

## WHY SOME MARKETS SUCCEED WHEN OTHERS FAIL FY 2010

Farmers' markets are valued sales outlets for many small-scale growers, and can be an important source of fresh fruits and vegetables in low-income communities. Despite the benefits attributed to farmers' markets, they face a variety of challenges. To gain insights into why some farmers' markets succeed while others fail, this project:

(1) Explored the characteristics of farmers' markets that influence sales. Interviews revealed that Massachusetts farmers need to make an average of \$250 in net sales each day for a market to be profitable and that only 59% of farmers' markets operating in 2009 met this criterion. Factors with the greatest influence on sales were the years of experience of a market manager, the manager's age, and the volume of customers;

(2) Evaluated a pilot program in which Special Supplemental Nutrition Program for Women, Infants and Children (WIC) participants were allowed to use cash value vouchers (CVV) to purchase fruits and vegetables at six farmers' markets in the state and determined if this would increase the number of WIC participants who shopped at those markets compared with other farmers' markets. The study also investigated whether the ability to use CVV at pilot markets caused an increase in the number of individuals who shopped at them in 2010 compared with 2009. No difference was found in the use of CVV at farmers' markets between pilot and comparison groups because nearly half of WIC market shoppers from comparison sites reported use of their CVV at farmers' markets; and

(3) Examined the use of farmers' markets by Supplemental Nutrition Assistance Program (SNAP) clients in Boston in the summer of 2010. The study revealed that Boston farmers' markets captured 0.10% of local SNAP dollars – ten times the national SNAP farmers' market redemption level. Combined, SNAP dollars and the local SNAP incentive program, contributed an average of \$556 in vendors sales per market.

### FINAL REPORT

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# **Why Some Markets Succeed When Others Fail Final Report**

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## Abstract

Farmers' markets are valued sales outlets for many small-scale farmers. Additionally, they are valued by food systems advocates as a way to improve access to fresh fruits and vegetables in low-income communities. Despite the benefits attributed to farmers' markets, they face a variety of challenges. The goal of this FSMIP project was to investigate the characteristics associated with sales volume at Massachusetts farmers' markets. It also explores the degree to which low-income individuals use farmers' markets and the contributions that federal nutrition assistance programs can make to market sales.

First the study explored the characteristics of farmers' markets that influence farmer sales. Interviews revealed that Massachusetts farmers need to make an average of \$250 in net sales each day for a market to be profitable. However, only 59% of farmers' markets that operated in 2009 met this criterion; thereby, providing sufficient sales volume to 57% of vendors. The elements of markets that were found to have the greatest influence on sales were the years of experience of a market manager, the manager's age, and the volume of customers.

Next the study evaluated a pilot program in which Special Supplemental Nutrition Program for Women, Infants and Children (WIC) participants were allowed to use cash value vouchers (CVV) to purchase fruits and vegetables at six farmers' markets in the state. The evaluation explored whether the ability to use CVV at pilot farmers' markets would increase the number of WIC participants who shopped at those markets compared with other farmers' markets. It also investigated whether the ability to use CVV at pilot markets increase the number of individuals who shopped at them in 2010 compared with 2009. The evaluation found no difference in the use of CVV at farmers' markets between pilot and comparison groups. Surprisingly, this was because nearly half of WIC market shoppers from comparison sites reported use of their CVV at farmers' markets. Therefore, study findings may be representative of a larger-than-expected demand for use of CVV at farmers' markets.

Finally, the study explored the use of farmers' markets by Supplemental Nutrition Assistance Program (SNAP) clients in Boston in summer, 2010. The research revealed that Boston farmers' markets captured 0.10% of local SNAP dollars – ten times the national SNAP farmers' market redemption level. Combined, SNAP dollars and the local SNAP incentive program, contributed an average of \$556 in vendors sales per market.

The research conducted for this project adds to the evolving literature on farmers' markets in the United States. It aids in furthering the understanding of characteristics that increase farmer sales and contribute to market stability. Additionally, it has provided insight into the use of farmers' markets by individuals who participate in federal nutrition assistance programs. This is important for understanding the contribution that farmers' markets can make in improving fruit and vegetable consumption for low-income individuals.

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## **I. Issue Statement**

This study took a comprehensive look at farmers' markets in Massachusetts. The main objective was to assess the characteristics that contribute to market viability. Additionally, the study evaluated the influence of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) cash value voucher program on the use of farmers' markets by WIC participants. Lastly, the study explored the use of Supplemental Nutrition Assistance Program (SNAP) benefits at Boston markets and their on vendor sales.

### Characteristics that influence vendor sales at Massachusetts farmers' markets

The primary aim of this study was to explore the characteristics of markets and market managers that influence the average sales volume for vendors. The study addressed two issues: (1) the reasons that farmers participate in farmers' markets; and (2) the factors that contribute to increased sales volume at markets. It was expected that profit would be the primary reason farmers participated in markets. It was also expected product diversity, years of manager experience, the presence of a paid manager, and high customer traffic would be positively associated with farmer sales.

### The introduction of the Special Supplemental Nutrition Program for Women, Infants, and Children cash value voucher to Massachusetts farmers' markets

The aim of this study was to evaluate a pilot program that introduced the use of the new WIC cash value voucher (CVV) program to six farmers' markets in Massachusetts. The study assessed the influence of this pilot program on farmer sales. It was expected that the ability to use CVV at pilot farmers' markets would increase the number of WIC participants who shopped at those markets compared to comparison markets. It was also expected that the ability to use CVV at pilot markets in 2010 would increase the number of WIC participants who shopped there compared with 2009.

### A case study of Boston farmers' markets: Use by Supplemental Nutrition Assistance Program clients

This case study of Boston farmers' markets provided a detailed description of market customers. The main aim of the study was to explore the use of farmers' markets by SNAP clients in Boston. It was expected that farmers' market customers would have higher average income than that of the neighborhoods in which the markets were located. It was also anticipated that the percentage of Boston SNAP dollars redeemed at Boston farmers' markets would be similar to the national average.

## II. Background Information

The term farmers' market has been used to refer to many different types of agricultural sales venues over the years. It has included everything from auction markets where farmers sold their goods to wholesalers, to small clusters of farmers selling produce directly to consumers in a town square (Pyle, 1971). The current definition of a farmers' market is a gathering of "farmers selling agricultural products they raise or create to individual customers at a temporary location on a periodical and/ or recurrent basis during the local growing season" (Oberholtzer and Grow, 2003). To differentiate farmers' markets from roadside stands, the United States Department of Agriculture (USDA) Agricultural Marketing Service (AMS) further specifies that there must be more than one farm vendor at a market (Ragland and Tropp, 2009).

The oldest farmers' market on record was established in 1634 in Boston, Massachusetts by Governor John Winthrop (Pyle, 1971). It was created by political authority to benefit urban consumers by providing access to agricultural products at a low cost. Unfortunately, the records on farmers markets between 1634 and the 1880s are incomplete and the vast majority of information has been lost. However, it is believed that during this time-period markets were commonplace and were the primary way that people purchased produce and other agricultural products (Pyle, 1971). The rise of railroads, the expansion of cities, and increased centralization of agricultural production contributed to a decline in the popularity of farmers' markets. By 1918 only half of U.S. cities had a farmers' market (Pyle, 1971).

In the post-World War II era there were only a few hundred farmers' markets across the country (Brown, 2001). The rise of supermarkets in the 1950s and 1960s contributed to a further decline in the number of markets. However, the 1976 Farmer-to-Consumer Direct Marketing Act led to a resurgence in markets (Brown, 2002). The Act aimed to "...foster and promote, through appropriate means and an economically sustainable basis, the development and expansion of both traditional and innovative approaches to direct marketing of agricultural commodities from farmers to consumers" (Farmer-to-Consumer Direct Marketing Act, 1976).

The passage of this Act provided both legitimacy to the direct marketing movement and funding for the establishment of venues such as farmers' markets, roadside stands, and community-supported-agriculture programs (Oberholtzer and Grow, 2003). The decade following the passage of the 1976 Act was characterized by rapid expansion of farmers' markets, but there were still fewer than 1,000 markets nationwide (Brown, 2001).

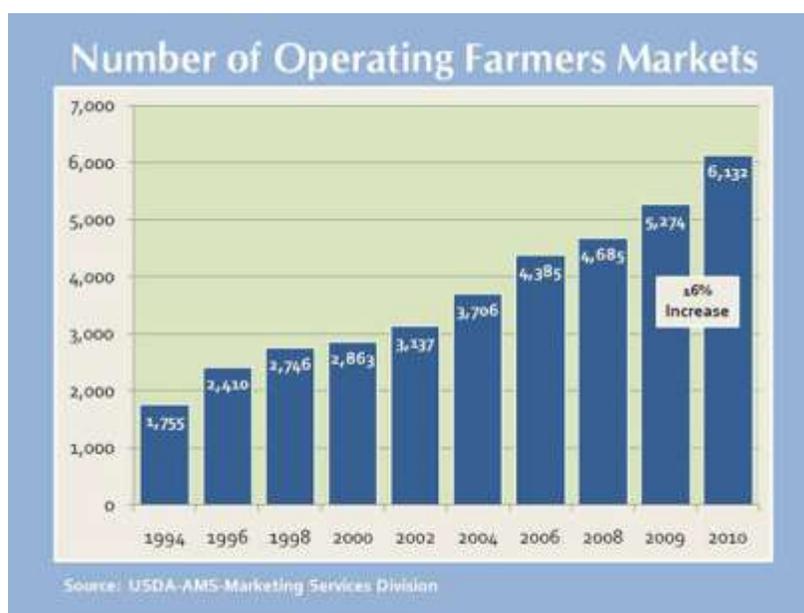
Beginning in 1994, the Agricultural Marketing Service (AMS) Wholesale and Alternative Markets Program began collecting data on farmers' markets (Brown, 2001). Since then AMS has expanded the array of information that they collect on farmers' markets. Furthermore, the federal government has expanded the technical and financial support provided to farmers' markets through the Farmers' Market Promotion Program (FMPP). Established under the 2002 Farm Bill, FMPP currently provides \$10 million a year to support farmers' markets and other direct producer-to-consumer marketing strategies (AMS, 2011a).

### Current State of Farmers' Markets

Over the last decade the number of farmers' markets has increased rapidly. In 2010, there were 6,132 farmers' markets in operation across the United States. As illustrated in Figure

2, this was an increase of 3,269 markets over the last decade (AMS, 2010). Every farmers' market has its own set of unique characteristics; however, there are many elements shared by markets around the country. The 2006 *National Farmers' Market Manager Survey* provided a vast amount of information about farmers' markets in the United States (Ragland and Tropp, 2009). In 2006, the average farmers' market was 15 years old, had 31 vendors, and operated for four and a half months each year. Markets in the Northeast and Mid-Atlantic had slightly fewer vendors than those in other parts of the country, 18 and 21 respectively. The range of months of operation was narrow, with a low of 3.9 months in the Rocky Mountain region and a high of 5 months in the Southeast and Far West.

Figure 1. Number of operating farmers' markets: 1994-2010



Source: Agricultural Marketing Service, 2010

The typical market primarily sold fruits and vegetables, but also offered herbs and flowers; baked goods; and honey, nuts, and preserves. Nearly half of all markets offered meat or poultry (45%). Only 27% sold milk or dairy products and 16% sold seafood. A typical market attracted approximately 600 customers each week. Markets in the Southeast and Northeast attracted the fewest customers with weekly averages of 348 and 352 respectively. Markets in the Far West attracted the largest number of customers with a weekly average of 1,379 per market.

The average market generated \$31,923 in average monthly sales. Sales were lowest in the Rocky Mountain region and the Southeast, \$22,354 and \$21,019 respectively. The Far West had the highest average monthly sales per market at \$56,742. The average market charged a vendor fee to cover the administrative costs of market operation. However, funds raised through this mechanism covered all administrative costs for only 46.5% of markets in the country. The remaining markets relied on funding from local municipalities, non-profit organizations, and other miscellaneous sources to cover expenses. Largely due to limited funding, the average market relied on volunteers; fewer than 40% had paid market managers.

### Market farmers

Demographic information that describes the characteristics of farmers who sell at markets is available at the national level through the USDA market manager survey. These data show that 89% of market farmers are Caucasian, 5% are Asian-American and 4% are African-American (Ragland and Tropp, 2009). The remaining market farmers are Native Hawaiian or American Indian. The survey reported ethnicity separate from race and found that nearly 9% of market farmers were Hispanic. The survey also reported that 60% of market farmers sell fruits, vegetables, flowers, and/ or herbs and 77% of growers offer organic products. Seventy-two percent of market farmers sell only what they grow (Ragland and Tropp, 2009).

No national-level data are available regarding the acreage used by market farmers, but it is generally agreed that markets appeal to small-scale growers (Kinney et al, 2010; Kambra and Shelley, 2002; Lyson et al, 1995). State-level data have revealed a range in the size of market farmer operations from an average of two acres in North Carolina (Andreatta, 2000) to 30 acres in New Jersey (Govindasamy et al, 1998).

There are a variety of reasons that farmers choose to sell at farmers' markets. Benefits identified through farmer surveys include the opportunity to socialize with other farmers and to interact with customers (Hunt, 2007; Griffin and Frongillo, 2003; Oberholtzer and Grow, 2003; Abel et al, 1999). Markets are also viewed as a venue to advertise products available through other outlets like roadside stands or community-supported-agriculture programs (Schmit and Gomez, 2011). However, the literature suggests that the primary reason farmers participate in farmers' markets is to earn income (Connor et al, 2009; Zepeda, 2009; Philips, 2007).

Farmers' markets are particularly attractive sales outlets for new and small-scale farmers (Kinney et al, 2010). A study in King County, Washington found that new farmers were drawn to markets as a low-cost way of meeting the public and spreading the word about their operation (Kinney et al, 2010). This was supported by the Community Food Security Coalition, which reported that farmers' markets require little upfront capital investment compared with "brick and mortar" operations (Briggs et al, 2010). As a result, farmers' markets can provide new farmers with a point of entry into the marketplace (Philips, 2007). Furthermore, the low cost of participation can help farmers escape additional loans, enabling them to test different products and growing techniques with reduced concern over maximizing yields to pay off debt (Diamond et al, 2009).

Many small-scale farms prefer direct-to-consumer sales strategies because they cannot achieve the economies of scale necessary to participate in wholesale markets (Kambra and Shelley, 2002). Lyson and colleagues (1995) support this idea; they assert that farmers' markets provide a "lifeline" for small farmers, since most distributors do not want to collaborate with multiple small farmers when they can work with one larger grower. The reliance of small-scale growers on farmers' markets is further demonstrated by a North Carolina study that found 40% of surveyed market farmers relied on markets for their entire annual income (Andreatta, 2000).

In addition to providing new and small-scale farmers entrance to the marketplace, farmers' markets are preferred sales outlets because they provide farmers access to retail prices (Kinney et al, 2010; Griffin and Frongillo, 2003; Govindasamy et al, 1998). Markets allow farmers to avoid middle-men and retain a larger portion of the consumer dollar than traditional wholesale venues (Diamond et al, 2009). A study of farmers in upstate New York found that farmers retained 80% of the dollar on products sold at farmers' markets (Griffin and Frongillo, 2003). Additionally, a study of farmers' markets in the Mid-Atlantic States revealed that gross

returns to producers from sales at farmers' markets were often 200-250% higher than sales to wholesalers and distributors (Oberholtzer and Grow, 2003). Finally, Philips (2007) reported that farmers' markets offered small-scale growers an opportunity to earn higher net income per acre because they can charge premium prices.

### Market customers

Multiple city- and state-level studies provide insight into demographics of farmers' market customers. The studies also highlight self-reported benefits and challenges faced by these individuals. In general, market customers are believed to be middle-aged or older, well educated, wealthy, Caucasian individuals. While these characterizations hold true in many places, some market customers defy this stereotype.

A study of 4,500 farmers' market shoppers in Iowa found that customers were on average between 51 and 65 years old (Otto and Varner, 2005). A national study of food shoppers compared individuals who shop at supermarkets with those who shop at farmers markets. It found that farmers' market shoppers were more likely to be older, female, and have a higher level of education than those who purchased their food elsewhere (Zepeda, 2009). A third study of 336 market shoppers in New Jersey revealed that customers were on average 51 years old. Eighty-three percent of these individuals were female and 84% were Caucasian. The respondents were also primarily college graduates and had annual incomes over \$60,000, in 1998 dollars (Govindasamy et al, 1998). Finally, a study in Orono, Maine found that the most striking differences between market and non-market shoppers were education and income. Two-thirds of market shoppers had a college degree compared with 25% of the general population. Additionally, their income levels were two times what were expected based on census data (Kezis, 1998).

As demonstrated above, the body of the literature on market customers supports the idea that they are affluent, Caucasian females who are older and well educated. However, a study of market shoppers in San Luis Obispo revealed alternative findings. This study found no differences in the age or income of market and non-market shoppers (Wolf et al, 2005). Additionally, recent research by Keeling-Bond and colleagues (2007) proposed that there may be a shift in the demographics of market patrons. They hypothesize that there will be a shift in the demographics of the typical market shopper as the number of markets expands and federal programs such as WIC and SNAP enable lower-income consumers to access markets (Keeling-Bond et al, 2007).

In addition to exploring who shops at farmers' markets, numerous studies have explored their motivations. Studies from Maine to Michigan to California have reported that produce freshness and quality were the most common reasons that customers shopped at farmers' markets (Connor et al, 2009; Wolf et al, 2005; Abel et al, 1999; Kezis et al, 1998). Furthermore, the USDA market manager survey found that over 50% of market managers believed customers visited their markets to support local agriculture and because they found the prices to be reasonable (Ragland and Tropp, 2009). Several independent studies confirm that market customers want to support local farmers (Connor et al, 2009; Feagan et al, 2004; Abel et al, 1999). However, few other studies support the idea that customers find markets to be affordable. Rather, studies that address market prices typically report that market shoppers are not price sensitive (Zepeda, 2009; Feagan et al, 2004; Kezis et al, 1998).

### Market challenges

Both farmers and customers have acknowledged challenges to selling and shopping at farmers' markets. Similarly, market managers have reported challenges to market operation. Most commonly, farmer participation in markets is hindered by the staff and time required to sell at markets (Tessman and Fisher, 2009). Additionally, several studies have found that weather is a significant challenge for farmers, because it can have a major influence on customer traffic and sales (Oberholtzer and Grow, 2003 and Griffin and Frongillo, 2003).

The primary challenge reported by customers is the limited hours of operation for farmers' markets (Tessman and Fisher, 2009; Oberholtzer and Grow, 2003; Griffin and Frongillo, 2003). For customers that work, or are used to the convenience of 24-hour supermarkets, it can be difficult to shop at a market that is open for only a few hours a week.

Market managers have found that consumer perception of high prices has inhibited some potential customers (Briggs et al, 2010; Colasanti et al, 2010; Zepeda, 2009). Market managers are also starting to find that there is increased competition for customers as the number of farmers' markets increases (Lohr et al, 2011; Stephenson et al, 2008). The next section focuses on the last two challenges since they are closely related to the research conducted for this study.

### Prices

Price comparison studies have been conducted in California, Iowa, North Carolina, and Boston. Each of these studies has compared the prices of fruits and vegetables found at farmers' markets with those at nearby supermarkets. The first took place in the California Bay Area in 1979 (Sommer et al, 1980). The authors compared prices at 15 farmers' markets with three supermarkets. They found that on average, fruit cost \$0.57 per unit at supermarkets and \$0.35 per unit at farmers' markets. The study also revealed that vegetables cost on average \$0.32 per unit at supermarkets and \$0.20 per unit at farmers' markets (Sommer et al, 1980). Prices were higher at supermarkets for 91% of the products that were compared (Sommer et al, 1980).

More recently, a price comparison study was conducted in Iowa. Prices were collected in the four main cities – Des Moines, Cedar Rapids, Ames, and Iowa City – during the months of June, July, and August (Pirog and McCann, 2009). The study compared prices for both non-local and local products; local was defined as in-state for the purposes of this study. The food basket used for the price comparison included zucchini, summer squash, cucumbers, string beans, cabbage, onions, tomatoes, sweet corn, and eggs. The study reported a comparison of local farmers' market vegetables (\$1.25 per pound) with non-local supermarket vegetables (\$1.39 per pound). Farmers' markets were slightly less expensive than supermarkets, but the difference was not statistically significant (Pirog and McCann, 2009).

In North Carolina, prices were compared for a total of 230 products (McGuirt et al, 2011). The study found that fruits and vegetables were 17.9% less expensive at farmers' markets than supermarkets. On average, fruit cost \$2.53 per pound at farmers' markets and \$3.27 per pound at supermarkets. Vegetables cost on average \$1.29 at farmers' markets and \$1.58 at supermarkets (McGuirt et al, 2011).

Lastly, during the summer of 2010, vegetables prices were compared between ten farmers' markets and seven supermarkets in Boston's low-income neighborhoods of Dorchester and Roxbury (Lightner, 2011). Prices were collected every 14 days between July 5 and October 24, dates during which all ten markets were open. The following vegetables were included in the comparison: carrots, cucumbers, onions, tomatoes, zucchini, white potatoes, scallions, lettuce, green bell peppers, and green beans. The average price per pound for vegetables was \$1.76 at

farmers' markets and \$1.72 at supermarkets (Lightner, 2011). This difference was not statistically significant. However, there were statistically significant differences in prices for cucumbers, tomatoes, potatoes, bell peppers and green beans. In each of these instances supermarkets were less expensive than farmers' markets (Lightner, 2011).

It is important to note that all of the studies described here found that products sold at farmers' markets and supermarkets were comparable in cost, but the perception of farmers' markets as more expensive persists. A study of non-market shoppers in Michigan found that perceived price played a large role in determining where people shopped. The authors reported that farmers' markets were viewed as places to purchase "gourmet food," which reinforced the idea that they were expensive and for the affluent (Colasanti et al, 2010). Another Michigan study found that consumers felt that farmers' markets should be cheaper than supermarkets, but weren't (Connor et al, 2009). A study from Ontario warned that farmers' markets must be careful about over-pricing and creating niche markets that are "havens for yuppies" (Feagan et al, 2004). Finally, a study in Portland, Oregon found that 21% of consumer felt that farmers' markets were too expensive and only for "rich people" (Grace et al, 2008).

