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Examining the Influence of Farmers' Market Motivations on Access to Healthful Foods and Business Opportunities for Farms

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Examining the Influence of Farmers' Market Motivations on Access to Healthful Foods and
Business Opportunities for Farms

A dissertation

submitted to

the faculty in the Department of Community and Behavioral Health

East Tennessee State University

in partial fulfillment of

the requirements for the degree

Doctor of Public Health with a concentration in Community Health

by

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ABSTRACT

Examining the Influence of Farmers' Market Motivations on Access to Healthful Foods and

Business Opportunities for Farms

by

Rachel Katherine Ward

Farmers' markets are increasingly promoted as mechanisms for improving access to healthful foods for low-income households, as they are relatively inexpensive to establish and they can provide affordable food for low-income households by offering Supplemental Nutrition Assistance Program Electronic Benefit Transfer (SNAP/EBT). SNAP/EBT at markets also expands revenue opportunities for participating farmers. Market managers provide a critical role in overseeing SNAP/EBT at markets and influencing business opportunities for farmers. Using a mixed-method approach, this study aimed to evaluate how managers' motivations influence SNAP/EBT availability and participation at markets and business opportunities for small- and moderate- sized farms.

To develop a survey measuring managers' attitudes and behaviors and farmers' market outcomes, focus groups were conducted with farmers' market managers (n=8) in Western North Carolina, East Tennessee, and Southwest Virginia, and interviews were conducted with farmers in the same region (n=8). Eight themes were identified in the manager focus groups, and 5 were identified in the farmer interviews. Qualitative data yielded insight on how managers influence market outcomes.

A survey incorporating qualitative findings was distributed to 271 NC farmers' market managers in May 2014. Multiple regression models were used to examine the influence of managers'

motivations to improve access to healthful food and support business opportunities on SNAP/EBT availability and participation and indicators of market vitality.

Sixty managers completed the survey. There was no significant association between food access motivation and SNAP/EBT participation. A significant, positive association was found between business motivation and customer count, total vendor count, and average weekly vendor count.

More research is needed to understand how managers' motivations interplay with environmental and organizational characteristics to influence food access for low-income households and business opportunities for farmers. Findings from this study offer a starting point for developing interventions that maximize managers' impact on these outcomes.

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DEDICATION

To Bryant

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CHAPTER 1

INTRODUCTION

Fruit and Vegetable Intake in the United States

Few Americans eat the recommended servings of fruits and vegetables each day, which leads to increased risk of obesity, cardiovascular disease, and other negative, diet-related health outcomes.¹⁻³ Low-income, rural, minority, and food insecure individuals are especially at risk of inadequate fruit and vegetable intake.³ These groups are more likely to live in obesogenic neighborhoods with fewer supermarkets and other food stores stocking affordable, nutritious foods than their wealthier counterparts.⁴ Often, where there are no healthful options, cheap foods that are high in refined grains, fats, and sugar are readily available.⁵⁻⁷

Environmental Interventions to Improve Food Access

A growing body of evidence supports public health intervention at the environmental level of the Social-Ecological Framework to improve community nutrition.^{4, 8} Recognizing that healthy choices can only be made in the environments that support them, these interventions involve making fruits and vegetables more accessible and affordable in communities that are at-risk of poor dietary behaviors.

The introduction of farmers' markets to communities with limited access to fruits and vegetables represents a novel and increasingly popular strategy for improving community nutrition environments. In the last decade there has been a tremendous growth in the number of farmers' markets in the US, attributable to both growing public demand for local, high quality produce they provide, and the purposeful placement of markets in low-income communities to improve healthful food access.⁹ Federal, state, and local support of and investments in farmers'

markets are widespread, and the evidence supporting their utility for improving behaviors and attitudes related to food choice is growing.¹⁰⁻¹¹

Significance of Proposed Research

The increased interest in farmers' markets as potential venues for increasing fruit and vegetable intake warrants a closer examination of how key players influence farmers' market outcomes, such as fruit and vegetable access for low-income consumers, and business opportunities for farms. Farmers' market managers, who are responsible for oversight of markets, implementing their mission, and serving as liaisons between farms and the community, may impede or facilitate public health and funding goals outlined by federal, state, and local agencies, such as the goal of encouraging the use of farmers' markets for nutrition promotion.¹² For example, the availability of Supplemental Nutrition Assistance Program Electronic Benefit Transfer (SNAP/EBT) at farmers' markets is largely determined by market management.¹³ SNAP/EBT is a leading strategy for improving access and affordability of healthful foods to low-income households, and lack of SNAP/EBT at farmers' markets is a commonly reported barrier to market use by low-income residents.¹⁴⁻¹⁵

Little is known about how farmers' market manager characteristics (e.g., values, interests, etc) influence access to farmers' markets for low-income households. Do managers believe outreach to low-income households in their community is important? Do they view their market as a place that should provide affordable food to the community? This study focuses on understanding how farmers' market managers' (hereafter referred to as "managers") perceptions of their roles influence SNAP/EBT availability and participation at their markets.

This study was funded by the Southern Sustainable Agriculture Research and Education (SARE) program, which aims to improve the vitality of small- and moderate-size farms in the US. Recognizing that farmers' markets are an important aspect of local agriculture economies, and the expansion of SNAP/EBT at farmers' markets could yield a significant increase in revenues for farms selling at farmers' markets. A secondary purpose of this study is to examine managers' perceived roles as facilitators of business opportunities for small-and moderate-size farms and their influence on business outcomes for these farms.¹⁶⁻¹⁸

Results of this project will inform 1) farmers' market leadership development strategies with the goals of facilitating access to healthful foods for low-income households and generating business opportunities for small and moderate size farms and 2) how agencies supporting farmers' markets (i.e. the United States Department of Agriculture (USDA), local/regional farmers' market associations) could develop leadership programs to expand the capacity of farmers' markets to accomplish these two goals.

Research Aims

Research Aim #1: Gather and analyze qualitative data on the experiences of a sample of farmers' market managers and farmers selling at farmers' markets to inform the development of a quantitative survey assessing farmers' market managers' perceptions of their roles;

Research Aim #2: Examine associations between North Carolina farmers' market managers' perceptions of their role as promoters of the availability of healthful foods and farmers' market SNAP/EBT availability and participation.

Hypothesis 2a: It is hypothesized that managers who identify as promoters of healthful foods to their communities are more likely to operate programs that facilitate access to

their markets for low-income households evidenced by SNAP/EBT availability and participation.

Research Aim #3: Examine associations between managers' perceptions of being facilitators of business opportunities for small- and moderate-size farms and farmers' market vendor recruitment, sales, and customer counts.

Hypothesis 3a: It is hypothesized that managers who identify as promoters of small- and moderate- size farmers foster greater business opportunities for these farmers, customer volume, vendor recruitment, and sales.

CHAPTER 2

LITERATURE REVIEW

Theoretical Framework

This dissertation is based on the Community Nutrition Model, which was developed from the Social-Ecological Model.⁸ In the last decade nutrition interventions that simply encourage individuals to “eat smart and move more”⁸ without considering their context have been deemed largely ineffective.² In contrast to antiquated approaches to behavior change that exclusively focus on the individual, the Social-Ecological Model guides researchers in addressing the complex interplay between policy, environmental, social, and personal factors that influence health behaviors and outcomes (Figure 1).^{4,19} The use of ecological models to promote healthy behaviors, such as consumption of fruits and vegetables, has been widely adopted and is endorsed by leading public health organizations such as the World Health Organization, the Institute of Medicine and the Centers for Disease Control and Prevention.²⁰⁻²²

The Social-Ecological Model was founded on the hypothesis that healthy behaviors are optimized when there are environmental and policy-level supports for healthful choices.¹⁹ The framework is based on four core principles: 1) there are multiple levels of influence on health behaviors; 2) these influences interact across levels, or spheres; 3) interventions that address more than one level of influence are most effective; and 4) interventions based on the model are most powerful when they address a specific health behavior.¹⁹

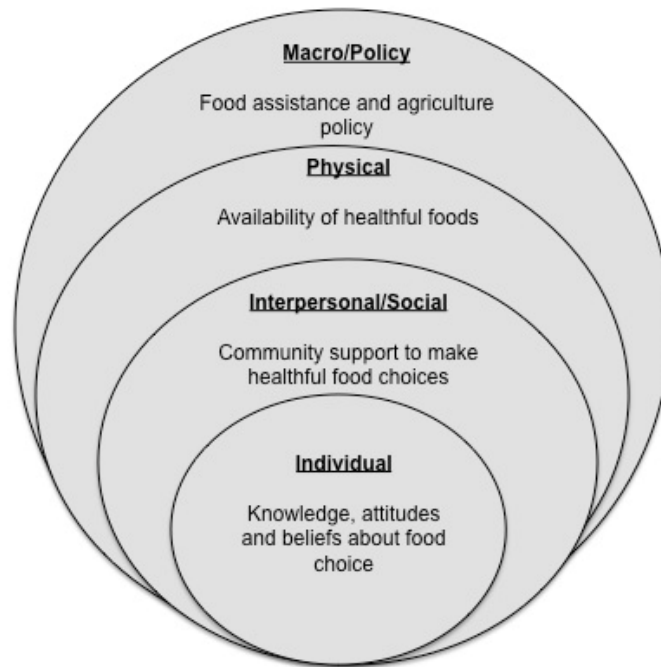


Figure 1: The Social- Ecological Model

At the individual level diet is influenced by skills and behavior, biology, cognitions (e.g., knowledge and preferences), and demographic factors (e.g., race and income). These characteristics determine motivations for food choices, outcome expectations of eating a healthful diet, self-efficacy to purchase and prepare healthful foods, and behavioral capacity.³ The interpersonal/social level directly influences the individual level. For example, family, friends, and peers determine one’s social role in his/her community and the social norms and supports related to food choice.^{4,23}

The physical level encompasses the broad range of places including the home, schools, worksites, neighborhoods, restaurants, supermarkets, grocery stores, farmers’ markets, and convenience stores where one might procure food. The physical food environment largely

determines access and availability of healthful foods and the barriers and opportunities to obtaining them.⁴

The fourth and broadest level of influence in the model is the macro, or policy level.^{4,8,19} This is the most distal level of influence from the individual, but it is nonetheless influential, determining how food is produced, distributed, and priced. An example of a macro-level influence is the Farm Bill, which sets the budget for United States Department of Agriculture (USDA) Supplemental Nutrition Assistance Program (SNAP).²⁴

Building from the Social-Ecological Model, the Community Nutrition Model outlines the different pathways that influence individual eating behavior in the community setting.⁸ Under this model government and industry policies influence environmental and informational variables (e.g., media and advertising) that influence individual variables (e.g., perceived nutrition environment) and ultimately eating behaviors. Specific environmental factors that may influence eating behaviors include: 1) the community nutrition environment; 2) the organizational nutrition environment; and 3) the consumer nutrition environment. Variables in the community nutrition environment include the type (e.g., farmers' markets, supermarkets, etc.) and location of food outlets and restaurants and their accessibility (e.g., hours of operation). The organizational nutrition environment entails the home, school, and worksites where individuals obtain food. The consumer nutrition environment encompasses the availability of healthful food options and their price, promotion, and placement.

This dissertation is focused on farmers' markets, an environmental support that may positively influence eating behavior (Figure 2). In the community nutrition environment, farmers' markets offer an alternative source of produce to supermarkets and grocery stores. In

the consumer nutrition environment, the type of food available at farmers' markets and the availability and promotion of federal nutrition assistance programs (e.g., SNAP/EBT) encourage access by low-income consumers. Farmers' market managers play a central role in determining the presence and promotion of healthful foods (e.g., fruits and vegetables) and supports for low-income households at the farmers' market, but relatively little is known how managers' values and perceived roles influence these factors.¹²⁻¹³ This study explores the influence of farmers' market management on SNAP/EBT availability (i.e., does the Market have SNAP/EBT capability) and participation (i.e., SNAP/EBT use) at farmers' markets.

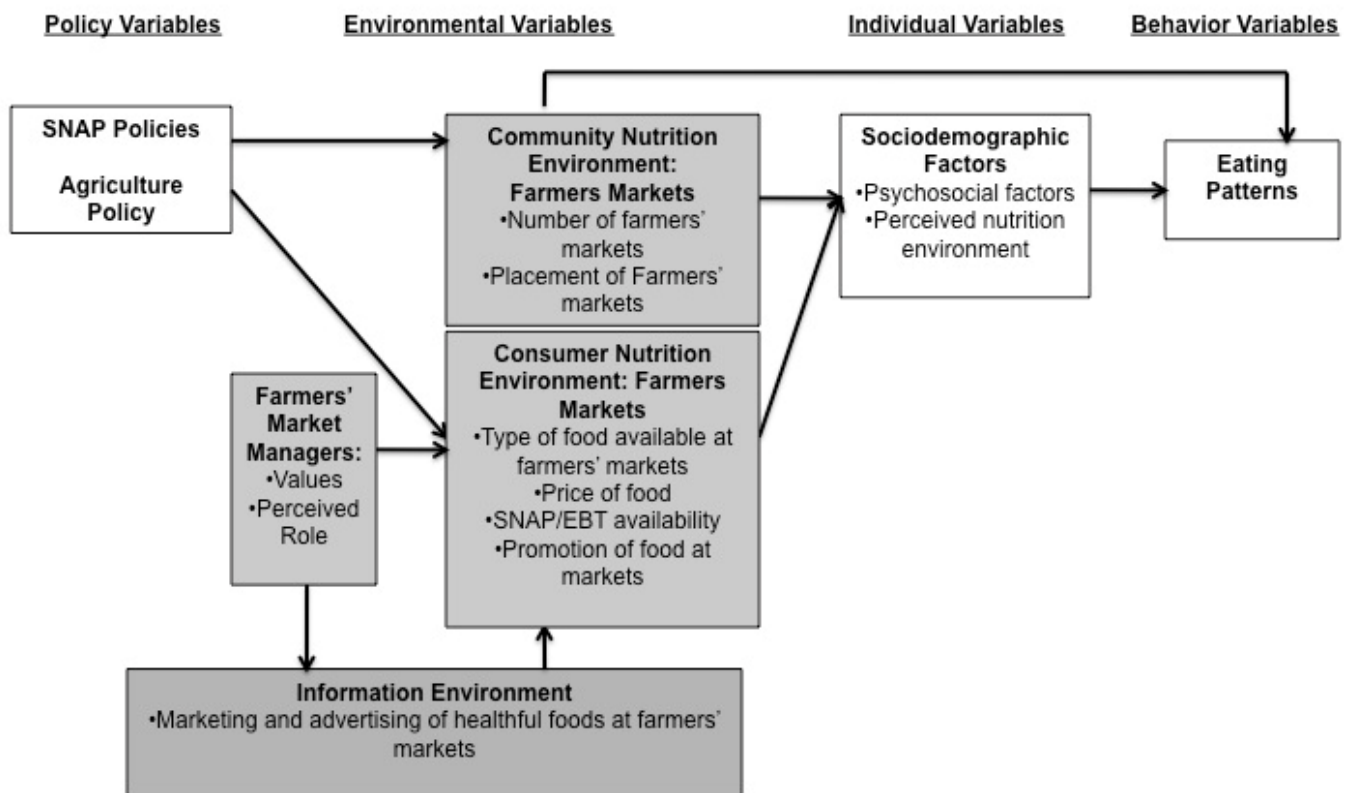


Figure 2: Study Theoretical Framework Based on the Community Nutrition Environment Model

