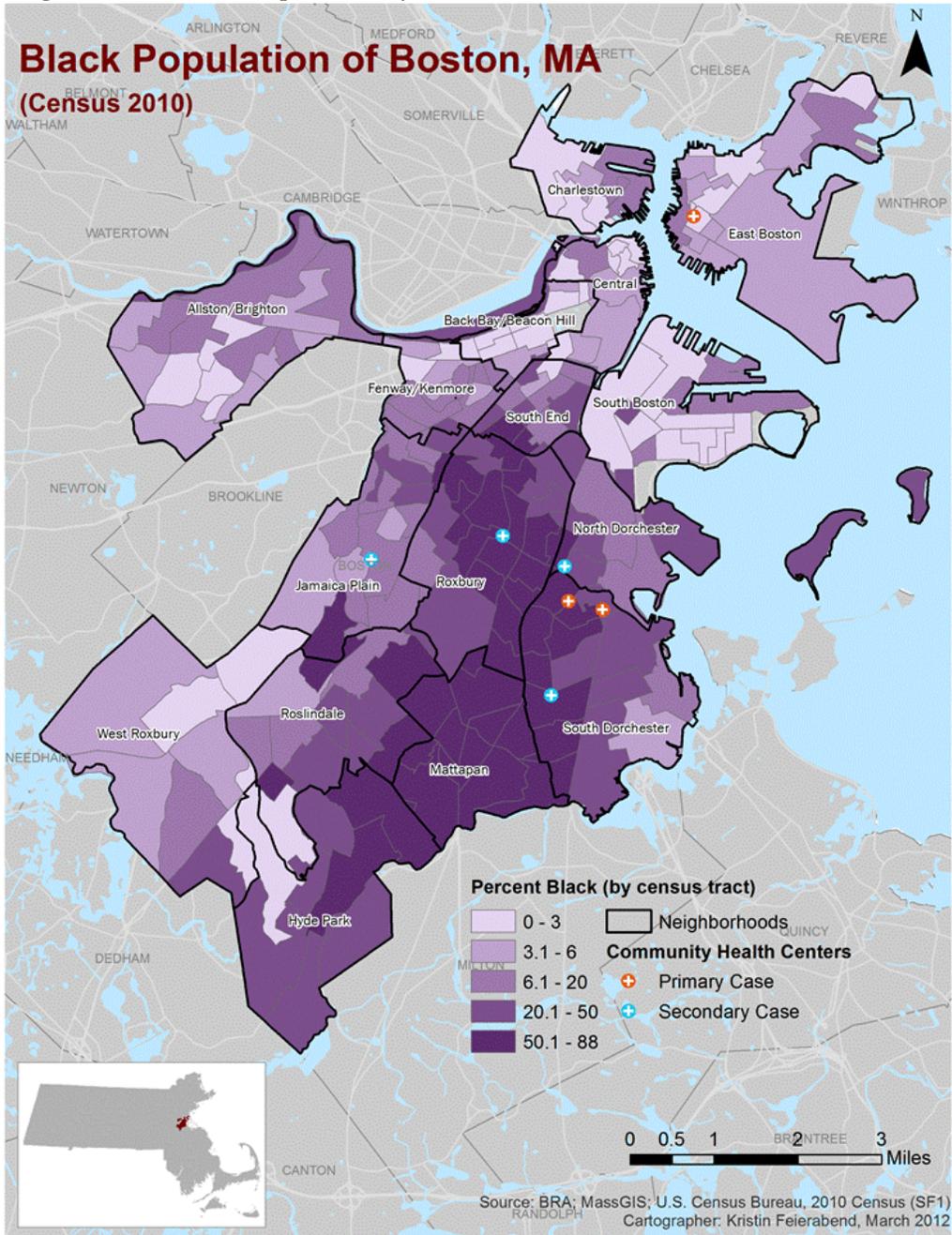
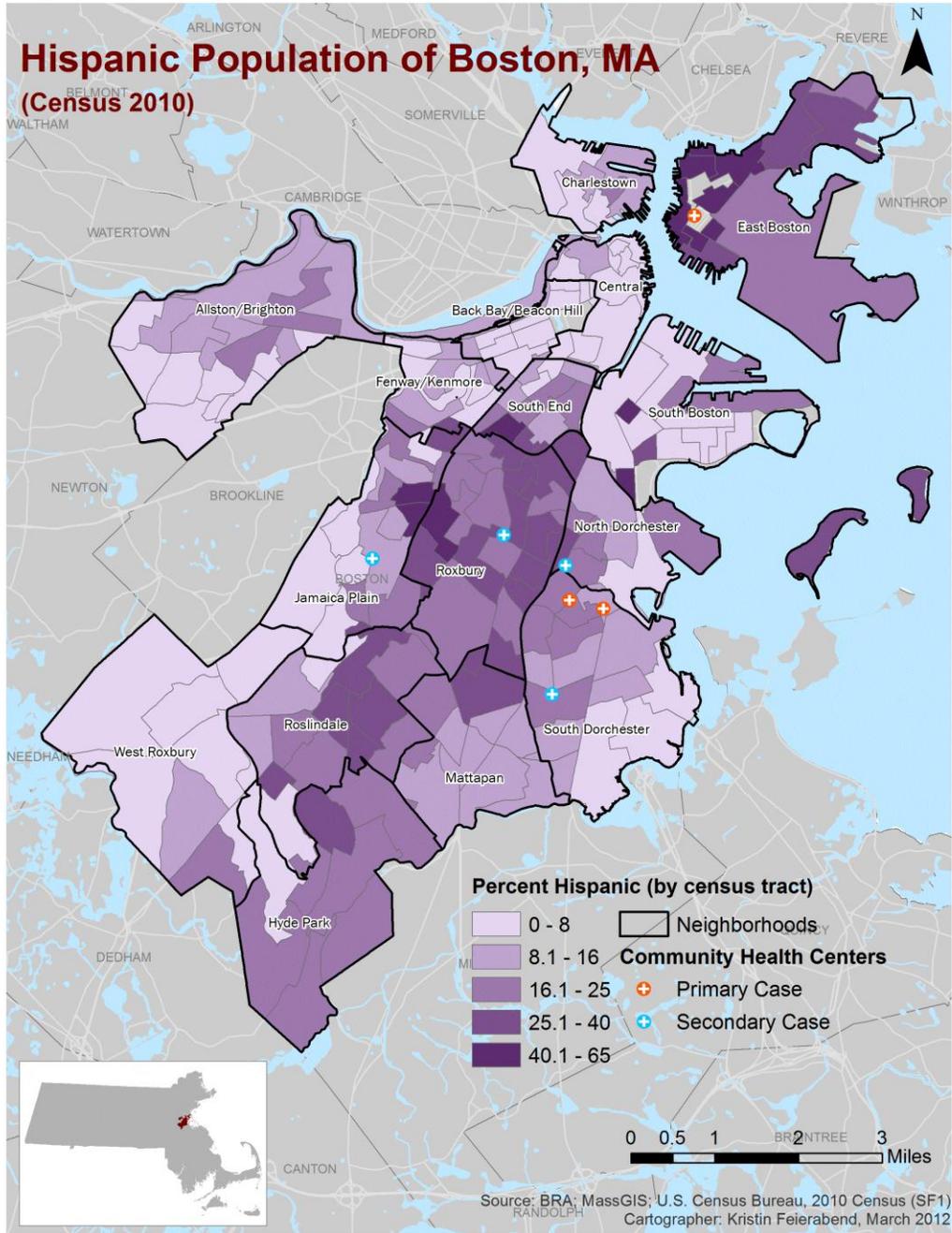


Figure 4.1b: Hispanic Population of Boston, MA



Food Store Density

The first step in the geospatial analysis was to create raster images showing the density of healthy and unhealthy food stores in Boston (Figures 4.2 a-b). Food store density (for both healthy and unhealthy food stores) seemed to align closely with the density of development throughout the city; that is,

neighborhoods like Central (Downtown) and East Boston, which are highly developed in general, displayed higher food store density. No clear patterns emerged in the areas immediately surrounding the target community health centers. Approximately half of the health centers appear to be in close proximity to a high density of convenience stores. The rest of the health centers appear to be in close proximity to high densities of both groceries and convenience stores.

Figure 4.2a: Grocery Store Density in Boston

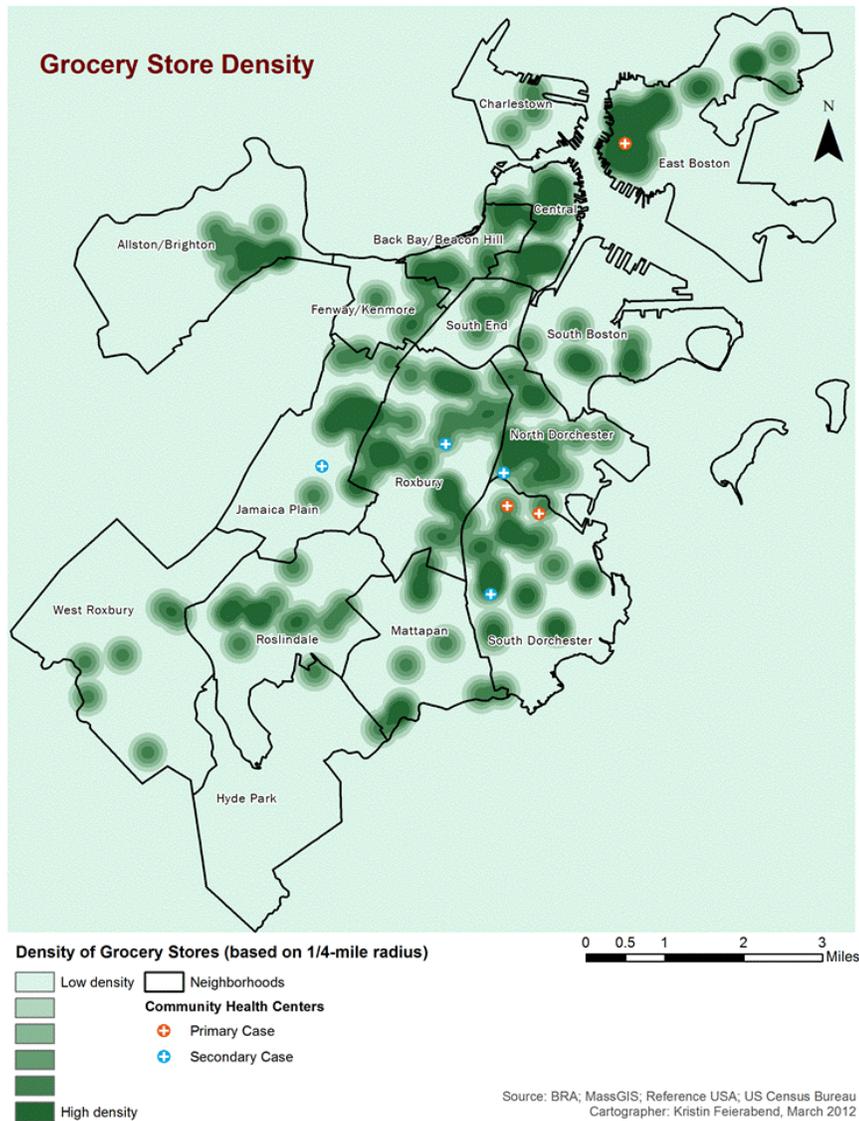
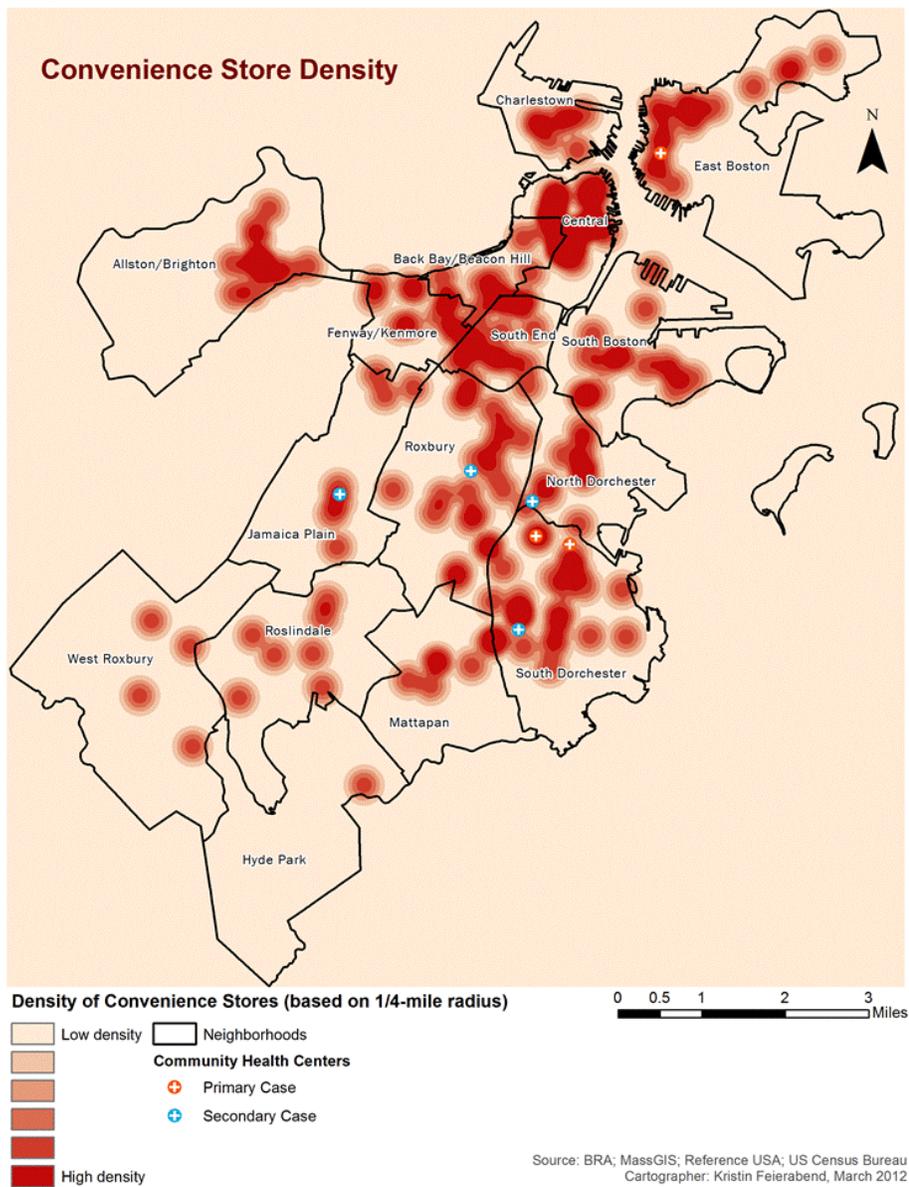