The perception of farmers' markets as expensive retail outlets may inhibit middle- or lower-income individuals from shopping there. In fact, one study found that those who believed farmers' markets were more expensive were 17% less likely to shop at a market (Zepeda, 2009). This is a challenge for market managers who are trying to expand their customer.

### Market competition

In recent years, market managers have begun to recognize that competition is increasing between farmers' markets for both customers and vendors. Some believe that this competition may lead to increased rates of closure for markets; however research in this area is extremely limited (Schmit and Gomez, 2011; Briggs et al, 2010; Kinney et al, 2010; Philips, 2007).

The primary work on market failure has come from Oregon State University Extension Service. Stephenson and colleagues examined data on Oregon farmers' markets from 1998 through 2005 (Stephenson et al, 2008). They found that 62 new markets opened during that time frame, but 32 of them closed. Most of the markets that closed did so within the first four years of operation (Stephenson et al, 2008a). The researchers identified five reasons for market closure: (1) insufficient revenue for market administration; (2) product mix; (3) the balance of vendors and customers; (4) unpaid market managers; and (5) the rate of manager turnover (Stephenson et al, 2008).

Market managers interviewed by Stephenson and his colleagues (2008) reported that finding the right balance between customers and vendors is "like magic" (Stephenson et al 2008a). If there are not enough vendors, the market will have trouble attracting enough customers. Alternatively, if there are too many vendors, the region may not have a sufficient population to support them all. Once again, farmers will earn insufficient profit to continue selling at the market. Managers must find the right balance to keep farmers and customers returning.

Information from the USDA market manager survey demonstrated that the increase in market customers has not kept pace with the overall rise in markets. The survey found that the average number of shoppers per market decreased from 1,055 to 959 between 2000 and 2005 (Ragland and Tropp, 2009). Furthermore, the number of markets increased at an annual rate of 8.6% over that five-year span, but sales increased by only 2.5% (Ragland and Tropp, 2009).

A recent presentation at the Farmers' Market Consortium reinforced the idea that there must be a balance between vendors and customers for a market to remain viable (Lohr et al, 2011). They noted that the balance is heavily influenced by the number of farmers' markets in proximity to each other. Lohr and colleagues found high levels of market clustering (and competition) in dense urban areas such as New York City, Washington D.C., Boston, Chicago, Los Angeles, and San Francisco (Lohr et al, 2011). In other regions of the country, markets were more geographically dispersed and in less direct competition.

### **Environmental Nutrition Interventions**

One way farmers' markets have sought to increase their customer base is by participating in federal nutrition assistance programs. Accepting SNAP and WIC benefits can broaden the number of potential customers who shop at farmers' markets. To create inroads to these lower-income communities some farmers' markets have partnered with WIC offices, community health centers, and other non-profit organizations. These social-service organizations are often willing partners because they view farmers' markets as beneficial to their clients who typically lack access to fresh fruits and vegetables (Briggs et al, 2010; McCormack et al, 2010; Tessman and Fisher, 2009).

Inadequate consumption of fruits and vegetables is a dietary pattern that impacts many Americans. The 2010 Dietary Guidelines for Americans recommended consumption of at least two cups of fruits and two and a half cups of vegetables every day (USDA and DHHS, 2010). However, the average American consumes only 42% and 59% of the recommended amounts of fruits and vegetables (including potatoes) respectively (USDA and DHHS, 2010). As of 2009, only 14% of the adult population met the guidelines for both fruit and vegetable consumption (DHHS, 2009).

Public health officials emphasize consumption of fruits and vegetables for three primary reasons. First, fruits and vegetables are major contributors of essential nutrients that are lacking in most Americans' diets, including folate, magnesium, and potassium. Second, fruits and vegetables are low in calories and can help with maintenance of a healthy weight. Finally, fruit and vegetable consumption is associated with reduced risk of lifestyle diseases such as heart attack, stroke, Type 2 diabetes, and some cancers (USDA and DHHS, 2010). According to the Centers for Disease Control and Prevention (CDC), heart disease, cancer and stroke are the top three causes of death in the country (CDC, 2011). Diabetes is the sixth most common cause of death (CDC, 2011). Collectively these four diseases cost the public over \$700 billion each year (CDC, 2009).

Americans of all socio-economic status need to increase fruit and vegetable consumption to decrease the likelihood of developing lifestyle diseases. However, low-income individuals are at the greatest risk of negative health consequences due to their lower-than-average rates of fruit and vegetable consumption (Izumi et al, 2011; Jetter and Cassady, 2005). The USDA reported that on average, Americans ate 1.03 cups of fruit and 1.58 cups of vegetables daily (Dong and Lin, 2009). In comparison, low-income individuals ate 0.96 and 1.43 cups of fruits and vegetables respectively (Dong and Lin, 2009).

A wide variety of factors influence what people eat, but evidence is mounting that the below-average rates of fruit and vegetable consumption by low-income individuals result largely from limited access and high prices (Jetter and Cassady, 2005; Drewnowski et al, 2004; Izumi et al, 2011; Cummins and Macintyre, 2006). This is particularly true of individuals who live in food deserts (Ver Ploeg et al, 2009). According to the USDA, a food desert is a community that

is both low-income and has limited food access (AMS, 2011). A low-income community is defined as a census tract in which 20% percent or more of the population is below the poverty threshold or in which the median family income is below 80% of the median family income of the area (AMS, 2011). An urban community is defined as having limited food access if 500 people, or 33% of the population, live more than a mile from a supermarket. In a non-metropolitan area the “acceptable travel distance” to a supermarket is expanded to ten miles (AMS, 2011).

Beaulac, Kristjansson and Cummins (2009) conducted a review of the literature on food deserts in the United States and found that 18 out of 19 studies supported the idea that geographic areas with a high proportion of low-income households were underserved by supermarkets and had poor access to healthy food. Jetter and Cassady (2005) constructed a “healthy food basket” and surveyed 25 stores in Los Angeles and Sacramento to determine availability of items and cost of the food basket. They found that lower-income neighborhoods, which were serviced primarily by small food stores, were 10% less likely to have whole grains and lean meat products (Jetter and Cassady, 2005).

Researchers in Detroit conducted an audit of food stores to assess the impact of food access on vegetable consumption. They found that individuals who lived in neighborhoods (half mile radius) with stores that did not carry at least five types of vegetables ate 0.17 fewer servings per day (Izumi et al, 2011). Finally, a San Diego study revealed that as the wealth of a neighborhood decreases, the number of supermarkets decreases and the number of fast food restaurants increases (Morland et al, 2002). This food environment made it difficult for residents of low-income communities to access healthy foods available in supermarkets and increased the ease with which they could purchase calorie-dense fast food options (Morland et al, 2002). In all three of these studies, the authors concluded that environmental interventions were necessary to improve the eating habits of residents in low-income communities (Izumi et al, 2011; Jetter and Cassady, 2005; Morland et al, 2002).

Some of the most common environmental nutrition interventions have included development of full-service supermarkets in low-income communities, introduction of healthy food to corner stores, and establishment of farmers’ markets. It is only over the last decade that environmental interventions have been intentionally used to address dietary patterns; therefore, evidence of their efficacy is just beginning to emerge. This literature review provides information on all three types of environmental nutrition interventions to offer points of comparison to the viability of farmers’ markets as venues for improving food access.

Pennsylvania has taken the lead in introducing full-service supermarkets to low-income communities. Policy makers there felt that nutrition education was having little impact because of low-income residents’ limited access to healthy food (Giang et al, 2008). Therefore, the Pennsylvania state legislature worked with The Food Trust, a local non-profit organization, to develop the Fresh Food Financing Initiative. The Initiative began in 2004 and has since provided funding to open 32 supermarkets in underserved Pennsylvania communities (Giang et al, 2008).

Unfortunately, no studies were found that have assessed fruit and vegetable consumption of community members before and after supermarket development in Pennsylvania. However, a New Orleans study found that the availability of fruits and vegetables within 100 meters of a household was a positive predictor of consumption (Bodor et al, 2007). Additionally, Bodor and colleagues (2007) found that each additional meter of shelf space allocated to fruits and vegetables increased consumption by 0.35 servings per day. Cummins and Macintyre (2006) provide further evidence for importance of locating supermarkets in low-income communities.

They found that low-income individuals had a 32% increase in fruit and vegetable servings per day for each additional supermarket located in their neighborhood (Cummins and Macintyre, 2006).

The above evidence demonstrates that the presence of supermarkets can significantly influence consumption of fruits and vegetables. However, full-service supermarkets require large amounts of space, which can be prohibitively expensive in urban areas (Giang et al, 2008; Bolen and Hecht, 2003). Additionally, for a supermarket to carry a full range of products and be profitable it requires approximately \$2 million in annual sales (Ver Ploeg et al, 2009). Many businesspeople and investors fear that low-income communities will not be able to provide this level of sales and therefore avoid locating stores in those areas (Ver Ploeg et al, 2009). Consequently, public health experts are looking for alternative interventions to increase availability of produce and other healthful food items.

One such alternative is a healthy corner store initiatives. This approach has been piloted in several cities including Baltimore, New York City, Philadelphia, and Boston. Researchers have found that low-income individuals often shop at corner stores because they are the closest food retail outlets to their homes (Gittlesohn et al, 2010; Bodor et al, 2007). However, these outlets typically offer calorie-dense, nutrient-poor foods and a limited variety of healthful products (Giang et al, 2008; Bodor et al, 2007; Cummins and Macintyre, 2006).

In Baltimore, customer purchasing patterns were compared between seven intervention and six comparison corner stores (Song et al, 2011). The intervention promoted ten healthy food items by making them available at the corner stores and conducting taste tests for the public. The study found that weekly sales of low-sugar cereals, cooking spray, low-fat chips, low-salt crackers, whole wheat bread, and 100% fruit juices increased at the intervention stores (Song et al, 2011). Based on these results, the authors conclude that corner stores are a viable outlet for interventions aimed at altering diet.

In New York City, the Department of Health and Mental Hygiene manages the “Healthy Bodega” initiative, which seeks to improve access to low-fat milk, whole grain products and fresh fruits and vegetables at approximately 1,000 corner stores or bodegas throughout the five boroughs. The program evaluation used self-reported store sales to compare purchasing patterns of the targeted foods. They found that increased availability of these products has led 32 % and 26% of customers to purchase more fruits and vegetables, respectively (Dept. of Health and Mental Hygiene, 2010).

The results of these healthy corner store pilot initiatives are promising. However, public health experts are mindful of the fact that space is severely limited in corner store, which reduces the variety of products that can be offered. Furthermore, many corner stores lack the infrastructure to sell highly perishable products. Without financial assistance, and assurance that healthy products will be profitable, store owners may be hesitant to invest in the necessary refrigeration.

Finally, farmers’ markets have been identified as an environmental intervention with the potential to alter food consumption. The establishment of farmers’ markets is less expensive than “brick and mortar” projects such as the development of supermarkets (Briggs et al, 2010). Additionally, farmers’ markets can allocate significantly more space to fruits and vegetables than corner stores. These advantages make markets an attractive option for enhancing food access in low-income communities. However, farmers’ markets are traditionally seasonal and therefore cannot provide food access on a year-round basis.

One of the first reports to assert that farmers' markets could help to improve access to healthful foods was published in 1999. In *Hot Peppers and Parking Lot Peaches* Fisher claimed that farmers' markets provided access to fresh produce as well as nutrition education and cooking skills (Fisher, 1999). Since then several additional studies have cited farmers' markets as a type of community-based intervention that may improve fruit and vegetable consumption for low-income individuals (Kruger et al, 2007; Nebling et al, 2007). However, few studies have assessed the direct impact of a farmers' market on dietary outcomes or food access.

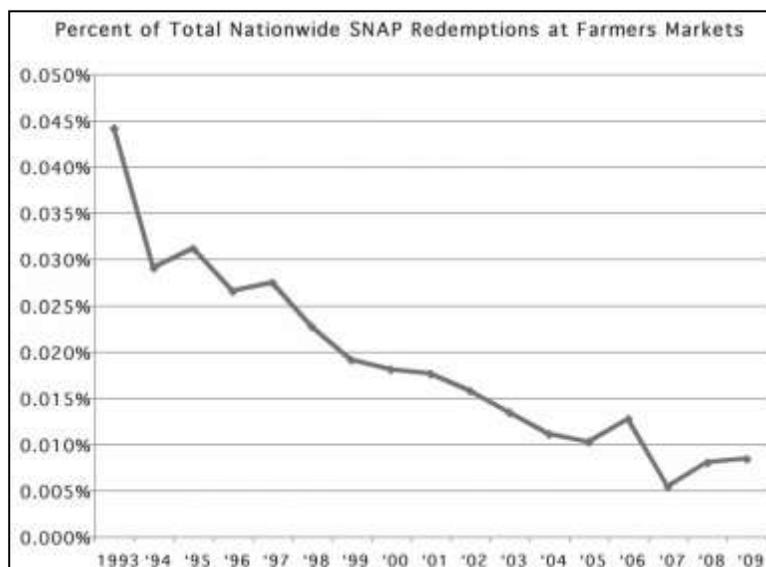
One study in London, Ontario compared access to a food basket between a low-income community that had a farmers' market and a more affluent community with a full-service supermarket. The food basket could not be completed in the low-income community prior to the introduction of the farmers' market (Larsen and Gilliland, 2009). The authors compared price and availability over three years. They found that in the low-income community, the farmers' market introduced basic items like broccoli, grapes and celery that would not have been available otherwise. Additionally, they found that the overall cost of the food basket declined by 12.2% with the introduction of the farmers' market (Larsen and Gilliland, 2009).

Several other studies have explored the impact of farmers' markets on individuals who use federal assistance programs such as SNAP and WIC. The relationships between farmers' markets and these programs are described in the following two sections.

### **SNAP and Farmers' Markets**

SNAP, formerly known as food stamps, is the largest federal food assistance program. In 2010, the program provided over \$64 billion in benefits to over 40 million Americans (FNS, 2011). The program is different from most other food assistance programs in that it provides participants the freedom to purchase any desired food product, with the exception of ready-to-eat foods, at most major retailers and many smaller groceries and convenience stores (FNS, 2011).

Major changes were made to SNAP in the 1996 Farm Bill. The Bill required states to change SNAP benefits from paper coupons to Electronic Benefit Transfer (EBT) cards, which work similarly to debit or credit cards. The USDA Food and Nutrition Service (FNS) changed the format of SNAP benefits to reduce both fraud and stigma (Kramer and Zakaras, 2011). Prior to this change, SNAP clients spent over \$9 million at farmers' markets annually, equal to approximately 0.044% of total SNAP dollars issued (Briggs et al, 2010). However, farmers' markets were ill-equipped to purchase expensive EBT machines that would have enabled SNAP clients to continue using their benefits at markets (Webber, 2011). As a result, the percent of markets accepting SNAP declined despite the fact that the overall amount of SNAP dollars being issued increased (Briggs et al, 2010). Figure 3 shows the change in the percentage of total SNAP dollars redeemed at farmers' markets from 1993 through 2009.

**Figure 2. Percent of SNAP sales redeemed at farmers' markets**

Source: Briggs et al, 2010

Use of SNAP at farmers' markets was lowest in 2007, when approximately \$1.6 million, or 0.005% of total benefits issued, were redeemed at 532 markets across the country (Briggs et al, 2010). Since then, the number of markets accepting SNAP has begun to rise, as has spending by SNAP clients. In 2010, a total of \$7.5 million, or 0.01% of total SNAP benefits issued, were redeemed at over 1,600 farmers' markets across the country (Love, 2011). Policy makers have indicated that they expect the use of farmers' markets by SNAP clients to continue rising, particularly if incentive programs continue to expand across the country (Love, 2011).

Participation in farmers' markets by SNAP clients is on the rise, but several challenges have inhibited use. As discussed earlier, the perception of high prices can stop some price-sensitive shoppers from shopping at farmers' markets (Pirog and McCann, 2009). In a Massachusetts-based study of SNAP clients, 21% of respondents reported high prices as the main reason they did not shop at markets (Fletcher-Russo, 2009). The same study found that 68% of SNAP clients surveyed did not know where markets were located or the times of operation (Fletcher-Russo, 2009). Additionally, the working poor may have difficulty shopping at farmers' markets because of the limited days and hours of operation compared with 24-hour supermarkets (Briggs et al, 2010).

Furthermore, cultural issues may impede the use of farmers' markets by SNAP clients. Lack of cultural sensitivity can result in a mismatch between the products offered at markets and those desired by the surrounding community (Briggs et al, 2010). It can also reflect the market environment itself; for example, in Michigan, a SNAP client reported that "... white culture shapes farmers' markets, first through appealing to romantic imagery of small farmers, which generally ignores the historically oppressed role of African Americans in agriculture and the current role of Latinos as farm workers; secondly through the reality that the community nurtured through a farmers' market is too often defined in a way that excludes people of color; and thirdly through the intersection of gourmet food practices which reinforce farmers' markets as places for the affluent" (Colasanti et al, 2010). The cultural barriers highlighted in the

quotation above will be challenging to overcome, but recognition is a critical first step in addressing the market environment and beginning to make it a space welcoming to people of all backgrounds.

While SNAP clients face numerous barriers to shopping at farmers' markets, efforts to increase their participation have focused primarily on price incentives. The main SNAP farmers' market incentive program has been sponsored by a private foundation called Wholesome Wave (Kramer and Zakaras, 2011). Beginning in 2008, Wholesome Wave Foundation started a Double Value Voucher (DVV) program, which provided a financial match to SNAP clients who shopped at farmers' markets (Kramer and Zakaras, 2011). The program was originally piloted at 12 markets in California, Connecticut and Massachusetts. By the end of its third year, the DVV had spread to 160 markets in 20 states (Wholesome Wave, 2011). The program works slightly differently in different communities. For example, in New York City, the "Health Bucks" program offers SNAP clients \$2 extra for every \$5 that they spend (Winch, 2008). Alternatively, in Boston, the "Boston Bounty Bucks" (BBB) program provides SNAP clients with a dollar-for-dollar match up to \$10 every time they shop at a participating market (Obadia et al, 2011). The DVV has two goals: (1) increase spending at farmers' markets to bolster farmer income and support local agriculture, and (2) increase purchasing and consumption of fruits and vegetables among SNAP clients (Kramer and Zakaras, 2011).

There is some evidence to suggest that this type of incentive program has increased spending at farmers' markets. However, there are no studies that demonstrate the influence of farmers' markets incentive programs on the diet of SNAP clients. The Food Project (TFP), a Boston based non-profit organization, has tracked SNAP spending at markets across the city. They found that combined SNAP and BBB sales increased from \$1,310 in 2008 to \$20,093 in 2009 (Kim, 2010). Personal communication with the Director of Community Programs at TFP revealed that sales nearly quadrupled between 2009 and 2010, reaching \$76,767 (Watts, 2010). Additionally, a study conducted by MDAR found that farmers' markets that offered the DVV incentive program received an average of \$2,587 in SNAP sales compared with \$867 at markets that accepted SNAP but did not offer the DVV incentive (Obadia et al, 2011). These findings demonstrate that the DVV program has had some success in increasing farmer sales.

### **WIC and Farmers' Markets**

The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) was established in 1972 to "safeguard the health of low-income women, infants and children ages 1-4 who are at nutritional risk by providing supplemental food, nutrition education, and referrals to health care and other social services" (Oliveira and Frazao, 2009). As the third largest federal food assistance program, WIC served 9.2 million individuals at a cost of \$8.7 billion in 2009 (FNS, 2009). The program targets foods that are high in calcium, iron, vitamins A and C, and high-quality protein. To increase consumption of these key nutrients, WIC food packages include a combination of milk, eggs, cheese, infant formula, fortified cereals, fruit juice, peanut butter or dried beans/peas, carrots and canned tuna (Jackowitz and Tiehen, 2010).

In addition to the standard WIC food packages, women, children and infants older than 4 months are eligible for Farmers' Market Nutrition Program (FMNP) coupons (FNS, 2010). Introduced in 1992, FMNP aimed to "provide fresh, unprepared, locally grown fruits and vegetables to WIC participants and to expand the awareness of, use of, and sales at farmers' markets" (Oliveira and Frazao, 2010). Program coupons can be used to purchase only fresh fruits, vegetables, and cut herbs at certified farmers' markets. Coupons are issued once per

season at a value of \$10-\$30 per participant, depending on the state. In 2009, 2.2 million individuals were served by the coupon program, and 3,635 farmers' markets across the country were certified to accept these benefits (FNS, 2010). In addition to providing WIC participants with access to fresh produce, the program generated over \$20 million in revenue directly to farmers (Oliveira and Frazao, 2010). Nationally, FMNP coupons contribute an average of \$1,744 in sales at participating markets (Ragland and Tropp, 2009).

Several studies have found that participation in FMNP has had a positive influence on fruit and vegetable consumption of WIC clients. McCormack and colleagues (2010) conducted a review of the literature that evaluated the influence of FMNP on fruit and vegetable consumption and found four studies to support this claim. They reviewed a six-state study of the FMNP pilot project conducted in 1991 and found that WIC clients who received FMNP coupons consumed 5% more fruits and vegetables than WIC clients who did not receive FMNP coupons (McCormack et al, 2010). They reviewed a 2001 study that found the issuance of a \$20 coupon increased fruit and vegetable consumption among WIC participants (McCormack et al, 2010). Additionally, their review included a 2003 study by the National Association of Farmers' Market Nutrition Programs, which surveyed 24,800 WIC clients from 30 programs across the country. This study found that 73% of respondents reported eating more fruits and vegetables as a result of program participation (McCormack et al, 2010).

The most recent study reviewed in the McCormack article was conducted in Ohio in 2007. The researchers used a Food Behavior Checklist to assess the difference in fruit and vegetable consumption between WIC clients who received FMNP coupons and those who did not (Kropf et al, 2007). The study revealed that program participants consumed 2.23 servings of vegetables per day compared with 1.91 servings for non-participants, a statistically significant difference (Kropf et al, 2007). There was no significant difference in fruit intake between the two groups. Finally, a fifth study, not included in the review by McCormack and colleagues, found that fruit and vegetable consumption increased by a full serving per day when nutrition education was combined with the farmers' market coupons (Dollahite et al, 2005).