The Scope of the Problem

Increased fruit and vegetable consumption may reduce many of the leading causes of death in the US, such as cardiovascular disease and cancer.^{1-3,25} The USDA recommends adults consume at least 5 servings of fruits and vegetables per day.²⁶ However, few Americans meet these recommendations. In 2009 no state met the fruit and vegetable consumption targets. Nationwide, only 26% of adults consumed fruits and vegetables more than 3 times per day.³ From 2000 to 2009, the overall prevalence of adults consuming fruits and vegetables at least twice per day dropped significantly from 34.4% to 32.5%.³ Women, college graduates, wealthier individuals, and individuals with normal weight body mass indexes (BMI) eat more fruits and vegetables than other subpopulations.³

Fruit and Vegetable Consumption and Obesity

Low fruit and vegetable intake is a leading modifiable risk factor for obesity and among the top 10 indicators for global mortality.²⁷ During 2011 and 2012 the prevalence of obesity in the US was 35%.²⁸ This represents more than a 100% increase from 1976 to 1980. In 2013 the average American adult is 20 pounds heavier than the average adult in 1960.²⁹ Since 1980 obesity rates (BMI >30) doubled in children and quadrupled in adolescents.²⁸ If these trends are not curbed, the overall obesity rate is expected to increase to 51% by 2030.²⁹

Obesity takes a toll on quality of life and is a leading driver of healthcare costs in the US. Compared to the normal-weight population, obese individuals spend an average of \$1,492 (42%) more per year on healthcare.³⁰ The domestic cost of obesity is estimated to be \$147 billion per year, or 9% of annual medical expenditures. By slowing the obesity trend by one point, the US could realize \$4.0 billion in medical savings by 2020.³⁰

Disparities in Obesity Outcomes in the United States

Ethnic minority and low-income households experience a disproportionate burden of obesity.³¹ African Americans experience the highest prevalence of obesity with a rate of 49.6% compared to 37.9% in Hispanics, and 34.9% in non-Hispanic whites.³¹ The highest obesity rates are found among the subpopulations with the lowest incomes and education levels.⁷ More than 31% of adults with incomes less than twenty-five thousand dollars per year are obese, compared to 25.4% of adults with annual incomes greater than fifty thousand dollars.²⁹ While the prevalence of obesity is growing nationwide, the Southeastern United States has more obese residents per capita than other regions of the country. Of the 20 states with the highest obesity rates in the country, 19 are located in the South or Midwest.³²

The Food Insecurity/Obesity Paradox

Many low-income households experience food insecurity, defined as limited and uncertain access to healthy foods, which places them at increased risk of poor diet quality and obesity.³³ Food insecure households are often forced to make tradeoffs between purchasing healthful foods and spending on other necessities. In turn, household members eat diets low in fruits and vegetables and high in refined sugars and grains and fats, which contribute to obesity risk.^{7,33}

Food insecurity rates increase during economic recessions.³⁴ During 2007 and 2008 the national food insecurity rate rose from 13 million to 17 million adults, the latter representing the highest reported number of food insecure households since the USDA began measuring food insecurity in 1995.³⁴ Households with incomes below the federal poverty line, single-parent homes, households headed by black non-Hispanic or Hispanic individuals, and households

located in large metropolitan areas were at increased risk for food insecurity.³⁵ Sporadic stressors, such as the loss of employment or SNAP benefits, frequently trigger food insecurity.³⁵

The Supplemental Nutrition Assistance Program (SNAP) and Food Security

The Federal Government aims to ameliorate food insecurity through the SNAP program (formerly Food Stamps), which is known as “the nation’s first line of defense against hunger”³⁶. SNAP is the largest of USDA Food and Nutrition Service (FNS) programs and represents 73% of all nutrition assistance spending.³⁶ The purpose of SNAP is to improve food security by increasing consumers’ food purchasing power. Those enrolled in SNAP receive a monthly credit allotment for food based on household size and income, with the expectation that households will spend 30% of their resources on food. Credits may only be used for food, excluding hot, prepared foods. In 2011, 1 in 7 Americans was enrolled in SNAP, with the annual cost of SNAP participation totaling \$71.8 billion.³⁷ As of June 2013 nearly 48 million were enrolled in SNAP, representing a 2.3% increase in enrollees from June 2012.³⁸

The Supplemental Nutrition Assistance Program (SNAP) and Diet Quality

Research suggests that while SNAP is effective at alleviating household food insecurity, it does not result in improved diet quality.³⁹⁻⁴⁴ For example, a recent study by Leung et al⁴¹ found while few low-income adults participating in the National Health and Nutrition Examination Survey (NHANES) from 1999-2008 consumed recommended intakes of grains, fruits, vegetables, nuts/seeds/legumes, and fish, and the diets of SNAP participants were significantly worse compared to their counterparts who were SNAP eligible nonparticipants. These findings echo previous reports of poor dietary intake among SNAP participants^{42,43} and may explain the increased prevalence of cardiovascular disease (CVD) risk factors in this subgroup.⁴⁴ Thus,

efforts to ensure SNAP benefits are being used for healthful food purchases are important for encouraging positive dietary and health outcomes in low-income households.

The Supplemental Nutrition Assistance Program (SNAP) and Obesity

In addition to being linked to diminished diet quality, studies have found that SNAP participation is associated with obesity.⁴⁵⁻⁴⁶ This phenomenon has been termed the SNAP/Obesity paradox. There are several hypotheses for why SNAP participation has been linked to obesity. Dinour et al⁴⁵ found a correlation between SNAP and obesity in women. The authors suggest a “feast-famine” cycle, whereby SNAP participants are food insecure until receiving their household SNAP benefits.⁴⁵ In a study of SNAP beneficiaries, Dinour et al⁴⁵ found an inverse relationship between number of days after receiving SNAP benefits and energy intake. Benefits are redeemed early in the month, leading to renewed food insecurity at the end of the month before SNAP is distributed again. This may lead to a physiological response that encourages adiposity. Leung et al⁴⁶ report a similar hypothesis for the association between SNAP and obesity. In a 2007 study the authors evaluated data on SNAP participants in the California Health Interview Survey and found that SNAP participation was positively associated with obesity independent of food insecurity status.⁴⁶ This association was stronger among men than women.

Environmental Influences on Food Choice

The determinants of food choice are multifactorial. Research suggests that the built environment, defined as “food sources, physical activity venues and other physical features”⁴⁷, strongly influences health behaviors and related outcomes by determining the accessibility of healthful choices. Disadvantaged neighborhoods, characterized by overcrowding, lower

socioeconomic status, households without cars, and high male unemployment rates, are associated with worse health outcomes and lower likelihood of access to supermarkets and fresh produce. Individuals in these neighborhoods are less likely to eat recommended diets.⁴⁸

A key consideration when evaluating food environments is the cost of food. Cost is the single most influential factor on food choice, followed by nutrition and convenience.⁸ The influence of cost and convenience on food choice differs between ethnic and socioeconomic groups, with low-income and nonwhite individuals giving greater weight to cost and convenience than other groups.⁸ Diets high in refined grains and sugars are more affordable than the recommended diets emphasizing lean meats, fish, fresh vegetables, and fruit.⁷ When comparing the cost of calories, foods with added sugars and fats are significantly less expensive than healthful foods like fruits and vegetables.⁷ An estimated 40% of the US diet comprises added sugars and fats.⁷

Disparities in Access to Healthful Food

Disparities in access to healthful foods follow a socioeconomic gradient and mirror disparities in health outcomes. Proximity to supermarkets, where fresh produce tends to be more affordable and of better quality than produce in other retail food outlets (e.g., convenience stores), is associated with healthier eating, lower BMI, and lower rates of obesity and diabetes.^{2,6,47} Individuals living in low-income and rural communities often live farther away from stores selling healthful foods than those living in wealthier, urban, and/or suburban areas.^{2,7,49} Where supermarkets are not available, consumers will shop at convenience stores, where food is cheaper, more accessible, and less nutritious.⁵ Nationwide there are more than 3 times as

many supermarkets in wealthier neighborhoods than in lowest-wealth areas, and supermarkets are 4 times more common in predominately white neighborhoods than black neighborhoods.⁴⁹

Shoppers at lower price supermarkets are 3 times more likely to be obese than shoppers at the highest priced supermarkets where healthful options are more plentiful.⁵⁰ This finding provides further support for measures to improve affordability of healthful foods, as cost may be a more important driver of shopping preferences than accessibility.⁷ In a study of the cost and availability of healthy foods in a low-income neighborhood, Jetter et al⁵¹ found that healthier foods are always more expensive, and supermarkets tend to stock healthier food items than other food stores (e.g., convenience stores, grocery stores, etc.).

National Strategies to Improve Fruit and Vegetable Intake

As low fruit and vegetable intake is a leading modifiable risk factor for obesity and chronic disease, and the nation's obesity rate exacts a significant toll on quality of life and healthcare resources, increasing fruit and vegetable intake and lowering the nation's obesity rate are 2 major public health goals in the US. The Department of Health and Human Services' *Healthy People 2020* aims to reduce the nation's obesity rate from 33.9% (2005-2008 rates) to 30.5% and increase the proportion of healthy weight adults from 30.8% to 33.9% by 2020.⁵² Nutrition-related goals of *Healthy People 2020* include increasing the amount of fruits consumed by the population age 2 years and older by .5 cups per 1000 calories to .9 cups per 1000 calories, and increasing the amount of vegetables consumed by .8 cups per 1000 calories to 1.1 cups per 1000 calories by 2020.⁵²

Increasingly, federal efforts to improve nutrition and reduce obesity and chronic disease rates focus on policy and environmental interventions. An example of this is CDC's Community

Transformation Grant (CTG) program. CTG focuses on 3 areas of community-level prevention: tobacco-free living, active living and healthy eating, and evidence-based quality clinical and preventative services.¹⁰ In 2011 the CDC awarded \$103 million in CTG funds to 61 states and local government agencies. This dissertation focuses on North Carolina, which received \$7.4 million in CTG funds per year for a 5-year program that will involve increasing access to fruits and vegetables via farmers' market enhancements.⁵³ Related activities include improving farmers' market structures, increasing transportation to and from markets, introducing zoning that supports farmers' markets, increasing nutrition education and farmers' market promotional activities, and implementing SNAP/EBT at farmers' markets.

The Use of Farmers' Markets to Improve Access to Healthful Food

Defined by the USDA as “a multi-stall market at which farmers' market producers sell agricultural products directly to the general public at a fixed location”⁵⁴, farmers' markets offer a solution to gaps in retail food outlets in low-income and rural communities. Efforts to improve access to healthful foods for low-income individuals via farmers' markets are increasing nationwide, with both governmental and private groups promoting the potential of farmers' markets to improve fruit and vegetable access and local economies. Farmers' markets require less capital expense and offer a greater degree of flexibility than building a traditional “brick and mortar” food store.¹⁵ A recent national assessment of public opinion of local and state policies to increase access to fruits and vegetables through policy and environmental interventions revealed strong public support for such approaches. Overall support of policy and environmental interventions ranged from 47.2% to 62.1%, with farmers' market-related policies receiving the most support of any approach.⁵⁵

While there is a need for more longitudinal and controlled studies to evaluate the effectiveness of farmers' market in increasing fruit and vegetable consumption, the literature suggests potential for farmer's market-based strategies for improving attitudes and beliefs toward fruit and vegetables, and fruit and vegetable intake.¹¹ Shopping at farmers' markets and produce stands has been associated with improved diet quality in low-income consumers in cross-sectional studies.⁵⁶⁻⁵⁸ In an ecological study of food environments in North Carolina, the presence of farmers' markets was inversely associated with obesity rates, such that for an additional increase in 1 standard deviation (SD) of farmer's markets per 1000 residents, a nonmetro county's obesity prevalence will decrease by .07%.⁵⁹

Farmers' markets are increasingly present in nontraditional settings such as medical centers, university campuses, and health clinics.⁶⁰⁻⁶³ In 2008 Freedman et al⁶³ conducted a study that placed farmers' markets at urban Boys and Girls Clubs in Nashville, Tennessee to improve the availability and affordability of fresh produce in a low-income, urban setting. Thirty-four farmers' markets were held at the Boys and Girls Clubs between June and August 2008, and markets were open to the general public. Study participants were given \$20 vouchers for the markets. Participants made two-thirds of produce purchases at the market. Qualitative interviews with participants revealed positive feedback, such as the perception that the farmers' market produce was reasonably priced, and that the intervention was both creative and necessary in light of the limited access to healthful foods in the neighborhood. Results from the study suggest that by placing a farmers' market in a community with limited food outlets, produce purchasing can increase. The addition of financial supports (e.g., \$20 vouchers) results in even greater purchasing of produce.

In 2012 Freedman et al⁶² implemented a farmers' market in a federally qualified health center (FQHC) to determine if placing the market in the clinic and providing patients with market vouchers would result in increased fruit and vegetable intake among diabetics. The study found a marginally significant increase of fruit and vegetable intake from 5.9 to 6.5 servings per day from baseline to follow-up. Participants who used vouchers exclusively (no personal funds) and frequented the market the most frequently were more likely to report increased fruit and vegetable consumption.