Figure 4.2b: Convenience Store Density in Boston



Raster images were linked to census data to show average density of convenience stores and grocery stores by census tract. Census tracts around all target health centers except in East Boston had low to moderate average grocery store density (Figure 4.3a), and all health centers were located in areas with moderate to high average density of convenience stores (Figure 4.3b).

Figure 4.3a: Average Grocery Store Density by Census Tract

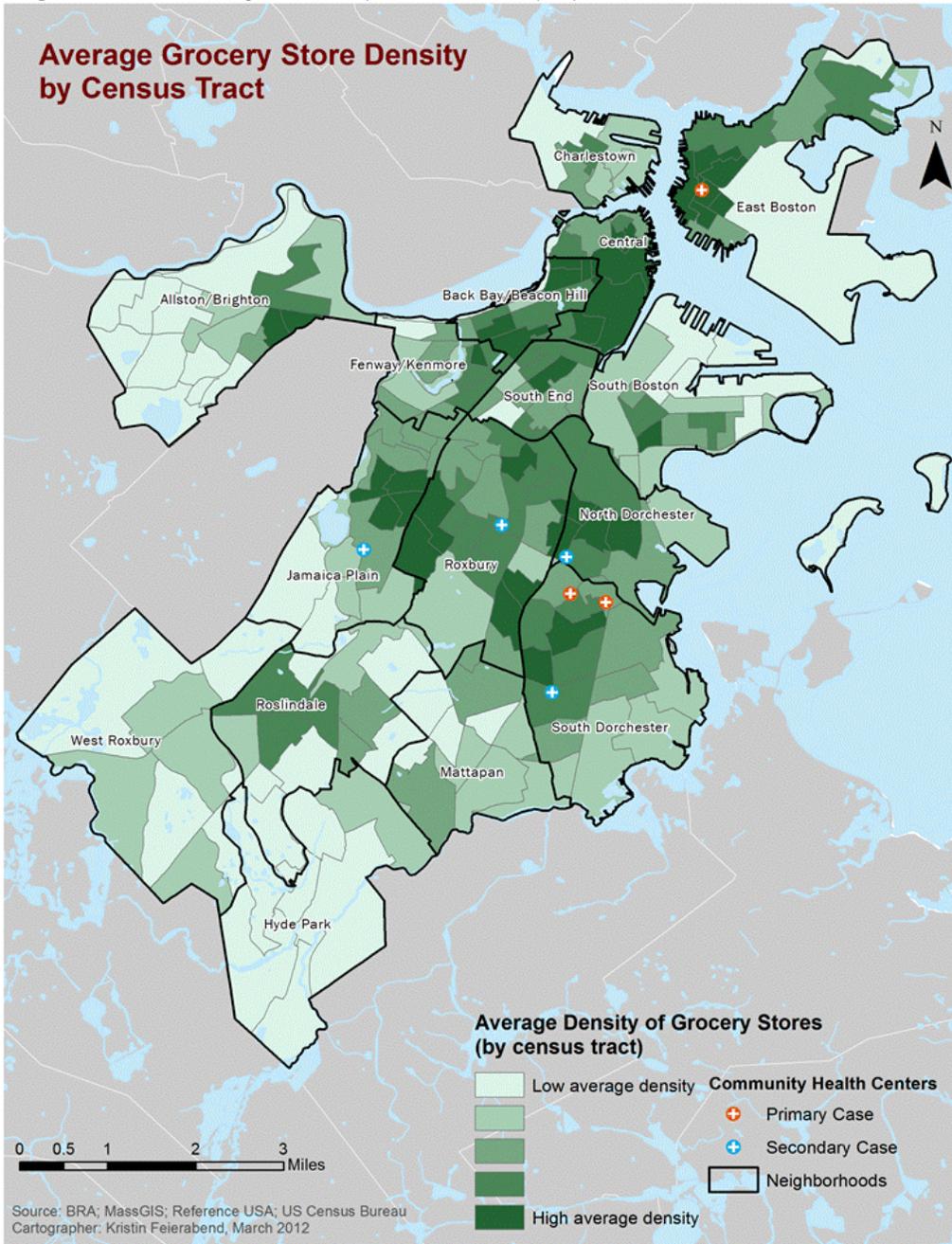
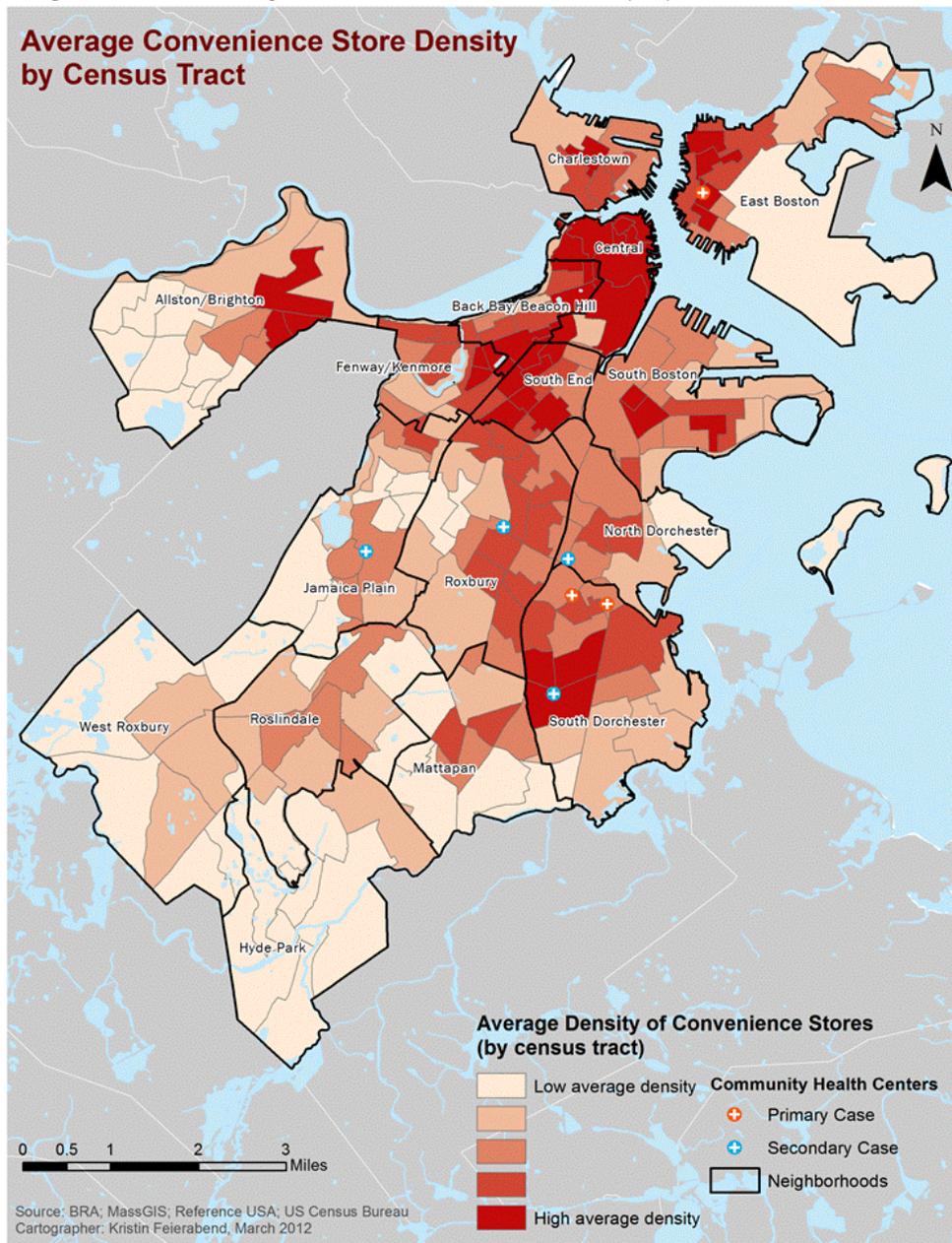


Figure 4.3b: Average Convenience Store Density by Census Tract



To more closely examine grocery store density, grocery store data was divided into four categories by annual sales volume and then mapped to show average density by census tract. Results for the average density of different sized grocery store by census tract are shown below (Figures 4.4 a-d).