Although the FMNP has been proven to increase fruit and vegetable consumption among participants it has had relatively low redemption rates. Nationally, only 60% of all coupons are redeemed (Ragland and Tropp, 2009). A USDA study revealed that the main reasons for low coupon use were: limited hours of market operation, lack of knowledge about market location, and lack of transportation to get to markets (Nadovich and Metrick, 2010).

For 17 years, FMNP coupons were the only WIC benefit that provided participants with fruits and vegetables, with the exception of carrots. In 2009, Cash Value Vouchers (CVV) were introduced to WIC food packages, based on recommendations from the Institute of Medicine (IOM, 2005). These vouchers allow for the purchase of fresh, frozen or canned fruits and vegetables. They are a monthly benefit issued at \$6, \$10 or \$15 per participant, dependent on age and nutritional need (FNS, 2010a). They differ from FMNP coupons, which can only be used at farmers' markets, in that they can be used at all certified WIC retailers (Oliveira and Frazao, 2009). USDA regulations allow individual states to determine whether CVV can be used at farmer's markets.

Prior to the initiation of CVV, pilot studies were conducted in New York and California to determine if WIC participants would utilize a targeted fruit and vegetable subsidy. In New York, children aged 2-5 years were issued \$5 checks every month for three months (Tyler et al, 2007). The checks could be used to purchase fresh, frozen or canned produce at 4,400 grocery

stores across the state. This study reported an 81% redemption rate, which was considered a highly successful rate of adoption for a new program (Tyler et al, 2007).

In California, the pilot study provided \$10 per week in fruit and vegetable checks to WIC participants for a period of six months (Herman et al, 2006). The study divided participants into three groups: (1) the control group, which did not receive any checks; (2) a group that could only redeem checks at farmers' markets; and (3) a group that could only redeem checks at supermarkets (Herman et al, 2006). The study found redemption rates of 90.7% and 87.5% at farmers' markets and supermarkets respectively (Herman et al, 2006). This pilot demonstrated that fruit and vegetable checks were in demand and that WIC participants were willing to use them at farmers' markets. The California pilot study also assessed the impact of the incentive program on fruit and vegetable consumption. There was an increase of 1.4 and 0.8 servings per day for the farmers' market and supermarket intervention groups respectively (Herman et al, 2008).

## Conclusion

National data from the USDA market manager survey illustrate that the number of farmers' market customers are not keeping pace with the expansion of farmers' markets (Ragland and Tropp, 2009). The evidence from additional research suggests that markets with insufficient customers generate lower farmer sales (Stephenson et al, 2008), which may encourage farmers to leave a market and may eventually cause market failure. At the same time that markets are struggling to increase their customer base, community organizers are turning to markets as a way to increase access to fruits and vegetables for low-income individuals. Programs that aim to increase produce consumption through use of farmers' markets may serve a dual purpose of increasing farmer income while providing access to healthful foods. This research aims to contribute to the literature on farmers' markets by assessing the characteristics that are related to increased sales for farmers. Additionally, it connects to the research on food access by evaluating the use of farmers' markets by SNAP clients in Boston and the influence of cash value vouchers on the use of farmers' markets by WIC clients.

### III. Research Methodology

A variety of qualitative and quantitative research tools were for this study. Market managers, farmers who sold at markets, farmers who did not sell at markets, and market customers were surveyed. Additionally, market manager focus groups and farmer interviews were conducted to provide a more nuanced understanding of information collected in the surveys. WIC participants were surveyed in spring, 2010 and winter, 2011 to assess changes in their use of farmers' markets over the 2010 market season. Finally, SNAP specific surveys were administered to Boston market managers and Geographic Information Systems software (GIS, version 9.2, ESRI, Redlands, CA) was used to assess use of SNAP at Boston markets. Detailed information on each of these research tools is provided below.

#### Market Manager Survey and Focus Groups

In February, 2010, a survey was mailed to managers of the 202 farmers' markets that operated during the 2009 season. A follow-up email, with the survey attached, was sent to all market managers two weeks after the original survey was mailed. A second reminder email was sent ten days later. Market managers who did not respond to mail or email appeals were considered non-respondents. A total of 110 surveys were completed for a response rate of 54%.

Six market manager focus groups were conducted to complement data collected in the surveys. Farmers' markets were clustered based on the region of Massachusetts in which they were located: Western, Central, Northeast, Cape Cod, Boston or Southeast. A maximum of 20 managers from each region were invited to participate in each focus group. Every second market was selected from a spreadsheet for regions that had more than 20 markets. Managers received email invitations to participate in their regional focus group. Follow-up emails were sent 10 days later. Finally, non-respondents received phone calls to encourage their participation. Of the 83 managers who were invited to participate in focus groups 25 attended, a response rate of 30%.

#### Farmers Surveys and Interviews

The Massachusetts Department of Agricultural Resources' (MDAR) farmer database generated a list of 365 fruit and vegetable farmers who sold products at farmers' markets in 2009 and 385 farmers who did not sell at markets. Surveys were mailed to both groups of farmers in early November, 2009. The market farmer survey requested information about why farmers sold at markets, estimated market sales, and customer relationships. Market farmers were also asked about perceived challenges and benefits to selling at farmers' markets. The non-market farmer survey asked about current sales outlets, whether they had previously sold at markets, and if so, why they stopped.

Most questions were closed-ended, with prompts. However, the questions about benefits and challenges to selling at a farmers' market were open-ended. A follow-up mailing was sent to non-respondents in late November, 2009. Additionally, an email, with attached survey, was sent to all non-respondents in the first week of December. A total of 201 (55%) and 192 (50%) market and non-market farmers, respectively, responded to the surveys.

To complement survey data, interviews were conducted with both market and non-market farmers. Farmers were randomly selected by choosing every third farmer from both the market and non-market farmer contact lists. Lists were arranged in alphabetical order by farm name. Selected farmers were contacted twice by email; those who did not respond to email received a phone call. Twenty of 97 market farmers participated in interviews for a response rate of 21%. Nineteen out of 124 non-market farmers participated in interviews for a response rate of 15%.

### **Customer Surveys**

Twenty-three farmers' markets operated in Boston during the 2010 growing season. Permission to visit each market was sought from market managers via email. Those who did not respond to email requests were contacted by phone. Finally, a follow-up email was sent to those who did not return phone messages. Market managers who were not reached by either phone or email were considered non-respondents. Fourteen of the 23 markets (63%) granted permission to conduct surveys on-site.

Each farmers' market was visited once for the full duration of the market. At smaller markets it was possible to approach every customer to ask if s/he would be willing to complete the survey. At larger markets, where there were too many customers to survey, a central location was selected and each person who passed by was asked to complete the survey. Multiple clipboards were available so that several people could complete the survey simultaneously.

### **WIC Surveys**

A longitudinal study design was used to test if the ability to use CVV at pilot farmers' markets would increase the number of WIC participants who shopped at those markets compared with comparison markets. The study also assessed if the ability to use CVV at pilot markets would increase the number of WIC participants who shopped there in 2010 compared with 2009, when participants did not have the option to use CVV at farmers markets.

Baseline surveys were administered in March and April, 2010, at ten WIC offices. The survey asked WIC participants to recall shopping habits from summer, 2009. The same ten WIC offices were visited again in January and February, 2011. At this time, WIC participants were asked to complete a survey recalling their shopping habits from summer, 2010. Surveys were conducted four times at each WIC office, twice in spring, 2010 and twice in winter, 2011. Multiple site visits were necessary to ensure an adequate sample size.

### **Site Selection**

The Massachusetts Department of Agricultural Resources and DPH worked together to select six farmers' markets at which the use of WIC CVV was piloted in 2010. Farmers' markets were chosen based on the following criteria:

1. Distance from other farmers' markets: Isolated markets were given preference so that the ability to use CVV at one market would not negatively impact a nearby market at which the vouchers could not be used.
2. Proximity to a WIC office: All pilot farmers' markets were located within the same town as a WIC office to facilitate coordination between market managers and WIC staff.

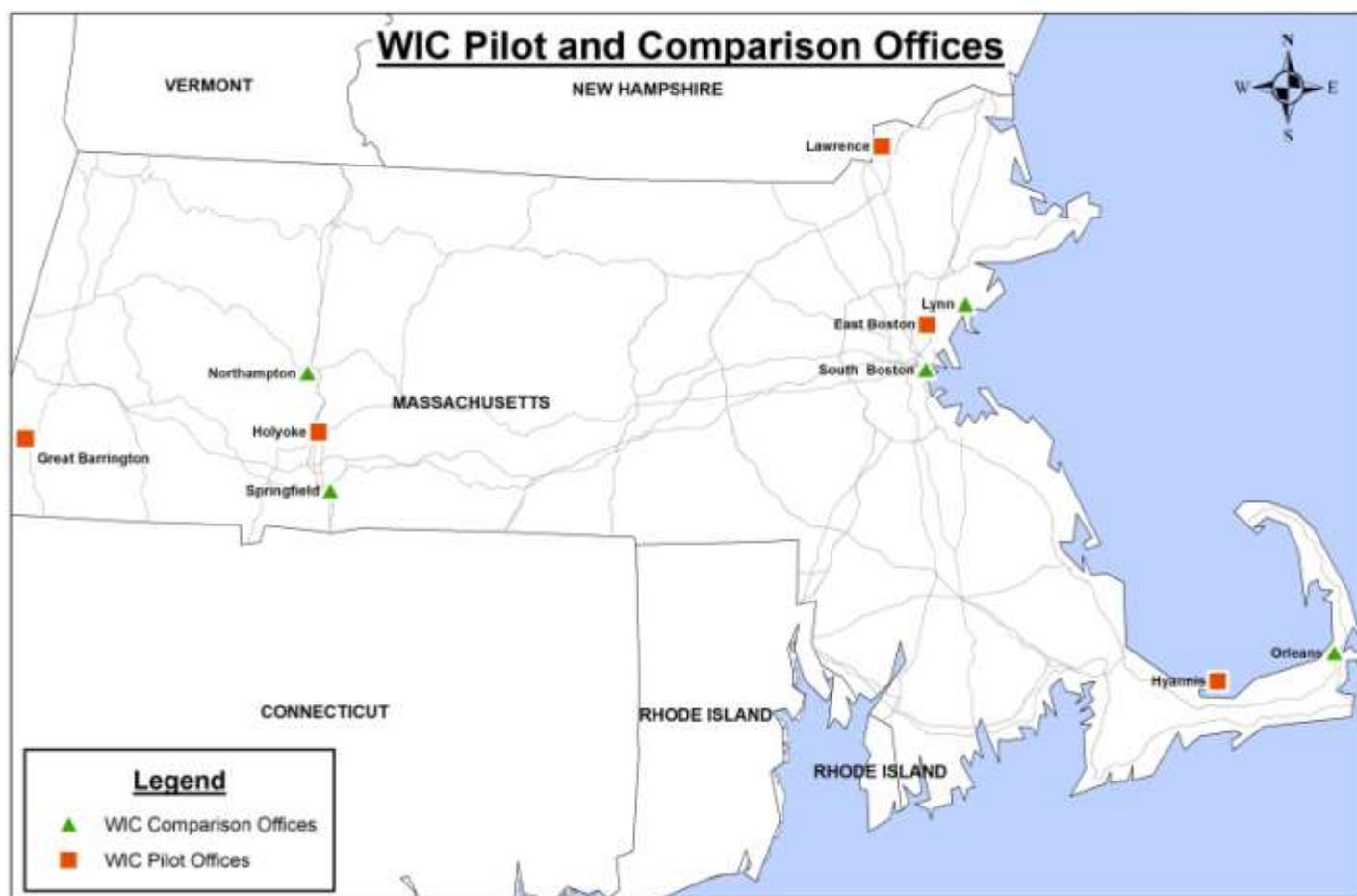
3. Involvement of WIC staff: DPH and MDAR staff sought to partner with WIC offices that were interested in supporting farmers' markets and willing to collaborate with market managers to promote the use of CVV.

4. Engagement of market managers: Preference was given to farmers' markets with engaged managers who would work with WIC offices and state employees to certify their farmers and promote the use of CVV at their markets.

5. Distribution across the state: DPH and MDAR staff sought farmers' markets that were located in different regions of the state to account for unknown differences in shopping habits by region that had the potential to influence the use of vouchers.

Based on these criteria, six pilot farmers' markets (associated with five WIC offices) were chosen in Massachusetts. They were located in the towns of Great Barrington, Hyannis, East Boston, Holyoke, and Lawrence. Two farmers' markets were selected in Great Barrington because of their proximity to one another and because of MDAR's desire to avoid customer confusion or competition between markets (Damon, 2011).

**Figure 3. Map of WIC Offices**



Each pilot market was then paired with a comparison market. The comparison markets were selected based on the criteria listed above, as well as location in the same region of the state as a pilot market and similar median income and population to the town in which the pilot farmers' market was located. Based on these criteria, comparison markets were selected in Northampton, Orleans, South Boston, Springfield and Lynn (Figure 3). All data were collected from WIC participants at the WIC offices located closest to the pilot and comparison markets.

### **Boston SNAP Survey**

In November, 2010, a survey was mailed to managers of the 18 Boston markets that accepted SNAP. This survey was administered through MDAR. Its purpose was to better understand the challenges and benefits associated with accepting SNAP. Market managers received an email informing them of the study and asking them to complete the survey. Within a week, all managers received a follow-up letter and survey in the mail. A reminder email was sent ten days later. Those who did not respond to email or post mail were considered non-respondents. Thirteen of the 18 managers (72%) completed the survey.

### **Geographic Information Systems**

Geographic Information Systems software (GIS, version 9.2, ESRI, Redlands, CA) was used to compare characteristics of market customers with those of the neighborhood in which the market was located. Census information from 2005, the most recent data available, was provided by the Boston Redevelopment Authority (BRA). This enabled a comparison of the average income of the area surrounding a farmers' market (defined as 0.5 miles) with the average reported income of market shoppers. One-half mile was selected because it represented the distance that 66% of survey respondent traveled to markets. This comparison addressed the question of whether market shoppers were representative of the neighborhood in which each market was located.

**Table 1. Work plan and study objectives**

<b>TASK</b>	<b>OUTPUTS</b>	<b>PERFORMANCE MEASURE</b>	<b>OUTCOMES</b>
Survey market managers	Mail 202 surveys and make follow-up phone calls to maximize response rate.	50% response rate on surveys.	Understanding of market and manager characteristics that contribute to market success.
Survey farmers	Mail 400 surveys to farmers that sell at markets and 400 to farmers who do not.	50% response rate from both groups.	Understanding of why farmers participate in markets, challenges faced and perceived benefits.
Survey market customers	Complete 500 surveys at 10 markets	Involvement from area non-profits who support farmers markets (volunteers to help with survey implementation).  Response rate of 40% or greater.	Enhanced understanding of what customers want from their farmers' market experience.
Survey WIC participants	2,000 surveys by WIC participants: 1,000 from pilot sites and 1,000 from comparison sites.	Response rate of 60% or greater.	Understanding of why WIC participants choose to shop at farmers' markets and the impact of the fruit and vegetable coupons on that decision making process.

#### **IV. Study Partnerships**

Massachusetts Department of Agricultural Resources (MDAR): Staff at MDAR assisted with market manager and farmer survey implementation. Additionally, the Farmers' Market Coordinator and Farmers' Market Nutrition Program Coordinator introduced the researcher to numerous people in the field that were essential for the success of this research project.

Massachusetts Department of Public Health (DPH): Staff at DPH helped shepherd this project through the Internal Review Board process, without which the researcher would not have been allowed to survey WIC participants. Additionally, DPH staff introduced the researcher to office managers at each WIC office and urged them to allow survey research to take place at their offices.

Study Participants: Numerous farmers, market manager, farmers' market customers, and WIC participants took time to complete surveys and to participate in focus groups and interviews. This research was only possible because of their generosity.

## V. Study Findings

### Characteristics that influence vendor sales at Massachusetts farmers' markets

#### The farmer perspective

In 2009, the average tenure of vendors at Massachusetts markets was 11 years; however, 66% of all vendors had been selling at market for fewer than 10 years. Vendors sold at an average of two markets per week. The number of markets per vendor ranged from one to 14, but only 8% sold at four or more markets a week.

Fifty-seven percent of market farmers made less than half their income at farmers' markets. When farmers were asked why they chose to sell at farmers' markets, the most commonly cited reason was to earn income (42%). Other commonly cited reasons were for the sense of community (16%) and to sell surplus products (12%). However, when asked about the perceived benefits to selling at farmers' markets a variety of other reasons were reported (Table 2).

**Table 2. Benefits to Selling at Massachusetts Farmers' Markets**

<b>Reported benefit</b>	<b>Percent of farmers (N=182)</b>
Higher profit margin	34%
Customer connection	23%
Providing good food to people	16%
Developing a sense of community	8%
Promotion of Farm	5%
Outlet for surplus goods	4%
Educate the public	4%
Other	6%

Despite the range of perceived benefits, market farmers acknowledged a number of challenges to utilizing farmers' markets as a sales outlet. Weather was cited as a challenge by 24% of market farmers. Farmer interviews revealed that both rainy and sunny weather caused problems. If it was too cold or rainy, few customers would attend the market, leading to poor sales. If it was too hot and sunny, many vegetables would wilt, making them difficult to sell. The second most commonly cited challenge to selling at farmers' markets was the staff and time required on market day (13%). Farmers explained that the need to have a person on-site for the market day left them with a costly choice: pay a staff member to tend the stall or staff the stall personally and lose a day of labor on the farm. Other commonly mentioned challenges included: competition among vendors (11%), insufficient customer traffic (9%), inadequate market promotion (8%), determination of the appropriate amount of products (6%), determination of appropriate prices (3%), maintenance of produce freshness (3%), and set-up and break-down (2%).

Farmers' reported that some of the abovementioned challenges had caused them to leave a market in the past. Thirty percent of market farmers' had left at least one market. Sometimes farmers left because they decided to focus on other aspects of their farm operation (5%) or they were offered a spot at a more established market (5%). However, the most common reason for a farmer to leave a market was because of insufficient sales (34%).

The reasons that non-market farmers chose not to sell at farmers' markets were similar to the challenges cited by current market farmers. The top three reasons were that the market required too much staff time (57%), sales were too weather dependent (25%) and there were too few customers (22%). Therefore, instead of selling their products at farmers' markets most opted to use a farm or roadside stand (51%). Interviews revealed that these stands were less labor intensive. They were either unstaffed, or they were on-farm and allowed farm staff to multi-task. However, 35% of the farmers surveyed sold wholesale, often under contract, because it provided a reliable, steady source of income. Those who sold wholesale stated a preference for reliable sales over the uncertainty of farmers' markets.

Of the non-market farmers surveyed, 30% had previously sold at a farmers' market. Their reasons for leaving markets were similar to the challenges mentioned by market farmers: profits were insufficient and the market required too much staff time. Interviews with both the market and non-market farmers revealed that there was a minimum level of gross sales that had to be guaranteed for a market to be profitable. During interviews, multiple market farmers reported the need for \$200 - \$250 in sales per day for a market to be economically viable. However, some farmers considered their operation to be "a hobby business" and were not concerned with making a profit at the market.

### Understanding Massachusetts Farmers' Markets

Massachusetts farmers' markets range in the number and types of products sold, years of operation, number of customers, weeks of operation per season, and vendor fees. A market profile has been created to provide a general description of Massachusetts farmers' markets (Table 3), but it is important to remember that no two markets are exactly the same.

**Table 3. Characteristics of Massachusetts Farmers' Markets**

	<b>Mean (N)</b>	<b>Minimum</b>	<b>Maximum</b>
Weeks of operation in 2009	19 (109)	8	28
Years of operation	10 (99)	1	38
Customers per week	573 (89)	25	3,000
Number of product categories available	7 (109)	2	10
Seasonal fee	\$264 (71)	\$0	\$720
Number of vendors	15 (108)	1	40

While the characteristics of individual markets were highly diverse, the demographic characteristics of market managers were more homogenous. Seventy percent of managers were female and three-quarters had a bachelor's or advanced degree. Additionally, 89% of all managers were Caucasian. The one demographic characteristic that was more diverse was age: the average market manager was 52 years old, but they ranged in age from 21 to 79.

Market managers were also similar in that few had experience as managers prior to starting their current position. Forty-three percent had two or fewer years of experience managing a market and 16% had more than ten years of experience. Slightly less than two-thirds of market managers were volunteers and 37% were paid for their work. Despite the demographic homogeneity among market managers, they had a wide variety of reasons for being involved with farmers' markets. The top four reasons for managing farmers' markets were to support local agriculture (62%), support community development (59%), improve food access (57%), and because it was fun (40%).

During focus groups, market managers raised concerns over four common challenges: reliance on volunteers, lack of financial stability, difficulty with market promotion, and concern over market saturation. Most managers who attended focus groups were volunteers. These individuals discussed the difficulties they faced trying to carve out sufficient time to manage a market when many of them had full-time jobs and family responsibilities. Market managers expressed high levels of commitment to their communities and their markets. However, they were concerned about who would be willing to replace them if no salary were offered.

No market manager was able to raise enough money in vendor fees to cover all the administrative costs of running the market. Administrative costs discussed by market managers included rent for the market space, liability insurance, advertising, staff salaries, city permits and special events. Some markets charged no fees because they could not guarantee vendor sales; they were entirely dependent on donations and volunteers. Managers felt that securing funds for market operations was a large challenge that could jeopardize their markets. Some managers reported that they would be willing to increase farmer fees if they could guarantee an increase in sales, an issue linked to both market promotion and competition with nearby markets.

Survey results demonstrated that market managers used signs and posters, newspaper advertisements, banners, radio, the internet, and word-of-mouth to promote their markets. However, the focus groups revealed that managers did not know if their outreach efforts were effective. Managers expressed a desire to increase market promotion efforts to attract more customers, but they were unsure how to reach new constituencies. Some managers felt that market saturation contributed to low customer turnout. They thought the overall rise in farmers' markets spread the customer base too thin, decreasing sales at all markets. No market manager wanted to deny a neighborhood a market, but many managers thought that markets should coordinate the scheduling of market days, times and locations to reduce competition.