A growing body of literature has evaluated the utility of connecting low-income consumers to farmers' markets through FNS programs. The majority of these studies have focused on the Senior Farmers Market Nutrition Program (SFMNP) and the Supplemental Nutrition Program for Women, Infants and Children (WIC) Farmer Farmers Market Nutrition Program (FMNP). Kunkel et al⁶⁴ evaluated the South Carolina SFMNP, which provided \$50 in farmers' market vouchers and nutrition information to fifteen thousand low-income seniors. Despite receiving nutrition information, few participants reported trying a new fruit or vegetable from the farmers' market. Participants reported positive experiences with the program, indicating the vouchers increased their purchasing power for produce (e.g., "I have to buy so much medicine it certainly helped me out, and I thank the nutrition program very much" and "I wish we could get them (coupons) more often they are very helpful on my food budget"). The study also explored participating farmers' perceptions of the program. Feedback was overwhelmingly positive, with 100% of respondents indicating they would participate in the program again.

To determine if additional economic subsidies for fruits and vegetables increased intake, Herman et al⁶⁶ evaluated the impact of fruit and vegetable subsidies at farmers' markets and supermarkets for urban women participating in WIC. Participants were randomly assigned to a

control, supermarket intervention group, or farmers' market intervention group and given either vouchers for the diapers, supermarket produce, or farmers' market produce, respectively. The study found a significant increase in vegetable intake in the intervention groups that was sustained 6 months after the economic incentive was removed.

The Current State of Farmers' Markets in the United States

Between 1970 and 2011 the number of farmers' markets grew from 350 to 8144, reflecting a large increase in consumer demand for local and fresh food and product variety in the US.⁹ Between 2008 and 2011 alone the number of farmers' markets reported by the Agricultural Marketing Services grew by 3144 (40% increase). While the number of farmers' markets has increased nationwide, low-income neighborhoods have seen less growth in the number of farmers' markets than wealthier neighborhoods.⁵⁴ This finding supports the common perception that farmers' markets are exclusionary. Studies of farmers' market patron characteristics reveal they tend to be white, educated, and female.⁶⁶⁻⁶⁷ To evaluate frequency of farmers' market use in a national sample, Blanck et al analyzed⁶⁸ the 2007 National Cancer Institute Food Attitudes and Behaviors (FAB) Survey and found that adults living in the Northeast US and adults older than 35 years were significantly more likely to frequent farmers' markets than younger adults and adults located in other regions of the country. The study found that farmers' market use did not differ by income, race, or ethnicity, but there was a positive association between education level and farmers' market use.⁶⁸

The purposeful placement of farmers' markets in marginalized settings seeks to expand farmers' market patronage to include a diverse customer group. Recent studies of farmers' customers suggest that farmers' markets are indeed relevant to the low-income consumer. For

example, Ruelas et al⁶⁹ found that farmers' market patrons in East and South Los Angeles are more likely to be Hispanic, uneducated, and low-income than the general population of their communities. However, significant barriers to accessing farmers' markets remain for low-income individuals.

Barriers and Facilitators to Farmers' Market Use

Commonly reported barriers by nonfarmers' market shoppers include convenience, limited discounts at farmer's markets, farmers' market culture, and awareness of farmers' market locations and times.^{14,70-74} A study of low-income WIC participants in North Carolina found that lack of transportation was a common reason participants did not shop at farmers' markets.⁷³ Another study by Grace et al⁷⁴ found that low-income customers prefer prepackaged food and pricing structures found at supermarkets and grocery stores, and they dislike the lack of clear signs indicating produce prices at markets. A 2013 collaborative study by Robert Wood Johnson Foundation, Project for Public Spaces, and Columbia University found the ephemeral nature of farmers' markets was challenging for low-income individuals who are often unaware of their hours and location.⁷¹ Study participants also reported inability to complete all of their shopping at the farmers' market as a barrier.

Facilitators to shopping at farmers' markets are varied, with acceptance of federal nutrition assistance benefits, transportation to markets, and awareness of farmers' market hours reported as facilitators among low-income households. In communities where farmers' markets have been purposefully created to improve access for low-income households, consumers are satisfied with product quality, variety, and prices than products available at traditional food stores.^{70,72}

Studies exploring the price of produce at farmers' markets are contradictory. While many farmers' market evaluations have reported price as a barrier, a number of recent studies found that the prices at farmers' markets are similar to or less than prices for the equivalent product at a supermarket.^{60,70, 75-79} For example, Flaccavento et al⁷⁵ found that in 74% of Appalachian communities studied, farmers' market prices were less than supermarket prices by an average of 22%. To determine the impact of placing a farmers' market in a food desert on price and availability of healthful foods, Larsen et al evaluated⁷⁸ the cost of a healthy food basket before and after the farmers' market was introduced and compared the cost to food baskets in surrounding neighborhoods. The authors found the introduction of the market resulted in a reduction of the price of foods in the food desert as well as an increase in the availability of specific produce items.

SNAP/EBT at Farmers' Markets

The acceptance of federal nutrition assistance benefits at farmers' markets is likely the most important factor influencing farmers' market use by low-income households.¹⁵ For example, a 2012 study of low-income individuals in North Carolina found that inability to use WIC vouchers and SNAP/EBT at farmer's market was a leading barrier to farmers' market access.⁷³ Many low-income households rely on SNAP or other federal benefits to buy food for their families. If households cannot use these benefits at markets or if they perceive they cannot use them, they will be less likely to shop at farmers' markets.¹⁴⁻¹⁵

The Current State of SNAP/EBT at Farmers' Markets

The acceptance of federal nutrition assistance benefits at farmers' markets is not a new strategy for encouraging low-income households to shop at markets. In 1994, 27.5% of farmers' markets accepted food stamps (presently SNAP benefits).⁷⁹ In 1996 the enactment of Personal

Responsibility and Work Opportunity Reconciliation Act legislated the transition from distributing SNAP benefits from paper-based Food Stamps to Electronic Benefit Transfer (EBT) cards. This resulted in a dramatic drop-off in food assistance redemptions at farmers' markets. Now, SNAP participants are required to swipe their EBT cards at point of sale terminals and enter a personal identification number.⁷⁹ Unlike paper food stamps, EBT requires farmers' markets to have electricity, phone lines, and EBT machines. When combined with transaction fees and monthly service charges, many markets found EBT cost-prohibitive. By 2004, only 8% of farmers' markets accepted food stamps.⁷⁹

Strategies for Improving SNAP/EBT Availability at Farmers' Markets

A number of strategies for increasing SNAP EBT sales at farmers' markets have been implemented. To address the cost and equipment barriers for introducing EBT to farmers' markets, Bottenheim et al⁸⁰ provided 21 vendors at an urban farmers' market in Philadelphia, Pennsylvania with EBT point of sale (POS) terminals, covered the transaction fees, and offered operation training. The study found a significant increase in EBT sales of 38% per month. Vendors reported they would be unlikely to maintain their own POS terminal without an economic subsidy due to the expense of operating EBT. While this study should be replicated in other farmers' markets in diverse settings, these results suggest that having multiple vendor-operated POS machines may increase farmers' market EBT use. In 2007 San Francisco legally mandated EBT access at all city farmers' markets. Since 2006 there has been an average increase in annual sales at the city's farmers' markets by 57% per year. Between 2008 and 2009 SNAP sales at the farmers' markets grew by 85%.⁸¹

The Economic Benefits of Farmers' Markets

While this study primarily focuses on healthful food access facilitated by farmers' markets, the secondary benefit of economic stimulus associated with farmers' markets and SNAP/EBT sales cannot be overlooked. Farmers' markets provide an opportunity for farmers to market directly to consumers rather than depending on indirect distribution channels.¹⁶⁻¹⁸ There are documented benefits of direct marketing from farmers to consumers such as increased financial returns to farmers and the sale of higher quality of food at a relatively lower cost to consumers.⁵¹ By selling directly to consumers farmers obtain the full retail price of their product versus a fraction of the price they receive when selling through supermarkets and other indirect channels.⁸¹ Farms that sell at local and regional markets generate 13 fulltime jobs per \$1 million in revenue, compared to 3 fulltime jobs per \$1 million in revenue for farms that do not sell locally.⁸²

Between 1978 and 2007 direct-to-consumer sales of agriculture accounted for 0.3% of all agriculture sales nationwide.⁸³ Small farms (defined as farms with annual sales less than fifty thousand dollars per year) and moderate-size farms (defined as farms with annual sales between fifty thousand dollars and two hundred fifty thousand dollars per year) benefit most from direct-to-consumer channels. Small farms represent 81% of all local food sales, which are dominated by vegetable, fruit, and nut sales. While the growth of direct-to-consumer sales of agriculture among small- and moderate-size farms is well documented, there remains considerable opportunity of growth for the sale of local foods.⁸³

SNAP/EBT Sales and Market Outcomes

Increasing the number of SNAP sales at farmers' markets is one way the USDA attempts to improve the viability of farmers' markets and business opportunities for small- and moderate-

size farms. In the last 5 years, the number of farmers' markets accepting SNAP/EBT has grown above 1994 levels. In 2011, 35% of all farmers' markets accepted SNAP/EBT.⁵⁴ This growth is attributed, in part, to increased FNS support and guidance for introducing EBT to farmers' markets and improved publicity of SNAP/EBT availability at markets to households. In 2012 the FNS allocated \$4 million over 2 years to increase the availability of wireless point of sale terminals for SNAP/EBT transactions at farmers' markets not currently participating in SNAP/EBT.⁸⁴ However, farmers' markets still represent a small fraction of total consumer and SNAP spending on food. In 2010, 2% of the American food budget was spent at farmers' markets, and 0.01% of all SNAP benefits were spent at farmers' markets.⁷⁹

The Structure of Farmers' Markets

Farmers' markets may require less capital investment and time to establish than traditional retail food outlets, but market heterogeneity poses unique challenges to sustaining markets, establishing SNAP/EBT, and facilitating business opportunities for local farmers.¹² Depending on their focus, size, and location, markets tend to fall within 6 broad structures: 1) There is no organization among the farms/producers selling at the market; they just show up; 2) A private business owner makes market rules that farms/producers follow as tenants; 3) There is an unofficial agreement among farms/producers; 5) The market is informal, but it does have guidelines; and 6) There is an official agreement among farms/producers, and the market is a legal entity with established legal and tax status.⁸⁵

Farmers' Market Goals

Farmers' market goals will influence the market atmosphere, where the market is located, and other factors that facilitate its specific markers of success, such as SNAP/EBT sales and

vendor participation. As previously discussed, the number of farmers' markets attempting to improve community nutrition is on the rise. Examples of this are the farmers' market Freedman et al⁵⁸ created at a FQHC, or farmers' markets established in Kaiser Permanente Health Clinics.⁸⁶ Markets operated by city governments may have more of an economic development focus than a public health focus. These markets may place a strong emphasis on restricting vendor spaces to local producers, or they may have a specific vendor mix requirements.

Farmers' Market Managers

Market managers typically run farmer's markets. Management positions may be paid or volunteer depending on the market's size and funding structure. Regardless of the market's mission, management is central to ensuring the success of any public market.⁸⁷ They serve as liaisons between municipalities, producers, and other retailers, and vendor satisfaction has been closely linked to the strength of market management.¹² Specific management duties typically involve overseeing staff, payments, and other general operations requirements; leasing space to vendors; assisting vendors; overseeing marketing and promotions; directing capital improvement projects; guiding long-range planning; and reporting to stakeholders.¹² Managers are responsible for SNAP/EBT at their markets and are "the building blocks of any successful EBT program".¹⁵

Despite their obvious influence on farmers' market outcomes, such as SNAP/EBT and product availability, there are no studies exploring how farmers' market managers perceive their roles, and the importance of alignment of their perceived roles with organizational goals. A large body of peer reviewed and grey literature describes specific farmers' market management tools, with an emphasis on how objective farmers' market manager characteristics can impact market operations.^{12-13, 88-89} For example, Govindansamy et al⁸⁸ assessed farmers' market

manager characteristics affecting farmers' markets in New Jersey, with an emphasis on management traits like length of employment, farming history, and education. The study identified discord between farmers selling at markets run by management who had little or no farming experience. These farmers felt their managers were unable to appreciate what farming involves. This finding suggests that prior farming experience may be an important qualification for market managers.⁸⁸ In a study of Oregon's farmers' markets, Stephenson et al⁸⁹ found that markets with volunteer managers operate markets with lower revenues than those with paid managers. The authors also identified high rates of manager turnover as a risk factor for market failure. While these studies offer practical guidance on how markets could select and guide managers to maximize market opportunities, they overlook less readily quantifiable ways farmers' market managers could subvert or support the agendas of the markets they oversee.

To date most research focusing on the relationship between management values and organizational outcomes is found in the business and management literature. In these fields values are defined as "desirable states, goals or behaviors on which individuals place a high worth".⁹⁰ Congruence between management and organizational values is likely to result in greater degrees of employee satisfaction, commitment, and involvement.⁹⁰ Managers display their values through activities like employee recruitment, program development, and even budgeting. In the example of farmers' markets, managers may place a high value on food equity. In turn, they may perceive their management role as an opportunity to make food at their market available to marginalized groups by promoting SNAP/EBT. Similarly, managers who value local agriculture may perceive their roles as facilitators of business opportunities for small, local farms. One way to demonstrate this is by restricting vendor space to local farms.

Summary Statement

Given their key position in executing and guiding the farmers' market, it is important to understand how managers' perceived roles influence market outcomes, including access to healthful foods for low-income households and business opportunities for farms. The expected influence of market managers is displayed in Figure 3. Currently, significant federal and state dollars are being channeled to farmers' market-based initiatives to improve accessibility of produce for low-income households through programs like NC CTG-P.⁵³ Other initiatives seek to bolster local agricultural economies through grant opportunities like the USDA's Farmers' Market Promotion Program (FMPP).⁸⁴ A conflict between these funding goals and farmers' market managements' perceived roles could undermine significant public investment and derail strategic opportunities to improve public health outcomes in at-risk communities and business opportunities for farms.



Figure 3: Expected Levels of Influence on Farmers' Market Outcomes

This study seeks to identify new barriers to the ultimate goal of improving fruit and vegetable consumption in low-income households through farmers' markets. A secondary outcome of this study will be the identification of how managers' perceived roles influence business opportunities for small- and moderate-size farms. Answers to these questions could support ongoing investment in farmers' market development and enhancements, guide leadership recruitment, and inform programs to develop the most effective market management possible.