Figure 4.4a: Average Density of Grocery Stores with Less Than \$500,000 Annual Sales (by census tract)

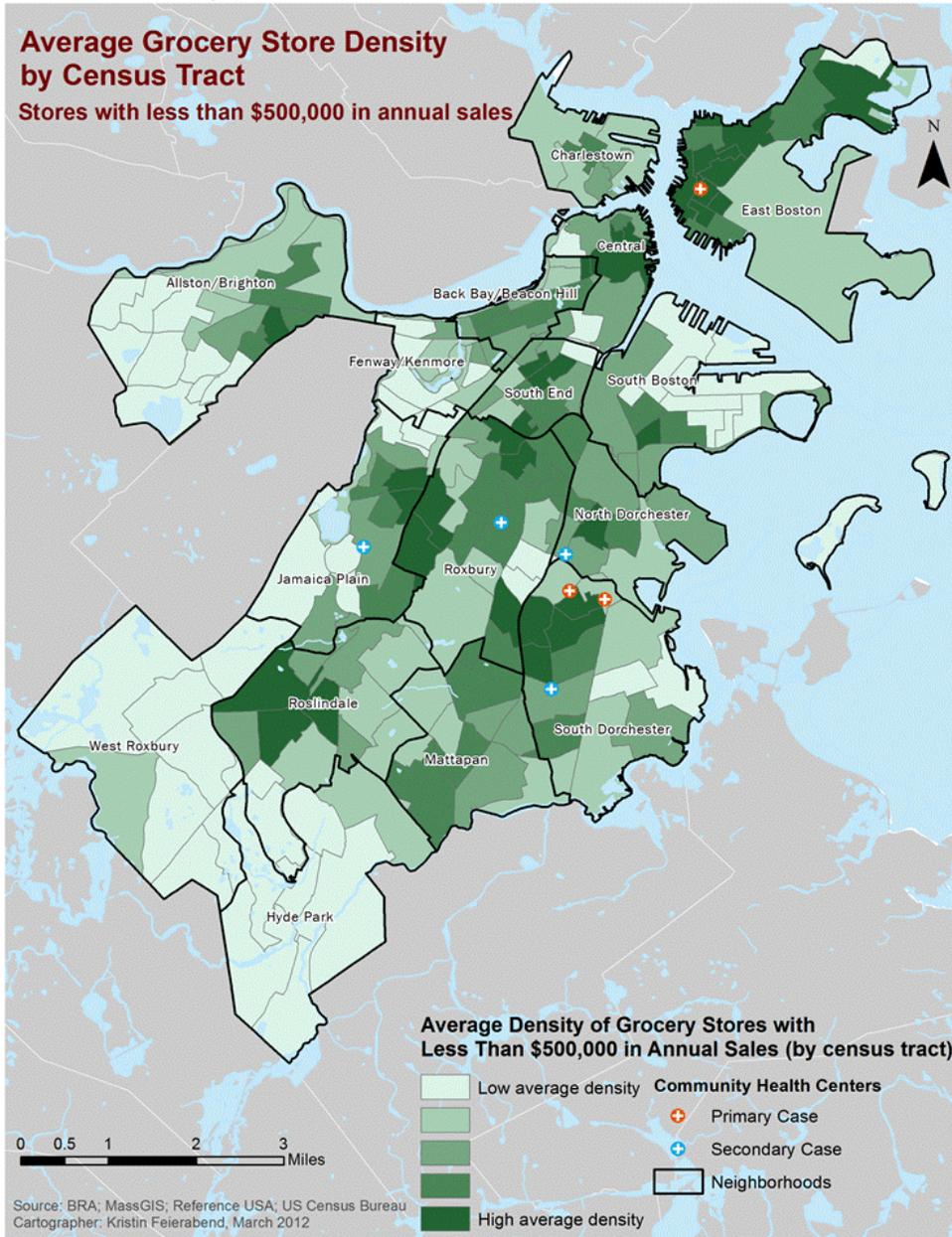
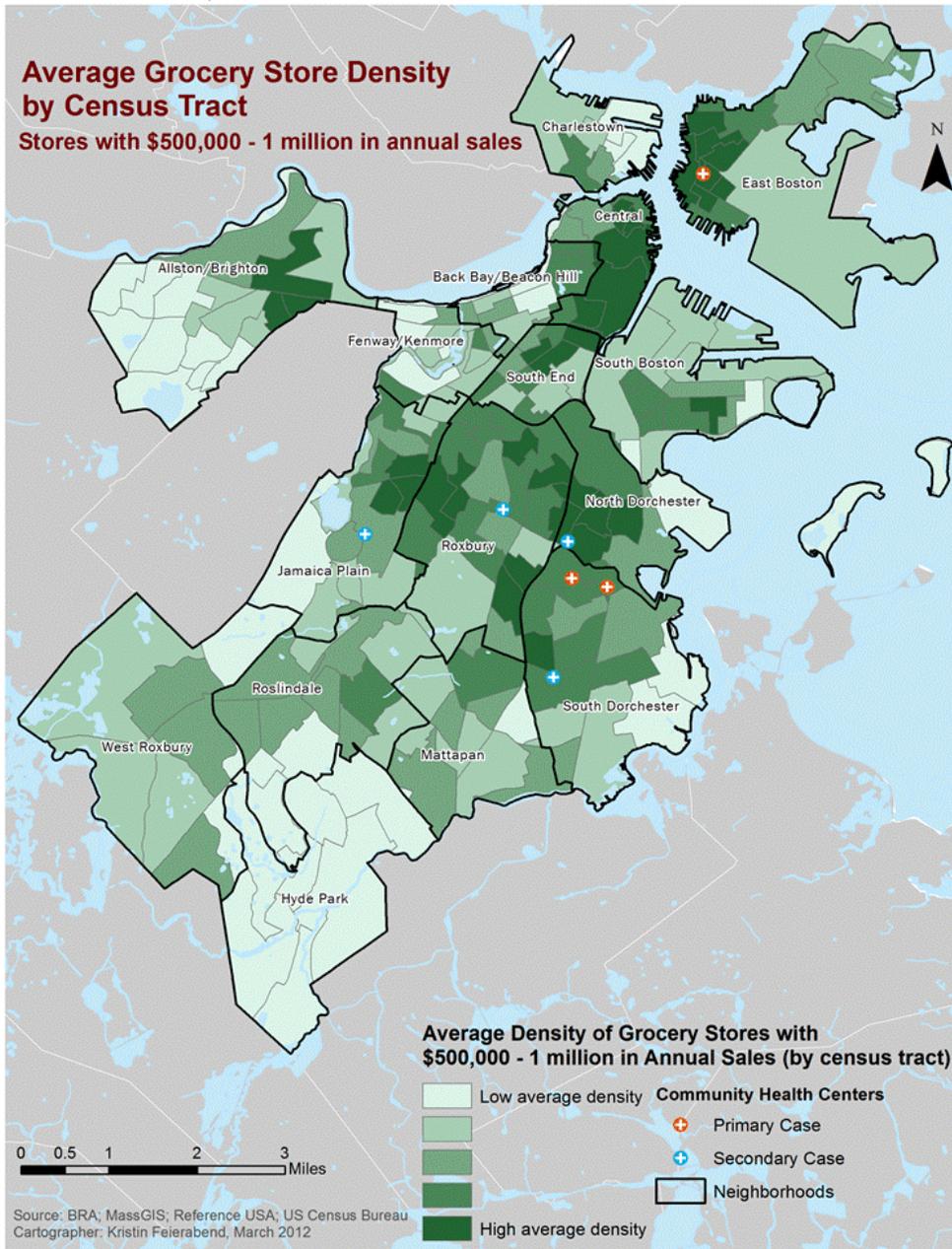


Figure 4.4b: Average Density of Grocery Stores with \$500,000-\$1 Million Annual Sales (by census tract)



As Figures 4.4a and 4.4b show, smaller scale stores (less than \$1 million asv) are distributed somewhat evenly throughout the city, with slightly higher average densities in urban core neighborhoods.

Figure 4.4c: Average Density of Grocery Stores with \$1-20 Million Annual Sales (by census tract)

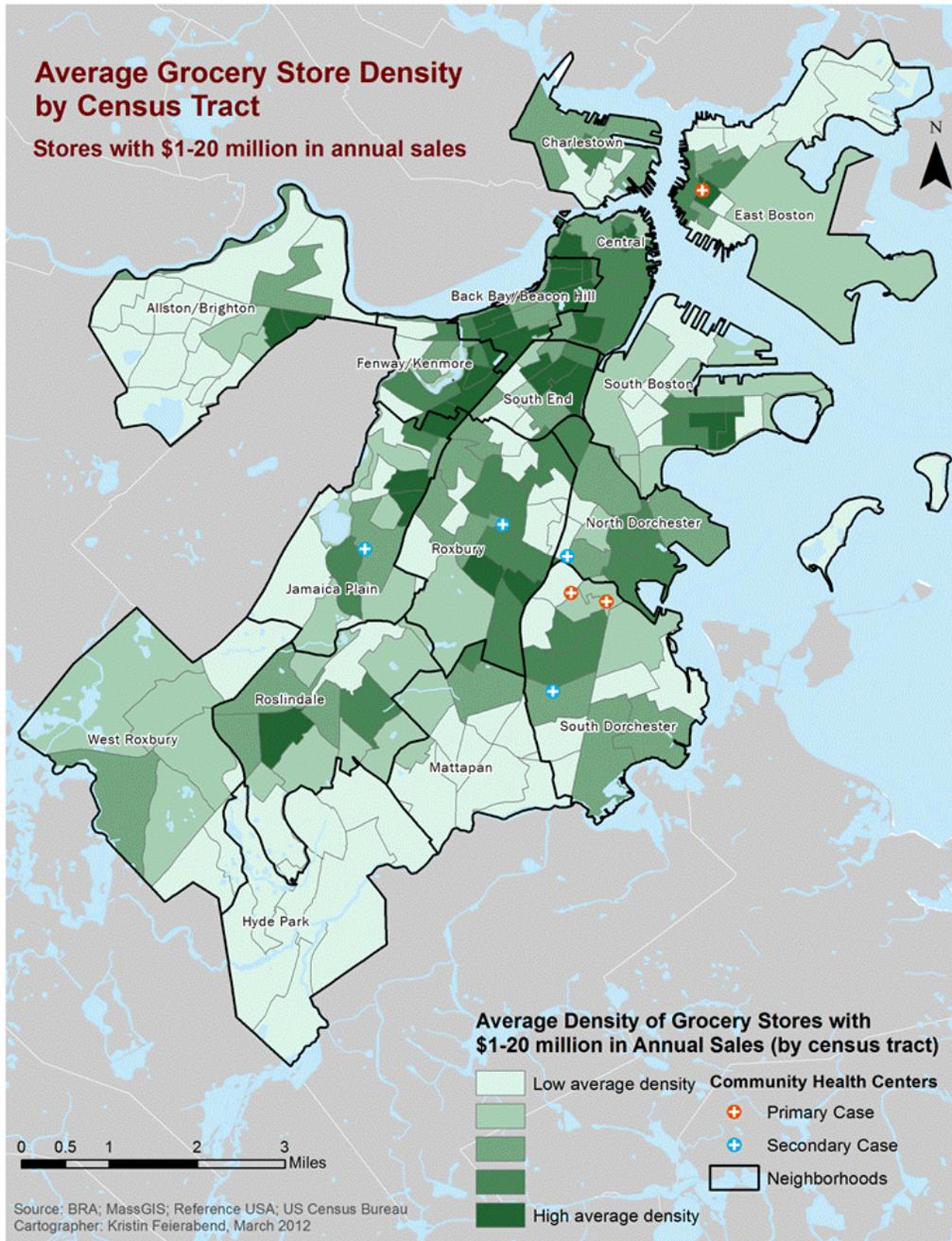
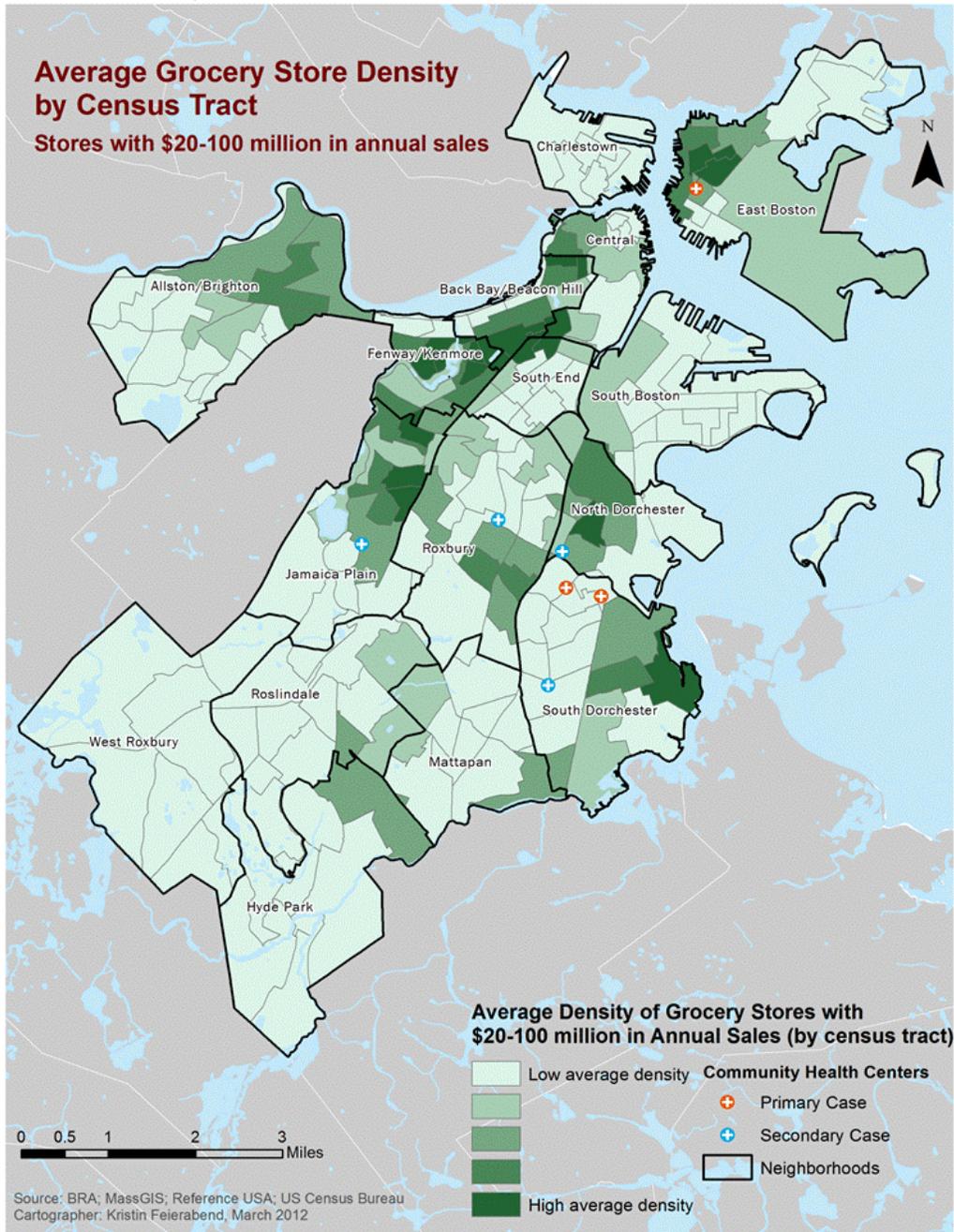