### Defining a Successful Massachusetts Farmers' Market

A Massachusetts farmers' market was categorized as successful if each vendor was able to generate \$250 or more in sales on an average market day. This sales volume was selected based on information provided during farmer interviews. Most farmers were hesitant to provide information about their income from farmers' markets. However, among those who were willing to discuss their sales, \$200-250 was reported as the amount necessary to break even when staff salaries were taken into account. Markets were found to have an average of 42 customers per vendor, a mean of 25, and a range from three to 300. The number of customers per vendor was multiplied by \$12.50, the average sales per customer (Obadia, 2011), to determine average sales volume per vendor. Market vendors were found to have earned an average of \$528 in sales per market day in 2009. Sales volume per vendor ranged from \$43 to \$3,750. For vendors to earn a minimum of \$250 per day, markets needed to attract a minimum of 20 customers per vendor.

Based on these calculations, 59% of Massachusetts farmers' markets were defined as successful. These markets provided sufficient sales to 818 (57%) of all Massachusetts vendors<sup>1</sup>.

#### Factors that Influence Farmer Sales

The study found that years of market manager experience ( $R = 0.401$ ,  $P = <0.001$ ) and the number of customers at a market ( $R = 0.534$ ,  $P = <0.001$ ) were significantly associated with vendor sales per market. There were no significant associations between vendor sales and the presence of a paid manager, product diversity, or types of outreach used to promote the market.

The study also revealed statistically significant differences in the years of manager experience and customer volume at successful and unsuccessful markets. The average number of years of manager experience was seven at successful markets and four at unsuccessful markets ( $P = <0.001$ ). The average number of customers at successful markets was 831; it was 166 at markets that did not generate sufficient sales volume ( $P = <0.001$ ).

**Table 4. Multivariate Linear Regression Market and Manager Characteristics Predictive of Farmer Sales**

	<b>Coefficient</b>	<b>Standard Error</b>	<b>P-Value</b>
Constant	954.5	810.1	0.244
Age	-16.1	6.8	0.022
Gender	217.2	202.0	0.287
Race	125.5	78.9	0.118
Highest Level of Education Completed	118.4	88.2	0.185
Paid Manager	53.2	149.9	0.724
Years as Manager	49.9	17.7	0.007
Prior Manager Experience	58.2	155.1	0.709
Months of Operation	-4.7	66.3	0.944
Day of the Week	-84.1	54.9	0.132
Time of Operation	-75.6	146.9	0.628
Years of Operation	-8.0	8.9	0.375
Number of Products	14.7	50.9	0.774
Entertainment	-205.9	172.8	0.239
Vendor Fee	-272.9	233.5	0.248

Lastly, multivariate linear regression was conducted to assess the influence of various market and manager characteristics on farmer sales (Table 4). Two characteristics were found to influence sales volume at farmers' market: manager age and years of experience as a market manager. Years of manager experience was positively associated with vendor sales. Each additional year of manager experience increased average vendor sales per market by \$49.90. Market manager age was negatively associated with farmer sales; vendor sales fell by \$16.10 for every year a market manager aged. When assessed collectively, none of the other manager or market characteristics had a significant influence on vendor sales.

<sup>1</sup> Market managers reported the total of vendors at their market but did not provide vendor names. Therefore, vendors who sold at multiple markets were recounted at each market in which they participated.

### The introduction of the Special Supplemental Nutrition Program for Women, Infants, and Children cash value voucher to Massachusetts farmers' markets

The five pilot WIC offices had a combined caseload of 21,368 individuals. A total of 614 (2.9%) participated in the study. The five comparison WIC offices had a combined caseload of 16,188. A total of 471 (2.6%) participated in the study. The overall response rate of WIC participants who were asked to take part in the study was 94%, ranging from a low of 90% in Lynn to a high of 100% in Great Barrington (Table 5).

**Table 5. Caseload and Response Rate by WIC Office**

WIC Office	Pilot/ Comparison	Caseload	Number of Survey Respondents	Response Rate
Great Barrington	Pilot	635	60	100%
Hyannis	Pilot	2683	93	92%
East Boston	Pilot	3867	173	92%
Holyoke	Pilot	5450	131	93%
Lawrence	Pilot	7196	157	95%
Lynn	Comparison	7489	176	90%
Northampton	Comparison	2435	55	97%
Orleans	Comparison	484	63	98%
South Boston	Comparison	638	44	92%
Springfield	Comparison	4008	133	93%

Demographic information for all survey respondents was determined (Table 6). There were no significant differences between study participants at WIC pilot and comparison offices in the areas of gender, age, and ethnicity. However, the average education level was significantly higher at comparison offices ( $P = 0.003$ ). To determine if the difference in level of education would impact further analyses, Pearson's correlations were conducted. These analyses revealed no significant relationship between level of education and use of farmers' markets ( $R = 0.032$ ,  $P = 0.314$ ) or the use of CVV ( $R = 0.013$ ,  $P = 0.782$ ), the primary behaviors of interest. Therefore, no additional steps were taken to control for the difference in level of education between the two groups.

Of all individuals surveyed in both years, a total of 520 (48%) reported that they shopped at farmers' markets. These respondents reported doing so because they felt the food was of higher quality than at the supermarket (46%), markets had a better product mix (44%), they wanted to support local farmers (44%), produce was less expensive (35%), or because markets were in a convenient location (25%). Twelve percent reported that they shopped at farmers' markets only because they received FMNP coupons that could not be used elsewhere.

**Table 6. Demographic Characteristics of WIC Survey Respondents**

<b>Variable</b>	<b>Pilot (600)</b>	<b>Comparison (483)</b>
<b>Gender</b>		
Male	5%	6%
Female	95%	94%
<b>Age</b>		
Under 18	2%	3%
18-30	68%	61%
31-35	15%	18%
36-40	8%	11%
Over 40	8%	8%
<b>Education</b>		
Some high school	20%	17%
High school	39%	32%
Some college	24%	27%
College	16%	21%
Beyond college	2%	3%
<b>Ethnicity</b>		
Caucasian	26%	36%
African American	2%	9%
Asian American	1%	3%
Hispanic	61%	45%
Other	10%	7%

Five-hundred and thirty (49%) WIC participants reported that they did not shop at farmers' markets; 266 in summer, 2009 and 264 in summer, 2010 (Table 7). The most common reason given was that they did not know where the markets were located (40%). WIC participants also reported that market hours were inconvenient (25%), market locations were inconvenient (14%), the products were too expensive (13%), and that markets didn't sell their preferred food products (3%).

**Table 7. Use of Farmers' Markets by WIC Participants**

	<b>2009</b>		<b>2010</b>	
	<b>Pilot (300)</b>	<b>Comparison (259)</b>	<b>Pilot (279)</b>	<b>Comparison (214)</b>
Shop at Farmers' Markets	54%	51%	48%	45%
Do NOT Shop at Farmers' Markets	46%	49%	52%	55%

In 2009, 293 (52%) of all individuals surveyed shopped at farmers' markets. In 2010, that number dropped to 230 (47%). The drop in use of farmers' markets was not significant at the 95% confidence level ( $P = 0.062$ ); however it was large enough to warrant investigation. Massachusetts Department of Agricultural Resources and DPH staff hypothesized that the reduced usage rate was due to technical difficulties that led to later-than-usual distribution of FMNP coupons in summer, 2010 (Damon, 2011). Similarly, there was a slight drop in those from pilot offices who shopped at farmers' markets between 2009 and 2010. However it was not statistically significant at the 95% confidence level ( $P = 0.128$ ). Furthermore, there was not a statistically significant difference between the number of WIC participants from pilot and comparison offices who shopped at farmers' markets in summer, 2010 ( $P = 0.606$ ). Finally, two-way ANOVA (analysis of variance) demonstrated no significant difference in the number of participants who shopped at farmers' markets in 2009 and 2010 across pilot and comparison offices.

Surveys demonstrated that 79% of WIC participants who shopped at farmers' markets used their FMNP coupons (Table 8). Additionally, many WIC market shoppers also used cash, which increased their spending beyond the amount provided by FMNP coupons. Furthermore, when the CVV farmers' markets pilot began, nearly half of market shoppers, from pilot and comparison WIC offices, used their vouchers at farmers' markets.

**Table 8. Self-reported Forms of Payment Used at Farmers' Markets**

	2009		2010	
	Pilot (162)	Comparison (131)	Pilot (133)	Comparison (97)
Farmers' Market Nutrition Program	80%	83%	75%	77%
Cash	52%	59%	39%	42%
SNAP	16%	14%	14%	19%
CVV	N/A	N/A	47%	49%

One-hundred and nine surveyed WIC participants reported that they used CVV at farmers' markets in summer, 2010. Based on data made available from MDAR, a total of nearly \$8,000 in CVV benefits were redeemed at the six pilot markets between June and October, 2010 (Damon, 2011). This represents 0.15% of total CVV benefits redeemed state-wide, from all sales outlets, during that time period. These vouchers were accepted by 21 farm vendors at the six pilot markets. Therefore, CVV sales averaged \$370 per vendor during the 2010 pilot phase. Given the generally low sales volume at farmers' markets, this was a meaningful contribution to vendor income. According to Ragland and Tropp (2009) the average market vendor in the Northeast earned \$6,676 in annual sales per market. Based on this annual average, CVV represented a 5% increase in sales for participating vendors at pilot markets.

These CVV sales were generated by WIC participants from both pilot and comparison offices. A total of 62 respondents from pilot WIC offices and 47 from comparison WIC offices reported use of their CVV at farmers' markets. A T-test confirmed that the difference in use of CVV at farmers' markets between pilot and comparison groups was not significant at the 95% confidence level ( $P = 0.801$ ). This finding was unexpected since individuals at comparison offices could not use the CVV at the farmers' market located closest to their WIC office.

These findings are explained by the fact that some participants were likely willing to travel beyond their closest market to use their CVV benefits at a farmers' market. The likelihood that WIC participants travel between multiple farmers' markets was supported by 2009 DPH redemption data provided, which provided information on the number of FMNP coupons issued at comparison offices and redeemed at pilot markets (Table 9). The Department of Public Health was unable to capture this data for 2010 due to changes in their computer system; therefore it is not possible to determine changes in these shopping patterns.

**Table 9. WIC Benefits Issued at Comparison Offices and Redeemed at Pilot Markets in 2009**

		Comparison Offices				
		Lynn	South Boston	Springfield South	Northampton	Orleans
<b>Total Coupons Redeemed from Office</b>		8,319	1,030	1,821	594	220
	<b>Lawrence</b>	759	8	0	0	0
	<b>East Boston</b>	12	8	0	0	0
<b>Pilot Markets</b>	<b>Holyoke</b>	0	0	213	31	0
	<b>Great Barrington</b>	0	0	10	0	0
	<b>Hyannis</b>	0	0	0	0	18

As demonstrated above, 759 FMNP coupons were issued in Lynn (comparison office) and redeemed in Lawrence (pilot market) in 2009. This is equivalent to 9% of all FMNP coupons issued in Lynn that year. Similarly, FMNP coupons issued at other comparison offices were redeemed at pilot markets in 2009; therefore it is probable that some of these individuals continued their shopping patterns in 2010. This may be the result of an intentional shopping trip to a preferred farmers' market. Alternatively, a WIC participant may have had another reason to visit the area near a pilot market and shopped at the farmers' market while s/he was nearby.

Finally, stepwise regression analysis was used to assess the factors that influenced WIC participants who shopped at farmers' markets. As described in the methods section the characteristics included in the regression analyses were determined by the established literature and associations identified through descriptive statistics.

Age ( $P = <0.001$ ) and average weekly spending on fruits and vegetables ( $P = 0.034$ ) both had a positive influence on the use of farmers' markets by WIC participants. The older an individual, the more likely s/he was to shop at a farmers' market. Additionally, the more a WIC participant spent on fruits and vegetables, the more likely s/he was to shop at farmers' markets. Furthermore, the use of CVV ( $P = <0.001$ ) had a positive influence on the use of farmers' markets. It was demonstrated that individuals who used their CVV were more likely to shop at farmers' markets, even if they did not use their vouchers there.

A second stepwise regression analysis was conducted to determine the factors that influenced the use of CVV by WIC participants. The only factor found to have an influence on the use of CVV at the 95% confidence level was whether an individual shopped at the farmers' market ( $P = <0.001$ ). This regression statement confirmed findings from descriptive analyses that demonstrated no difference in use of CVV between pilot and comparison groups.

## A case study of Boston farmers' markets: Use by Supplemental Nutrition Assistance Program clients

A total of 720 customer surveys were completed at 14 farmers' markets during summer, 2010. Response rates varied from a low of 50% at the Fields Corner market to a high of 91% at the Roslindale market (Table 10). A total of 74% of individuals asked to complete surveys complied.

**Table 10. Boston Farmers' Markets, 2010**

Market	Surveyed (N)	Customer Response Rate
1. Allston	Yes (54)	67%
2. Boston Medical Center	Yes (42)	67%
3. Boston University	Yes (52)	84%
4. Bowdoin Geneva	No	--
5. Charlestown	Yes (50)	68%
6. City Hall	No	--
7. Codman Square	Yes (54)	75%
8. Community Servings	Yes (61)	73%
9. Copley Square	Yes (58)	76%
10. Dewey Square	Yes (51)	71%
11. Dorchester House	No	--
12. Dudley Common	No	--
13. East Boston	Yes (50)	66%
14. Fields Corner	Yes (31)	50%
15. Hyde Park	Yes (29)	80%
16. Jamaica Plain	No	--
17. Mattapan	No	--
18. Mission Hill	Yes (60)	80%
19. Peabody Square	Yes (59)	82%
20. Prudential Center	No	--
21. Roslindale	Yes (72)	91%
22. South Boston	No	--
23. South End	No	--

### Understanding farmers' market customers

According to most demographic indicators, customers surveyed at farmers' markets were not representative of the average Boston resident (Table 11). Market shoppers were predominantly female, more likely to be Caucasian, had higher levels of education, and were younger than the general population. Forty-eight percent were between 25 and 44, while only 35% of the general population was within that age range (Shah et al, 2010).

Despite the differences between market shoppers and Boston residents in most demographic categories, the average income of Boston residents fell within the range of surveyed customers. The average income for all surveyed customers ranged between \$50,000 and \$75,000 compared to a mean income of \$60,543 for Boston households (Shah et al, 2010).

**Table 11. Comparison of Market Shopper Demographics with Boston Demographics**

Education		Some high	High	Some	College	Masters +
		school	school or	College		
		school	GED	College	College	Masters +
	Market customers	1.8%	7.3%	13.9%	38.8%	38.1%
	Boston	17%	23%	19%	22%	20%
Race		White	Black	Asian	Latino	Other/ bi-racial
	Markets customers	71%	12%	5%	4%	8%
	Boston	51%	22%	8%	16%	4%
Gender		Male	Female			
	Market customers	27%	73%			
	Boston	48%	52%			
Age		<=24	25-44	45-65	>65	
	Market customers	13%	48%	34%	5%	
	Boston	34%	35%	21%	10%	

Most market customers were repeat shoppers. Over two-thirds of those surveyed shopped at farmers' markets either "at least once a week" (49%) or "every other week" (21%). Fifty-eight percent spent between \$10-20 each time they visited the market. Seventeen percent spent less than \$10 each visit and a quarter of all customers surveyed spent more than \$25. Pearson's correlation found a significant, positive relationship between the frequency with which an individual visited a farmers' market and the average amount they spent per visit ( $R= 0.182$ ,  $P= <0.001$ ).

Most customers (78%) visited farmers' markets during their leisure time or while running errands close to home, rather than on their way to or from work (32%) or on lunch break (27%). Sixty-seven percent traveled less than 10 minutes to get to the farmers' market. Another 18% traveled between 10 and 15 minutes to reach the market.

Ninety-five percent of customers surveyed felt that products at farmers' markets were "better" or "much better" in quality than those available at the supermarket (Table 12). Seventy percent found that the selection of products was "better" or "much better" than at the supermarket. Anecdotally, customers stated that markets offered fewer products than the supermarket, but they had more of the type of products that they wanted to purchase. Only 44%

of surveyed customers reported that the prices at farmers' market were "better" or "much better" than at the supermarket.

**Table 12. Customer Perception of Products Sold at Boston Farmers' Markets**

	<b>Selection (693)</b>	<b>Quality (679)</b>	<b>Price (654)</b>
Much Better	40%	64%	21%
Better	30%	30%	23%
Same	16%	5%	33%
Worse	14%	1%	21%
Much Worse	0.1%	0%	2%

Pearson's correlations revealed a statistically significant relationship between the amount that customers spent at farmers' markets and their perception of quality ( $R = 0.123$ ,  $P = 0.001$ ) and selection ( $R = 0.103$ ,  $P = 0.007$ ). The relationship between spending and price perception was not significant at the 95% confidence level. However, the associations between price and quality ( $R = 0.169$ ,  $P = <0.001$ ) and selection ( $R = 0.227$ ,  $P = <0.001$ ) were significant at this level.

The most commonly purchased products at farmers' markets were fruits and vegetables. Fifty-nine percent and 78% of respondents reported that they always purchased fruits and vegetables respectively. Respondents also purchased bread and bakery products (41%), flowers (30%), dairy (21%), and eggs (16%) on an occasional basis. Many farmers' market shoppers expressed interest in a wider variety of food products. Forty-one percent stated they would be interested in buying fish at the market if it were available and 32% were interested in the ability to purchase meat.

### Learning from Focus Groups

All but one market manager who attended the focus groups said that improved food access for low-income community members was a central goal for their market. Managers felt that there was community demand for their markets and that their markets had an important role to play in improving food access. The primary way in which market managers worked to increase access for low-income community members was by making markets SNAP-accessible. Some managers felt that accepting SNAP was both expensive and administratively cumbersome. However, they all agreed that accepting SNAP was necessary to better serve their communities.

Managers were pleased with the BBB program. They felt that it helped make markets more competitive with full-service supermarkets and other retail outlets. However, they also expressed concern over the fact that spending by SNAP clients was relatively low, even in areas with high caseloads.

Market managers felt that use of SNAP at farmers' markets could be increased through strengthened outreach. In 2010, most managers promoted their markets through email, newspaper advertisements, and flyers in their communities. Managers felt they benefited from the citywide outreach efforts of The Food Project, which ran radio advertisements for the Boston Bounty Bucks program and placed ads on busses and trains that ran through Boston.

Managers believed these efforts had increased awareness about SNAP at Boston markets, but that word-of-mouth was the most effective strategy. They felt that direct access to SNAP

participants through a DTA mailing would help generate more awareness about the benefits of farmers' markets and begin to create a "buzz" among SNAP clients.

### SNAP at the Farmers' Market

Eighteen out of 23 Boston farmers' markets accepted SNAP benefits during the 2010 season. For 7 markets 2010 was the first year they accept SNAP benefits. Participating markets saw an average of \$2,779 in SNAP sales throughout the season. This is a 54% increase from 2009, when total SNAP sales in Boston were approximately \$1,800 per market (Kim, 2010).

In 2010, a total of \$40,880 in SNAP dollars was spent at Boston farmers' markets. This represented 0.10% of the \$41,744,891 in SNAP benefits issued in market neighborhoods from June through September 2010. This is a small percentage, but it is 10 times the amount of SNAP benefits redeemed at farmers' markets nationally (Love, 2011). Combined SNAP and BBB sales totaled \$76,767 in 2010 and contributed an average of \$556 in annual vendor sales per market. Few markets kept track of total vendor sales, so it was not possible to determine the exact percentage of market sales generated by SNAP. However, a national USDA farmers' market manager survey reported that farm vendors in the Northeast earn an annual average of \$6,676 per market (Ragland and Tropp, 2009). If this is true for the Boston vendors, SNAP and BBB sales contributed an 8% increase in vendor sales during the 2010 season.

**Table 13. Portion of SNAP Dollars Issued in Boston and Redeemed at Boston Farmers' Markets**

Market	Zip Code	Full-season SNAP Sales (Excluding Bounty Bucks)	SNAP Benefits by Zip Code (June – Sept 2010)	Percent of SNAP Dollars Spent at Farmers' Market(s)
Allston	02134	\$1,092	\$659,263	0.17%
Boston Medical Center	02118	\$965	\$4,365,642	0.02%
Bowdoin Geneva, Dorchester House, Fields Corner, and Peabody	02122	\$6,019	\$3,129,789	0.19%
City Hall	02108	\$3,276	\$85,409	3.84%
Codman Square	02124	\$2,438	\$7,488,074	0.03%
Community Servings	02130	\$1,200	\$2,556,359	0.05%
Copley Square	02116	\$12,947	\$890,308	1.45%
Dewey Square	02111	\$2,403	\$650,868	0.37%
Dudley Common	02125	\$1,855	\$4,920,305	0.04%
East Boston	02128	\$2,641	\$3,931,354	0.07%
Hyde Park	02136	\$112	\$2,548,073	0.004%
Mattapan	02126	\$190	\$3,764,568	0.005%

Mission Hill	02120	\$1,060	\$1,653,741	0.06%
Roslindale	02131	\$3,068	\$2,364,516	0.13%
South Boston	02127	\$1,614	\$2,736,622	0.06%

Data provided by DTA allowed for a comparison of SNAP dollars redeemed at farmers' markets with the total amount redeemed by zip code. Supplemental Nutrition Assistance Program sales were higher than the national average of 0.01% at all but two markets (Table 13). However, as the data demonstrate, Boston markets have attracted only a small fraction of potential SNAP clients.

The three markets that attracted the largest percentage of SNAP dollars were City Hall Plaza, Copley Square and Dewey Square. These markets are unique in that they are located in central downtown locations. They are also distinguished from other markets in that they have more than 20 vendors and operate two days a week. These characteristics may have contributed to their higher-than-average SNAP sales. However, the sample size is too small to determine if these characteristics made a statistically significant contribution to SNAP sales at Boston markets.

A comparison was conducted of the average customer income and neighborhood income for the 14 surveyed farmers' markets (Figure 4). As stated in market manager focus groups, most of these markets have been intentionally located in lower-income neighborhoods to provide residents an outlet for healthy food. This analysis provided a weighted average-income for the half-mile area surrounding each market (Table 14) and compared these neighborhood incomes with the reported income ranges of market shoppers. This analysis was conducted to determine whether markets attracted customers that were financially representative of the neighborhoods in which they were located, or if they attracted a sub-section of the neighborhood.