CHAPTER 3

METHODS

Methods Summary

The first part of this study involved qualitative data collection from farmers' market managers and farmers selling at farmers' markets to explore how management influences outcomes of interest and to inform quantitative survey development (Aim 1). The second part of this study involved administration and analysis of a quantitative survey of a universal sample of North Carolina's farmers' market managers (i.e., all managers in the state) to evaluate associations between managers' motivations and the outcomes of interest (Aims 2 and 3). The methods for this dissertation consist of the following components:

1. Qualitative data collection from farmers' market managers and farmers from Southwest Virginia, East Tennessee, and Western North Carolina to inform survey development;
2. Analysis of qualitative data to develop survey items;
3. Pilot testing of surveys to ensure clarity and flow;
4. Administration of quantitative surveys to all farmer's markets managers in North Carolina;
5. Logistic and linear regression analyses to examine associations between the independent variables of market managers' perceived roles and the dependent variables of SNAP/EBT acceptance and participation, vendor recruitment, sales, and customer volume.

Aim 1: Qualitative Data Collection

Qualitative Study Design

The qualitative component of this mixed methods study was based on the Grounded Theory.⁹¹ This approach involves an iterative process of gathering, coding, and analyzing qualitative data and identifying ways to further explore the topic of interest.⁹² Grounded Theory is used for researching topics that are poorly understood, as studies using this theory are expected to identify new research questions. This theory was appropriate for this study because a review of the literature found 1) no validated survey instrument for evaluating farmers' market managers' perceptions of their roles; and 2) no studies examining associations between managers' perceived roles and farmers' market outcomes.

A managers' focus group guide was developed from the literature on farmers' market management, barriers and facilitators to farmers' market access for low-income households, and farmers' market development.^{12-13, 67, 72-73} Questions on farmers' market managers' perceptions of their roles were added to gather new information on this topic. The focus group guide can be found in Appendix A. For the farmer interviews, a guide was developed from literature describing how farmers' markets operate, barriers and facilitators to farmers' market sustainability, and access for low-income households (Appendix A).¹²⁻¹³ Questions on farmers' experiences and interactions with farmers' market managers were added to gather new information on how market managers impact vendor sales and experiences. The ETSU Institutional Review Board approved the informed consent documents and focus group and interview guides on December 20, 2013. Approved Informed Consent Documents can be found in Appendix B.

Participant Recruitment

The first part of the qualitative study involved a focus group among a small, purposive sample of farmers' market managers in Southwest Virginia, East Tennessee, and Western North Carolina and interviews with farmers selling at farmers' markets in the same region to gather formative data on how managers influence the outcomes of interest. Farmers' market managers and farmers were selected from this region due to the investigator's existing relationship with members of the local agriculture community in the area. This region also offered the opportunity to gather data from managers and farmers participating in both rural and urban farmers' markets. By drawing on multiple sources of data to inform survey development (e.g., literature reviews, focus groups with managers, and interviews with farmers), bias was minimized. Data triangulation (i.e., focus groups with managers compared with interviews with farmers) offered a rich perspective on the influence of market managers and a more in-depth understanding of the topic.⁹¹

Farmers' market managers were recruited to participate in a focus group through the Appalachian Farmers' Market Association (AFMA) (Abingdon, Virginia) and Asheville, North Carolina's farmers' markets. AFMA holds monthly meetings with most farmers' market managers from the Southwest Virginia/East Tennessee region and offered to facilitate manager recruitment for this study (Tamara McNaughton, personal communication, September 9, 2013). In December 2013 all managers participating in AFMA were sent an e-mail invitation to participate in a focus group. Due to scheduling complications, two separate focus groups were held with AFMA managers; one before and one after the regularly scheduled AFMA meeting January 9, 2014 at the Slater Center in Bristol, Tennessee. Two managers participated in the first focus group, and 3 participated in the second.

To meet the recruitment goal, 3 additional farmers' market managers were recruited from Asheville, North Carolina based farmers' markets. These managers were identified through the Appalachian Sustainable Agriculture Project's (ASAP) listing of local farmers' markets and invited to participate through an e-mail message. Again, scheduling conflicts prevented one large focus group. Thus, one focus group with 2 managers, and an interview (one-on-one) with the third manager were held on February 11, 2014 at a coffee shop located in Asheville. Focus groups were recorded using a digital recorder. All managers (n=8) received \$25 compensation for their participation.

Due to the large geographic size of Southwest Virginia/East Tennessee and the lack of a regular meeting of farmers selling at farmers' markets in the region, separate in-depth interviews were held with 8 farmers in lieu of focus groups. Potential participants were contacted through 1) managers who participated in the focus groups and shared the recruitment information with farmers selling at their markets, and 2) The Appalachian Sustainable Agriculture Project's (ASAP) weekly e-mail that is distributed to the farmers in its network. The latter method yielded an overwhelming response from farmers selling at farmers' markets throughout the region of interest. Farmers were invited to participate on a first-come, first-served basis. Interviews were scheduled for times deemed most convenient by interested farmers. Interviews were conducted on the phone from February 19 through March 27, 2014 and recorded using a digital audio recorder. All participants received \$25 for helping with the study.

Qualitative Data Analysis

Focus groups and interviews were transcribed verbatim. The investigator and an ETSU graduate student independently reviewed the text. The investigator developed 2 codebooks (1-

market manager focus group codebook, and 1- farmer interview codebook) based on literature review (deductive codes) and data-rich transcript reviews (inductive codes). The codebooks were reviewed by the graduate student, who then met with the investigator to make changes where appropriate. The resulting codes were compared to the literature on farmers' market management (constant comparison), until complete consensus on the codebook was achieved.⁹² There were 28 codes for the farmers' market manager focus groups, and 22 codes for the farmer interviews.

The focus group and interview data were imported into N'Vivo version 10 (QSR International, Victoria, Australia) for analysis. The investigator and graduate student independently coded the text and then met to review the codes and reach consensus. Codes were only retained if unique participants addressed them at least twice. Relevant themes were identified if at least 2 participants addressed them, and quotes were selected to support them.

Survey Development and Piloting

The investigator developed a market manager survey by combining focus group and interview results and items from the USDA National Farmers' Market Manager Survey.⁹³ The first step in this process was developing an exhaustive list of potential questions that were framed around the focus group results. Building from the focus group findings, items addressing the different constructs of the Health Belief Model were developed.⁹⁵ While not part of the study aims, overlaying the Health Belief Model was determined by the investigator and dissertation committee to be a useful addition to the project, as interventions based on theoretical models are more likely to be effective than those that are not.⁹⁶ The Model's constructs were adopted for this study as follows: perceived vulnerability of the community where the farmers' market is located to inadequate nutrition (perceived vulnerability), perceived severity of inadequate

nutrition in the community (perceived severity), perceived benefits of the farmers’ market (perceived benefit), perceived barriers to farmers’ market access and operations (perceived barriers), perceived benefits of the SNAP/EBT program (perceived benefit), perceived barriers of the SNAP/EBT program (perceived barriers), cues to action related to the farmers’ market in general (cues to action), motivations to improve access to healthful food (motivation), motivations to provide business opportunities in the community (motivation), self-efficacy to operate the SNAP/EBT program (self-efficacy), and self-efficacy to operate the farmers’ market in general (self-efficacy). In keeping with focus group findings and the overlay of the Health Belief Model, the phrase “perceived role” was exchanged for the term “motivation”. Figure 4 displays the application of the Health Belief Model to this study.

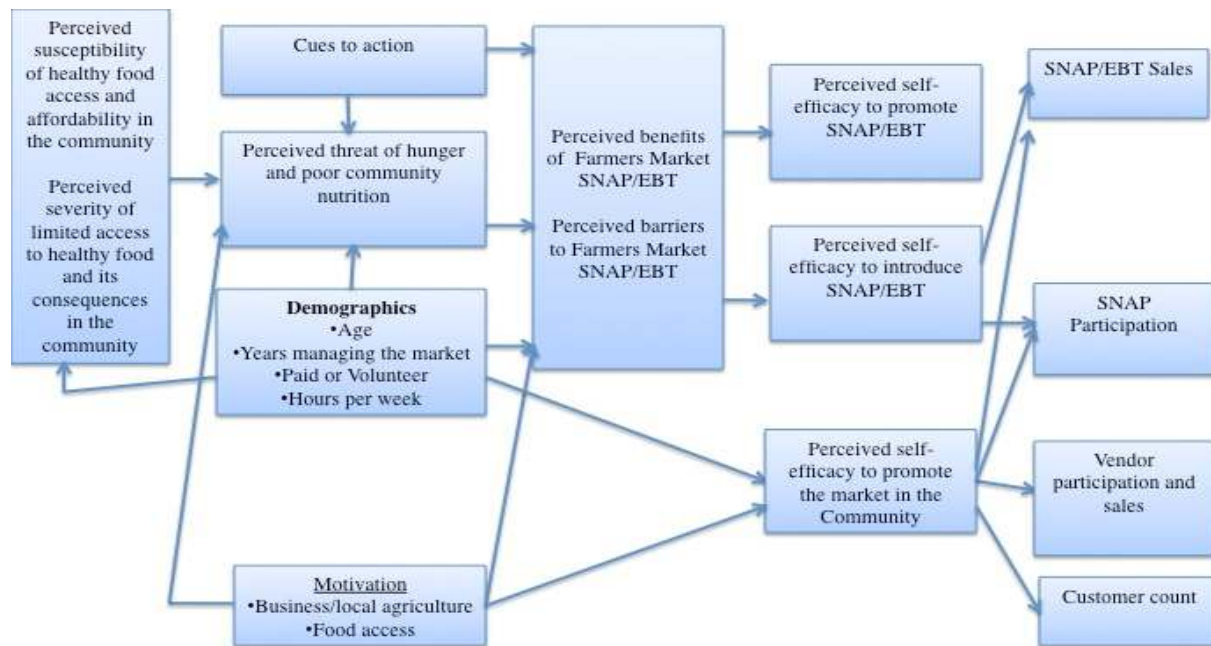


Figure 4: Application of the Health Belief Model to the Study

As much as possible, survey wording was taken directly from the focus group and interview data to ensure questions were written in a way that reflected the sentiments conveyed in qualitative data collection (e.g., “It is important to create a *family atmosphere* at the market”). The list of survey items was distributed to colleagues knowledgeable about the field of study and the investigator’s dissertation committee for review. Reviewers were asked to select at least one item per survey category to retain and to suggest new survey items and provide edits where appropriate. The feedback was reviewed and at least one item was chosen per construct, with more items being retained for the measures most relevant to this study (i.e., motivation items). An overview of the survey development process can be found in Table 1.

Table 1: Survey Development Process

Phase	Description	Outcome
Initial drafting of survey items	-200 potential items were sent to the dissertation committee and colleagues for review -Reviewers were asked to highlight items for retention, or suggest new items where appropriate	-The committee suggested clarifying the difference between “perceived vulnerability” and “perceived severity constructs” of the Health Belief Model -It was suggested that all items addressing SNAP/EBT participation barriers be retained
Selection of final items	-The investigator reviewed the feedback and selected items based on the frequency of recommendation by the reviewers, and the relative importance of the items	-It was determined a skip pattern should be included to direct participants to questions most relevant to their situation -Some items were negatively worded to avoid response patterns -31 questions were developed, with at least two response options per Health Belief Model construct
Programming survey into SurveyMonkey	-Items were entered into SurveyMonkey.com	-31 survey questions were included
Piloting of survey	-The survey was sent to the committee and pilot study participants (n=5) for further review	-Adjustments were made to ranking questions to ensure they allowed multiple response options -Grammatical and spelling edits were made throughout the survey

Table 1 (Continued)

Survey administration	-The survey was e-mailed to the sample on May 15, 2014	
Restructuring question order	-Due to low response rate, it was suggested that contact information items be moved to the end of the survey	-The participant contact and Social Security Number questions were moved to the end of the survey

All items addressing HBM constructs were measured on a 4-point Likert Scale (1-Strongly disagree to 4-Strongly agree). If a scale contained items that might not apply to all participants (i.e., questions about the board of directors), they were given the option to indicate ‘5’ for ‘N/A’. A skip pattern was entered after the question “Does your market operate SNAP/EBT?” whereby managers were directed to SNAP/EBT questions tailored to whether or not they had SNAP/EBT at the market. These items were then combined with USDA Farmers’ Market Manager Survey measures of farmers’ market and market manager characteristics.⁹³ The survey was programmed in SurveyMonkey (Palo Alto, CA). A summary of the constructs and their respective survey items can be found in Appendix C.

The survey and informed consent for piloting it were approved by ETSU’s IRB in April 18, 2014. The surveys were distributed to 5 farmers’ market managers who were recruited from the manager focus group sample for piloting. Participants were given one week to review the survey, and they received additional \$10 for their participation in the pilot study. Minor revisions suggested by the pilot participants and the NC CTG-P Evaluation Team were made to the survey. Final IRB approval for the survey and NC market manager informed consent document was given May 27, 2014. A final version of the survey can be found in Appendix D.

Survey Measures

Apart from survey items gathering data on market operations and vitality (i.e., customer counts, sales, etc.), the survey was largely organized around the Health Belief Model constructs of perceived vulnerability, perceived severity, perceived barriers, perceived benefits, self-efficacy, cues to action, and motivation. It is important to note that not all survey items were used to inform the aims of this dissertation study. Data resulting from these survey items were used to describe manager characteristics and will be used for future research. An overview of the items relevant to Aims 2 and 3 is described in detail below.

Dependent Variables for Aim 2

The objective of Aim 2 was to examine associations between North Carolina farmers' market managers' perceptions of their role as promoters of the availability of healthful foods and farmers' market SNAP/EBT availability and participation. For this aim the dependent variables were SNAP/EBT availability and participation. SNAP/EBT availability was coded as a dichotomous variable (e.g. 1-Yes, the Market participates in SNAP/EBT and 2-No, the Market does not participate in SNAP/EBT). SNAP/EBT participation (defined by SNAP/EBT redemption at the Market) was coded as a continuous variable defined by asking managers "How many customers participated in SNAP/EBT at your market in 2013?". To develop a continuous SNAP/EBT sales variable, managers of markets that offer SNAP/EBT were asked to indicate the value of EBT sales at their market by responding to the question "What was the value of SNAP/EBT sales at your market in 2013?".

Independent Variables for Aim 2

The purpose of Aim 2 was to explore the association between managers' motivations related to healthful food access and SNAP/EBT outcomes. Therefore, the independent variable for Aim 2 was a continuous score describing managers' motivation to increase access to healthful foods in their communities. The score (variable name: FoodAccessMotivationScore) was formed by averaging participants' responses to 7 survey items, including 2 items ranking the relative importance of providing healthful food access in the community and 5 items addressing the motivation construct of the Health Belief Model related to community food access. These items are described in further detail below.