Figure 4.4d: Average Density of Grocery Stores with \$20-100 Million Annual Sales (by census tract)



In contrast, Figures 4.4c and 4.4d, show that larger scale stores, particularly those with over \$20 million annual sales volume are less evenly distributed throughout the city and have higher average densities on the city’s west side.

GeoDa was used to regress mean food store density with demographic variables to determine if statistically significant correlations existed; Table 4.3 includes the results of this analysis. Scatter plots were then used to show relationships between average grocery store density and demographic and socioeconomic variables by census tract.

Table 4.3: Results of Regression Analysis				
Regression of race/ethnicity and mean food store density by census tract				
	<i>n</i>	<i>r-value</i>		
	Food Stores	Blacks	Hispanics	Whites
All convenience stores	197	-0.13	-0.00	0.07
All grocery stores	235	-0.09	0.37**	-0.03
Less than \$500,000 asv	81	-0.00	0.48**	-0.04
\$500,000-1 million asv	113	-0.07	0.34**	-0.10
\$1-20 million asv	37	-0.15*	-0.09	0.14
\$20-100 million asv	19	-0.14	0.15*	0.08
Regression of median household income and mean food store density by census tract				
	<i>n</i>	<i>r-value</i>		
All convenience stores	197	0.01		
All grocery stores	235	-0.09		

* indicates $p < 0.5$; ** indicates $p < 0.01$

Figures 4.5a-c show relationships between race/ethnicity and average density for all grocery stores. A significant positive correlation ($r=0.48$, $p < 0.01$) existed between average grocery store density and Hispanic populations; however, average grocery store density did not correlate with census tracts with substantial White ($r=0.04$, $p > 0.05$) or Black populations ($r=0.00$, $p > 0.05$).

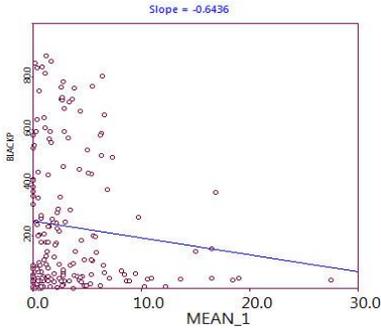


Figure 4.5a
Percent Black by Average Grocery Store Density (by census tract)

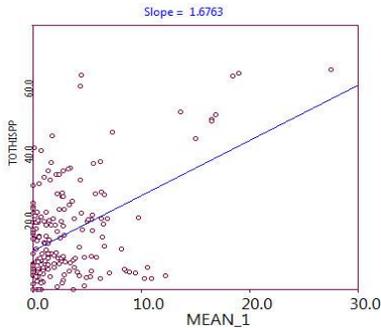


Figure 4.5b
Percent Hispanic by Average Grocery Store Density (by census tract)

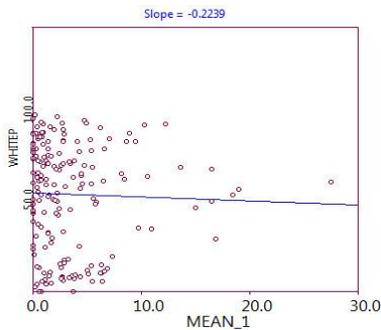


Figure 4.5c
Percent White by Average Grocery Store Density (by census tract)

A statistically significant, negative correlation ($r=0.15$, $p<0.05$) was found between average density of large-scale (\$1-20 million asv) grocery stores and number of Blacks by census tracts (Figure 4.6a). A non-significant, negative relationship ($r=0.09$, $p>0.05$) existed between average density of large-scale (\$1-20 million asv) grocery stores and number of Hispanics by census tract (Figure 4.6b), while a positive non-significant relationship ($r=0.14$, $p>0.05$) existed between average density of these stores and number of Whites by census tract (Figure 4.6c). Although not always statistically significant, these results reinforce

the findings from an earlier map, which showed urban core neighborhoods with lower average densities of large-scale grocery stores.

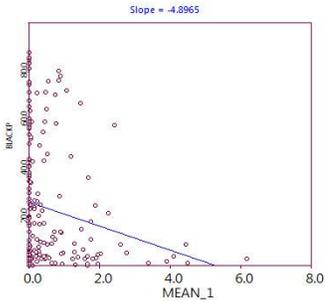


Figure 4.6a
Percent Black by Average Density of Grocery Stores with Annual Sales \$1-20 million (by census tract)

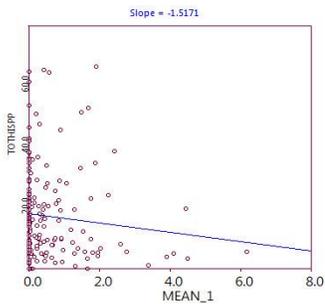


Figure 4.6b
Percent Hispanic by Average Density of Grocery Stores with Annual Sales \$1-20 million (by census tract)

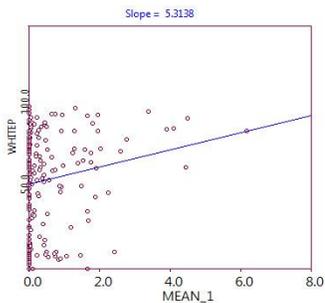


Figure 4.6c
Percent White by Average Density of Grocery Stores with Annual Sales \$1-20 million (by census tract)

No significant relationships existed between average density of smaller scale stores (<\$500,000-1 Million asv) and number of Blacks or Whites by census tract. However, a statistically significant, positive correlation ($r=0.48$, $p<0.01$) was found between number of Hispanics by census tracts and average density of stores with less than \$500,000 asv (Figure 4.7a). A statistically significant, positive correlation ($r=0.34$; $p<0.01$) was also found between number of

Hispanics by census tracts and average density of stores with \$500,000-1 Million asv (Figure 4.7b).

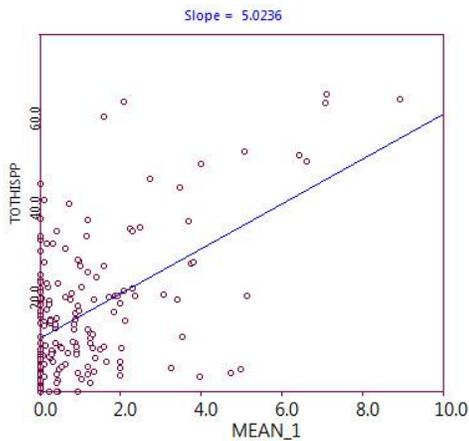


Figure 4.7a: *Percent Hispanic by Average Density of Grocery Stores with Annual Sales <\$500,000 (by census tract)*

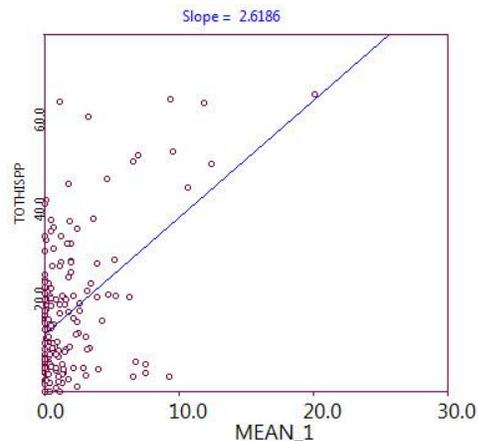


Figure 4.7b: *Percent Hispanic by Average Density of Grocery Stores with Annual Sales \$500,000-1 Million (by census tract)*

Scatter plots were created to show the relationship between average convenience store density and race/ethnicity, however no statistically significant relationships emerged. Figures 4.8a and 4.8c show a non-significant, positive relationship ($r=0.07$, $p>0.05$) between convenience stores and White population, and a non-significant, negative relationship ($r=0.13$, $p>0.05$) between convenience stores and Black population. No major pattern emerged among Hispanic populations ($r=0.04$, $p>0.05$).

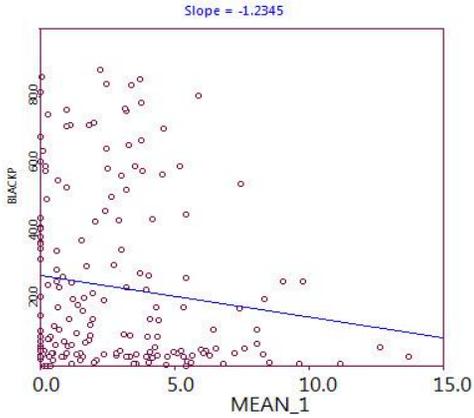


Figure 4.8a: *Percent Black by Average Convenience Store Density (by census tract)*

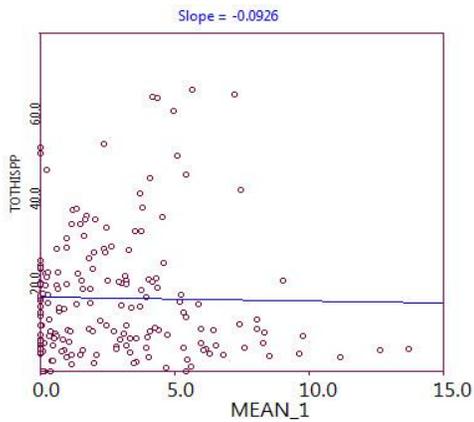


Figure 4.8b: *Percent Hispanic by Average Convenience Store Density (by census tract)*

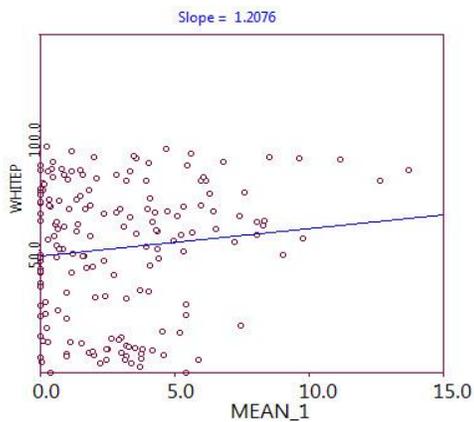


Figure 4.8c: *Percent White by Average Convenience Store Density (by census tract)*

Finally, scatter plots were created to show the relationship between average food store density and median household income. A non-significant, negative relationship ($r=0.09$, $p>0.05$) existed between average grocery store density (for all size stores) and median household income, meaning that as median household income increases, the average density of grocery stores

decreases (Figure 4.9a). This may be related to spatial development patterns; that is, wealthier people may live in neighborhoods characterized by suburban development, which may have lower average grocery store density per square mile. No statistically significant relationships ($r=0.01$, $p>0.05$) existed between average convenience store density and median household income (Figure 4.9b).