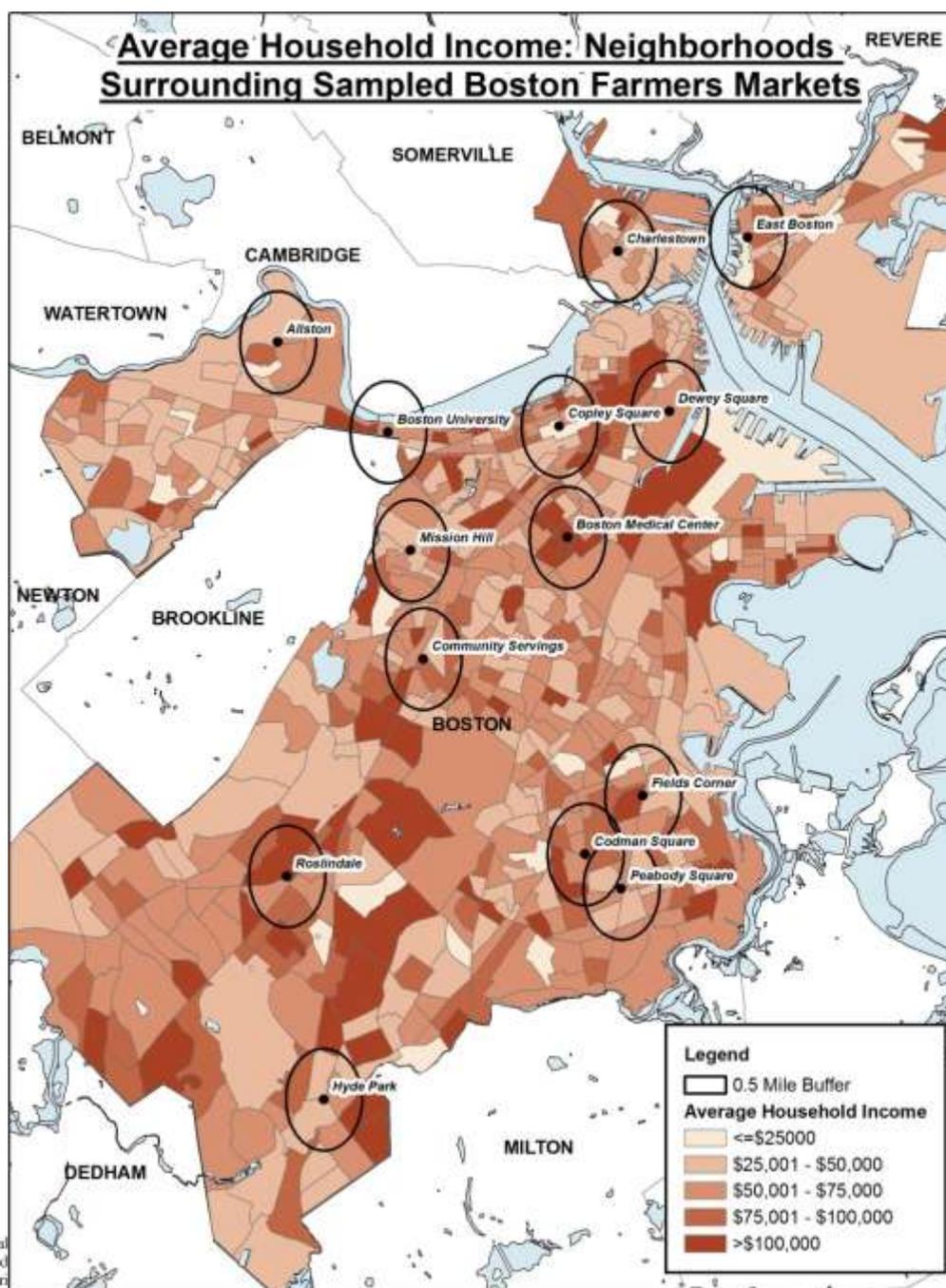
**Table 14. Comparison of Average Farmers' Market Customer Income with Weighted Average Neighborhood Income**

Market (N)	Average Income Range of Market Customers	Average Household Income within 0.5 Miles of Market	Customer Income Range Compared with Average Neighborhood Income	SNAP Accepted
Allston (51)	\$25,000 - \$50,000	\$72,230	-	Yes
Boston Medical Center (39)	\$50,001 - \$75,000	\$97,295	-	Yes
Boston University (45)	\$50,001 - \$75,000	\$56,722	=	No
Charlestown (41)	>\$100,000	\$55,654	+	No
Codman Square (51)	\$25,000 - \$50,000	\$74,142	-	Yes
Community Servings (60)	\$50,001 - \$75,000	\$66,183	=	Yes
Copley Square (55)	\$50,001 - \$75,000	\$71,615	=	Yes
Dewey Square (46)	\$75,001 - \$100,000	\$57,228	+	Yes
East Boston (49)	\$25,000 - \$50,000	\$68,115	-	Yes
Fields Corner (28)	\$25,000 - \$50,000	\$65,029	-	Yes
Hyde Park (26)	\$50,001 - \$75,000	\$62,652	=	Yes
Mission Hill (57)	\$50,001 - \$75,000	\$50,873	=	Yes

Peabody (57)	\$75,001 - \$100,000	\$59,815	+	Yes
Roslindale (69)	\$75,001 - \$100,000	\$80,747	=	Yes

For six of the surveyed markets, the average income of shoppers was equal to that of the surrounding neighborhood. Three markets (Peabody, Dewey Square and Charlestown) attracted customers with a higher average income than the neighborhood in which each market was located. Of these three markets, only Charlestown does not accept SNAP benefits. Of the 14 surveyed markets, five attracted customers with a lower average income than the neighborhood in which the market was located.

**Figure 4. Comparison of Average Household Income between Market Shoppers and Market Neighborhoods**





## VI. Summary Discussion & Recommendations for Future Research

This research explored the role of farmers' markets as sales venues for farmers and produce retail outlets for low-income consumers. The research began with an assessment of the factors that influenced the ability of Massachusetts markets to generate farmer sales in 2009. Next, an evaluation was conducted to assess the impact of the Massachusetts WIC CVV farmers' market pilot program on use of markets by WIC participants in 2010. Finally, a case study of farmers' markets in Boston was conducted. The case study provided baseline data on Boston farmers' markets in 2010 and explored the use of local markets by SNAP clients.

This research was inspired by staff at MDAR and the Boston Mayor's Office. Through a series of informational interviews, staff at both agencies expressed a desire to identify the characteristics that would increase the long-term viability of farmers' markets. As funders and policy makers, agency staff wanted to ensure that they were supporting viable markets. Furthermore, since Massachusetts was one of only 15 states to allow the use of CVV at farmers' markets, MDAR was eager to evaluate their pilot program. Finally, staff at the Boston Mayor's Office was interested in the degree to which farmers' markets were being used by SNAP clients in Boston.

This *Summary Discussion & Recommendations for Future Research* section summarizes the findings from all elements of this research. It provides an overview of the questions that were addressed in the research and study findings. Additionally, this section offers recommendations for future research. Lastly, recommendations are provided to policy makers and practitioners to increase sales volume at farmers' markets and to strengthen markets' role in serving socio-economically diverse customers.

### Characteristics that influence sales at Massachusetts farmers' markets

This study originally sought to determine the characteristics that make farmers' market financially viable. However, survey responses demonstrated that most market managers did not maintain detailed financial records. Most managers were unable to report the items or services on which money was spent or sources that generated market revenue. Consequently, managers did not know the portion of expenses that were covered by vendor fees, or whether they were financially solvent. This in itself is an interesting finding. It calls into question the degree to which farmers' markets consider themselves businesses that need to be economically self-sufficient. Furthermore, market manager focus groups revealed that financial uncertainty made it difficult for managers to plan market services and activities from year to year. Poor record keeping and financial instability are not unique to Massachusetts farmers' markets. A national survey conducted by USDA in 2006, found that fewer than 50% of markets were able to cover their expenses based on vendor fees alone (Ragland and Tropp, 2009).

Further investigation of market finances is recommended to better understand how markets can become economically self-sufficient. Detailed data on market expenses and income are needed to assess whether markets are covering their operating expenses or incurring debt. This information would enable a comparison of the characteristics of markets between those that require outside support and those that are self-sufficient. Such information would help policy makers and grantors use their funding in a targeted manner. Furthermore, it may help market

managers – and organizations that sponsor markets – establish stable markets that better serve farmers and their communities.

Since there were insufficient data to assess the financial viability of market organizations, the analysis turned to an assessment of characteristics that influenced individual farmer sales. Previous research demonstrated that income was the primary reason that farmers sold at markets (Connor et al, 2009; Zepeda, 2009; Philips, 2007). Therefore, farmer sales were used as a proxy for a successful market.

Based on farmer interviews, a successful market was defined as one that was able to generate a minimum mean of \$250 in vendor sales per market day. Based on prior research by Stephenson and colleagues (2008), it was expected that diverse product offerings, presence of a paid manager, years of market manager experience, and volume of customer traffic would impact farmer sales. These findings were supported by national-level research conducted by the USDA (Ragland and Tropp, 2009).

Surprisingly, the difference in farmer sales between markets with paid and volunteer managers was not significant at the 95 percent confidence level. Average vendor sales per market day were \$601 and \$516 at markets run by paid and volunteer managers, respectively ( $P=0.559$ ). This is in strong contrast to national survey findings that revealed markets with paid managers generated five times more sales than volunteer run markets (Ragland and Tropp, 2009).

Additionally, no relationship between the diversity of products offered and farmer sales was found. This may reflect the fact that there was little variation in the types of products offered at markets. However, customer surveys found that market shoppers were interested in purchasing products that were unavailable at most markets, such as meat and fish. Based on this study and research conducted in both Washington (Kinney et al, 2010) and Oregon (Stephenson et al, 2008), it is recommended that market managers strive to offer a variety of products. Furthermore, it is recommended that they promote the diversity of their offerings so that customers know what to expect at the market.

A positive relationship was detected between farmer sales and the experience of the market manager. A logical assumption would be that successful markets were attracting more experienced market managers. However, the research showed that 92% of market managers had no experience prior to working with their current market. Therefore, it appears that managers develop skills on the job that make them better equipped to manage a market.

This finding raises a question about what managers learn on the job that makes them increasingly effective. Focus group discussions revealed that market managers needed expertise in advertising, accounting, conflict resolution, vendor recruitment, fundraising and community organizing. An assessment of the degree to which market managers possess these skills – and the ways in which these skills were acquired – would be useful for future hiring and training of market managers. Such research should evaluate both the personality traits of managers and their various skill sets to determine the type of individual best suited to successfully manage a market.

The study also found a significant, positive relationship between farmer sales and customer traffic. The association between the number of customers at a market and farmer sales reinforces the idea that markets need to attract larger customer bases to provide farmers with sufficient sales volume. However, market manager focus groups revealed concern over perceived competition for customers among closely-clustered markets. At the national level the concept of market competition for customers is supported by the fact that the average number of

customers per market has decreased by approximately 100 people per day as the number of markets has increased (Ragland and Tropp, 2009). Additionally, Lohr and colleagues (2011) have reported especially high levels of competition for customers in major urban centers such as Boston, New York City, Washington DC, Chicago, San Francisco and Los Angeles.

It is recommended that those involved in supporting and operating farmers' markets work together to reduce competition among markets. Open lines of communication are necessary so that new markets are carefully located in neighborhoods where they will best serve the community and present limited competition to established markets. This can help to ensure that markets located in proximal communities do not operate on the same days. Therefore, communication can also help reduce market competition and improve customer convenience by increasing the days and times that markets are open to the public.

Additional research is needed to determine the influence of market competition on farmer sales and market closure. Such research can be challenging because there is often little information regarding markets that are no longer in operation. However, it is recommended that census data be used to determine the association between neighborhood characteristics on markets that have closed in the last ten years. Additionally, research is needed to determine the ideal ratio between population density and the number of farmers' markets that can be supported. Such information is essential when determining whether a new market is needed and if so, where it should be located.

Finally, the study investigated farmer motivations for selling at markets. Data showed that 41% of Massachusetts markets did not provide vendors with sufficient sales volume to earn a profit. This represented 626 out of 1444 vendors that participated in Massachusetts markets. Based on previous research that indicated farmers participate in markets primarily to earn income (Connor et al, 2009; Zepeda, 2009; Philips, 2007), this finding implies that many markets may be at risk of losing their farmers. However, market farmer survey responses revealed that only 30% had ever left a market. This may be attributed to the fact that 56% of farmers reported reasons other than profit for selling at farmers' markets. Interviews revealed that some farmers consider market expenses an advertising cost, because the market increases farm visibility and sales through other outlets. For these farmers, earning a profit at a farmers' market may not be essential. Additionally, self-described "hobby" farmers reported that they did not expect to earn a profit; they participated in farmers' markets because they wanted to interact with community members and share what they grew.

These findings highlight a need to better understand the types of farmers who participate in markets and why they do so. Preliminary work in this area was conducted for this study, but the findings suggest the need for additional investigation. Research is needed to assess the portion of market farmers who do not need to generate an income from their market activities. Beyond general motivations, there is a need to better understand market sales, farmer need for profit, whether they are willing to take a loss at some markets, and if so, why. This type research is likely to highlight a growing discord between non-profit farms and traditional for-profit farms (Webber, 2011). According to MDAR staff, non-profit farms tend to sell products below cost, because they seek to make food more affordable for low-income customers. These organizations are able to generate revenue through grants and private donations to compensate for low levels of revenue. However, it can be difficult to for-profit farmers to compete, because they need to ensure that their prices reflect the full cost of production (Webber, 2011). Therefore, additional questions about price setting and price competition should be included in such research.

## **Influence of federal nutrition assistance programs on market sales**

This research evaluated the impact of the Massachusetts WIC CVV farmers' market pilot program on market sales. Additionally, it explored the contribution that SNAP clients made to vendor sales in Boston. The WIC CVV and SNAP programs both have dual goals of increasing fruit and vegetable consumption among low-income individuals and increasing farmer sales at markets. This study focused specifically on the influence of these programs on farmer sales; it did not investigate the impact of these programs on beneficiaries.

### WIC CVV farmers' market pilot program

The national WIC program introduced a new fruit and vegetable subsidy (cash value voucher) in October 2009 and allowed states to determine if this benefit could be used at farmers' markets (Oliveira and Frazao, 2009). In 2010, Massachusetts was one of only 15 states to allow the use of the CVV at farmers' markets (Tessman and Fisher, 2009). Together, MDAR and DPH decided to initiate a pilot program that allowed the use of these vouchers at six markets across the state. This study expected to find that (1) the ability to use CVV at pilot markets would increase the number of WIC participants who shopped at these sites in 2010 compared with 2009. It was also anticipated that the ability to use CVV at pilot farmers' markets would increase the number of WIC participants who shopped at those markets compared with other farmers' markets. However, unexpected results were uncovered.

At both pilot and comparison markets, there was a decline in the percent of WIC participants who shopped at farmers' markets from 2009 to 2010. The reduced use of markets by WIC participants could be attributed to a delay in the distribution of FMNP coupons (Damon, 2011). Traditionally, FMNP coupon distribution begins in early June and continues through late August. This distribution spurs a surge in the use of farmers' markets by WIC participants (Damon, 2011). However, in 2010, Massachusetts WIC offices received a new computer system, which delayed the distribution of FMNP coupons by several months. Many participants did not receive benefits until late summer or early fall, which reduced their incentive to shop at farmers' markets. Some participants never received their coupons at all.

The Massachusetts Department of Agricultural Resources and DPH have recognized institutional challenges to the distribution of FMNP and are acting to address this issue. WIC participants will no longer receive FMNP coupons during regularly scheduled visits. In 2011, each WIC office will schedule a coupon distribution day. To acquire coupons, participants must visit their WIC office on this specified day. This change will be instituted to increase the overall percentage of coupons that are redeemed by limiting the provision of coupons to individuals who are more likely to use them (Damon, 2011). Due to this change, MDAR expects that the number of individuals who receive coupons will decline in 2011. Consequently, they have increased the amount of coupons per individual from \$10 to \$20.

It is unclear what impact this change will have on farmer income or use of farmers' markets by WIC participants. Therefore, it is recommended that WIC program coordinators closely monitor the use of FMNP coupons during the 2011 season. To determine if the number of WIC participants using FMNP drops, they should track the number of individuals who redeem coupons in addition to the percent of coupons redeemed.

In addition to tracking overall use of farmers' markets by WIC participants, this study explored the differences in reported use of CVV at farmers' markets by participants at the pilot and comparison WIC offices. Surprisingly, there was no statistically significant difference in the use of CVV at farmers' markets between these two groups. This was particularly unexpected because CVV could only be accepted at the farmers' markets located closest to the WIC pilot offices. Therefore, it was expected that only individuals from WIC pilot offices would use CVV at farmers' markets. However, of respondents from comparison WIC offices who shopped at farmers' markets in 2010, almost half reported that they used their CVV at a farmers' market.

It is likely that the use of CVV at farmers' markets by individuals at comparison WIC offices is a reflection of their willingness to travel to pilot markets to use their CVV. According to a USDA study, 30% of farmers' market patrons in New England regularly traveled between 6 and 20 miles to reach their farmers' market of choice (Ragland of Tropp, 2009). Only the Orleans WIC office was more than 20 miles from a pilot market, and this was the only comparison office from which no participants reported use of their CVV at a farmers' market.

Additionally, data from DPH demonstrated that WIC participants from comparison sites had shopped at pilot markets in 2009. Therefore, it is reasonable to believe that a portion would continue to do so in 2010. Unfortunately, this level of data was not captured for the 2010 season so it is not possible to determine whether the overall number of WIC participants who traveled to shop at pilot markets changed as a result of the introduction of CVV.

The lack of a statistically significant difference in the use of CVV among individuals from pilot and comparison WIC offices does not necessarily reflect a lack of interest in the program. On the contrary, if the results reflect a higher-than-expected use of CVV at farmers' markets by individuals from comparison offices, it would suggest that CVV may provide an important new source of revenue for farmers' markets.

The study findings are not conclusive, but they may indicate a positive future for CVV sales at farmers' markets. From June to October 2010, just under \$8,000 in CVV benefits were redeemed at six farmers' markets. This represents 0.15% of total CVV benefits redeemed during that time period, a rather small percentage. However, CVV sales averaged \$370 for the 21 farmers who sold at pilot markets. This was a 5% increase over the average annual sales of \$6,676 for vendors in the Northeast (Ragland and Tropp, 2009).

In 2011, the number of Massachusetts farmers' markets certified to accept CVV will expand from six to 20. The goal in increasing the number of markets eligible to accept CVV is to expand the number of WIC participants who can use their benefits at farmers' markets and thereby increase direct sales to farmers (Damon, 2011). It is recommended that WIC staff conduct outreach to inform participants of the ability to use CVV at farmers' markets. This is necessary to raise awareness about the new CVV benefit which are unused (at any type of retailer) by 20% of the WIC population in Massachusetts (Mueller, 2011). It is also needed to address the limited awareness of farmers' markets reported by many survey respondents.

Additionally, it is recommended that future research track trends in the overall percentage of WIC participants who use CVV and the types of retail locations at which benefits are redeemed. Future research should also track the redemption of CVV at pilot farmers' market and the WIC sites from which those benefits were issued. This information will aid in understanding how far WIC participants are willing to travel to use these benefits at farmers' markets. It may also assist MDAR and DPH in creating a CVV farmers' market plan that will optimize the use of CVV at farmers' markets and increase sales for market farmers. Finally, collecting data on the amount of money WIC participants spend on fruits and vegetables is recommended. This will

enable DPH to determine if use of CVV at farmers' markets increases the overall purchasing of fruits and vegetables by WIC participants.

### SNAP at Boston farmers' markets

The case study of Boston farmers' markets focused on the use of markets by SNAP clients. It was expected that farmers' market customers had higher average household incomes than the populations of the neighborhoods in which each market was located. It was also expected that Boston farmers' markets captured an equal portion of SNAP sales when compared with the national average. However, the study revealed that Boston farmers' market shoppers had an average income similar to that of the general population. The study also found that Boston markets redeemed a higher percentage of local SNAP dollars than markets nationwide.

Numerous studies have found that farmers' markets tend to appeal to an affluent clientele. An Orono, Maine study found that the average market shopper's income was twice as high as expected based on census data (Kezis et al, 1998). A market study conducted in New Jersey found that 27% of the survey population had an income above \$100,000 (Govindasamy et al, 1998). The income distribution of market shoppers was higher than that of the general population. Based on these data, it was expected that Boston farmers' market shoppers would also have a higher average income than the general population. The fact that average income for market shoppers was equal to the average income for the city overall was surprising, but not unprecedented. A study in San Luis Obispo, California found similar results when comparing demographics of market shoppers and non-market shoppers (Wolf et al, 2005).

Most surprising was that five markets had average customer incomes below the average income of the surrounding neighborhood. This finding appears to be unique within the literature on farmers' market customer demographics. The neighborhoods in which these five markets are located have distinct higher-income and lower-income census blocks. Therefore, the findings may be explained by the fact that average neighborhood incomes were raised by the higher-income blocks, but the markets attracted more customers from the lower-income blocks. This interpretation is supported by the fact that these five markets have explicitly conducted outreach to attract lower-income community members: specifically SNAP clients.

Based on demographic data, it appears that Boston farmers' markets are attracting customers from a variety of socio-economic backgrounds. It is recommended that policy makers and practitioners continue to publicize farmers' markets through a diverse range of media outlets and in all neighborhoods of the city. It is also recommended to conduct research comparing product pricing and availability between farmers' markets and supermarkets. Preliminary work in this area has been conducted by The Food Project. However, they compared only ten items, which were selected based on their availability at farmers' markets (Watts, 2010).

In addition to exploring customer demographics, this study assessed the use of farmers' markets by SNAP clients. Nationally, 0.01% of all SNAP dollars were redeemed at farmers' markets in 2010 (Love, 2011). In Boston, 0.10% of SNAP dollars issued in market neighborhoods were redeemed at farmers' markets. While these percentages are low, they represent a substantial increase in annual sales for farmers. SNAP sales in Boston provided average annual sales of \$300 per vendor for each market they participated in during the 2010 season. This increased to \$556 when BBB were included. Unfortunately, there are no data available on the total sales for farmers at Boston markets, so the portion of total market sales derived from SNAP cannot be determined. However, Ragland and Tropp (2009) reported that average annual vendor sales in the Northeast were \$6,676. If this figure is representative of

Boston vendors, it can be estimated that combined SNAP and BBB sales increased the average annual farmer sales at Boston markets by 8%.