Survey items ranking motivation to increase access to healthful foods in the community

The first 2 items included in the score were responses to the question "Which aspects of your job as farmer's market manager do you believe to be most important (1-most important, 6-least important)". Response options relevant to this score included: 1) "Making healthy food affordable in my community"; and 2) "Making healthy food accessible in my community". Responses to this question were reverse coded, such that a higher value corresponded to a higher relative importance of that aspect (e.g., a score of "6" for "Making healthy food accessible in my community" would indicate the manager believes this to be the most important aspect of their job).

Survey Items Addressing Managers' Motivation to Increase Access to Healthful Foods in the Community

An additional 5 items based on the Health Belief Model construct of "motivation" were also used to develop the food access motivation score. For these items participants were asked to respond to the question "Please state if you agree or disagree with the following statements

about your role as a farmers' market manager" and rank their agreement on a scale of 1 to 4 (1-strongly disagree to 4-strongly agree) for the following items: 1) "It is important that low-income people feel welcome at the farmers' market"; 2) "It is important that everyone in the community is able to shop at the farmers' market"; 3) "Low-income people in my community feel welcome at the farmers' market"; 4) "I enjoy facilitating a place where the community can gather"; and 5) "Creating a family atmosphere at the market is important to me".

Dependent Variables for Aim 3

Aim 3 explored the associations between managers' perceptions of being facilitators of business opportunities for small- and moderate-size farms and farmers' market vendor recruitment, sales, and customer counts. For this aim the dependent variables were customer count, sales, and total vendor count, average weekly vendor count, and local vendor count at the market. A description of how these variables were formed follows.

Customer Counts

Customer count was a continuous variable developed from the response to the question "On average, how many customers participated at your market each week in 2013?"⁹³

Vendor Sales

Vendor sales was a continuous variable developed from the response to the question "What was the total value of producer/vendor sales at your market in 2013?"

Total Vendor Count

Total vendor count was a continuous variable developed from the response to the question “How many vendors participated at your market in 2013? (Count each producer/vendor only once. Do not count each separate time they participated in the market).”⁹³

Average Weekly Vendor Count

Average weekly vendor count was a continuous variable developed from the response to the question “On average, how many vendors participated at your market each week in 2013?”.

Local Vendor Count

Local vendor count was a continuous variable developed from the response to the question “In 2013, how many vendors at your market only sold farm products they produced themselves? (Count each producer/vendor only once. Do not count each separate time they participated in the market).”⁹³

Independent Variables for Aim 3

The independent variable for Aim 3 was a continuous score describing the managers’ motivation to improve business opportunities in their communities. The score (variable name: BusinessMotivationScore) was formed by averaging participants’ responses to 6 items, including 3 ranking items related to business motivation, and 3 items addressing the Health Belief Model “motivation” construct items related to business. A description of how these items were developed follows.

Survey items ranking motivation to improve business opportunities in the community

The first 3 items included in the score were responses to the question “Which aspects of your job as farmer’s market manager do you believe to be most important (1-most important, 6-least important)”. Response options relevant to this score included: 1) “Supporting local artisans”; 2) “Supporting local agriculture”; and 3) “Supporting the local economy in general”. Responses to this question were reverse coded, such that a higher value corresponded to a higher relative importance of that aspect (e.g., a score of “6” for “Supporting local agriculture” would indicate the manager believes this to be the most important aspect of their job).

Survey Items Addressing Managers’ Motivation to Improve Business Opportunities in the Community

An additional 3 items based on the Health Belief Model construct of “motivation” were also used to develop the business motivation score. For these items participants were asked to respond to the question “Please state if you agree or disagree with “the following statements about your role as a farmers’ market manager” and rank their agreement on a scale of 1 to 4 (1-strongly disagree to 4-strongly agree) for the following items: 1) “Having a diverse mix of products at the market is important to me”; 2) “Ensuring the products sold at the market are locally grown/made is important to me”; and 3) “Helping small business is important to me”.

Covariates for Both Aims 2 and 3

To control for variables that have been associated with success at implementing SNAP/EBT and farmers' market vitality (i.e., customer count, size, sales, etc.)^{13,89}, covariates for both Aims 2 and 3 models included manager and market characteristics. A description of these covariates and how they were developed follows.

Manager Characteristics

Manager characteristics included as covariates included pay status, years managing the market, and age. Manager pay was determined by asking, “Are you paid to manage the market?” to create a dichotomous “Yes/No” (0-No, 1-Yes) variable. Years managing the market was a continuous variable determined by asking, “How many years have you managed the market?”. Managers’ age was a continuous variable developed by asking “What is your age in years?”.

Market Characteristics

Market characteristics included as covariates included paid employee counts, volunteer counts, number of years in operation, and the market’s urban/rural status. A continuous employee count variable was formed by summing the responses to 4 survey items asking for the total number of full-time year round, part-time year round, full-time seasonal, and part-time seasonal employees at the market. Volunteer count was a continuous variable determined by asking, “How many volunteers do you have at the market?”. Market length of operation in years was a continuous variable determined by asking “How many years has the market been in operation?”

Market urban/rural status was a dichotomous variable based on whether or not the farmers’ market location was based in an Office of Management and Budget Metropolitan Statistical Area metropolitan or micropolitan statistical area. Using the Office of Management and Budget’s definition, a metropolitan area contains an urban area of fifty thousand or more people, and a micropolitan area contains an urban area of more than ten thousand people but less than fifty thousand people. Locations in a micropolitan area were coded as “0”, and locations in a metropolitan area were coded as “1”.⁹⁶

Study Population Context

The target population (farmers' market managers) for the final survey is based in North Carolina, where there is an ongoing CDC Community Transformation Grant Project (CTG-P) that involves development and enhancement of farmers' markets through efforts like marketing, promotional activities, and providing transportation to improve community nutrition. North Carolina ranks 18th of 50 states for fruit and vegetable consumption and 34th of 50 for obesity.⁹⁷ In 2011, 1.6 million North Carolinians were enrolled in SNAP, with spending totaling \$2.4 billion for the year. A small fraction of SNAP dollars was redeemed at state farmers' markets, comprising just .004% of the .08% of total US SNAP spending at farmers' markets.⁹⁸ The North Carolina CDC CTG-P Farmers' Market Development and Enhancement Evaluation Grant found that there was an average of 6.9 fruit and vegetable outlets per NC county in 2012, which increased to an average of 8.4 fruit and vegetable outlets per county in 2013.⁹⁹

Sampling Frame

As a consultant on the North Carolina CDC CTG-P Farmers' Market Development and Enhancement Evaluation Grant, the investigator had access and permission to use the North Carolina CTG-P Fruit and Vegetable Outlet Inventory (NC FVOI). This dataset contains detailed information on all of the State's fruit and vegetable outlets and was collected during summer 2012 and 2013 by CTG and local health department staff in every NC County. To develop the sampling frame for this study, only farmers' markets (defined as "a venue with a predictable location and hours of operation that sells produce, but that is not a retail store"⁵⁰), and their corresponding city, market manager name, and manager contact information (telephone number

and e-mail address) were selected. After deleting duplicate markets and markets that were no longer in operation, 271 farmers' market managers were included in the sampling frame.

Data Collection

On May 14, 2014, the 271 North Carolina farmers' market managers identified through the NC FVOI were contacted by e-mail, or telephone if their e-mail address was not available, and invited to participate in the study. Initially, managers were given one week to complete the survey. This timeline was extended an additional week to increase participate recruitment. Two separate follow-up e-mails were sent to each manager with an e-mail address between May 14 and May 25. All managers listed in the sampling frame were contacted at least once by e-mail or telephone. Data collection closed May 30, 2014.

Survey Analysis. Data were exported from SurveyMonkey in an Excel document and analyzed in SPSS version 21 (SPSS IBM, New York, USA). All string items were recoded into new nominal variables.

Descriptive Analysis

Descriptive statistics (means, SDs, and percentages) were used to summarize the characteristics of farmers' market and manager and responses to the Health Belief Model items and resulting indexes. A reliability analysis was conducted to determine Cronbach's alpha for each of the Health Belief Model construct indexes. Indexes with alpha $>.70$ were determined to be reliable scales.¹⁰⁰

Bivariate Analysis

To test for a linear relationship between 2 quantitative variables, Pearson's correlation was used to examine the linear association between the dependent variables (binary SNAP/EBT variable and continuous variables of customer count, total vendor count, average vendor count, and local vendor count), and the dependent variables and potential covariates (continuous variables of manager age, years managing the market, employment status, market length of operation in years, volunteer count, and employee count). Items with correlation coefficients >0.5 were considered to be moderately correlated.¹⁰¹ However, because this is the first study of its kind, all potential covariates were included in the multivariate models even if significant correlation was found.

To further describe the managers, and to identify targets for future research, independent samples t-tests were run to explore whether there were differences of Health Belief Model indexes between the groups. Statistical significance for all analyses was set at two sided $p < .05$.

Multivariate Analysis

Market years of operation was the only covariate that was highly correlated with a dependent variable in bivariate analysis (customer count; $r=0.56$). As previously stated, because this is the first study of its kind, all potential covariates, including those with moderate or low correlations with the outcomes of interest in the bivariate analysis, were included in the inferential models.

Multivariate Analysis for Aim 2. Due to the small sample of managers reporting having SNAP/EBT at their markets ($n=12$) and missing data (3 missing for SNAP/EBT sales, and 4

missing for SNAP/EBT customer count), SNAP/EBT sales and SNAP/EBT customer count were not used as dependent variables for Aim 2 linear regression analysis.

Binary logistic regression was performed to examine the association between the likelihood that participants have SNAP/EBT at their farmers' markets and food access motivation. Three models were used. For Model 1, bivariate analysis was used to examine the association between SNAP/EBT participation and food motivation score; Model 2 adjusted for Model 1 and further adjusted for manager characteristics; and Model 3 adjusted for Model 2 and further adjusted for market characteristics.

Multivariate Analysis for Aim 3. Separate multiple linear regression models were used to examine associations between continuous market vitality characteristics (customer count, total vendor count, average weekly vendor count, and local vendor count) and the continuous business motivation score (independent variable). Three iterations of each model were run to explore the influence of manager and market characteristics (covariates) on overall fit. Final models retained covariates with statistically significant beta coefficients in the adjusted models. Significance was set at $p < .05$.

CHAPTER 4

RESULTS

Introduction

This section describes the results of the statistical analyses outlined in the methods chapter. First this section provides the findings from the qualitative work done for Aim 1. Second, the section provide an overview of the study participants using descriptive statistics findings from the bivariate analysis. Finally, results from Aims 2 and 3 are described in detail using multivariate analysis.

Aim 1: Qualitative Study Results

Manager Focus Group Results

Eight managers participated in the focus groups; of these, 5 were from rural farmers' markets in Southwest Virginia and East Tennessee, and 3 were from urban farmers' markets in Asheville, North Carolina. The participants' backgrounds varied and the sample included recent college graduates, working professionals, a retiree, and a full-time farmer. Their catalysts for becoming market managers varied as well. All but one participant were customers at the markets they manage and were recruited to fill the management position during a leadership transition. One participant was a farmer selling at the market and now acts both as a manager and farmer at the market. The only markets without SNAP/EBT were urban markets located in Asheville, North Carolina.

Eight themes emerged from the focus group. These closely followed the structure of the focus group guide and included: 1) Manager's role, 2) Motivation, 3) Enjoyment, 4) Market's

contribution to the community, 5) Challenges, 6) SNAP/EBT perceptions, 7) SNAP/EBT challenges, and 8) Rules and restrictions. A summary of the themes follows.

Theme 1: Manager's Role

Because this study involves understanding how farmers' market managers influence their market outcomes, participants were first asked to describe their roles. The participants had similar explanations of their roles, using terms such as "point person" and "face of the market". In general, was little variation in the descriptions of the tasks the manager is required to accomplish. These included activities such as operating the credit card and SNAP/EBT machines if their markets had them, promoting the market in the community, enforcing rules and regulations, and answering the vendors' and community's questions.

Theme 2: Motivation

To gather more information on what inspired the participants to assume their roles as managers, they were asked about what precipitated them accepting their positions, and what motivated them to become managers. They unanimously responded that they were motivated to support local agriculture.

While the participants expressed a primary interest in supporting local agriculture, they mentioned other direct and indirect motivations and benefits of the farmers' markets throughout the focus groups. For example, one rural manager discussed the utility of the farmers' market as a "business incubator" that could spur economic opportunity for community members with minimal capital investment.

Theme 3: Market's Contribution to the Community

Participants were asked about their perception of their markets' greatest contributions in their communities as another way to identify their priorities. They described a number of benefits including bolstering the local economy by attracting people to shop and visit the towns where the markets are located; supporting small businesses and new/young farmers; expansion of food access and affordability in the community through SNAP/EBT incentives like the Wholesome Wave Grant; the placement of markets in areas with limited grocery store access; and in one case the funding of community programs through farmers' market revenue.

Theme 4: Enjoyment

Throughout the focus groups, 6 of 8 participants expressed strong emotional ties to the farmers' market community, using words like "family" to describe their relationships there. The discussions about what they enjoyed about being market managers reinforced the motivations they described and highlighted indirect and unanticipated rewards they experienced in their roles.

Theme 5: Challenges

The participants' discussions of the challenges they experienced in their roles varied greatly. Interpersonal issues were commonly reported (7 of 8 participants), and many of participants discussed challenges with enforcing rules and communicating with vendors and members of the board of directors. The 3 urban participants expressed frustration with the entities that host their markets (a church, a small cooperative food store, and a mixed-used commercial/residential community).

Theme 6: SNAP/EBT Perception and Participation

For this study we were especially interested learning about SNAP/EBT participation at the farmers' markets represented by the study participants. Six of the 8 markets currently operate SNAP/EBT. The remaining 2 markets, both of which are urban, are interested in offering SNAP/EBT. Participants who operated SNAP/EBT at their markets reported uniformly positive feedback from the vendors and their communities.

Theme 7: SNAP/EBT Challenges

While none of the participants who have SNAP/EBT at their markets expressed significant market-specific barriers to implementing SNAP/EBT, 3 of 5 rural market managers did express some challenges recruiting customers to use SNAP/EBT. An urban manager who does not have SNAP/EBT at his or her market discussed his or her lack of familiarity with the program as a barrier to offering SNAP/EBT. A different urban manager of a market without SNAP/EBT shared that he or she wanted to offer it, but his or her vendors voted against it due to competing priorities.