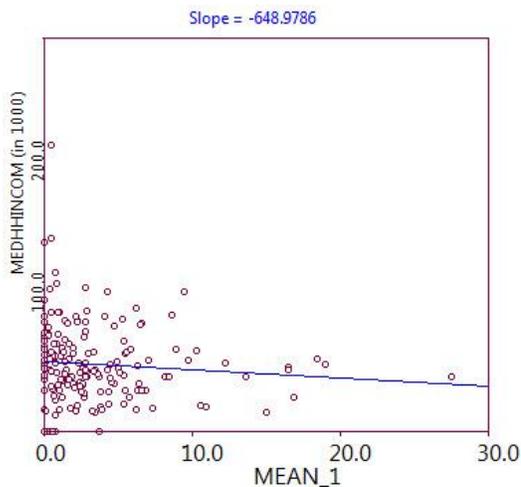


Figure 4.9a: Median Household Income (in \$1000) by Average Grocery Store Density (by census tract)

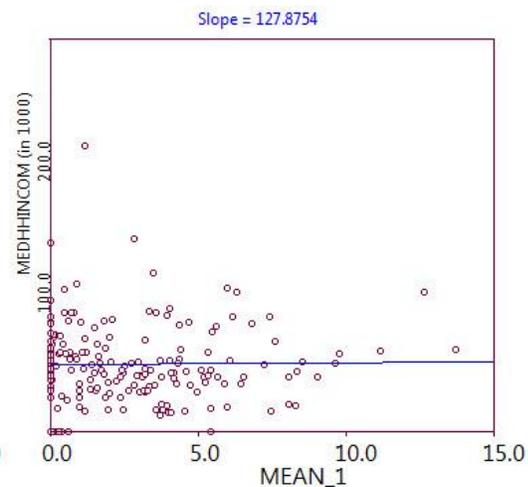


Figure 4.9b: Median Household Income (in \$1000) by Average Convenience Store Density (by census tract)

In summary, the GIS analysis examined spatial patterns in food store density in Boston and how food store distribution relates to the city's demographic and socioeconomic make-up. This analysis showed that, in general, community health centers are located in areas with low to moderate grocery store density and moderate to high convenience store density. The distribution of grocery stores throughout the city varied depending on store size. Stores with the highest annual volume of sales appear to be most prevalent on the city's west side; in most cases, however, grocery store density did not correlate with race.

Census tracts with substantial Hispanic populations were positively correlated with average grocery store densities of all sizes except those with \$1-20 million annual sales volume. No statistically significant relationships existed between convenience store density and race, ethnicity, or income.

Interview Results

A total of seven interviews were conducted with community health center staff in the city of Boston. This section highlights the major findings from the interview process and organizes interview responses around the themes of motivations, challenges and resources, and the future of healthy food access.

Motivation for Organizing Healthy Food Access Initiatives

One goal of the interview process was to simply learn more about why community health centers organize or promote healthy food access initiatives. Based on my conversations with staff, the idea to organize healthy food access initiatives often stemmed from departmental staff or community interests, as opposed to higher-level directors or organizational boards. For example, three interviewees described themselves as having a strong interest in healthy food access and noted that they had either started a healthy food access initiative at the health center themselves or were hired to continue an existing initiative because of their interest. In the case of two health centers, community residents provided the impetus for organizing a healthy food initiative. In both cases, residents were

concerned that inadequate food access in the neighborhood was contributing to poor health, so they approached the health center to see how they might work together to address the issue. This indicates that community health centers are considered trusted organizations in the community and that residents sometimes see them as important partners in addressing neighborhood problems. Some staff mentioned that their health center had received funding for anti-obesity initiatives, which spurred them to organize a food access initiative as part of a broader community health program.

Staff I spoke with were motivated to get involved in healthy food access for many of the same reasons, including inadequate food access in the neighborhood, organizational mission, and increased attention and funding from foundations, hospitals, and local government (Table 4.3). Nearly all interviewees said that they were

Table 4.4: Primary Motivations for Organizing Healthy Food Access Initiatives

1. Healthy food access a problem in the local community
2. Organizational mission to improve both individual and community health
3. Staff and community interest in improving healthy food access
4. Increased attention and funding for anti-obesity initiatives from foundations, hospitals, city government

motivated to start, or consider starting, an initiative to improve the availability of healthy food choices in the neighborhood. Three interviewees described their health center’s neighborhoods as “food deserts,” noting an absence of grocery stores. One interviewee whose health center conducted a small survey examining

food purchasing habits in the community found that residents regularly consume fruits and vegetables, but they must travel to grocery stores outside the neighborhood to purchase healthy food items. Two interviewees described an imbalance between convenience foods and healthier options. As one person explained, “the closest restaurants... don’t offer many healthy food options. Much of the food is high fat and high calorie, and grocery stores are farther away.” Although most interviewees focused on the lack of healthy food options, three staff noted that some small, ethnic shops do carry fruits and vegetables that cater to local immigrant populations.

For some interviewees, the motivation to increase healthy food options stemmed from health centers’ organizational mission to improve both individual and community health. For instance, two interviewees felt the health center was responsible for ensuring that a link exists between what patients are “prescribed” at the health center and what is available in the community, meaning that, if a healthy food item (e.g. whole wheat pasta) is promoted at the health center, then it should be available to purchase in the neighborhood. “Health centers are lead organizations, especially in urban communities,” another interviewee explained. “We really wanted to do this [healthy food initiative] here because it makes the statement that this is important and really linked to good health.” One interviewee said that, “supporting local farmers is part of our community’s health,” suggesting that providing jobs for residents and keeping consumer dollars in the neighborhood is as important to neighborhood health as the food being sold. All of these statements indicate that community health center staff find it

important to “practice what they preach” and demonstrate how individual health is tied to community health.

Increased attention and funding for anti-obesity programs has also provided motivation for health centers to organize healthy food access initiatives. One interviewee explained that the health center had not been involved in healthy food access in the past because, “ten years ago, the big issues were HIV, domestic violence, asthma. More recently, awareness of the obesity problem has really taken off and people are actually getting concerned about it.” She and other interviewees felt that this increased attention, coupled with an increase in funding for anti-obesity initiatives from foundations, hospitals, and Boston city government, provided important motivation to organize healthy food initiatives.

Challenges and Resources

Interviewees described a number of challenges they have experienced when trying to promote, organize, and maintain healthy food access initiatives. Although these descriptions varied somewhat by health center and type of initiative, interviewees seemed to experience a number of the same challenges, particularly those that relate to staff capacity and funding, inter-departmental and community support, affordability of fruits and vegetables, behavior change, and farmers market development. At the same time, however, interviewees pointed to many important resources within their health centers, neighborhoods, and the city of Boston that help them overcome challenges of organizing and promoting healthy food access initiatives.

Staff Capacity and Funding

A majority of interviewees felt that organizing a healthy food access initiative like a farmers market or corner store project requires a significant amount of time and motivation on the part of staff. “It’s a big task to even explore the potential for a market, and then to actually implement and make it successful for both farmers and the community can be a real challenge,” noted an interviewee interested in starting a farmers market in the future. Another interviewee said that, because health centers have become “bigger and more streamlined over time,” staff have had to focus their efforts on individual health care and have less time to devote to community programs. Not surprisingly, interviewees at health centers that have staff dedicated solely to food access initiatives said that they are able to commit more time to these projects.

Staff capacity is closely tied to funding. Health centers that receive financial support for healthy food access initiatives from funders like community-based organizations, city government, hospitals, foundations, and the state agriculture department, are able to do more than health centers that receive little or no funding. For example, two interviewees said they have the capacity to run multiple healthy food initiatives because they receive outside funding for programming and have staff dedicated to working on community food initiatives. Another health center, in contrast, only has the capacity to organize a small initiative because the project receives little funding and has no staff specifically dedicated to the project. All of the interviewees who expressed interest in

organizing a healthy food access initiative in the future said that they would need more financial resources and staff capacity to do so.

To overcome these challenges, community health centers have looked to community partnerships. Two interviewees cited local neighborhood groups that helped to start a healthy food initiative, while two interviewees interested in starting initiatives mentioned the possibility of working with neighborhood economic development organizations and local churches. A critical partner described by all interviewees was The Food Project, a non-profit that runs sustainable agriculture programs for Boston youth. Interviewees said the Food Project has offered valuable consulting advice and has helped develop subsidized community-supported agriculture (CSA) programs, provide EBT machines at farmers markets, and install community gardens at health center sites. Interviewees agreed that community partnerships like this allow them to engage in healthy food access initiatives without taking significant time and resources away from other health center responsibilities.

Inter-departmental Support

Even when a health center staff member has the time and resources to dedicate to a community program, interviewees said it can sometimes be difficult to gain support from staff in other departments. Two interviewees felt this was because health center departments “are fairly ‘siloed,’” meaning that departments like Adult Medicine are not well integrated with Community Health. To address this issue, the staff promote healthy food initiatives throughout other departments

and connect with case managers, nurses, and others to try to gain support for their programs. Two health centers offer a workplace CSA as a way “to expose providers to what’s available at the market. It gets them eating the food themselves so that they can champion healthy food in their patient visits.”

Two interviewees not currently organizing healthy food access initiatives felt that it would be difficult to gain inter-departmental support for such initiatives because medical providers are currently reimbursed for only fifteen minutes of each patient visit, and thus have limited time to discuss community programs with patients. Staff who work on healthy food programming, then, “have to convince some providers that it is important for them to spend part of a patient’s visit promoting these healthy food programs.” However, both interviewees who cited this as a problem work at health centers that are shifting toward a health care model that could change the way patients receive care. This model—the Patient-Centered Medical Home (PCMH)—would not only strengthen the relationship between patient and physician, but would also create a team of staff from multiple departments who together share responsibility for an individual’s health. Interviewees felt that this could be beneficial to healthy food programs because it provides more opportunities for other health center departments to learn about community programs and also “gets patients talking with nurses, nutritionists, counselors, and other staff who can encourage participation in healthy food programs.”

Community Buy-in and Cultural Relevance

Some interviewees cited challenges gaining community buy-in for healthy food access initiatives. For instance, two staff members said that their health center will identify something like healthy food access as a problem in the neighborhood, but residents might not see this as an issue. The challenge they said, then, is helping residents understand that healthy food access is a problem about which they should be concerned. For many interviewees, the first step is educating residents about the benefits of healthy eating. Once this is accomplished, they can begin to work with residents to increase healthy food options in the neighborhood. Even when community members show interest in healthy food access, however, they still might not have the power to create change within the neighborhood. As one interviewee described it, decisions are made by a number of people within the health center and the neighborhood, and “sometimes it’s hard for residents to feel like their input was considered if their idea was not actually implemented.”

One staff suggested that, in order to gain community buy-in, it is necessary to find “people in the community who truly embrace the movement for healthier food who can help get others engaged.” Two interviewees said that, in the case of farmers markets, it is important to find vendors who “actually want to support the community” by providing healthy, affordable food to neighborhood residents. Vendors who prioritize community connections, not just profit, establish stronger ties with residents and contribute to the markets’ overall success. Four interviewees suggested that neighborhood youth can be an

important resource in generating community support and explained that many local organizations provide funding for teens to be involved in community initiatives. Because of this funding, youth have helped to develop multi-lingual publicity materials, sell food and serve as interpreters at farmers markets, and organize health advocacy events, all while gaining critical employment experience. Interviewees also noted that youth bring an energy and enthusiasm to their work that can make them powerful champions in the movement to improve healthy food access.