Furthermore, SNAP spending at Boston markets is on a rapid upward trajectory. Since 2008, SNAP spending has increased by over 3,000%, from \$1,310 in 2008 (Kim, 2010) to \$40,880 in 2010 (Watts, 2010). City officials and community organizations expect this trend to continue in future years, although they recognize that SNAP sales will stabilize eventually (Watts, 2010).

It is recommended that the city staff set a clear goal for the portion of SNAP dollars that they aim to bring into farmers' markets and a plan for enhancing outreach within the SNAP community to reach that goal. It is also recommended that research be conducted to understand the limitations and barriers for those SNAP clients who do not shop at farmers' markets.

Recent studies have uncovered a variety of barriers that inhibit SNAP clients from shopping at farmers' markets. One Ohio study found that limited knowledge about the ability to use SNAP at a farmers' market is a significant hurdle (Flamm, 2011). A study from Portland, Oregon discovered that limited hours of operation make farmers' markets a difficult shopping destination for the working poor (Grace et al, 2008). Finally, a Michigan study found that both price and the perception of cultural insensitivity kept many minorities and low-income community members from shopping at farmers' markets (Colasanti et al, 2010). It is important for Boston officials to gain a better understanding of the specific limitations that inhibit the use of farmers' markets by SNAP clients in their community. This will enable community organizers to address these issues and increase the portion of SNAP dollars redeemed at Boston markets. Furthermore, it will help individual market managers make their markets more attractive to a broader swathe of the population.

Finally, it is recommended that additional research be conducted to compare fruit and vegetable intake of farmers' market and non-market SNAP shoppers. Such data will aid in developing a better understanding of the role that farmers' markets can play as an environmental intervention geared toward improving dietary outcomes in low-income communities. Furthermore, it would contribute to the literature by assessing whether customers are increasing their fruit and vegetable consumption by shopping at farmers' markets or simply replacing produce they would have purchased elsewhere.

## Conclusion

This study assessed the viability of farmers' markets in Massachusetts and took an in-depth look at the contribution of federal nutrition assistance programs to vendor sales. As a result of this work, several key findings have been revealed.

1. Contrary to the body of literature, this study finds that **income may not be the main factor motivating vendors to participate in farmers' markets**. When surveyed only 42% of farmers listed income as a reason for selling at farmers' markets.
2. **Market manager experience and customer traffic are the main factors positively associated with vendor sales**. Unlike other studies, there was no evidence that product diversity or the presence of a paid manager were associated with vendor sales.
3. Use of WIC CVV at farmers' markets was low in 2010, amounting to less than \$8,000 state-wide. However, **CVV contributed an average of \$370 in annual sales to the 21**

**farmers who participated in the pilot program.** This was an increase of 5% over average annual market sales for vendors in the Northeast.

4. **Boston has had greater success than the country overall attracting SNAP clients to farmers' markets.** In Boston, 0.10% of local SNAP dollars were redeemed at farmers' markets, 10 times more than nationwide.
5. **Supplemental Nutrition Assistance Program and BBB dollars contributed a combined average of \$556 in vendor sales at Boston markets.** This is an 8% increase over the average annual market sales for vendors in the Northeast.

Based on these findings, there is a need for additional research in a variety of areas. First, research is needed to further investigate farmer motivations for participating in markets. This research should explicitly inquire whether farmers are willing to sell products below operating costs, and if so why. Such research is likely to find differences between non-profit and for-profit farms (Webber, 2011). Next, research is needed to better understand what skills market managers acquire on the job and how/ why they lead to higher market sales.

Research is also needed to better understand the relationship between recipients of federal nutrition assistance programs and farmers' markets. The WIC CVV program should continue to be monitored as it expands. Specifically, program coordinators should evaluate why participants chose to use their CVV at markets instead of supermarkets or corner stores. Additionally, the impact of CVV on fruit and vegetable consumption should be assessed, with comparisons conducted between participants that shop at farmers' markets and those who do not. Further research is also needed to better understand the relationship between SNAP and farmers' markets. Surveys and interviews should be conducted with SNAP clients who do not shop at markets to assess barriers to access. Finally, it is recommended that rigorous dietary assessments be conducted to determine if shopping at farmers' markets increases fruit and vegetable consumption of SNAP clients.

## VII. Project Beneficiaries

1. Market Managers: The primary beneficiaries of this project are the over 200 market managers working in Massachusetts. This research provides insight into ways in which they can increase sales for vendors at their markets, thereby increasing the stability of their markets. Additionally, this research has helped to provide Boston specific managers with a better understanding of their customer base and the types of products they are interested in purchasing.

2. Market Vendors: As a result of the manager guidance provided through this research vendors that sell at Massachusetts markets will also benefit from this research. The study found that acceptance of WIC cash value vouchers can increase sales by 5% and the acceptance of SNAP can increase sales by up to 8%. If this work can encourage those markets who do not yet accept these benefits to do so, this will lead to increased sales for vendors.

3. WIC and SNAP recipients: This study has demonstrated that WIC and SNAP benefits make a meaningful contribution to sales at farmers' markets. If this can encourage more markets to accept these benefits, it will increase access to markets for individuals receiving these benefits. While future research is needed to determine the impact that this may have on their access to fresh produce, it is believed that this will have a positive impact on overall consumption of fruits and vegetables.

### VIII. References

- Abel, J.; Thompson, J.; and Maretzki, A. (1999). Extension's role with farmers' markets: Working with farmers, consumers, and communities. *Journal of Extension*.  
<http://www.joe.org/joe/1999october/a4.php> Last accessed 7/26/11.
- Agricultural Marketing Service. (2011). Food Deserts. USDA.  
<http://apps.ams.usda.gov/fooddeserts/foodDeserts.aspx> Last accessed 6/25/11.
- Agricultural Marketing Service. (2011a). Farmers' market promotion program. USDA.  
<http://www.ams.usda.gov/AMSV1.0/FMPP> Last accessed 6/25/11.
- Agricultural Marketing Service. (2010). Farmers' Markets and local food marketing. USDA.  
<http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateS&navID=WholesaleandFarmersMarkets&leftNav=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers%20Market%20Growth&acct=frmrdirmtk> Last accessed 6/25/11.
- Anderson, M. (2009). Food Retail Options in Boston. Boston Collaborative for Food and Fitness. Boston, MA.
- Andreatta, S. (2000). Marketing strategies and challenges of small scale organic producers in central North Carolina. *Culture and Agriculture*. 22 (3): 40-50.
- Ball, K.; Timperio, A.; and Crawford, D. (2009). Neighbourhood socioeconomic inequalities in food access and affordability. *Health and Place*. 15: 578-585.
- Bazzano, L.A.; He, J.; Ogden, L.G.; Loria, C..M.; Vupputuri, S.; Myers, L.; and Whelton, P.K. (2002). Fruit and vegetable intake and risk of cardiovascular disease in US adults: the first National Health and Nutrition Examination Survey epidemiologic follow-up study. *The American Journal of Clinical Nutrition*. 76 (1): 93-99.
- Beaulac, J.; Kristjansson, E.; and Cummins, S. (2009). A systematic review of food deserts, 1966-2007. *Preventing Chronic Disease*. 6 (3): 1-9.
- Bennett, J.; Binus, J.; Gaytan, M.; Hopfe, A.; Keaton, J.; Lefler, A.; and Schott, M. (2007). Documenting the Portland farmers' market: A historical snapshot of sustainable agriculture. Portland State University. Portland, OR.
- Bodor, J.; Rodes, D.; Farley, T.; Swalm, C.; and Scott, S. (2007). Neighbourhood fruit and vegetable availability and consumption: the role of small food stores in an urban environment. *Public Health Nutrition*. 11 (4): 413-420.
- Bodor, J.; Ulmer, V.; Dunaway, L.; Farley, T.; and Rose, D. (2010). The rationale behind

- small food store interventions in low-income urban neighborhoods: Insights from New Orleans. *The Journal of Nutrition*. 140 (6): 1185-1188.
- Bolan, E. and Hecht, K. (2003). Neighborhood groceries: New access to healthy food in low-income communities. *California Food Policy Advocates*. Oakland, CA,
- Boston Medical Center and Drexel University. (2008). Coming Up Short: High Food Costs Outstrip Food Stamp Benefits. BMC and Drexel University. [http://www.childrenshealthwatch.org/upload/resource/RCOHD\\_Report\\_Final.pdf](http://www.childrenshealthwatch.org/upload/resource/RCOHD_Report_Final.pdf) Last accessed 9/12/10.
- Briggs, S.; Fisher, A.; Lott, M; Miller, S.; and Tessman, N. (2010). Real food, real choice: Connecting SNAP recipients with farmers' markets. Community Food Security Coalition. Portland, OR.
- Brown, A. (2001). Counting farmers' markets. *American Geographical Society*. 91(4): 655-674.
- Brown, A. (2002). Farmers' market research 1940-2000: An inventory and review. *American Journal of Alternative Agriculture*. 17 (4): 167-176.
- Brown, C.; Miller, S.; Boone, D.; Boone, H.; Gartin, S.; and McConnell, T. (2007). The importance of farmers' markets for West Virginia direct marketers. *Renewable Agriculture and Food Systems*. 22 (1): 20-29.
- Callahan-D'Auria, M. (2009). SNAP at the farmers' market: Farmers' market strategies for outreach and promotion of incentive programs to Supplemental Nutrition Assistance Program recipients in Massachusetts and Connecticut. Tufts University. Boston, MA.
- Cash, S.; Sunding, D.; and Zilberman, D. (2005). Fat taxes and thin subsidies: Prices, diet, and health outcomes. *Food Economics*. 2 (3): 167-174.
- Centers for Disease Control and Prevention. (2011). Leading causes of death. Centers for Disease Control and Prevention. <http://www.cdc.gov/nchs/FASTATS/lcod.htm> Last accessed 6/26/11.
- Centers for Disease Control and Prevention. (2010). Surveillance of Certain Health Behaviors and Conditions Among States and Selected Local Areas – Behavioral Risk factor Surveillance Systems, United States, 2007. *MMWR* 59 (1).
- Centers for Disease Control and Prevention. (2009). Chronic disease prevention and health promotion. Centers for Disease Control and Prevention. <http://www.cdc.gov/NCCdphp/overview.htm> Last accessed 6/25/11.
- Children's Health Watch. (2010). City of Boston: Prevalence of Food Insecurity. Children's Health Watch. <http://www.childrenshealthwatch.org/>

Last accessed 9/12/10.

- Colasanti, K.; Conner, D.; and Smalley, S. (2010). Understanding barriers to farmers' market patronage in Michigan: perspectives from marginalized populations. *Journal of Hunger and Environmental Nutrition*. 5 (3): 316-338.
- Connor, D.S.; Montri, A.; Montri, D.N.; and Hamm, M.W. (2009). Consumer demand for local produce at extended season farmers' markets: Guiding farmer marketing strategies. *Renewable Agriculture and Food Systems*. 24 (4): 251-259.
- Connor, P.; Bartlett, S.; Mendelson, M.; Condon, K. and Sutcliffe, J. (2010). WIC participant and program characteristics. Food and Nutrition Service, USDA. Report No. WIC-08-PC. Washington, DC.
- Conrey, E.J.; Frongillo, E.A.; Dollahite, J.S. and Griffin, M.R. (2003). Integrated program enhancements based on utilization of farmers' market nutrition program. *Journal of Nutrition*. 133 (6): 1841-1844.
- Cox, B.; Whichelow, M.; and Prevost, T. (1999). Seasonal consumption of salad vegetables and fresh fruit in relation to the development of cardiovascular disease and cancer. *Public Health Nutrition*. 3 (1): 19-29.
- Cummins, S. and Macintyre, S. (2002). Food deserts – Evidence and assumption in health policy making. *British Medical Journal*. 325 (7361): 436-438.
- Cummins, S. and Macintyre, S. (2006). Food environments and obesity – neighborhood or nation? *International Journal of Epidemiology*. 35 (1): 100-104.
- Damon, L. Farmers' Market Nutrition Program Coordinator. Massachusetts Department of Agricultural Resources. Personal communication. [Lisa.damon@state.ma.us](mailto:Lisa.damon@state.ma.us). April 2011.
- Dauchet, L.; Amouyel, P.; and Dalongeville, J. (2005). Fruit and vegetable consumption and risk of stroke: A meta-analysis of cohort studies. *Neurology*. 65 (8): 1193-1197.
- Dauchet, L.; Amouyel, A.; Hercberg, S.; and Dalongeville, J. (2006). Fruit and vegetable consumption and risk of coronary heart disease: A meta-analysis of cohort studies. *The Journal of Nutrition*. 136 (10): 2588-2593.
- Department of Health and Human Services. (2002). Healthy People 2010. Department of Health of Human Services. <http://www.healthypeople.gov/2010/Publications/>  
Last accessed 5/31/11.
- Department of Health and Mental Hygiene. (2010). New York City healthy bodegas initiative, 2010 report. Department of Health and Mental Hygiene. New York, New York.

- Diamond, A.; Barham, J.; and Tropp, D. (2009). Emerging market opportunities for small-scale producers: Proceedings of a special session at the 2008 USDA partners meeting. Agricultural Marketing Service, USDA. Washington, DC.
- Dollahite, J.S.; Nelson, J.A.; Frongillo, E.A.; and Griffin, M.R. (2005). Building community capacity through enhanced collaboration in the farmers market nutrition program. *Agriculture and Human Values*. 22 (3): 339-354.
- Dong, D. and Lin, B. (2009). Fruit and vegetable consumption by low-income Americans: Would a price reduction make a difference? Economic Research Service, USDA. Report No. 70. Washington, DC.
- Dong, D. and Leibtag, E. (2010). Promoting fruit and vegetable consumption: Are coupons more effective than pure price discounts? Economic Research Service, USDA. Report No. 96
- Drewnowski, A.; MDARmon, N. and Briend, A. (2004). Replacing fats and sweets with vegetables and fruits – A question of cost. *American Journal of Public Health*. 94 (9): 1555-1559.
- Drewnowski, A. (2004). Obesity and the food environment: dietary energy density and diet costs. *American Journal of Preventive Medicine*. 27 (3): 154-162.
- Drewnowski, A. and Spector, S. (2004). Poverty and obesity: The role of energy density and energy costs. *American Journal of Clinical Nutrition*. 79 (1): 6-16.
- Economic Research Service. (2009). Access to affordable and nutritious food: measuring and understanding food deserts and their consequences. Economic Research Service, USDA. Washington, DC.
- Farmer-to-Consumer Direct Marketing Act of 1976. Public Law 94-462. 90 Stat. Section 3. (1976).
- Feagan, R.; Morris, D.; and Krug, K. (2004). Niagara region farmers' markets: local food systems and sustainability considerations. *Local Environment*. 9 (3): 235-254.
- Fiechter-Russo, T. (2009). An Analysis of EBT machine Usage at Boston Area Farmers' Markets. Massachusetts Department of Agricultural Resources. Boston, MA.
- Fisher, A. (1999). Hot peppers and parking lot peaches: evaluating farmers' markets in low income communities. Community Food Security Coalition. Portland, OR.
- Flamm, L.J. (2011). Barriers to EBT use at farmers' markets: Lessons in Empowerment evaluation from rural Ohio. *Journal of Hunger and Environmental Nutrition*. 6 (1): 54-63.

- Food and Nutrition Service. (2011). We welcome SNAP: Putting healthy food within reach. Food and Nutrition Service, Benefit Redemption Division, USDA. Washington, DC.
- Food and Nutrition Service. (2010). Farmers' Market Nutrition Program. U.S. Department of Agriculture. <http://www.fns.usda.gov/wic/WIC-FMNP-Fact-Sheet.pdf> Last accessed 4/15/11.
- Food and Nutrition Service. (2010a). WIC Food Packages: Maximum monthly allowances. USDA. <http://www.fns.usda.gov/wic/benefitsandservices/foodpkgallowances.HTM> Last accessed 4/21/11.
- Food and Nutrition Service. (2009). Fact Sheet: The Special Supplemental Nutrition Program for Women, Infants, and Children. USDA. <http://www.fns.usda.gov/wic/WIC-Fact-Sheet.pdf> Last accessed 5/31/11.
- Ford, E. and Mokdad, A. (2001). Fruit and vegetable consumption and diabetes mellitus incidence among US adults. *Preventive Medicine*. 32 (1): 33-39.
- Franco, M.; Roux, A.; Glass, T.; Caballero, B.; and Brancati, F. (2008). Neighborhood characteristics and availability of healthy foods in Baltimore. *American Journal of Preventive Medicine*. 35 (6): 561-567.
- Giang, T.; Karpyn, A.; Laurison, H.; Hillier, A.; and Perry, D. (2008). Closing the grocerygap in underserved communities: The creation of the Pennsylvania fresh food financing initiative. *Journal of Public Health Management Practice*. 14 (3): 272-279.
- Gils, C.; Peeters, P.; Bueno-de-Mesquita, H.; et al. (2005). Consumption of vegetables and fruits and risk of breast cancer. *JAMA*. 293 (2): 183-193.
- Gittlesohn, J.; Suratkar, S.; Song, H.; Sacher, S.; Rajan, R.; Rasooly, I.; Bednarek, E.; Sharma, S.; and Anliker, J. (2010). Process evaluation of Baltimore healthy stores: A pilot health intervention program with supermarkets and corner stores in Baltimore City. *Health Promotion Practice*. 11 (5): 723-732.
- Glanz, K. and Hoelscher, D. (2004). Increasing fruit and vegetable intake by changing environments, policy and pricing: Restaurant-based research, strategies, and recommendations. *Journal of Preventive Medicine*. 39 (2): 88S-93S.
- Glanz, K. and Yaroch A. (2004). Strategies for increasing fruit and vegetable intake in grocery stores and communities: policy, pricing and environmental change. *The Journal of Preventive Medicine*. 39 (2): 75S-80S.
- Govindasamy, R.; Zubriggen, M. Italia, J.; Adelaja, A.; Nitzche, P.; and VanVranken, R.

- (1998). Farmers; markets: consumer trends, preferences and characteristics. The State University of New Jersey Rutgers. New Brunswick, NJ.
- Grace, C.; Grace, T.; Becker, N.; and Lyden, J. (2008). Barriers to using urban farmers' markets: An investigation of food stamp clients perceptions. *Journal of Hunger and Environmental Nutrition*. 2 (1): 55-75.
- Griffin, M. and Frongillo, E. (2003). Experiences and perspectives of farmers from Upstate New York farmers' markets. *Agriculture and Human Values*. 20 (2): 189-203.
- Hanson, K. and Oliveira, V. (2009). Economic linkages between the WIC program and the farm sector. Economic Research Service, USDA. Brief No. 12. Washington, DC.
- Hendrickson, D.; Smith, C.; and Eikenberry, N. (2006). Fruit and vegetable access in four low-income food deserts communities in Minnesota. *Agriculture and Human Values*. 23 (3): 71-383.
- Herman, D.R.; Harrison, G.G.; and Jenks, E. (2006). Choices made by low-income women provided with an economic supplement for fresh fruit and vegetable purchase. *Journal of the American Dietetic Association*. 106 (5): 740-744.
- Herman, D.R.; Harrison, G.G.; Afifi, A.A.; and Jenks, E. (2008). Effect of a targeted subsidy of intake on fruits and vegetables among low-income women in the Special Supplemental Nutrition Program for Women, Infants, and Children. *American Journal of Public Health*. 98 (1): 98-105.
- Hung, H.; Joshipura, K.; Jiang, R.; Hu, F.; Hunter, D.; Smith-Warner, S.; Colditz, G.; Rosner, B.; Spiegelman, D.; and Willett, W. (2004). Fruit and vegetable intake and risk of major chronic disease. *Journal of the National Cancer Institute*. 96 (1): 1577-1584.
- Hunt, A. (2007). Consumer interactions and influences on farmers' market vendors. *Renewable Agriculture and Food Systems*. 22 (1): 54-66.
- Institute of Medicine. (2005). WIC food packages: A time for change. National Academies of Science. Washington, DC.
- Izumi, B.; Zenk, S.; Schulz, A.; and Mentz, G. (2011). Associations between neighborhood availability and individual consumption of dark-green and orange vegetables among ethnically diverse adults in Detroit. *Journal of the American Dietetic Association*. 111 (2): 274-279.
- Jackowitz, A. and Tiehen, L. (2010). WIC participation patterns: An investigation of delayed entry and early exit. Economic Research Service, USDA. Report No. 109. Washington, DC.
- Jansen, M.; Bueno-de-Mesquita, H.; Feskens, E.; Streppel, M.; Kok, F.; and Kromhout,

- D. (2004). Quantity and variety of fruit and vegetable consumption and cancer risk. *Nutrition and Cancer*. 48 (2): 142-148.
- Jetter, K. and Cassady, D. (2005). The availability and cost of healthier food alternatives. *American Journal of Preventive Medicine*. 30 (1): 38-44.
- Jilcott, S.; Keyserling, T.; Crawford, T.; and McGuirt, J. (2011). Examining associations among obesity and per capita farmers' markets, grocery stores/ supermarkets, and supercenters in US counties. *Journal of the American Dietetic Association*. 111 (4): 567- 572.
- Joshiyura, K.; Ascherio, A.; Manson, J.; et al. (1999). Fruit and vegetable intake in relation to risk of ischemic stroke. *JAMA*. 282 (13): 1233-1239.
- Joy, A.B.; Bunch, S.; Davis, M.; and Fuji, J. (2001). USDA program stimulates interest in farmers' markets among low-income women. *California Agriculture*. 55 (3): 38-41.
- Just, R.E. and Weninger, Q. (1997). Economic evaluation of the farmers' market nutrition program. *American Journal of Agricultural Economics*. 79 (3): 902-917.
- Kambra, K. and Shelley, C. (2002). California agricultural direct marketing study. California Institute for Rural Studies. Davis, CA.
- Keeling Bond, J.; Thilmany, D.; Ryan, K.; and Bond, C. (2007). Where do consumers shop for fresh produce and why? Western Education/ Extension and Research Activities Conference. Las Vegas, NV.
- Kezis, A. Gwebu, T.I Peavey, S.; and Cheng, H. (1998). A study of consumers at a small farmers' market in Maine: results from a 1995 survey. *The Journal of Food Distribution Research*. <http://ageconsearch.umn.edu/bitstream/27442/1/29010091.pdf>  
Last accessed 7/21/11.
- Kim, G. (2010). Boston Bounty Bucks: Increasing Access to and Affordability of Fresh Fruits and Vegetables for SNAP Participants. The Food Project. Boston, MA.
- Kim, S. and Blanck, H. (2011). State legislative efforts to support fruit and vegetable access, affordability, and availability, 2001 to 2009: A systematic examination of policies. *Journal of Hunger and Environmental Nutrition*. 6 (1): 99-113.
- Kinney, K.; Lindahl, J.; Creahan, K.; and Richey, J. (2010). Farmers' market report. Department of Natural Resources and Parks, Water and Land Resources Division. King County, WA.
- Kramer, M. and Zakaras, M. (2011). Improving nutrition for SNAP recipients: A