Theme 8: Rules and Restrictions

Participants were asked to describe their rules and regulations and specific vendor restrictions. All of the markets required producers to be "local"—the definition of which varied from "within 100 miles" to "Appalachian grown". In general, participants were strict about prohibiting "middlemen" or people reselling products from vending at the market. One participant shared that her market makes exceptions for specialty products that are locally produced (e.g., cherries from another local farmer), or products that are highly desired and are somewhat in line with the market's mission (e.g., fair trade roasted coffee). Their flexible

approach was shared by the urban managers, who expressed variability in their enforcement of market rules and regulations depending on the situation. Table 2 displays the themes and their subthemes. The themes and selected, illustrative quotes can be found in Appendix E.

Table 2: Themes and Subthemes from the Farmers’ Market Focus Groups, n=8

Theme	Subtheme
Managers’ role	<ul style="list-style-type: none"> • Point person • Liaison between the vendors and community • Face of the market • Getting the word out • Doing education • The messenger • Quick decision making • The messenger • Gracious host • Cop • Decide who can vend • Manage the bucks system • Communicating with the public • Represent the market • Organizing the market • Bouncer
Motivation	<ul style="list-style-type: none"> • Preserving farmers’ markets • Helping small business get a foothold • I like farmers • Educate the underserved • Importance of local food • Support farmers • Teach people farmers need to pay their bills • Make food available proximally • Serve new people
Enjoyment	<ul style="list-style-type: none"> • Culture of community • Love working with people • The event • Receiving gratitude • Share ideas, knowledge, and stories • Like family • Big party every week • Fun • Camaraderie • Relationships • Relationships with vendors • Relationships with customers
Community contribution	<ul style="list-style-type: none"> • Ability to learn about growing • Brings people to town • Access to local food • Closest “grocery” • Only weekday market • Vendor fees support community programs • Doubling SNAP funds/Wholesome Wave Grant • Outreach • Economics • The food • The event • Outlet for the farmers • Contact with the farmers/growers

Table 2 (continued)

Challenges	<ul style="list-style-type: none"> • Being the liaison • Politics • Timing the market • Lack of experience • Host site conflicts • Parking • State tax policies • Product mix 	<ul style="list-style-type: none"> • Being a vendor and a manager • Steering committee conflicts • Being the messenger • Not being local • Unhappy vendors • Being professional • Pricing products
SNAP/EBT perceptions	<ul style="list-style-type: none"> • Limited success • People thrilled • Low participation rate • Program is growing • Program brought people to the market 	<ul style="list-style-type: none"> • SNAP customers are families • SNAP customers are elderly • Very successful • Farmers accept SNAP • NO vendor problems • Farmers wanted SNAP • Low priority
SNAP/EBT barriers	<ul style="list-style-type: none"> • Struggle to reach people • Low priority for vendors • 	<ul style="list-style-type: none"> • Too expensive • Need help
Rules and regulations	<ul style="list-style-type: none"> • No middlemen • Local 	<ul style="list-style-type: none"> • Diverse product mix • Expectation of helping others

Farmer Interview Results

Eight farmers participated in phone interviews; 4 participants were from Western North Carolina, and 4 were from Southwest Virginia. The farmers’ experiences selling at markets varied, with some only reporting participating in one market, and others participating in multiple markets each season. Six vendors were produce farmers, and 2 were dairy farmers. Interview length ranged from 10 minutes to 90 minutes. Five themes were identified in the farmer interviews: 1) Direct-consumer sales; 2) Characteristics of an attractive market; 3) Characteristics of a good manager; 4) The influence of management on sales; and 5) SNAP/EBT experiences.

Theme 1: Direct-consumer Sales

When asked to describe their motivations for selling at farmers' markets, their reasons included logistics and the advantages of direct-consumer sales. Advantages of direct-consumer sales varied and included subthemes such as better margins resulting from direct sales, the opportunity to engage with customers in person, and the feasibility of selling excess garden harvest at the market.

Theme 2: Characteristics of an Attractive Market

To determine what attracts vendors to sell at a particular farmers' market, the farmers were asked about the characteristics they considered when selecting a market. Most farmers (5 of 8) shared that the foot traffic (number of customers frequenting the market) and reputation were key considerations when selecting markets. Product mix, or the diversity of products available at the market, and product type (e.g., organic) were mentioned frequently (4 of 8) as important features of farmers' markets that could impact vendor sales. The need to ensure some degree of product diversity was also highlighted, as this is an important consideration of customers who want to be able to purchase a variety of products in one setting (one stop shopping). Many farmers placed high value on having a producer-only market for both the economic benefit of minimizing their competition with nonlocal producers as well as the general ethos of supporting local foods. Much like the managers who participated in the focus groups, many of the farmers spoke positively about having a community-oriented market.

Theme 3: Characteristics of an Effective Manager

To determine how vendors characterize effective management, the farmers were asked to describe the characteristics of a "good" manager and the influence of farmers' market

management on their experience as vendors. The responses to these questions varied, with some vendors conveying emphatic opinions about management qualities. Several farmers mentioned the need for managers to have strong organizational (3 of 8), and most (6 of 8) highlighted communication skills as being important attributes of good managers. When discussing communication, many of the farmers described the manager's outreach to the public as a key way for ensuring a strong customer base at the markets. One North Carolina-based vendor provided an example of effective market promotion in the form of on-site activities.

The quality of being "fair" was discussed at length as an important attribute of a farmers' market manager by 2 of the farmers. One rural market vendor from North Carolina connected "fairness" to enforcement of market regulations. This sentiment was reiterated by a rural vendor in Southwest Virginia who described in the importance of enforcing rules in the context of the "producer-only" requirement.

Theme 5: The Influence of Management on Sales

The author was interested in understanding how management characteristics could influence business outcomes for vendors. When describing how management influences sales, promotion again was mentioned by most of the vendors. Limited adherence to market rules and regulations was even described as a reason why one seasoned market vendor stopped selling at a particular farmers' market.

Theme 5: Experiences with the SNAP/EBT Program

All participants were enthusiastic about the SNAP/EBT program, and only one of them had never participated in it. In general, the farmers described it as offering a double benefit, providing increased sales opportunities for them as vendors, and making it easier for low-income

households to buy healthy food. None of the farmers expressed frustration with the actual SNAP/EBT systems at their markets. All farmers participating in SNAP/EBT (n=7) described a process whereby the markets the SNAP/EBT program centrally. Farmers at these markets receive SNAP/EBT payments either daily or monthly. Table 3 displays the themes and subthemes for the farmer interview portion of this study. A list of themes and selected, illustrative quotes can be found in Appendix E.

Table 3: Themes and Subthemes with Interviews from Farmers, n=8

Theme	Sub-theme	
Direct-to-consumer sales	<ul style="list-style-type: none"> • Had to sell our product • Meeting customers • Premium price • Interaction with customers • Interaction with vendors 	<ul style="list-style-type: none"> • Sell surplus vegetables from garden • Scaling up production • Business diversification • Communities supporting small farmers
Characteristics of an attractive market	<ul style="list-style-type: none"> • Good reputation • Foot traffic • Time and day (logistics) • Close to home • Sales • Producer only market 	<ul style="list-style-type: none"> • Roof over our heads • Rural setting • Community oriented • Other organic farmers • No pecking order • Limited competition
Characteristics of a good manager	<ul style="list-style-type: none"> • Promoter • Works well with the public • Planning activities to entice customers • Keeping vendors up-to-date • Keeping the public up-to-date • Gets musicians • Organized 	<ul style="list-style-type: none"> • Features products • Is “fair”/enforces rules • Friendly disposition • Problem solver • Forward thinking • Creative • Flexible • Willing to enforce rules
Influence of manager on sales	<ul style="list-style-type: none"> • Advertising (Facebook, TV, Radio) • Weekly newsletter • Sociable with customers • Vendor space assignment 	<ul style="list-style-type: none"> • Product mix/market product balance • Promote the market • Be organized • Maintaining decorum with vendors and customers
SNAP/EBT experiences	<ul style="list-style-type: none"> • Increased sales • Additional sales/new customers • Matching funds at markets 	<ul style="list-style-type: none"> • Healthy food for more people • Proud to participate • Great program

Aims 2 and 3 Results

Survey Response Rate

Sixty-six managers responded to the survey, resulting in a response rate of 24%. Of these, 60 responded beyond the first 2 questions. Six participants stopped the survey upon being asked to provide personal information for participant payment mailing. Therefore, 60 participants were included in all descriptive and inferential analyses (22% response rate).

Descriptive Statistics

The average participant age was 46 years (range: 24-73 years). The majority of managers were paid to operate their markets (56.7%), and markets had an average of 9 volunteers (range: 0-300 volunteers) and 1 paid staff person (range: 0-20 people). Markets had an average of 34 vendors per season (range: 3-150 vendors), 21 (range: 2-65) vendors per week (range: 2-65 vendors), and 19 local vendors per season (range: 0-125 vendors). An average of 377 (range: 40-3000 customers) customers visited the markets each week. Most markets were located in urban areas (68%). Twelve participants (20) reported having the SNAP/EBT program at their markets. Manager and market characteristics can be found in Table 4.

Table 4: Characteristics of Farmers' Market Managers and Their Respective Markets; n=60

	Mean (range)
Manager Characteristics	
Age in years (n=58)	46(24-73)
Years managing the market (n=59)	5(1-20)5(
Paid manager; n(%)	
-Yes	34(56.7)
-No	26(43.4)
Market characteristics	
Market length of operation in years (n=59)	10(1-41)
Paid staff (n=60)	1(0-20)
Volunteers (n=53)	9(0-300)
Total vendors in 2013 (n=59)	34(3-150)
Weekly vendors ^a (n=59)	21(2-65)
Local vendors (n=58)	19(0-125)
Customers ^b (n=53)	377(40-3000)
SNAP/EBT ^c ; n(%)	
-No	47(79.70)
-Yes	12(20.30)
Rural/Urban Status (n=60)	
-Rural	19(31.70)
-Urban	41(68.30)
Market governance structure*; n(%)	
-Manager	21(35.0)
-Board of directors	31(51.7)
-Non-profit organization	11(18.3)
-City/Municipal government	14(23.3)
-State government	14(23.3)
-Other	7(11.7)

a = Average number of vendors per week; b= average number of customers per week;

c=Binary SNAP/EBT participation

*Total exceeds 100% due to multiple response options

The average reliability estimate of the HBM constructs was 0.77 (SD=.07). A descriptive summary (means and standard deviations) of indexes and their corresponding reliability scores can be found in Appendix C.

Bivariate Analysis

Statistically significant differences were observed in self-efficacy to run the SNAP/EBT program, benefits of the SNAP/EBT program, and barriers to offering the SNAP/EBT program scores between the SNAP/EBT groups ($p < .05$). Managers who have SNAP/EBT at their markets had significantly higher self-efficacy to run the SNAP/EBT program (mean score 3.33 versus 2.80), a higher perceived benefit score (mean score 3.48 versus 3.01), and a lower perceived barrier score, suggesting they perceived the barriers to be fewer than the other participants (mean 2.97 versus 2.59). Differences between the groups' perceived vulnerability and severity of community food access and nutrition issues were not statistically significant. Mean scores and standard deviations can be found in Table 5.

Table 5: Characteristics of Managers with SNAP/EBT at Their Markets and Those Without It, n=60

Variable	<u>Managers without SNAP/EBT</u>			<u>Managers with SNAP/EBT</u>			p-value
	N	Mean	SD	N	Mean	SD	
<i>Manager and market characteristics</i>							
Age	45	46.98	12.22	12	44.25	13.39	0.50
Years managing the market	46	4.96	4.19	12	3.42	1.68	0.22
Paid staff	47	1.34	3.48	12	1.33	1.72	0.01*
Volunteers	41	9.95	7.68	11	4.55	4.72	0.70
Years of operation	47	9.62	46.59	11	16.55	13.84	0.03*
Total vendors	46	31.09	27.43	12	44.58	29.29	0.14
Average weekly vendors	46	19.54	14.86	12	28.42	20.38	0.09
Local vendors	46	17.90	20.18	11	25.00	29.09	0.35
Customers	41	281.15	284.25	11	761.36	963.03	0.01*
<i>HBM constructs</i>							
Perceived vulnerability of community to nutrition and food access issues	47	2.62	0.60	12	2.79	0.44	0.36
Perceived severity of community nutrition and food access issues	47	2.71	0.43	11	2.69	0.46	0.89
Perceived barriers to operating the farmers' market	47	2.01	0.34	12	2.01	0.33	0.96
Cues to action for operating the farmers' market	47	2.69	0.74	12	2.79	0.37	0.67
Business motivation score	47	3.54	0.41	12	3.61	0.47	0.64
Food access motivation score	47	3.67	0.45	12	3.91	0.39	0.10
Self-efficacy to operate SNAP/EBT	42	2.80	0.69	11	3.33	0.52	0.02*
SNAP/EBT barriers	47	2.59	0.44	11	2.07	0.39	0.001*
SNAP/EBT benefits	46	3.03	0.57	11	3.48	0.39	0.02*

*Significant at $p < .05$; P-value was obtained from t-test.

Aim 2 Multivariate Analysis Results

For Aim 2 the association between food access motivation and SNAP/EBT participation was not significant in the crude or adjusted models, suggesting there is no association between local food motivation score and SNAP/EBT participation. Regression results can be found in Table 6.

Table 6: Logistic Regression Analysis of the Association Between SNAP/EBT Participation and Food Access Motivation Score Reported by NC Farmers’ Market Managers, n=60

	Odds ratio (95% CI)		
	Model 1 ^a	Model 2 ^b	Model 3 ^c
Food access motivation score	3.77(0.76-18.81)	5.14(0.79-33.08)	5.78(0.61-54.67)
Manager age		0.99(0.93-1.046)	0.99(0.93-1.07)
Manager pay status		3.35(0.71-15.78)	2.54(0.34-19.16)
Years managing the market		0.89(0.67-1.98)	0.83(0.56-1.23)
Paid employee count			1.06(0.71-1.58)
Volunteer count			0.99(0.96-1.03)
Market years in operation			1.08(0.99-1.16)

^a Model 1: Crude odds ratio; ^b Model 2: Adjusted for Model 1 and manager characteristics; ^c Model 3: Further adjusted for Model 2 and market characteristics

Aim 3 Multivariate Analysis Results

Business motivation score and customer count.