Several interviewees felt that, in order to gain community buy-in, it is important to design projects that are culturally relevant to residents. For example, one interviewee felt that a corner store initiative had been somewhat unsuccessful because the health center did not have a strong understanding of how corner stores were used in the community. Through the project, the staff learned that corner stores are used for smaller purchases, often specific products from immigrants' home countries, and that regular shopping trips are made to large grocery stores outside of the neighborhood. The interviewee explained that, it "would require a major cultural shift to make these [corner] stores the primary shopping place for residents." As a result, the health center is re-thinking more culturally appropriate ways to increase healthy food access. In the case of farmers markets, three interviewees said that vendors help garner support from the immigrant community by growing and selling a variety of ethnic produce. In one community, vendors are able to build connections because they have immigrated from many of the same countries as neighborhood residents.

Three interviewees made the point that creating change in the community is not always immediate. As one interviewee put it, “change is much more of a process—making sure it works for the health center, for the community, for the Department of Agriculture, for many different groups... it’s a slow, careful, navigating process.” However, regardless of how long it takes, if improving long-term health of community members is the goal, then it is important that residents are invested in the changes that are made.

Affordability of Fruits and Vegetables

All interviewees said that the “high cost”—either real or perceived—of fruits and vegetables was a challenge when organizing or promoting healthy food access initiatives. Some felt that produce is actually expensive and unaffordable to low-income residents. Others felt that people perceive fruits and vegetables to be expensive, not because the food is actually high in price, but because convenience food is comparatively cheap. Affordability, either real or perceived, then, is often a barrier when health centers try to encourage low-income patients to purchase healthy food at farmers markets or corner stores. Three interviewees described a particular tension between making food affordable to the consumer while still ensuring a profit for the farmer or business owner. One interviewee described the situation by saying, “the stores are charging high prices, so people don’t buy the food, which then means that the store owner has to continue charging high prices in order to make a profit.” The cost balance is particularly difficult for corner stores, because unlike farmers markets, there are no programs

to incentivize healthy food purchasing at corner stores. Instead, health centers try to help businesses provide low prices to customers but still maintain a profit by increasing foot traffic and the quantity of healthy food purchases.

All interviewees agreed that programs that incentivize healthy food purchasing are critical to increasing residents' consumption of fruits and vegetables. In particular, staff who organize farmers markets found the Boston Bounty Bucks program (which doubles SNAP benefits up to twenty dollars) to provide important price breaks to shoppers. Two interviewees noted that, in the past, they have offered patients healthy food vouchers for farmers markets and grocery stores, explaining that these not only increase affordability but also provide an incentive for patients to try new foods. "It's hard to get someone to pay for a zucchini when they've never had it before and aren't sure if they'll like it, so the gift card provides an incentive to try new things." Such incentive programs contribute to the overall success of health centers' food access initiatives.

Behavior Change

The primary goal of healthy food access initiatives is making healthy food more available and affordable to residents. However, interviewees noted that, even when healthy food is readily accessible in a community, there are still a number of challenges to getting residents to purchase them. Three mentioned that it can be difficult for patients to change their eating habits when they have developed preferences for certain types of food. Time restrictions and limited

cooking skills among patients were also cited as barriers to eating fresh fruits and vegetables. To address these issues, interviewees said they often try to educate clients about the benefits of healthy food and expose them to new foods through cooking classes and tasting events.

Three staff described situational factors that are largely out of clients' control but can greatly shape food purchasing behavior. For instance, "there are a lot of stressors like housing, employment, and safety that make it difficult for families to be motivated to eat healthy. At the end of the day, food might not be their biggest priority." To address this issue, clinical staff sometimes counsel patients on how to stretch their food budgets or make simple switches (e.g. from white rice to brown rice) without spending additional money. Two interviewees cited crime as a challenge, noting that, "concerns about safety... can make it difficult to get residents out shopping in the community." For example, one interviewee described the farmers market as a "hangout" in the community, which "is good because it means a lot of people are around, but it can also be a challenge because sometimes people cause problems... and decrease feelings of safety, especially after dark." To improve safety, the health center now has bike police patrol the farmers market area after dark. These conversations indicate that health center staff recognize the important role that both personal and contextual factors can play in shaping food purchasing behaviors.

Farmers Market Development

Several interviewees described challenges related to farmers market development, many of which are not specific to community health centers but could be experienced by any organization not typically active in the healthy food movement. All interviewees agreed that recruiting vendors was difficult and was often done through cold-calling. Two interviewees felt recruitment was a challenge because many farmers were unfamiliar with the health center’s neighborhood and/or were concerned they would not make a profit. Four interviewees cited challenges finding a physical site for a farmers market. For

Table 4.5: Challenges and Resources for Organizing Healthy Food Access Initiatives	
Challenges	Resources
<ul style="list-style-type: none"> ■ Limited staff capacity ■ Limited funding for community programs ■ Lack of support from other community health center departments ■ Lack of community interest/support ■ High cost (real or perceived) of fruits and vegetables ■ Personal factors, like taste and cooking skills, that influence food purchasing ■ Contextual factors, like safety, that influence food purchasing ■ Farmers market siting and vendor recruitment 	<ul style="list-style-type: none"> ■ Funding from local organizations, hospitals, foundations, and City of Boston ■ Partnerships with neighborhood groups, non-profits, and the City of Boston ■ Youth and community members who champion healthy food access ■ Farmers market vendors who sell culturally relevant food ■ Incentive programs for fruits and vegetables ■ Health center staff who understand personal and contextual factors influencing food purchasing behavior

some, this was a problem because the neighborhood lacked appropriate space for a market; for others, complicated city permitting processes or conflicts with local organizations or city departments made it difficult to site markets in certain locations. Three interviewees expressed some concern about “oversaturation,” or establishing too many markets within the same neighborhood. Two interviewees thought that it might be possible to establish a more centralized market in the future, however both agreed that “there’s no real place to hold a market in between the different areas; there’s no central gathering space.”

An Uncertain Future

Overall, the community health center staff interviewed spoke positively about their involvement in healthy food access initiatives, despite experiencing such challenges as minimal staff capacity, limited inter-departmental and community support, and difficult cost-differentials between healthy and unhealthy foods. Many described resources like community partners, youth, and incentive programs that complement and support their efforts to improve access to healthy food. With regard to the future, however, interviewees were cautiously optimistic, expressing some uncertainty as to the fate of healthy food access initiatives over the long-term. Two interviewees expressed concerns that healthy food access will “become the flavor of the week,” and that funders will shift their resources to new and different types of health initiatives. Many of the staff I spoke with felt that healthy food access initiatives would continue in the future but were unsure which initiatives would become “best practices.” Interviewees

suggested a number of possibilities, including mobile markets, an increased number of small markets, fewer and more centralized markets, or potentially even improved public transportation to grocery stores. Regardless of what happens in the long-term, the staff expressed a continued commitment to improving healthy food access in the community.

Chapter 5: Discussion and Recommendations

The purpose of this project was to gain an understanding of the role of community health centers in improving healthy food access in urban neighborhoods of Boston. Interviews with staff highlighted health centers' motivations for organizing and promoting healthy food access initiatives and illustrated some of the challenges and resources that go along with such work. This chapter places interviews within the broader food movement context to show that, despite challenges, health centers have a lot to offer in the movement to improve healthy food access, reduce obesity, and improve long-term health outcomes. I conclude the chapter with recommendations for how planners and policymakers can build upon the work of community health centers to improve health outcomes and secure food justice over the long-term.

Comprehensive Understanding of Diet and Health

Community health center staff demonstrated a comprehensive understanding of the factors that shape diet and health outcomes. Interviewees employed a public health framework similar to Robinson's (2008) socio-ecological model, in which diet and health are thought to be influenced by complex and inter-related factors at the intrapersonal, interpersonal, and environmental level. This is not surprising, given community health centers' mission to not only provide medical assistance to individuals but also to address social determinants of health.

Because the focus of my research was on healthy food access, most of my conversations with health center staff centered upon environmental-level problems and interventions. Interviewees expressed concerns about the lack of healthy food choices in their communities, illustrating their awareness of the potential link between food access and health. For instance, some health center staff described their neighborhoods as “food deserts” and cited an absence of full-service grocery stores. Others described a situation in which residents frequently purchase high-fat, high-calorie foods because stores carrying unhealthy food far outnumber and are more convenient than stores carrying healthier options. Some researchers suggest that such “food imbalance” may be problematic because consumers tend to shop at the places most convenient to them (MG 2010).

The GIS analysis of food store density confirmed much of what was said in interviews. For example, the raster images of grocery store density showed that approximately half of the target community health centers were located in close proximity to a high density of convenience stores but not to a high density of grocery stores, giving credence to interviewees’ concerns about food imbalance. Upon further analysis, it became apparent that target health centers are located in census tracts with a lower average density of large groceries (>\$20 million asv) and a higher average density of small grocery stores (\$500-1 million asv). This trend—that communities in the urban core tend to have limited access to large grocery stores and supermarkets but greater access to small grocery stores—has been recorded by a number of other researchers (Dunkley et al. 2004; Raja et al. 2008; Ver Ploeg et al. 2009). Additionally, some researchers have

looked more closely at food options provided at different types of stores, finding that smaller grocery stores often do not carry the range of healthy food options available at larger stores (Farley et al. 2009; Larson et al. 2009). So, while small grocery stores may be located within close proximity to health centers, it is possible that interviewees appropriately used the term “food desert” to refer to the limited range of healthy food options sold at these stores.

Contrary to much of the existing food desert literature, which suggests that communities of color tend to have more convenience stores and fewer grocery stores than middle-class, White neighborhoods, few statistically significant correlations were found between average food store density and race and income. It is possible that the location of healthy and unhealthy food stores is not tied to demographics but that food store location is more closely related to development patterns, i.e. urban areas are more densely developed and thus have a higher density of both healthy and unhealthy food stores. In the future, researchers may want to control for population density when examining relationships between food store density and race to eliminate the potentially confounding variable.

Interviewees intimated that reasons for when and where people shop are more complex than a simple food imbalance and pointed to several other factors that influence food purchasing decisions. In two instances, interviewees said that, despite easy access to convenience stores, residents actually travel to full-service grocery stores outside of their neighborhoods to purchase the majority of their food. As other researchers have shown (Clifton 2004), this behavior is highly dependent on mobility and whether or not residents have access to cars or public

transportation that can connect them to stores outside of the neighborhood. Another health center found that shopping at full-service groceries outside of the neighborhood is the cultural norm for residents and that it would be highly difficult to get residents to shop at convenience stores, even if the stores carried healthy food options. Safety, too, was identified as a factor influencing when and where people shop; for instance, some residents, particularly individuals with children, may choose to travel to a grocery store outside of their neighborhood because they feel it is safer than a nearby convenience store. According to Zenk et al. (2011), safety is an issue that, to date, has received little attention in food access initiatives but which deserves more consideration for the potentially significant role it plays in food purchasing decisions. All of these examples suggest that healthy food access is a complex issue that encompasses issues of mobility, cultural norms, and safety. More specific and in-depth spatial analyses in conjunction with resident interviews may help to capture a more accurate picture of challenges and opportunities related to food access.

Although the focus of my interviews was on environmental-level factors shaping food purchasing behavior, interviewees also brought up important personal and cultural factors, such as individual food preferences, nutrition knowledge, and cultural foodways, that influence dietary habits. Health center staff acknowledge that such factors can be significant inhibitors to healthy eating and offer programs like grocery store tours, tastings, cooking classes, nutrition support groups, and nutrition classes to address these issues.

Health center staff also described situational factors like high stress levels and financial constraints that can make it difficult for individuals to prioritize healthy eating. In particular, interviewees described a tension between making healthy food affordable for customers while still maintaining a profit for business owners, e.g. corner store owners or farmers market vendors. Interviewees felt that incentive programs, such as the Boston Bounty Bucks program, were particularly important in making healthy food more accessible to low-income residents. This indicates that affordability is an important component of healthy food access and that, in the short-term at least, more effort should be put into the development of incentive programs. It should be noted that the federal government is making strides in this arena; in 2008, the United States Department of Agriculture authorized the Healthy Incentives Pilot (HIP), a program that provides incentives to a random sample of food stamp recipients in Hampden County, Massachusetts, to encourage the purchase of fruits, vegetables, and other healthy food (USDA FNS 2012). Evaluation of this program will provide important insight as to whether such incentives successfully increase healthy food purchases and whether the program can be extended to all food stamp users.