- roadmap for the double value voucher program. Master Thesis. Harvard Kennedy School of Government. Cambridge, MA.
- Krebs-Smith, S. and Kantor, L. (2001). Choose a variety of fruits and vegetables daily: understanding the complexities. *Journal of Nutrition*. 131 (2): 487S-501S.
- Kropf, M.L.; Holben, D.H.; Holcomb, J.P.; and Anderson, H. (2007). Food security status and produce intake and behaviors of Special Supplemental Nutrition Program for Women, Infants, and Children and farmers' market nutrition program participants. *Journal of the American Dietetic Association*. 107 (11): 1903-1908.
- Kruger, J.; Yore, M.M.; Solera, M.; and Moeti, R. (2007). Prevalence of Fruit and Vegetable Consumption and Physical Activity by Race/ Ethnicity – United States, 2005. *JAMA*. 297 (10): 2071-2074.
- Larson, K. and Gilliland, J. (2009). A farmers' market in a food desert: Evaluating impacts on the price and availability of healthy food. *Health and Place*. 15 (4): 1158-1162.
- Leibtag, E. and Kumcu, A. (2011). The WIC fruit and vegetable cash voucher: Does regional price variation affect buying power? Economic Research Service, USDA. Bulletin No. 75. Washington, DC.
- Lightner, R. (2011). Healthy food in underserved Boston neighborhoods: The affordability and viability of farmers' markets. The Food Project. Boston, MA.
- Liu, S.; Manson, J.; Min Lee, I.; Cole, S.; Hennekens, C.; Willett, W.; and Buring, J. (2000). Fruit and vegetable intake and risk of cardiovascular disease: The women's health study. *The American Journal of Clinical Nutrition*. 72 (4): 922-928.
- Lohr, L.; Diamond, A.; Dicken, C.; Marquardt, D. (2011). Mapping Competition zones for U.S. farmers' markets. "USDA Farmers' Market Consortium." Washington, DC.
- Lynch, J. and Kaplan, G. (1997). Understanding how inequality in the distribution of income affects health. *Journal of Health Psychology*. 2 (3): 297-314.
- Lyson, T.A.; Gillespie, G.W.; and Hilchey, D. (1995). Farmers' markets and the local community: Bridging the formal and informal economy. *American Journal of Alternative Agriculture*. 10 (3): 108-113.
- Mabli, J.; Cohen, R.; Potter, F.; and Zhoa, Z. (2010). Hunger in America 2010: Local Report Prepared for The Greater Boston Food Bank 2003. Mathematic Policy Research, Inc. Princeton, NJ.
- Manin, M. and Harries, C. (2010). Food for every child: The need for more supermarkets in Massachusetts. The Food Trust. Philadelphia, PA.

- McCormack, L.; Laska, M.; Larson, N.; and Story, M. (2010). Review of the nutritional implications of farmers' markets and community gardens: A call for evaluation and research efforts. *Journal of the American Dietetic Association*. 110 (3): 399-408.
- McGuirt, J.T.; Jilcott, S.B.; Haiyong, L.; and Ammerman, A. S. (2011). Produce price savings for consumers at farmers' markets compared to supermarkets in North Carolina. *Journal of Hunger and Environmental Nutrition*. 6 (1): 86-98.
- Moore, L. and Diez-Roux, A. (2006). Associations of neighborhood characteristics with the location and type of food stores. *American Journal of Public Health*. 96 (2): 325-331.
- Morland, K.; Wing, S.; Roux, A.; and Poole, C. (2002). Neighborhood characteristics associated with the location of food stores and food service places. *American Journal of Preventive Medicine*. 22 (1): 23-29.
- Mueller, Meghan. State breastfeeding Coordinator. Massachusetts Department of Public Health, Nutrition Division. Personal communication. meghan.mueller@state.ma.us February 2011.
- Nadovich, J. and Metrick, J. (2010). Connecting local farmers with USDA farmers market nutrition program participants. Southeastern Pennsylvania Resource Conservation and Development Council. Perkasie, PA.
- Nebling, L.; Yaroch, A.; Seymour, J.; and Kimmons, J. (2007). Still not enough: Can we achieve our goals for Americans to eat more fruits and vegetables in the future? *American Journal of Preventive Medicine*. 32 (4): 354-355.
- Neff, R.; Palmer, A.; Mckenzie, S.; and Lawrence, R. (2009). Food systems and public health disparities. *Journal of Hunger and Environmental Nutrition*. 4 (3-4): 282-314.
- Ness, A. and Powles, J. (1997). Fruit and vegetables, and cardiovascular disease: A review. *International Journal of Epidemiology*. 26 (1): 1-13.
- Newby, P.K. (2009). Boston Collaborative for Food and Fitness Community Assessments: Survey Results and Recommendations. Boston Collaborative for Food and Fitness. Boston, MA.
- Nord, M.; Coleman-Jensen, A.; Andrews, M.; and Carlson, S. (2010). Household food security in the United States, 2009. Economic Research Service, USDA. Report No. 108. Washington, DC.
- Obadia, J.; Damon, L.; and Webber, D. (2011). Supplemental Nutrition Assistance Program benefits at Massachusetts farmers' markets: Program evaluation. Massachusetts Department of Agricultural Resources. Boston, MA.

- Oberholtzer, L. and Grow, S. (2003). Producer-only farmers' markets in the mid-Atlantic region: A survey of market managers. Wallace Center for Agricultural and Environmental Policy. Arlington, VA.
- Oliveira, V. and Frazao, E. (2009). The WIC program: Background, trends, and economic issues 2009 edition. Economic Research Service, USDA. Report No. 73. Washington, DC.
- Otto, D. and Varner, T. (2005). Consumers, vendors, and the economic importance of Iowa farmers' markets: An economic impact survey analysis. Iowa State University. Ames, Iowa.
- Pearson, T.; Russell, J.; Campbell, M.; and Barker, M. (2005). Do food deserts influence fruit and vegetable consumption? A cross-sectional study. *Appetite*. 45 (2): 195-197.
- Philips, E. (2007). The growing trend of farmers' markets in the United States. Cornell University. Ithaca, NY.
- Pirog, R. and McCann, N. (2009). A consumer price perspective on local and non-local foods purchased in Iowa. Iowa State University. Ames, IA.
- Powell, L. and Chaloupka, F. (2009). Food prices and obesity: Evidence and policy implications for taxes and subsidies. *The Milbank Quarterly*. 87 (1): 229-257.
- Project Bread. (2009). Status Report on Hunger, 2009. Project Bread.  
[http://www.projectbread.org/site/DocServer/ProjectBread\\_StatusReportOnHunger2009.pdf?docID=5541](http://www.projectbread.org/site/DocServer/ProjectBread_StatusReportOnHunger2009.pdf?docID=5541) Last accessed 9/12/10.
- Pyle, J. (1971). Farmers' markets in the United States: Functional anachronisms. *Geographical Review*. 61 (2): 167-197.
- Quintana, S.N. (2009). Undoing inequity: Farmers' market nutrition assistance initiative. The Food Project. Boston, MA.
- Rabi, D.; Edwards, A.; Southern, D.; Svenson, L.; Sarigous, P.; Norton, P.; Larsen, E.; and Ghali, W. (2006). Association of socio-economic status with diabetes prevalence and utilization of diabetes care services. *BMC Health Services Research*. 6: 124-130.
- Racine, E.; Vaughn, A.; and Laditka, S. (2010). Farmers' market use among African American women participating in the Special Supplemental Nutrition Program for Women, Infants, and Children. *Journal of the American Dietetic Association*. 110 (3): 441-446.
- Ragland, E. and Tropp, D. (2009). USDA national farmers' market manager survey 2006. Agricultural Marketing Service, USDA. Washington, DC.

- Riboli, E. and Norat, T. (2003). Epidemiologic evidence of the protective effect of fruit and vegetables on cancer risk. *American Journal of Clinical Nutrition*. 78 (3): 559S-569S.
- Rose, D. and Richards, R. (2004). Food store access and household fruit and vegetable use among participants in the US food stamp program. *Public Health Nutrition*. 7 (8): 1081-1088.
- Schmit, T.M. and Gomez, M.I. (2011). Developing viable farmers' markets in rural communities: An investigation of vendor performance using objective and subjective valuations. *Food Policy*. 36 (2): 119-127.
- Serdula, M.; Gillespie, C.; Kettle-Kahn, L.; Farris, R.; Seymour, R.; and Denny, C. (2004). Trends in fruit and vegetable consumption among adults in the United States: Behavioral risk factor surveillance system, 1994-2000. *American Journal of Public Health*. 94 (6): 1014-1018.
- Shah, S. N. (2009). Health of Boston Report, 2009. Boston Public Health Commission. Boston, MA. <http://www.bphc.org/about/research/hob/Pages/Home.aspx> Last accessed 9/12/10.
- Sommer, R.; Ning, M.; and Aitkins, S. (1980). Price savings to consumers at farmers' markets. *Journal of Consumer Affairs*. 14 (2): 452-462.
- Song, H.J.; Gittelsohn, J.; Kim, M.; Suratkar, S.; Sharma, S.; and Anliker, J. (2009). A corner store intervention in a low-income urban community is associated with increased availability and sales of some healthy foods. *Public Health Nutrition*. 12 (11): 2060-2067.
- Song, H.J.; Gittelsohn, J.; Kim, M.; Suratkar, S.; Sharma, S.; and Anliker, J. (2011). Korean American storeowners' perceived barriers and motivators for implementing a corner store-based program. *Health Promotion Practice*. 12 (3): 472-482.
- Stephenson, G.; Lev, L. and Brewer, L. (2007). Understanding the link between farmers' market size and management organization. Oregon State University Extension Service. Corvallis, OR.
- Stephenson, G.; Lev, L.; and Brewer, L. (2008). I'm getting desperate: what we know about farmers' markets that fail. *Renewable Agriculture and Food Systems*. 23 (3): 188-199.
- Stephenson, G.; Lev, L.; and Brewer, L. (2008a). When things don't work: Some insights into why farmers' markets close. Oregon State University Extension Service. Corvallis, OR.
- Sterling's Best Places. (2010). Best Places to Live. Sterling's Best Places. <http://www.bestplaces.net/city/Boston-Massachusetts.aspx> Last accessed 9/12/10.

- Stewart, H. and Blisard, N. (2008). Are lower income households willing and able to budget or fruits and vegetables? Economic Research Service, USDA. Report No. 54. Washington, DC.
- Tessman, N. and Fisher, A. (2009). State implementation of the new WIC produce package: Opportunities and barriers for WIC clients to use their benefits at farmers' markets. Community Food Security Coalition. Portland, OR.
- Thilmay, D.; Keeling-Bond, J.; and Bond, C. (2007). Buy local buy fresh? Exploring local fresh produce consumer motivations and interest. Colorado State University Extension. Fort Collins, CO.
- Tyler, J.; Robinson, C.; Simonds, S.; and McFarland, D. (2007). New York State WIC Program: 2006 vegetable and fruit demonstration project. The Bureau of Supplemental Food Programs, Food Delivery Systems Unit. New York, N.Y.
- United States Department of Agriculture and United States Department of Health and Human Services. (2010). Dietary Guidelines for Americans, 2010. USDA and DHHS. <http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2010/PolicyDoc/PolicyDoc.pdf> Last accessed 6/25/11.
- U.S. Department of Health and Human Services. (2009). State indicator report on fruit and vegetables, 2009. Centers for Disease Control and Prevention. Atlanta, Georgia.
- Van Duyn, M and Pivonka, E. (2000). Overview of the health benefits of fruit and vegetable consumption for the dietetics professional: Selected literature. Journal of the American Dietetic Association. 100 (12): 1511-1521.
- Veer, P.; Jansen, M.; Klerk, M.; and Kok, F. (1999). Fruits and vegetables in the prevention of cancer and cardiovascular disease. Public Health Nutrition. 3 (1): 103-107.
- Ver Ploeg, M.; Breneman, V.; Farrigan, T.; et al. (2009). Access to affordable and nutritious food: Measuring and understanding food deserts and their consequences. Economic Research Service, USDA. Administrative Publication No. (AP-036).
- Watts, C. Director of Community Programs. The Food Project. Personal communication. [cwatts@thefoodproject.org](mailto:cwatts@thefoodproject.org) November 2010.
- Webber, David. Farmers' Market Coordinator. Massachusetts Department of Agricultural Resources. Personal communication. [David.webber@state.ma.us](mailto:David.webber@state.ma.us) January 2011.
- Wholesome Wave Foundation. (2011). Double value voucher program. Wholesome Wave Foundation. <http://wholesomewave.org/what-we-do/double-value-coupon-program/> Last accessed 6/26/11.

Winch, R. (2008). Nutrition incentives at farmers' markets: Bringing fresh, healthy, local foods within reach. Farmers' Market Coalition. <http://farmersmarketcoalition.org/> Last Accessed 5/31/11.

Wolf, M.; Spittler, A.; and Ahern, J. (2005). A profile of farmers' market consumers and perceived advantages of produce sold at farmers' markets. *Journal of Food Distribution Research*. 36 (1): 192-201.

Zenk, S.; Schulz, A.; Hollis-Neely, T.; Campbell, R.; Holmes, N.; Watkins, G.; Nwankwo, R.; and Odoms-Young, A. (2005). Fruit and vegetable intake in African Americans: Income and store characteristics. *American Journal of Preventive Medicine*. 29 (1): 1-9.

Zepeda, L. (2009). Which little piggy goes to the market? Characteristics of US farmers' market shoppers. *International Journal of Consumer Studies*. 33 (3): 250-257.

## IX. Appendices

### A. Farmers' market manager survey

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Dear Market Manager,

I am writing to ask for your assistance in completing the attached survey.

My name is Jennifer Obadia and I am a doctoral student at the Friedman School of Nutrition Science and Policy at Tufts. With help from the Massachusetts Department of Agriculture, I am conducting research on farmers' markets across the State.

**The research aims to determine what characteristics make a farmers market successful.** To answer this question we must learn about how a market is run, where it is located, the types of products sold, and the way the market interacts with the surrounding community. This is information that can only be provided by market managers, such as yourself. **You are the experts who know the details of what really happens on market day.**

In addition to gathering information from market managers, the research project will gather information from both farmers and consumers. These other stakeholders are being asked to provide information about what motivates them to be a part of a farmers market, either as a vendor or customer.

By developing a better understanding of what makes some markets successful while others struggle, I hope to help government agencies and non-profits make confident choices when investing in new markets, or helping older markets re-invent themselves.

**The information that you provide will remain confidential.** Neither you nor your market will be independently identified. Rather the information you provide will be used to create a general picture of markets across Massachusetts.

The survey will take approximately **20 minutes** to complete. The survey can be **returned with the other materials included in this mailing to the Massachusetts Department of Agriculture.**

I greatly appreciate your assistance with this survey and look forward to learning from your insight about farmers' markets.

Many thanks,



Jennifer Obadia  
[Jennifer.obadia@tufts.edu](mailto:Jennifer.obadia@tufts.edu)  
 9141-815-1194

### Market Manager Demographic Information

---

1. Age \_\_\_\_\_ 2.  Male  Female

3. What is your race or ethnicity? **Please check one.**

- Caucasian  
 African American  
 Asian American  
 Hispanic  
 Other (please specify) \_\_\_\_\_

4. What is the highest level of education you have completed? **Please check one.**

- Some high school  
 High school  
 Some college  
 College  
 Masters degree or higher

### General Market Characteristics

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5. Market name & location \_\_\_\_\_

6. Number of months the market was open in 2009. \_\_\_\_\_

7. Market days and hours of operation. \_\_\_\_\_

8. Year market was established. \_\_\_\_\_

9. How many vendors participated in your market during the 2009 growing season?  
 \_\_\_\_\_

10. Approximately how many customers attend your market each week?  
 \_\_\_\_\_

11. What types of products were sold at your market in 2009? **Check all that apply.**

- |                                     |   |
|-------------------------------------|---|
| <input type="checkbox"/> Vegetables | <input type="checkbox"/> Jams and jellies             |
| <input type="checkbox"/> Fruits     | <input type="checkbox"/> Baked goods                  |
| <input type="checkbox"/> Cheeses    | <input type="checkbox"/> Honey or maple syrup         |
| <input type="checkbox"/> Meats      | <input type="checkbox"/> Crafts                       |
| <input type="checkbox"/> Flowers    | <input type="checkbox"/> Other, please specify. _____ |

12. Did your market provide any regular entertainment or host any events during the 2009 growing season (live music, cooking demonstrations, children's day etc)?

Yes  No

### **Market Finances**

---

13. What were your approximate market expenses in 2009? **Please estimate.**

Less than \$5,000  \$20,001 - \$25,000  
 \$5,000 - \$10,000  \$25,001 - \$30,000  
 \$10,001 - \$15,000  Greater than \$30,000  
 \$15,001 - \$20,000  Unknown

14. Did your market charge vendor fees in 2009?  Yes  No

14a. If yes, what was the annual fee per vendor? \_\_\_\_\_

15. Identify your market's source(s) of funding from 2009. **Check all that apply.**

Vendor fees  
 Non-profit/ foundation grants  
 Government funding  
 In-kind donations/ volunteers  
 Expenses were absorbed by a sponsoring agency/ organization  
 Other, please specify. \_\_\_\_\_

16. If vendor fees **do not** cover all operating expenses in 2009, do you expect other forms of income (grants, donations, volunteers, etc.) to be reliable in the future?

Yes  No

17. Do you consider your market to be economically sustainable?

(In 2009, did market funding sources cover all operating costs?)  Yes  No

18. Was your market manager position paid in 2009?  Yes  No

### **Market Manager Activities & Responsibilities**

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19. For how many years have you been the manager of this farmers market? \_\_\_\_\_

19a. Did you have prior experience as a market manager?  Yes  No

20. What are your goals for market improvement or growth? **Check all that apply.**

More vendors  More customers  
 More entertainment  Better promotion  
 Acquire an EBT machine  Educate the public about sustainable



## B. Market farmer survey

Hello,

The Massachusetts Department of Agricultural Resources (MDAR) is working with Tufts University to develop a better understanding of how farmers view farmers' markets. According to MDAR records you sold at a farmers market during the 2009 growing season.

### **This makes your input especially important!**

We would like to learn from you why you have chosen to sell at a farmers' market. It is our goal to use this information to make farmers' market a more hospitable environment that better meets farmer needs.

Completion of this survey is entirely **voluntary**. It will no way affect any of your relationships retailers, customers or the Department of Agricultural Resources. Your responses will be kept fully confidential and neither your name nor the name of your farm will appear in any publications.

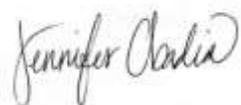
By choosing to participate in this survey you will help in the development of understanding what makes farmers' markets successful and how they can better serve farmers.

Please use the enclosed envelop to send a completed survey to Lisa Damon, the Farmers Market Nutrition Coupon Coordinator, by **March 22, 2010**.

Thank you for your assistance with this important research.

We look forward to learning from you.

Sincerely,



Jennifer Obadia  
PhD Candidate  
Friedman School of Nutrition Science & Policy  
Tufts University  
[Jennifer.obadia@tufts.edu](mailto:Jennifer.obadia@tufts.edu)

1. For how many years have you been selling at a farmers' market? \_\_\_\_\_

2. Why did you decided to start selling at a farmers' market? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Have you been selling at the same farmers' market since you began using them as a sales outlet?      \_\_\_\_\_ Yes      \_\_\_\_\_ No

If no, why did you leave any previous markets? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. At which markets did you sell during the 2009 growing season? Please list all.

\_\_\_\_\_

\_\_\_\_\_

5. Do your relationships with customers influence what you grow?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

If yes, how?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

6. Do your relationships with customers influence how you produce your crops?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

If yes, how?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7. Approximately what percentage of your total farm sales were generated at farmers' markets in 2009? Please check one.

_____ Less than 5%	_____ 6-10%
_____ 11-15%	_____ 16-20%
_____ 21-25%	_____ 26-30%
_____ 31-35%	_____ 36-40%
_____ 41-45%	_____ 46-50%
_____ 51-55%	_____ 56-60%
_____ More than 60%	

8. What do you view as the primary benefits to selling at a farmers' market?

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9. What do you view as the main challenges to selling at a farmers' market?

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### C. Non-market farmer survey

Hello,

The Massachusetts Department of Agricultural Resources (MDAR) is working with Tufts University to develop a better understanding of how farmers view farmers' markets. According to MDAR records you did not sell at a farmers market during the 2009 growing season.

#### **This makes your input especially important!**

We would like to learn from you why you have chosen not to sell at a farmers' market. It is our goal to use this information to make farmers market a more hospitable environment that better meets farmer needs.

Completion of this survey is entirely **voluntary**. It will no way affect any of your relationships retailers, customers or the Department of Agricultural Resources. Your responses will be kept fully confidential and neither your name nor the name of your farm will appear in any publications.

By choosing to participate in this survey you will help in the development of understanding what makes farmers' markets successful and how they can better serve farmers.

Please use the enclosed envelop to send a completed survey to Lisa Damon, the Farmers Market Nutrition Coupon Coordinator, by **March 22, 2010**.

Thank you for your assistance with this important research.