Business motivation score was significantly and positively associated with customer count in the crude and adjusted models, such that an increase in business motivation score was associated with an increase in customer count. In the model adjusted for market characteristics, only manager pay status (Yes/No) and business motivation score were significant. In the model adjusted for market and manager characteristics, only market years of operation was significant, and the business motivation score was no longer significant (Table 7). To find the most parsimonious model, a fourth regression was run retaining manager pay status and market years of operation as covariates. This model was statistically significant, $F(3,48)=13.21$, $p<.001$, adj

$R^2 = .42$ (Table 8). In this model, business motivation score was significantly associated with customer count, whereby a 1 point increase in business motivation score was associated with an increase of 380 customers.

Table 7: Multiple Linear Regression Analysis of the Association Between Farmers' Market Customer Count and Business Motivation Score Reported by NC Farmers' Market Managers, n=60

	B (SE B)		
	Model 1 ^a	Model 2 ^b	Model 3 ^c
Business motivation score	408.82(168.11)*	458.11(160.93)*	254.58(164.13)
Manager age		-4.49(160.93)	-5.16(5.89)
Manager pay status		499.13(129.08)**	207.18(164.18)
Years managing the market		12.11(17.06)	12.89(16.83)
Paid employee count			157.78(29.14)
Volunteer count			0.58(1.42)
Market years in operation			17.90(2.81)*

B=Beta coefficient; SE B=Standard error of beta

a=Unadjusted; b=Adjusted for Model 1 and manager characteristics; c=Further adjusted for Model 2 and market characteristics; * Significant at $p < .05$; Significant at $p < .001$

Table 8: Aim 3 Significant Regression Models of the Association Between Customer, Average Vendor, and Local Vendor Counts, and Business Motivation Score, n=60

	B	SE B	CI (95%)	P-Value
Business motivation score and customer count ^a	380.83	137.83	103.71-657.94	0.01*
Business motivation score and total vendor count ^b	16.99	7.87	1.21-32.78	0.04*
Business motivation score and average vendor count ^c	8.47	4.07	0.29-16.34	0.04*

B=Beta coefficient; SE B=Standard error of beta

a= Adjusted for manager pay status and market years in operation; b=Adjusted for manager age, manager pay, and years managing the market; c=Adjusted for manager pay and no. of paid employees

* Significant at $p < .05$

Business Motivation Score and Total Vendor Count

The regression of business motivation score on total vendor count found a positive, significant association between business motivation score and total vendor count when controlling for manager characteristics. Business motivation score was no longer a significant predictor of total vendor count when manager characteristics were added to the model; however, the overall model was significant (Table 9). A final model including covariates that were significantly associated with the outcome (manger pay and paid employee count) was statistically significant, $F(3,55)=8.32$, $Adj. R^2 = 0.27$, $p<.001$ (Table 8). In this model, a one point increase in business motivation score was associated with an increase of 14 vendors.

Table 9: Multiple Linear Regression Analysis of the Association Between Farmers’ Market Vendor Count and Business Motivation Score Reported by NC Farmers’ Market Managers, n=60

	B (SE B)		
	Model 1 ^a	Model 2 ^b	Model 3 ^c
Business motivation score	13.53(8.41)	16.99(7.87)*	10.25(7.91)
Manager age		0.37(0.29)	0.29(0.31)
Manager pay status		26.01(6.64)**	15.57(8.25)
Years managing the market		-0.05(0.91)	-0.37(0.94)
Paid employee count			-0.01(0.79)
Volunteer count			0.29(0.41)
Market years in operation			6.11(1.75)**

B=Beta coefficient; SE B=Standard error of beta

a=Unadjusted; b=Adjusted for Model 1 and manager characteristics; c=Further adjusted for Model 2 and market characteristics; * Significant at $p<.05$; Significant at $p<.001$

Business Motivation Score and Average Weekly Vendor Count

The model predicting average weekly vendor count from business motivation was statistically significant when adjusted for both market and manager characteristics; however, the

independent variable was no longer significant when controlling for market characteristics (Table 10). A final model retained covariates with significant beta coefficients, to include manager pay status and paid employees, $F(3,55)=10.46$, $\text{Adj } R^2=.33$, $p<.001$ (Table 8). In this model, a 1 point increase in business motivation score was associated with an increase of 9 average weekly vendors.

Table 10: Multiple Linear Regression Analysis of the Association Between Average Weekly Vendor Count and Business Motivation Score Reported by NC Farmers' Market Managers, $n=60$

	B (SE B)		
	Model 1 ^a	Model 2 ^b	Model 3 ^c
Business motivation score	8.67(4.86)	9.48(4.42)*	5.08(4.56)
Manager age		0.07(0.16)	-0.06(0.18)
Manager pay status		16.38(3.73)**	10.85(4.76)*
Years managing the market		-0.09(0.51)	-0.08(0.54)
Paid employee count			2.39(1.01)*
Volunteer count			0.02(0.05)
Market years in operation			0.35(0.24)

B=Beta coefficient; SE B=Standard error of beta

a=Unadjusted; b=Adjusted for Model 1 and manager characteristics; c=Further adjusted for Model 2 and market characteristics; * Significant at $p<.05$; **Significant at $p<.001$

Business Motivation Score and Local Vendor Count

Business motivation score was not significantly associated with local vendor count in the unadjusted models. Both of the models adjusted for manager and market characteristics were significantly associated with local vendor count; however, business motivation score was not a statistically significant predictor in any of the models ($p>.05$) (Table 11).

Table 11: Multiple Linear Regression Analysis of the Association Between Local Vendor Count and Business Motivation Score Reported by NC Farmers' Market Managers, n=60

	B (SE B)		
	Model 1 ^a	Model 2 ^b	Model 3 ^c
Business motivation score	11.36(6.65)	13.13(6.68)	6.48(5.99)
Manager age		0.17(0.25)	0.02(0.24)
Manager pay status		15.33(5.63)*	1.62(6.14)
Years managing the market		0.26(0.77)	-0.10(0.72)
Paid employee count			6.97(1.36)**
Volunteer count			0.06(0.06)
Market years in operation			0.54(0.34)

B=Beta coefficient; SE B=Standard error of beta

a=Unadjusted; b=Adjusted for Model 1 and manager characteristics; c=Further adjusted for Model 2 and market characteristics; * Significant at p<.05; Significant at p<.001

Summary of Findings for Aims 2 and 3

For Aim 2 we do not reject the null hypothesis that the food motivation score does not have a significant effect on increasing the likelihood of SNAP/EBT participation. We reject the null hypothesis for Aims 3a, 3b, and 3c and do not reject the null hypothesis for Aim 3d. In the final model business motivation score was significantly associated with an increase in customers, vendors, and average weekly vendors, whereby a one point increase in business motivation score was associated with an increase of 381 customers, 17 total vendors, and 9 weekly vendors.

CHAPTER 5

DISCUSSION

Introduction

This study provides new information on how farmers' market managers may influence access to healthful foods for low-income households and business opportunities for small and moderate size farmers. When this study was conceptualized during spring 2014, there was no literature on the topic despite the influence farmers' market managers are known to exert over market operations. Currently, there is only one published study of farmers' market managers' influence on SNAP/EBT participation, which describes the positive economic impact of accepting SNAP/EBT at farmers' markets, and the need for increased training of market managers around food security among market managers in Michigan.¹⁰¹ Findings from this exploratory dissertation study contributes to the nascent literature on the potential for farmers' markets to contribute to public health programs. The findings presented here provide starting point for deeper investigation of *behavioral factors* that determine how managers effect market outcomes, and could be used to inform interventions aiming to maximize managements' impact on making healthful foods more affordable in communities, while simultaneously supporting local agriculture.

Primary Findings

Aim 1 Findings

The themes described in the previous section create a robust framework for understanding the interplay between managers, their attitudes, and the barriers and facilitators to

their operations. The managers and farmers presented a range of perspectives on the components of vital markets and effective farmers' market management. Participating managers detailed major drivers behind their work, such as the desire to make sure farmers had incomes to support their families, or a passion to see their community become more vibrant. The farmers interviewed described characteristics of markets and managers they found to be attractive and positive. For example, farmers highlighted the importance of managers who proactively communicated with the public.

When this study was conceptualized, the plan was to assess managers' *perceived roles* to define the independent variables for Aims 2 and 3. However, through the qualitative data collection, it became clear that a more effective way of addressing this concept would be to evaluate the managers' *motivations*. The managers clearly described their motivations for their role, and as described previously, their emphasis on specific aspects of the market (e.g., supporting their vendors) drove their efforts. The change in terminology from *perceived role* to *motivation* led to further investigation of theoretical models that could be applied to the research.

Overlaying the Health Belief Model. Upon review of the qualitative themes and corresponding quotes, the investigator identified the Health Belief Model as the most appropriate behavioral theory to model relationships between the variables of interest. This model is based on the concept that health behaviors are determined by an individual's attitudes and beliefs about a disease and strategies to prevent it. The Health Belief Model constructs can influence a health outcome individually or in concert. Working backward, it became evident that these different constructs captured important concepts reported by the focus group and interview participants, who thoroughly described barriers, benefits, motivations, cues to action, and their beliefs about

self-efficacy related to general farmers' market management, as well as managing the SNAP/EBT program.

While the Health Belief Model is traditionally applied to an individual to address a disease for which he or she is at risk, this study applied the model to an individual (farmers' market manager) to address community-level risk factors. For example, the market managers' perceptions of their community's vulnerability to inadequate nutrition may inform their approach to introducing and promoting SNAP/EBT in their community. The novel application of this theory supports the suggestion by Glanz et al⁹⁵ to "test our theories iteratively in the field" to encourage the convergence of theory, research and practice. Appendix F lists the HBM constructs and quotes from the focus groups and interviews that support its application to the study.

Discussion of Findings for Aims 2 and 3

Participant Characteristics. This study recruited a small yet diverse sample of North Carolina's farmers' market managers. Only 22% of known farmers' market managers in NC participated. Participants tended to be middle aged, with about 5 years of experience as market managers. Most participants (56%) were paid to operate the markets. Most markets (68%) were located in urban areas, and a relatively small proportion (20%) of managers offered SNAP/EBT at their farmers' markets.

Food Access Motivation and SNAP/EBT Participation. Managers' motivations to improve access to healthful foods in their communities was not associated with SNAP/EBT placement at their markets. This reflects a similar nonsignificant finding between groups and their perceptions of community food issues and suggests that the relationship between being

aware of and interested in community food issues and providing SNAP/EBT is not as straightforward as was hypothesized. Specifically, there are a number of “steps” between recognizing and being concerned with community food access issues and actually implementing SNAP/EBT. Market finances, vendor pay, manpower, and the community context are just several of many factors that contribute to the introduction of SNAP/EBT to their markets.¹³ This finding from the multivariate analysis confirms feedback from the managers’ focus groups. For example, one of the urban managers stated an emphatic interest in offering SNAP/EBT at her market, but shared that their vendors opposed it, SNAP/EBT was too expensive, and they didn’t have the community resources she needed to set it up. This case illustrates how, theoretically, a manager could have a high food access motivation score yet not offer SNAP/EBT at his or her market due to external impediments.

Manager Motivation and Market Vitality. In general, the relationship between motivation and market vitality was significantly and positively associated. This study found that for every one point increase in business motivation score, there was an increase of 381 customers, 17 vendors, and 9 average weekly vendors. These findings reveal a possibility that making vendors interested in and motivated to influence the economic benefits of their markets could translate to better economic outcomes at the market. It may also be that managers with higher business motivation scores are also more likely to know and accurately report market vitality data like customer counts.

It is important to consider how to improve managers’ business motivation scores in order to identify strategies for improving farmers’ market vitality indicators as well as approaches for addressing the goal of connecting markets to the SNAP/EBT program and its direct financial benefit to farmers. Data from the qualitative portion of this study could provide insight on how to

address managers' business motivation. Farmers participating in the study's interviews gave practical examples of how they felt managers impacted their sales. For example, one North Carolina-based farmer described the importance of interactive promotions like cooking demonstrations and sampling in attracting customers to buy products. A farmer in Southwest Virginia discussed the impact of the market layout on foot traffic. Providing managers with case studies of real-life examples of how their efforts impact sales and practical tips on how to recruit customers could encourage them to bolster their efforts.

Managers who are not highly motivated by public health messaging could be motivated to offer federal nutrition benefit programs, like SNAP/EBT, if they are more knowledgeable about the economic benefits of program participation. Most farmers participating in the interviews reported good sales outcomes from participating in the SNAP/EBT program, with many stating that participation expanded their customer base. By highlighting the economic potential of participating in SNAP/EBT, managers who are more motivated by business than food access and public health issues could be encouraged to offer SNAP/EBT at their markets.

In comparing this positive, significant outcome with the null finding in Aim 2, it is important to recognize that there are different and perhaps fewer hindrances to attracting vendors and customers to markets than there are to introducing SNAP/EBT. At the very least, there are multiple pathways to putting "business motivation" into action, whereas vendors motivated by local food access may find their efforts stopped completely if they cannot offer SNAP/EBT benefit redemption at their markets. An example of this is found in the focus groups with market managers. One urban manager, in particular, was very passionate about local food access and business; unfortunately, she could do very little about improving access to low-income households because her market did not use SNAP/EBT for financial reasons.

HBM Score Differences between SNAP/EBT Groups. One interesting finding from this study was the difference in managers' self-efficacy and perceived benefits and barriers of the SNAP/EBT program. The comparison of managers with SNAP/EBT at their markets and those without it revealed that managers who operate SNAP/EBT have higher self-efficacy to operate the program. Of course, this is an intuitive finding, as these managers have operated, managed, and promoted the program at some point, and thus should be more confident in their abilities to do so than managers who have not. However, the lower self-efficacy finding in managers who do not run SNAP/EBT at their markets warrants further investigation. It would be interesting to know if lower self-efficacy to operate SNAP/EBT is actually a barrier to operating the program.

The comparison of these groups also found that managers *without* SNAP/EBT at their markets had higher perceived barriers of SNAP/EBT and lower perceived benefits of the program. Again, some of this may be the result of them not actually having experience with the program. Nonetheless, further study should investigate how these perceptions influence the managers' willingness to introduce SNAP/EBT at their markets. Tailored approaches to remove barriers and increase managers' awareness of the benefits of SNAP/EBT to their vendors and communities could result in more markets offering SNAP/EBT.