At the same time, interviewees' concerns about the affordability of healthy food suggest that short-term fixes alone will not be sufficient and that community-based organizations, cities, states, and federal government must work together to develop long-term solutions. Some of these strategies may come from the supply side, e.g. providing agricultural subsidies for fruit and vegetable production (instead of corn, soybeans, etc.), which would potentially lower healthy food

prices for consumers. Other strategies, such as improved employment options or higher wages, may come from the demand side, which would increase consumers' ability to purchase healthy food. Although these strategies may be more difficult to implement, they are essential to ensuring all people have access to healthy food in the long-term.

Conversations with health center staff confirm that altering diet and improving health outcomes is a complex challenge with no simple answer. However, my interviews clearly demonstrate that community health centers have an “awareness of health-related problems, needs, and solutions in their communities” that will prove valuable in addressing health disparities in the long-term (Freedman 2012, 85). In addition, community health center staff are regularly in touch with clients through clinical visits and community programs and are thus aware of the many challenges residents face in developing and maintaining healthy eating habits. This puts health centers in a unique position to “bring underrepresented groups into the arena” of the alternative food movement and give them an opportunity to shape and implement interventions (Freudenberg 2011, 633). In this way, community health centers can be an important resource for planners and other food movement activists who seek to develop interventions to improve healthy food access.

Community Health Center Mission and Capacity

Conversations with interviewees indicate that community health centers' mission to improve individual and community health has remained unchanged

since the founding of health centers in the mid-1960s. In addition to offering personal medical care, health centers continue to organize programs like healthy food access initiatives that are designed to improve health outcomes for the community as a whole. Unfortunately, as interviewees noted, constraints in staff capacity and funding can sometimes limit a health center's ability to organize and maintain community programs. This follows a long-term trend across the U.S., in which political shifts, reduced federal funding, and rising medical costs have forced community health centers to focus on providing individual health care (Lefkowitz 2007; Lefkowitz and Todd 1999). Even the founder of community health centers, Jack Geiger, concedes that, "the early health center focus on social determinants and community development is greatly attenuated, as the costs of simply providing medical care have grown nearly overwhelming" (Geiger 2005, 318). No doubt, this reduction in funding for community programs has contributed to interviewees' challenge of building inter-departmental support for healthy food access initiatives among staff and providers. As health center staff mentioned, providers receive reimbursement from Medicare and Medicaid for only fifteen-minutes of each patient's visit and have to devote more time to individual care and less, if any, time to promoting community programs.

Despite this shift toward more individualized care, community health centers still manage to find ways to organize and promote healthy food access initiatives. As one interviewee noted, community health centers have a history of "thinking outside of the box" and finding innovative ways to implement community programs. Freedman et al. (2012) suggest that a number of factors,

including the presence of staff and community leaders who advocate for and champion healthy food, can influence a health center's ability to successfully organize healthy food access initiatives. Both of these factors were alluded to among staff who organize such initiatives. For instance, interviewees self-described themselves as the initiators of healthy food access initiatives and said that they make a concerted effort to build support among other health center staff through work-place CSA programs and educational discussions. Although funding for community programs is limited, these staff members have made healthy food access a priority and have secured program funding from alternative sources, including foundations, the City of Boston, the state Department of Agriculture, and community-based organizations. Over the long-term, it is possible that concerns about healthy food access will become more firmly embedded in health center practices; as health centers shift toward a patient-centered medical home model, staff may rely less on one department or staff person to carry the banner of healthy food access and work more collaboratively to emphasize the importance of these programs. In terms of community leadership, interviewees described situations in which residents approached the health center to ask for their help in addressing issues of healthy food access in the neighborhood. This suggests that residents see health centers as important neighborhood institutions that can provide useful advocacy support and resources to address their food access concerns.

Social capital, or “ties and connections available that may be leveraged to mobilize environmental interventions,” can also contribute to a community health

center's ability to successfully organize healthy a food access initiative (Freedman et al. 2012, 84). Many health center staff have built relationships with community partners, such as the Food Project, the City of Boston, neighborhood organizations, and youth development organizations. These partnerships serve diverse purposes—sometimes providing project consultation, while other times providing assistance with community organizing or program implementation—and are critical to the success of the healthy food programs.

Still, conversations with health center staff suggest that opportunities exist for deeper and additional partnerships. Staff described challenges navigating processes with which they were not familiar, such as obtaining farmers market permits, recruiting market vendors, and collaborating with convenience store owners. Coordinating such logistical factors can take significant time and resources, especially for organizations like health centers that are relatively new to the food movement. Current partners, food access organizations, city departments, and even neighborhood business associations could provide much-needed training and assistance to community health centers trying to navigate permitting processes, connect with farmers, or work with small business owners.

Toward Food Justice

In some ways, community health centers seem to operate within the dominant food movement narrative, one which promotes local food as an environmentally sustainable alternative to industrial agriculture (Alkon and Agyeman 2011). This framework is “largely created by, and resonates most

deeply, with white and middle-class individuals;” however, individuals who promote this narrative rarely acknowledge its racial implications (2011, 3). For example, nearly all of the health center staff I spoke with were White, and those who organize healthy food access initiatives said that they were hired, in part, because of their interest in the issue. This suggests that the alternative food movement continues to employ a narrative that resonates most closely with Whites and that people of color and low-income individuals tend to be “the objects of the work but not the leaders of it” (Slocum 2006, 330).

My research is in no way a critique of these staff members—indeed, almost everyone alluded to the importance of cultural competency in healthy food access programming—nor is it a critique of the community health center as a whole, since the limited nature of this study prevented me from examining broader organizational practices. Still, the “whiteness” of the staff may provide a rationale for some of the challenges interviewees described in obtaining support for healthy food initiatives from community members. As Guthman (2011, 275) explains, sometimes even “more race-conscious projects tend to get coded as white” simply because the types of food promoted, educational modes, and program delivery do not resonate with people of color. Although this may not be true in every case, it certainly points to the need for a more race-conscious food movement narrative, more deliberate leadership development among people of color in the fields of public health and nutrition, and perhaps more intentional hiring processes for jobs related to healthy food access.

On occasion, health center staff described situations in which decisions to organize healthy food access initiatives were based on the assumption that healthy food access was something that residents wanted without actually consulting residents first. For example, one health center's CSA program was originally structured in such a way that staff members cold-called different WIC recipients each week hoping clients would eagerly accept the produce shares. According to a staff member, however, clients had little interest in the CSA and the health center had trouble distributing the shares. This story typifies what Slocum (2006) calls, "bringing good food to others," or the desire among food movement activists to share and educate others about the benefits of local food. Although good intentioned, such decisions are based on the assumption that local food is a universally shared value.

After recognizing that clients felt no connection to the CSA program, the health center requested that WIC recipients sign up if they were interested in receiving a share, provide input regarding the type of food they would like to receive, and attend a shareholder meeting to learn how the CSA program works. Since then, staff have received positive feedback and believe the program has been "much more successful because there was full participation from the beginning and the share included more culturally appropriate foods." This example illustrates two points: first, that it is important that residents feel invested in healthy food access initiatives in order for them to be effective; and second, it demonstrates that, although community health centers can make the mistake of

“bringing good food to others,” they are willing and able to change their strategy when it does not meet the needs of residents.

Fortunately, community health centers continue to learn from their experience organizing healthy food access initiatives and are shifting their programs to more closely reflect food justice principles. For example, one interviewee said that the health center intentionally avoids the “environmental sustainability” narrative frequently employed in the alternative food movement. She explained that, “promoting the ‘localness’ of the food is not important... we first want to talk about the health benefits of eating well, and then, once there’s a deeper understanding of health, we can start talking about environmental concerns.” Here, the staff member does not dismiss that local food has environmental benefits, but she suggests that health is a higher priority for residents than sustainability. Other interviewees felt that it is important to frame healthy food access initiatives in a way that resonates with people’s cultures, and thus, they tend to promote foods that appeal to particular immigrant populations in the community. As one interviewee noted, “many of our immigrant groups value local food as much as the market organizers,” and plan much of their weekly shopping around the market. These examples demonstrate how community health centers employ different frames to engage immigrants and people of color who might be turned off by traditional food movement framing.

A critical piece of the food justice paradigm is to not simply improve access to healthy food but to actually redistribute power throughout the food system (Alkon and Agyeman 2011). This desire for redistribution of power aligns

closely with one of the founding principles of community health centers, which is for communities to “have the economic and social ability, the knowledge and the motivation to manage their own health services” (Geiger 2005, 316). With a shared goal of community empowerment and control, it makes sense, then, that community health centers would support leadership development efforts in the movement for food justice.

From my conversations, I learned that health center staff try to cultivate community leadership for healthy food access initiatives primarily through youth development programs. Community health centers engage youth in the design and implementation of healthy food access initiatives, and through these projects, youth build relationships in the community, gain knowledge about health, and develop important leadership skills. In one case, after working with a health center on a healthy corner store initiative, a small group of youth went on to successfully advocate for a salad bar at their high school. Through their experience with the corner store initiative, explained a staff member, youth “learned how organizing and empowerment can create change” and were able to apply what they had learned to make improvements to their school environment. In this way, community health centers are building food justice leaders in their communities.

The fact that food store density correlated, in some instances, with race/ethnicity shows that spatial injustices continue to permeate our food system. This was illustrated by the negative correlation between high average density of grocery stores with \$1-20 million in annual sales and census tracts with

substantial Black populations. Although urban core neighborhoods may lack access to larger stores, however, many of these communities have a rich network of smaller grocery store. This was illustrated by a statistically significant positive correlation existed between census tracts with substantial Hispanic populations and a high average density of grocery stores with less than \$500,000 in annual sales. These small stores can be an important part of a community, even if they do not necessarily carry as many healthy options as large grocery stores (Farley et al. 2009). As one health center staff person explained, many small stores “regularly attract the same customers, are family-oriented, and supply important culturally-relevant goods.” This realization occurred after the health center began working on a healthy corner store initiative and engaging in dialogue with residents and store owners about healthy food access. Such an example reiterates the potentially valuable role community health centers can play in engaging community members, including store owners that sell food within the neighborhood, in the broader food movement conversation.

Some health center staff expressed uncertainty about the future of healthy food access initiatives and said they were worried the issue would become a “passing trend.” While it is possible that political will and funding streams may shift in the coming years, the sustainability of healthy food access initiatives is largely connected to the level of ownership that residents have over projects (Freedman et al. 2012). If residents are not invested in healthy food access, then it is likely that these programs will fade over time. However, if, as food justice advocates suggest, residents become the leaders in the movement to procure and

distribute food in their communities, then the movement will endure. As this research demonstrates, community health centers are in a strong position to empower residents to become leaders in the food justice movement.

Recommendations for Planners and Policymakers

My research suggests that community health centers are important neighborhood institutions increasingly involved in healthy food access initiatives, yet up to this point, they have been largely absent from the broader food movement conversation. Here, I offer three recommendations for how planners and policymakers can bring community health centers into the alternative food movement and build upon their efforts to improve health outcomes and secure food justice in the long-term.

Expand the Food Movement Conversation

Community health centers offer a wealth of knowledge about the personal, cultural, and contextual factors influencing diet and health. Health center staff are regularly in contact with clients through clinical visits and community programming, and, thus, are often aware of the challenges residents face when making food purchasing decisions or trying to improve their health. Such experiences give health center staff a level of cultural competency that someone outside the health center may not have. Planners and policymakers should take advantage of this substantial resource and make a concerted effort to include health centers in conversations about healthy food access. Instead of designing

interventions based on assumptions about food access, planners and policymakers should first talk with community health center staff to develop a more realistic understanding of the challenges and opportunities within a community.

More importantly, however, planners and policymakers should consider community health centers as a gateway to the very people that food access interventions are designed to help. One of the criticisms food justice advocates have of the alternative food movement is that individuals who are most affected by inadequate food access are disconnected from related decision-making processes. Community health centers provide an access point for planners to engage residents in the food movement conversation to help them develop the knowledge and skills needed to influence the decisions that most affect them. For example, planners could look to health centers for support with community organizing, hosting community meetings, or soliciting resident input through focus groups and surveys. Bringing residents into the food movement conversation is an important first step for planners and policymakers hoping to improve health outcomes and food justice in the long-term.