We look forward to learning from you.

Sincerely,



Jennifer Obadia  
PhD Candidate  
Friedman School of Nutrition Science & Policy  
Tufts University  
[Jennifer.obadia@tufts.edu](mailto:Jennifer.obadia@tufts.edu)

1. What types of products did you produce in 2009? Check all that apply.

- |   |   |
|---|---|
| <input type="checkbox"/> Fruits         | <input type="checkbox"/> Vegetables                   |
| <input type="checkbox"/> Flowers        | <input type="checkbox"/> Poultry                      |
| <input type="checkbox"/> Dairy products | <input type="checkbox"/> Beef                         |
| <input type="checkbox"/> Grains         | <input type="checkbox"/> Other, please specify. _____ |

2. Where did you sell your products in 2009? Check all that apply.

- |   |  |
|---|--|
| <input type="checkbox"/> Produce under contract       | <input type="checkbox"/> Part of a co-op                         |
| <input type="checkbox"/> Wholesale                    | <input type="checkbox"/> Community-supported-agriculture program |
| <input type="checkbox"/> You-pick                     | <input type="checkbox"/> Roadside stand                          |
| <input type="checkbox"/> Other, please specify. _____ |  |

3. Are you interested in developing a stronger relationship with your customers?

- Yes     No

4. How would you describe your current production practices? Check all that apply.

- |   |   |
|---|---|
| <input type="checkbox"/> Conventional                 | <input type="checkbox"/> Free range                 |
| <input type="checkbox"/> Organic                      | <input type="checkbox"/> Integrated Pest Management |
| <input type="checkbox"/> Low or No-Till               | <input type="checkbox"/> Cage free                  |
| <input type="checkbox"/> No hormones                  | <input type="checkbox"/> Grass-fed                  |
| <input type="checkbox"/> Other, please specify. _____ |   |

5. Have you ever sold at a farmers market?     Yes     No

If yes, why did you stop selling at the market?

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6. Do you plan to sell at a farmers market in 2010?     Yes     No

7. What are the main reasons you do not sell at a farmers market? Check all that apply.

- |   |   |
|---|---|
| <input type="checkbox"/> I cannot charge high enough prices | <input type="checkbox"/> There is no market nearby      |
| <input type="checkbox"/> Market hours are inconvenient      | <input type="checkbox"/> There are not enough customers |
| <input type="checkbox"/> Requires too much work/ staff      | <input type="checkbox"/> Too weather dependent          |
| <input type="checkbox"/> High vendor fees                   | <input type="checkbox"/> Other? _____                   |

8. What, if anything, would encourage you to participate in a farmers market? Check all that apply.

- |  |  |
|--|--|
| <input type="checkbox"/> Closer location         | <input type="checkbox"/> More convenient hours |
| <input type="checkbox"/> More customers          | <input type="checkbox"/> Better prices         |
| <input type="checkbox"/> Weather protected space | <input type="checkbox"/> Longer season         |

\_\_\_\_\_ Lower vendor fees \_\_\_\_\_ Other? \_\_\_\_\_

9. Would you like to participate in an interview to share your thoughts on how to improve farmers markets for farmers? If so please provide your name and an email address or phone number.

---

**Thank You!**

## **D. Market farmer interview template**

### Prior to Interview:

Date of Interview:

Name of Farmer:

Farmer Contact Information:

Farm name and location:

### Background Questions:

Years farming:

Number of acres farmed:

Main Crops:

Years Selling at Farmers' Markets:

Which markets do you sell at?

Do you have any other forms of sales? If so what?

### Primary Questions:

- (1) How do you decide which markets to sell at?
- (2) How do you determine if a market will be financially viable? Are there any specific components that you look for?
- (3) How do you decide where to set your prices? Do your prices vary between markets?
- (4) Have you ever left a market? If so, why?
- (5) What do you view as the main challenges to selling at farmers' markets?
- (6) What do you view as the main benefits to selling at farmers' markets?

## **E. Non-market farmer interview template**

### Prior to Interview:

Date of Interview:

Name of Farmer:

Farmer Contact Information:

Farm name and location:

### Background Questions:

Years farming:

Number of acres farmed: Main Crops:

Primary sales outlet:

Number of farm staff (Full Time Equivalent):

How far is the closest farmers' market?

### Primary Questions:

(1) Have you ever sold at a farmers' market?

If yes, why did you stop?

If no, why have you decided not to use markets as a sales outlet?

(2) Is there anything that might encourage you to start selling at farmers' markets?

(3) What do you view as the main strengths and weaknesses of your current sales outlets?

## F. Focus Group Questions



### Farmers' Market Manager Consent Form

**Study Title:** Success of Massachusetts Farmers' Markets

**Investigator:** Jennifer Obadia

**Study Purpose:** You have been asked to participate in a discussion group, which is part of a broader study about farmers' markets in Massachusetts. The purpose of the study is to understand why some markets succeed when others fail. The ultimate goal is to support all markets in the state so that they can adopt best practices.

**Procedures:** The discussion group will last approximately one hour. This will be an informal discussion among market managers facilitated by Jennifer Obadia, the primary researcher. Several topics for discussion will be suggested and you may say as much or as little about the topic as you like.

**Confidentiality:** The discussion group will be taped so that the researcher can reflect on points made aggregate data at a later point. Neither your name or the name of your market will not be shared with anyone outside the discussion group. Nor will your name be used in any final reports or publications without your express permission.

**Costs & Benefits to You:** There are no costs to your participation in this study. There are also no direct benefits to your participation. However, your participation will contribute to a greater understanding how farmers' markets work and what can contribute to their success in Massachusetts.

**Withdrawal from Study:** Should you decide at any time during the discussion group that you no longer wish to participate you may withdraw your consent.

**Request for More Information:** You may request additional information about the study at anytime. Please contact Jennifer Obadia at [Jennifer.obadia@tufts.edu](mailto:Jennifer.obadia@tufts.edu) or at 914-815-1194.

**Signature:** I confirm that the purpose of the research, the study procedures, as well as the potential costs and benefits have been explained to me. I agree to participate in the discussion group.

---

Signature

---

Date

1. What are the primary ways that you publicize your market? And do you feel as though they are bringing in sufficient number of customers to make the market viable for farmers?
2. How is your market funded? Do you have a sponsoring organization? What are your main market expenses? Do you feel that the market is financially secure and will be able to operate in future years?
3. How do you see the role of farmers' markets in increasing food access for low-income community members? What steps is your market taking if any?
4. What type of support or training did you receive when starting your job as market manager? Is there additional support that you wish you had been given at the beginning? Continuously?

## G. 2009 Women, Infants & Children Farmers' Market Survey

### INFORMED CONSENT

#### Study Information

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**Request to Participate in Research** We would like to invite you to take part in a research project. The purpose of this research is to determine the benefit of using WIC fruit and vegetable checks at the farmers market.

**You must be at least 18 years old** to be in this research project.

The survey will take about five minutes. If you decide to take part in this study, we will ask you to answer a series of questions about your shopping habits. **There are no foreseeable risks or discomforts to you for taking part in this study.**

**There are no direct benefits to you for participating in the study.** However, your answers may help us to learn more about what helps and prevents WIC participants from shopping at farmer's markets.

**Your participation in this study is anonymous and will not influence your WIC benefits.** That means no one will know if you took part in this study and no one, including the researcher, will know what your answers are. Any reports or publications based on this research will use only group data and will not identify you or any individual as being of this project.

**The decision to participate in this research project is up to you.** You do not have to participate and you can refuse to answer any question. Even if you begin the survey, you may stop at any time.

**If you have any questions about this study,** please feel free to email Jennifer Obadia at [Jennifer.obadia@tufts.edu](mailto:Jennifer.obadia@tufts.edu), the person mainly responsible for the research.

### Demographic Information

---

1. Your age \_\_\_\_\_
2. \_\_\_\_\_ Male \_\_\_\_\_ Female
3. What is your race? (You can specify one or more)
- \_\_\_\_\_ American Indian/ Alaska Native (specify tribal nation \_\_\_\_\_)
- \_\_\_\_\_ Asian
- \_\_\_\_\_ Black
- \_\_\_\_\_ Hispanic/ Latino/ Black
- \_\_\_\_\_ Hispanic/ Latino/ White
- \_\_\_\_\_ Hispanic/ Latino/ Other
- \_\_\_\_\_ Native Hawaiian or other Pacific Islander (specify \_\_\_\_\_)
- \_\_\_\_\_ White
- \_\_\_\_\_ Other (specify \_\_\_\_\_)
- \_\_\_\_\_ Unknown/ not specified
4. What is the highest level of education you have completed?
- \_\_\_\_\_ Some high school
- \_\_\_\_\_ High school
- \_\_\_\_\_ Some college
- \_\_\_\_\_ College
- \_\_\_\_\_ Masters degree or higher

### Use of Farmers Markets

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5. Did you shop at a farmers market during 2009? \_\_\_\_\_ Yes \_\_\_\_\_ No

**IF YES, PLEASE SKIP TO QUESTION 10.  
IF NO PLEASE ANSWER QUESTIONS 6-9 AND THEN STOP.**

6. If you **DID NOT** shop at a farmers market in 2009, why didn't you? Please check all that apply.

- \_\_\_\_\_ The produce is too expensive
- \_\_\_\_\_ I don't know where the markets are located
- \_\_\_\_\_ The market times are inconvenient
- \_\_\_\_\_ The markets don't have the type of food I like
- \_\_\_\_\_ The market location is inconvenient
- \_\_\_\_\_ Other, please specify. \_\_\_\_\_

7. What, if anything, would make you interested in shopping at a farmers market?

- |   |  |
|---|--|
| <input type="checkbox"/> Free food samples            | <input type="checkbox"/> Wider variety of products |
| <input type="checkbox"/> Activities for my children   | <input type="checkbox"/> More convenient hours     |
| <input type="checkbox"/> Lower prices                 | <input type="checkbox"/> More convenient location  |
| <input type="checkbox"/> Other, please specify. _____ |  |

8. About how much did you spend on **groceries** each week during the summer of 2009?

- |   |   |
|---|---|
| <input type="checkbox"/> Less than \$20 | <input type="checkbox"/> \$51-\$60      |
| <input type="checkbox"/> \$20-\$30      | <input type="checkbox"/> \$61-\$70      |
| <input type="checkbox"/> \$31-\$40      | <input type="checkbox"/> \$71-\$80      |
| <input type="checkbox"/> \$41-50        | <input type="checkbox"/> More than \$80 |

9. About how much did you spend on **fruits and vegetables** each week during the summer of 2009?

- |  |   |
|--|---|
| <input type="checkbox"/> Less than \$5 | <input type="checkbox"/> \$16-\$20      |
| <input type="checkbox"/> \$5-\$10      | <input type="checkbox"/> \$21-\$25      |
| <input type="checkbox"/> \$11-\$15     | <input type="checkbox"/> More than \$25 |

**IF YOU DID SHOP AT A FARMERS MARKET IN 2009 PLEASE ANSWER QUESTIONS 10-14.**

10. How often did you shop at the farmers market in 2009?

- Less than once a month  
 Once a month  
 Twice a month  
 Once a week  
 More than once a week

11. Which of the following did you use at the farmers market in 2009? Please check all that apply.

- WIC Farmers Market Nutrition Program  
 Food Stamps (SNAP)  
 Cash

12. About how much did you spend in total (at the farmers' markets and at other stores) on **fruits and vegetables** each week during the summer of 2009?

- |  |   |
|--|---|
| <input type="checkbox"/> Less than \$5 | <input type="checkbox"/> \$16-\$20      |
| <input type="checkbox"/> \$5-\$10      | <input type="checkbox"/> \$21-\$25      |
| <input type="checkbox"/> \$11-\$15     | <input type="checkbox"/> More than \$25 |

13. About how much did you spend on **all groceries** each week during the summer of 2009?

- |   |   |
|---|---|
| <input type="checkbox"/> Less than \$20 | <input type="checkbox"/> \$51-\$60      |
| <input type="checkbox"/> \$20-\$30      | <input type="checkbox"/> \$61-\$70      |
| <input type="checkbox"/> \$31-\$40      | <input type="checkbox"/> \$71-\$80      |
| <input type="checkbox"/> \$41-50        | <input type="checkbox"/> More than \$80 |

14. Why did you choose to shop at a farmers' market? Please check all that apply.

- |   |  |
|---|--|
| <input type="checkbox"/> The produce is high quality  | <input type="checkbox"/> I like the atmosphere                   |
| <input type="checkbox"/> The produce is a good price  | <input type="checkbox"/> I like supporting local farmers         |
| <input type="checkbox"/> The location is convenient   | <input type="checkbox"/> I like the variety of produce available |
| <input type="checkbox"/> Other, please specify. _____ |  |

## H. 2010 Women Infants & Children farmers' market survey

### Demographic Information

1. Age \_\_\_\_\_ 2. \_\_\_\_\_ Male \_\_\_\_\_ Female
3. What is your race? (You can specify one or more)
- \_\_\_\_\_ American Indian/ Alaska Native (specify tribal nation \_\_\_\_\_)
- \_\_\_\_\_ Asian
- \_\_\_\_\_ Black
- \_\_\_\_\_ Hispanic/ Latino/ Black
- \_\_\_\_\_ Hispanic/ Latino/ White
- \_\_\_\_\_ Hispanic/ Latino/ Other
- \_\_\_\_\_ Native Hawaiian or other Pacific Islander (specify \_\_\_\_\_)
- \_\_\_\_\_ White
- \_\_\_\_\_ Other (specify \_\_\_\_\_)
- \_\_\_\_\_ Unknown/ not specified
4. What is the highest level of education you have completed?
- \_\_\_\_\_ Some high school
- \_\_\_\_\_ High school
- \_\_\_\_\_ Some college
- \_\_\_\_\_ College
- \_\_\_\_\_ Masters degree or higher

### Shopping Habits

5. About how much did you spend on **all groceries** each week during the summer of 2010?
- \_\_\_\_\_ Less than \$20 \_\_\_\_\_ \$51-\$60
- \_\_\_\_\_ \$20-\$30 \_\_\_\_\_ \$61-\$70
- \_\_\_\_\_ \$31-\$40 \_\_\_\_\_ \$71-\$80
- \_\_\_\_\_ \$41-50 \_\_\_\_\_ More than \$80
6. About how much did you spend on **fruits and vegetables** each week during the summer of 2010?
- \_\_\_\_\_ Less than \$5 \_\_\_\_\_ \$16-\$20
- \_\_\_\_\_ \$5-\$10 \_\_\_\_\_ \$21-\$25
- \_\_\_\_\_ \$11-\$15 \_\_\_\_\_ More than \$25
7. Did you use your WIC fruit and vegetable checks during the summer of 2010?
- \_\_\_\_\_ Yes \_\_\_\_\_ No



7a. If yes, at what location did you use your fruit and vegetable checks?  
Please check all that apply.

- Supermarket  
 Convenience store  
 Bodega  
 Farmers' market  
 Other, please specify \_\_\_\_\_

8. Did you shop at a farmers' market during 2010?  Yes  No

**IF YOU DID SHOP AT A FARMERS' MARKET,  
 PLEASE SKIP TO QUESTION 11.  
 IF YOU DID NOT, PLEASE ANSWER QUESTIONS 9 & 10.**

9. If you **DID NOT** shop at a farmers' market in 2010, why didn't you? Please check all that apply.

- The produce is too expensive       I don't know where they are located  
 The market times are inconvenient       They don't have the type of food I like  
 The market location is inconvenient       Other, please specify \_\_\_\_\_

10. What, if anything, would make you interested in shopping at a farmers' market?

- Free food samples       Wider variety of products  
 Activities for my children       More convenient hours  
 Lower prices       More convenient location  
 Other, please specify. \_\_\_\_\_

**ONLY ANSWER THE FOLLOWING QUESTIONS IF YOU DID SHOP AT A  
 FARMERS' MARKET**

---

11. How often did you shop at the farmers' market in 2010?

- Less than once a month  
 Once a month  
 Twice a month  
 Once a week  
 More than once a week

12. Did you use any of the following at the farmers' market in 2010? Please check all that apply.

- WIC Farmers Market Nutrition Program Coupons  
 Food Stamps (SNAP)  
 Cash  
 Fruit and Vegetable Checks

13. Why did you choose to shop at a farmers' market? Please check all that apply.

- |  |  |
|--|--|
| <input type="checkbox"/> The produce is higher quality | <input type="checkbox"/> I like the atmosphere             |
| <input type="checkbox"/> The produce is cheaper        | <input type="checkbox"/> I like supporting local farmers   |
| <input type="checkbox"/> The location is convenient    | <input type="checkbox"/> My preferred produce is available |
| <input type="checkbox"/> Other, please specify. _____  |  |

**THANK YOU!**

## I. Farmers' Market Consumer Survey



### FARMERS' MARKET CONSUMER SURVEY

**Tufts**  
UNIVERSITY | Gerald J. and Dorothy R.  
Friedman School of  
Nutrition Science and Policy

#### Demographic Information

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1. Age: \_\_\_\_\_ 2. Gender: \_\_\_\_\_ Male \_\_\_\_\_ Female

3. What is your race/ ethnicity? **Check all that apply.**

- Caucasian (White)  
 African American  
 Asian American  
 Hispanic  
 Other

4. What is the highest level of education you have completed? **Please check one.**

- Some High School  
 High School  
 Some College  
 College  
 Masters +

5. What was your annual household income in 2009? **Please check one.**

- less than \$25,000  
 \$25,000-\$50,000  
 \$50,001-\$75,000  
 \$75,001-\$100,000  
 more than \$100,000

#### Shopping Habits

---

6. During the market season, how often do you shop at a farmers' market? **Please check one.**

- less than once a month  
 once a month  
 twice a month  
 once a week



7. How long does it take you to get to the farmers' market? **Please check one.**

- less than 10 min.  
 11-15 min.  
 16-20 min.  
 21-25 min.  
 26-30 min.  
 more than 30 min.

8. When do you visit the farmers' market? **Check all that apply.**

- During my lunch break  
 On the way home from work  
 When running errands  
 Leisure time

9. Approximately how much do you spend each time you visit the farmers' market? **Please check one.**

- less than \$10  
 \$10-\$15  
 \$16-\$20  
 \$21-\$25  
 \$26-\$30  
 more than \$30

10. How often do you purchase each of the following products at the farmers' market?  
**Please select a box for each item (fruits, vegetables, etc).**

	Fruits	Vegetables	Flowers	Eggs	Cheese or Milk	Fish	Bread & Baked Goods	Meat
Every visit								
Some Visits								
Rarely								
It is <b>NOT</b> available, but <b>I would purchase</b>								
It is <b>NOT</b> available, and <b>I wouldn't purchase it</b>								

11. How would you rate the produce sold at the farmers' market, compared to that at the supermarket?

	Much better	Better	Same	Worse	Much Worse
<b>SELECTION</b>					
<b>QUALITY</b>					
<b>PRICE</b>					



## J. Massachusetts EBT Farmers' Market Evaluation

1. Market name and location.

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2. Days and hours of operation of market.

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3. How many vendors are at your market? Please check one.

- 2  
 3-5  
 6-10  
 11-15  
 16-20  
 21-25  
 > 25

4. For how many years has your market been accepting EBT? Please check one.

- 2010 was the 1<sup>st</sup> year  
 2 years  
 3 years  
 4 years  
 5 years  
 > 5 years

### **EBT Expenses**

---

5. What company did you use in 2010 to provide the EBT service?

---

6. Did you rent or purchase the EBT machine?       Rent       Purchase

6a) **If you purchased your machine**, what was the purchase cost?

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7. What were the costs associated with this service?

Monthly fee? \_\_\_\_\_ Transaction fee? \_\_\_\_\_

9. What were the total SNAP associated costs for the season?

---

10. Did you accept credit or debit cards at your market?       No       Yes

10a) If yes, what charges were associated with this service? (Outside of the EBT fees.)

Monthly fee? \_\_\_\_\_ Transaction fee? \_\_\_\_\_

10b) If no, why did you decide **NOT** to accept credit or debit cards? Please explain.

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11. Does your market have more than one EBT machine? \_\_\_\_\_No \_\_\_\_\_ Yes

11a) If yes, please explain how they are used.

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### **Use of EBT Machine**

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12. Did you have any difficulty with the technical side of using EBT at the market (For example, difficulty getting service, machine malfunctions, etc)? If yes, please explain.

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13. If you had technical difficulties, who did you ask for assistance?

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14. How would you rate the assistance you received, 1 being the most helpful and 5 being the least helpful?

Please check one.

\_\_\_\_\_1 \_\_\_\_\_2 \_\_\_\_\_3 \_\_\_\_\_4 \_\_\_\_\_5

15. How were SNAP/ EBT transactions made at your market? (For example, did customers come to the market manager booth first to get tokens and then shop at the market.) **Please describe.**

---

---

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16. What were your total **SNAP/ EBT sales** for the season?

---

17. What were your total **debit/ credit card sales** for the season?

---



## SNAP Outreach and Promotion

18. What forms of outreach did you use to raise awareness about the ability to use SNAP at your market? Please check all that apply and rate their effectiveness (1 being the most effect, 5 being least effective).

Type of Outreach	Effectiveness (please circle)				
<input type="checkbox"/> Sent postcards to SNAP recipients	1	2	3	4	5
<input type="checkbox"/> Provided flyers to DTA or offices	1	2	3	4	5
<input type="checkbox"/> Posted flyers around the neighborhood	1	2	3	4	5
<input type="checkbox"/> Posted an advertisement in the local newspaper	1	2	3	4	5
<input type="checkbox"/> Promoted the market at area events	1	2	3	4	5
<input type="checkbox"/> A local organization assisted us with promotion	1	2	3	4	5
<input type="checkbox"/> MDAR assisted us with promotion	1	2	3	4	5
<input type="checkbox"/> Other, please explain	1	2	3	4	5

19. Did you offer any incentives for SNAP participants? (For example, coupons to first time shoppers, or participation in the Boston Bounty Bucks program.) Please explain.

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20. Do you intend to use SNAP/ EBT at your market again next year?

No       Yes

21. Will you need financial assistance to continue using EBT at your market?

No       Yes

22. How can the Department of Agricultural Resources and/ or the Department of Transitional Assistance assist you with SNAP at the farmers' market in the future?

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