Build Partnerships with Community Health Centers

Beyond using community health centers as access points to engage residents in healthy food projects, planners and policymakers should consider building more substantial partnerships with health centers to increase the efficiency and effectiveness of their work. Community health centers have a number of organizational strengths that provide opportunities for strategic

partnerships. For example, health centers often specialize in health promotion and education, an expertise that planners and policymakers lack. This expertise, in combination with health centers' ongoing relationship with clients, may increase the likelihood that residents in the community respond positively to educational programs or healthy food advertising. In addition, because part of their mission is to improve community health, health centers may be interested in collaborating with planners and policymakers to conduct program evaluations to determine whether or not healthy food policies or projects are meeting residents' needs. Lastly, health centers are typically large, anchor institutions in their communities, many of which have facilities for community use. Planners could collaborate with health centers to use these facilities for initiatives like farmers markets, CSA drop-offs, or cooking classes.

All of the aforementioned partnership opportunities are based on community health centers' existing strengths, yet other activities exist that may fall outside health centers' expertise or capacity. Here, planners, policymakers, and community organizations can offer their support to ensure the successful planning and implementation of healthy food access initiatives. For instance, planners or other municipal departments may be able to offer health centers assistance when navigating complicated permitting processes for farmers markets or street vending. Planners could also provide maps of potential market sites or inventories of local businesses to health centers interested in starting farmers markets or corner store initiatives. Community-based organizations such as the Food Project should continue to provide health centers with important services

such as consulting advice, community garden installation, and CSA programs. Youth development organizations, too, are an important resource for health centers because they make connections between leadership development and healthy food access, a critical piece to securing food justice in the long-term. Where possible, planners and policymakers should work in partnership with community health centers and other community-based organizations to obtain funding for healthy food access initiatives. Community health centers have a demonstrated history of “thinking outside the box,” but they are unable to do so without the necessary funding and support from others.

Confront Racism and Pursue Food Justice

If planners and policymakers wish to reduce diet-related health disparities and improve health outcomes in the long-term, the alternative food movement must become more race-conscious and aware of the cultural and structural histories that have shaped current food system practices. In some ways, community health centers are ahead of planners in their efforts to challenge the dominant food movement framework and equip low-income youth of color with the tools to actively participate in the decision-making process that shapes our food system. Overall, however, my research suggests that the food movement is still one largely dominated by white, middle-class culture, even within race-conscious institutions like community health centers.

This realization calls for all of us, including health centers, to look beyond quick-fixes to healthy food access to be more intentional in empowering residents

to create change within their own communities. One strategy to alter existing power dynamics might be for community health centers to hire residents from the local neighborhood to work with community members on food justice issues. These individuals, having shared experiences and similar backgrounds to others in the community, would bring a high level of cultural competency to their work that other food access advocates may lack. They could play an important role as liaisons to planning departments and other community organizations to ensure that food access interventions are community-driven and culturally relevant. Of course, as this thesis illustrates, health centers face budget constraints that would likely prevent the hiring of such new employees; still, it seems highly plausible that such positions could be funded through grants or other outside sources until food justice efforts become more fully integrated into health center practices.

The likelihood that our communities will see reductions in diet-related disease and improvements in overall health outcomes largely rests on our ability to not simply “invite others to the table” but to actually give low-income residents and people of color the opportunity to actively *set* the table and guide decisions affecting healthy food access in their communities (Guthman 2011, 264).

Together, planners and community health center staff can ensure that community members have an active stake in these decision-making processes, thereby moving us one step closer to securing food justice in the long-term.

Further Research

This study fills a gap in the literature by providing insight into the role of community health centers in improving healthy food access in urban neighborhoods. The limited scope of this project, however, prevents broad generalizations and points to a number of opportunities for further research. To start, my research focused solely on community health centers in the city of Boston, Massachusetts, which has a unique history of public health and food activism that may not be as strong in other communities. More research should be done to determine the extent to which community health centers in other urban areas are involved in efforts to improve healthy food access and whether a strong activist history is a prerequisite to such work. Although my research focused on a highly urbanized area, inadequate healthy food access is an equally if not more significant problem in rural communities and elicits a different set of challenges than those experienced in urban communities. To that end, it may be beneficial to examine the extent to which rural community health centers are engaged in efforts to improve healthy food access and the challenges and resources that accompany such work.

I conducted a very small number of interviews with a select group of health center staff working in the areas of nutrition and community health. This provided an insightful, but very limited, perspective on health centers' involvement in healthy food access initiatives. In the future, researchers should consider talking with other health center staff, as well as community partners, who may offer a different perspective on the role community health centers play

in connecting residents to healthy food options. Even more importantly, future research should include conversations with community residents who can speak from personal experience about how they perceive neighborhood food access, the role of community health centers, and their own involvement in the food justice movement.

Much of what I heard from health center staff confirmed what is stated in the existing literature, for instance, that cost and transportation influence food purchasing behavior. Although a number of innovative projects, such as incentive programs or shuttle services to grocery stores, have been implemented to address these issues, few evaluations have been developed to determine their impact. This points to the need for more long-term program evaluations that examine not only outputs (e.g. increased sales at farmers markets) but also outcomes (e.g. behavior changes or improved health outcomes). Such evaluations should also explore whether or not these programs transform decision-making structures within a community to give residents greater control over food procurement and distribution.

This thesis used GIS to examine the density of groceries and convenience stores in areas immediately surrounding community health centers. While this analysis provided insight into the current state of food access in Boston, it failed to capture many of the nuances present at the neighborhood level (e.g. the types of foods carried at groceries and convenience stores) and whether or not other food stores (e.g. restaurants or fast food establishments) display any spatial patterns. In the future, food store inventories and community surveys of residents' food

purchasing behaviors should be done to obtain a clearer picture of neighborhood-level food access. In addition, further GIS analyses could examine the ways in which factors like neighborhood walkability, access to transportation, and even perceptions of safety influence healthy food access, and how healthy food access, in turn, is related to long-term health outcomes. Finally, it is important to keep in mind that food access is only one small factor contributing to health disparities among low-income communities and communities of color. In addition to diet, researchers should also give attention to issues like physical activity, availability and affordability of health care, and other personal and environmental factors that may affect a person's health.

Conclusion

The goal of this study was to explore the extent to which Federally Qualified Health Centers (FQHCs) are engaged in efforts to improve access to healthy food choices in urban neighborhoods of Boston. Research suggests that many low-income neighborhoods and communities of color lack access to affordable, healthy food and that such inadequate access may contribute to the high rates of obesity and diet-related disease often experienced in these communities. Over the past decade, non-profits and municipal governments have received increased attention for their efforts to improve healthy food access through a number of environmental-level interventions, including farmers markets, healthy corner store initiatives, and community garden programs. Although these efforts are good intentioned, critics contend that such healthy food

initiatives tend to reflect middle-class, white ideals more than the traditions and cultures of the communities they intend to serve. Community health centers, in contrast, have a longstanding history of engaging communities in efforts to address the social determinants of health, yet have received little attention for their involvement in food access to date.

To gain insight into the potential role for community health centers in healthy food access initiatives, I interviewed staff at seven health centers throughout the city of Boston. Through these interviews, I found that health centers maintain a strong commitment to improving community health and that, with the support of youth, community-based organizations, and other partners, health centers are overcoming constraints in staff capacity and funding to become increasingly involved in efforts to connect residents to healthy food options. Not only do community health centers offer valuable insight and expertise into the complex relationships between diet and health, but they provide an access point for planners and policymakers interested in connecting with the people most affected by inadequate food access. Based on these findings, it is recommended that planners and policymakers build partnerships with community health centers to engage residents in the food movement conversation and empower future decision-makers to pursue food justice.

Appendix A: Interview Questions

Interview questions for community health centers organizing healthy food access initiatives

Background Info

1. What is your role at this community health center? How long have you worked here?
2. Does this health center offer diet or nutrition services? If yes, what kind of services are offered? Are these services connected to your healthy food access initiative?

Healthy food access

1. What motivated the health center to start a healthy food access initiative? (i.e. how was this need identified?)
 - a. *If they don't mention food access directly-* Do you perceive access to healthy food choices to be a problem in this neighborhood? Are you a resident of the neighborhood? Are you familiar with the food stores in the area? Do you have a sense of where people shop (in the neighborhood or elsewhere)?
2. What resources or capacity make it possible for the health center to undertake and sustain this project? i.e.:
 - Does a member of the staff have an interest or expertise in healthy food access?
 - How is the project funded now, and how do you anticipate continuing to fund the program in the future?
 - How many staff members are involved, and do you anticipate that need to change in the future?
 - Are there other partners involved outside the health center?
 - Others?

Successes/Challenges

3. How are you measuring the project's success? Based on your criteria for measuring success, do you feel the project has been successful?
 - a. One of the guiding principles of community health centers is that they are "community driven." Do you feel that the market is embraced by the local community and that they feel ownership over it?
4. What challenges have you faced in establishing or a sustaining a healthy food access initiative? These could be organizational challenges (e.g. lack

staff capacity) or program-related challenges (e.g. residents' personal preferences do not match with food offered at market). Is there anything you know now that you would have liked to know before you started this initiative (i.e. lessons learned)?

5. Have you found that cultural differences among the population you're serving present particular challenges for your initiative? Why do you feel this has [not] been a challenge? If it has posed a challenge, what ways have you sought to address the issue?

Interview questions for community health centers not organizing healthy food access initiatives

Background Info

1. What is your role at this community health center? How long have you worked here?
2. Does this health center offer diet or nutrition services? If yes, what kind of services are offered? What resources (funding, leadership, etc) or capacity (staff, space, etc) make these successful?

Healthy food access

1. Do you perceive access to healthy food choices to be a problem in this neighborhood? Are you a resident of the neighborhood? Are you familiar with the food stores in the area? Do you have a sense of where people shop (in the neighborhood or elsewhere)?
2. Some community health centers in Boston have started healthy food access initiatives, such as farmers' markets and healthy corner store programs, to improve access to healthy food choices in their neighborhoods. Do you see a role for this community health center in engaging in this sort of effort (or partnering with another organization on this type of project)? Why or why not?
 - a. If yes, what would this role look like?
 - b. Are there challenges that prevent you from doing so? These could be organizational challenges (e.g. lack staff capacity) or program-related challenges (e.g. residents' personal preferences do not match with food offered at market).
3. Have you experienced **challenges** in your existing programming? Have you found that **cultural differences** among the population you're serving

present particular challenges for your work? Why do you feel this has [not] been a challenge? If it has posed a challenge, what ways have you sought to address the issue?

4. Are you aware of other groups (government, non-profit, neighborhood group, etc) working to improve healthy food access in this neighborhood? Are you connected in any way to their work (i.e. cross-advertising, participation at events, etc.)?
5. *(If they are interested in starting a market)* What kind of information would you like to know before engaging in a healthy food access initiative? Are there particular resources, organizational capacity, or community partnerships that you see as necessary prerequisites?

Appendix B: Institutional Review Board (IRB) Approval



OFFICE OF THE VICE PROVOST

Social, Behavioral, and Educational Research
Institutional Review Board
FWA00002063

Title: Exploring the Role of Boston's Community Health Centers in Improving Access to Healthy Food Choices

December 15, 2011 | Notice of Action

IRB Study # 1112012 | Status: EXEMPT

PI: Kristin Feierabend
Faculty Advisor: Mary Davis
Review Date: 12/15/2011

The above referenced study has been granted the status of Exempt Category 2, 4 as defined in 45 CFR 46.101 (b). For details please visit the Office for Human Research Protections (OHRP) website at: [http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.html#46.101\(b\)](http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.html#46.101(b))

- The Exempt Status does not relieve the investigator of any responsibilities relating to the research participants. Research should be conducted in accordance with the ethical principles, (i) Respect for Persons, (ii) Beneficence, and (iii) Justice, as outlined in the Belmont Report.
- Any changes to the protocol or study materials that might affect the Exempt Status must be referred to the Office of the IRB for guidance. Depending on the changes, you may be required to apply for either expedited or full review.

IRB Administrative Representative Initials:

Handwritten initials in black ink, appearing to be "JRS", written over a horizontal line.

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