Study Strengths

Data Triangulation

A major strength of this study was its mixed methods design that incorporated the perspectives of key stakeholders. The combination of qualitative feedback from both managers and farmers participating at markets provided a data-rich collection of transcripts from which the investigator could develop quantitative survey items. Important, new information emerged from

the focus groups and interviews, and the study's direction was adjusted accordingly. For example, qualitative study findings led to addition of the Health Belief Model as a guiding theory for survey development. Scales used in this study were generally reliable ($\alpha > .70$), which is likely attributable to the use of terminology and concepts emphasized in the qualitative data. Finally, key findings from the qualitative transcripts are useful for reflecting results from the North Carolina based quantitative survey, as is detailed below.

Overlay of a Theoretical Model

This study was grounded in behavioral theory and modified throughout to ensure the most applicable theoretical approaches were used. For example, the foundation of this study was the Social Ecological Model, which set the framework for addressing multiple levels of influence on food access and affordability. Using feedback from the qualitative portion of this study, the Health Belief Model was introduced, providing a new, relevant framework for exploring the role of market managers in addressing food access, affordability, and market vitality indicators. Interventions that use behavioral theory are more likely to be effective than those that do not.⁹⁴

Application to an Ongoing Project

Another strength of this study is its connection to the North Carolina Community Transformation Grant Project. Data from this evaluation will be used to guide ongoing efforts with the State's CTG-P, and future projects working through farmers' markets to encourage the population to eat more fruits and vegetables. By grounding the study in theory, yet connecting it to real-life, ongoing projects, the results are more likely to be useful in both research and public health practice.

Limitations

Participant Recruitment and Sample Size

There were several limitations to this formative study. A key limitation was the small sample size. Only 24% of potential farmers' market managers participated in the study, and when participants responding to only the first 2 questions (farmers' market name and city) were removed for analysis, this rate decreased to 22%. While this is slightly higher than the Michigan study response rate (18%), it is lower than was expected from an altruistic sample population, and smaller than the sample size recruited for the most recent USDA Farmers' Market Manager survey (34%).^{95,100} There are several reasons for the low response rate. First, the FVOI dataset may not have accurately categorized venues due to reporting error by the CTG and health department staff required to complete it. This may have resulted in an overestimation of the true number of farmers' markets operating in NC. Second, the University required a Social Security Number for all participants wishing to receive \$10 for their feedback. Four potential participants responded by e-mail or phone that they would like to participate but would not because of the Social Security Number requirement. Only 57% (34 of 60) of participants actually provided their Social Security Number on the survey, opting to complete the survey without the promise of receiving payment for helping with the study. Third, it is likely that some participants did not respond simply because they were uninterested in the study or unfamiliar with the contact e-mail. To address this, a follow-up recruitment letter will be sent during July and August for a second wave of data collection.

Reliability of Measures

The limited reliability of certain measures is another limitation of this study. Many of the survey items used to develop dependent variables and covariates asked participants to recall detailed information. For example, they were asked to share vendor sales, customer count, vendor count, and SNAP/EBT participation count and sales data. If the participants did not have market records with them when they completed the survey, then it is likely that recall bias occurred. This was evident in the vendor sales question, to which only 65% of participants responded. Some participants who did respond to this question placed question marks next to their answers, suggesting they were very unconfident in their response. While this survey item was found on the USDA Managers Survey, this study found it to be a highly unreliable measure. It is likely that few markets in North Carolina even collect vendor sales data, as markets typically receive seasonal/daily vendor fees, and allow vendors to operate their businesses autonomously and without requiring sales reports. Customer data is also expected to be a somewhat unreliable measure, as the methods for collecting counts may vary between markets, and counting methods are very error prone. There is a need for stronger, more reliable measures of market outcomes, particularly in the wake of a growth in public funds for farmers' markets, and the need for more rigorous evaluations of their impact.

Overlooked Manager Characteristics

It is possible that this study oversimplified the diversity in types of managers. For example, this study did not account for managers of multiple markets, and there were no items addressing who the managers' employers are, or what the managers did in addition to operating the market. It may be interesting to conduct a follow-up survey that specifically explores these

topics with managers who oversee multiple markets to determine variation in outcomes between markets managed by the same person. More detailed descriptions of market managers could also be useful for developing messaging tailored for market managers. For example, farmers' market managers who are employed by municipalities may have different motivations and approaches than managers who were recruited because they were loyal, helpful customers, as was the case with most of the managers who participated in the focus groups.

It may also be a good idea to ask whether or not the managers live in the community they manage. This point was raised by one participant who sent a follow-up email clarifying that her responses may not be totally reliable because she was not familiar with the entire community, only an eclectic subset that shopped at the market. Some studies on farmers' markets found that managers who were farmers were more effective than those who were not. Perhaps the same could be said of managers who are part of the community versus those who are not? There may be differences in managers' perception of issues and understanding of terms depending on their backgrounds. Some managers may be well versed in the local food movement, and familiar with the related terminology. Others may be appointed managers by their city and have little background and/or interest in local agriculture. This limitation is important to recognize in an era of public health funding for outlets like farmers' markets. Not all managers are interested in community health, and even fewer may be familiar with issues, concepts, and terms related to food access and affordability issues.

Conclusion

This study highlights the unique position farmers' market managers are in to influence 2 important aspects of the communities where their markets are located: nutrition access for low-

income households, and the opportunity for local farmers to earn income. Focus group and interview findings paint a picture of market managers as leaders who, to be effective, should have a combination of soft skills necessary to serve as a “liaison” between the public and the vendors and organizational and enforcement skills necessary to enact the market’s goals. The author of this study hypothesized that somewhere in the space between the market’s *potential* and actual *outcomes* achieved, the manager’s motivation plays a part. We observe that there is, indeed, a relationship between motivation and outcomes, as evidenced by the significant, positive association between the participants’ business motivation scores and select market vitality indicators.

This study serves as starting point for teasing out the specific characteristics, attitudes, and beliefs that could converge with other important facilitators to maximize the potential of farmers’ markets. More work should be done to understand the interplay between market manager characteristics and the different environmental and organizational factors necessary to accomplish the market’s goals. Of particular interest to public health is the possibility for low-income households to buy fresh produce at farmers’ markets. There is a growing body of literature demonstrating associations between farmers’ market shopping and fruit and vegetable intake among FNS benefit recipients. The proportion of SNAP redemption at farmers’ markets, however, remains strikingly low. There remains tremendous potential for farmers’ markets to experience the “win-win” of positively impacting community nutrition issues, thereby expanding their consumer base, and ultimately increasing the amount of money that goes back into the hands of local farmers.

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APPENDICES

APPENDIX A

Focus Group and Interview Guides

Introduction

Thanks for taking the time to meet with me. I am [*name of facilitator*]. I understand that your time is valuable and we appreciate your participation. We'll be here about 60 minutes so that we can talk about your experiences as a farmers' market manager.

Before we get started, I'd like to go over some ground rules so that our discussion runs smoothly.

1. I would like to hear from everyone during the discussion even though each person does not have to answer every question.
2. Feel free to respond to what has been said by addressing your responses directly to me or to anyone else in the room. Please avoid side conversations so that people don't get distracted and everyone can be heard.
3. There are no wrong answers, just different opinions. So just say what is on your mind. You are the experts.
4. There are several questions that we want to go through, so I may have to move to another question before the discussion of a previous question has ended.
5. Everything we talk about is between us. You must agree not to reveal anything you learn about other participants or share statements made during this discussion outside of this focus group. Having said that, don't feel pressure to reveal thing about yourself that you are not comfortable with others in this group knowing.

Does each of you agree to these ground rules?

So I/we can keep focused on the discussion we will be audiotaping and [name] will be taking notes.

Any more questions before we begin?

These first questions are about your role as the farmers' market manager.

1. Describe your role at the farmers' market.
2. Describe how your farmers' market is governed
 - a. Do you have a board of directors?
 - b. Discuss the rule and regulations
3. What motivated you to become a farmers' market manager?
4. What do you enjoy most about your role as farmers' market manager?
5. What are some of the most difficult aspects of being a market manager?
6. Compare the role you've assumed at the market to the role outlined in your job description or the farmers' market bylaws.

- a. Is there a difference between the two? If yes, describe how and why.
- 7. In your opinion, what are the most important contributions your farmers' market makes to the community? How have you observed this?
- 8. Describe how you communicate the mission of your farmers' market to the vendors? To the community?

Now we're going to discuss the United States Department of Agriculture's Supplemental Nutrition Assistance Program at farmers' markets.

- 9. What are your perceptions of the SNAP/EBT program?
- 10. Describe your farmers' market's involvement in the Supplemental Nutrition Assistance Program.
 - a. Does your market participate in SNAP/EBT?
 - b. If not, is your market interested in participating in SNAP/EBT?
- 11. If your market does offer SNAP/EBT, describe the SNAP/EBT program at your farmers' market.
 - a. Is it centrally operated, or do vendors run their own EBT machines?
 - b. How successful is SNAP/EBT at your market?
- 12. If your market does not offer SNAP/EBT, discuss some reasons why it does not

The last questions are about vendor restrictions at your farmers' market.

- 13. Discuss any vendor restrictions at your farmers' market.
 - a. Describe who determined these restrictions
- 14. In your opinion, what level of influence should the market manager have on selecting which vendors participate at the market?
- 15. Describe the importance of locally grown food to your market.

Those are all of the questions for today. Do you have anything else you would like to add?

Thank you for participating! Your feedback has been very helpful. If you think of something else you'd like to share, please do not hesitate to contact me.

Interview Guide for Farmers

Introduction

Thanks for taking the time to meet with me. I am [*name of facilitator*]. I understand that your time is valuable and we appreciate your participation. We'll be here about 60 minutes so that we can talk about your experiences as a vendor who sells at farmers' markets.

Before we get started, I'd like to go over some ground rules so that our discussion runs smoothly.

6. There are no wrong answers, just different opinions. So just say what is on your mind. You are the expert.
7. There are several questions that we want to go through, so I may have to move to another question before the discussion of a previous question has ended.
8. Everything we talk about is between us. Having said that, don't feel pressure to reveal thing about yourself that you are not comfortable with others in this group knowing.

Does you agree to these ground rules?

So I/we can keep focused on the discussion we will be audiotaping and [name] will be taking notes.

Any more questions before we begin?

These first questions are about your experiences selling at farmers' markets.

16. Describe your current participation in farmers' markets.

17. How long have you sold at farmers' markets?

18. What motivated you to become a vendor at farmers' markets?

19. What are some of the market characteristics you consider when selecting a market?

Now, I'm going to ask you about your interactions with farmers' market managers.

20. How would you describe a "good" farmers' market manager? What are their characteristics?

21. In your opinion, how important is the farmers' market manager in influencing your experience as a vendor?

22. In your opinion, what level of influence should the market manager have on selecting which vendors participate at the market?

23. In what ways does the manager impact vendor sales?
 - a. How have you observed this?

For this study, we're also interested in the United States Department of Agriculture's Supplemental Nutrition Assistance Program (SNAP)

24. Describe your perception with the SNAP/EBT program.

25. Describe our experiences with SNAP/EBT at farmers' markets.

Those are all of the questions for today. Do you have anything else you would like to add?

Thank you for participating! Your feedback has been very helpful. If you think of something else you'd like to share, please do not hesitate to contact me.

APPENDIX B

Informed Consent Documents

PRINCIPAL INVESTIGATOR: Rachel Ward

TITLE OF PROJECT: Examining the influence of farmers' market managers perceived roles on business opportunities for small- and moderate- size farms and access to healthful foods for low-income households

EAST TENNESSEE STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD

This Informed Consent will explain about being a participant in a research study. It is important that you read this material carefully and then decide if you wish to be a volunteer.

Why is this study being done?

The purpose of this research is to find out more about the influence of farmers' market managers on farmers' market outcomes. The decision to take part in this research is yours to make. By doing this research, we hope to learn more about farmers' market managers and how they influence access to healthful foods and business opportunities in their communities.

Why am I being invited to take part in this research?

You are being invited to take part in this research because you are a farmer in Southwest Virginia or East Tennessee.

How long will this take?

You are being asked to participate in an interview that will last approximately 60 minutes. If you volunteer to take part in this research, you will be one of about 8 farmers to do so.

What will I be asked to do?

You are being asked to do the following: First, we will ask you to make sure you understand this consent form and then ask that you sign it. Then, we will ask you to participate in a 60-minute interview either in-person or by phone, depending on your preference.

Are there alternative procedures/treatments?

No, there are no alternative procedures/treatments.

What possible harms or discomforts might I experience if I take part in the research?

It has been determined that the risks associated with this research are no more than what you would experience in everyday life. Participants may feel uncomfortable answering some of the questions in the interview.

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APPROVED
By the ETSU IRB
DEC 20 2013
By *aa*
Chair/IRB Coordinator

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OCT 22 2014

ETSU IRB

Subject Initials _____

PRINCIPAL INVESTIGATOR: Rachel Ward

TITLE OF PROJECT: Examining the influence of farmers' market managers perceived roles on business opportunities for small- and moderate- size farms and access to healthful foods for low-income households

What are the possible benefits I may experience from taking part in this research?

We do not know if you will get any benefits by taking part in this study. This research might help us learn more about how farmers' market managers influence the outcomes of the markets they manage. There may be no personal benefit from your participation but the information gained by doing this research may help others in the future.

What will it cost me to take part in this research?

It will not cost you any money to be part of the research.

Will I be paid for taking part in this research?

Yes. You will receive \$25 for participating in this study. Participants will have to provide their full name, street address, and Social Security Number to collect \$25 for participating in the study.

Do I have to participate in this study?

Participation in this research experiment is voluntary. You may refuse to participate. You can quit at any time. If you quit or refuse to participate, the benefits or treatment to which you are otherwise entitled will not be affected. You may quit by calling Rachel Ward, whose phone number is 828-808-7913. You will be told immediately if any of the results of the study should reasonably be expected to make you change your mind about staying in the study.

Who do I contact with questions about the study?

If you have any questions, problems or research-related medical problems at any time, you may call Rachel Ward at 828-808-7913 or (423) 439-7538). You may call the Chairman of the Institutional Review Board at 423-439-6054 for any questions you may have about your rights as a research subject. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you can't reach the study staff, you may call an IRB Coordinator at 423-439-6055 or 423-439-6002.

How will you keep the information you collect about me secure? How long will you keep it?

Interview recordings will be transcribed verbatim for analysis. Once they are transcribed, the audio recordings will be deleted. Transcriptions will be stored on a password protected computer in a locked office in Lamb Hall Room 303 on ETSU's campus. All study data will be kept for 5 years.

Who will know that I took part in this research and learn personal information about me?

Every attempt will be made to see that your study results are kept confidential. A copy of the records from this study will be stored Lamb Hall Room 303 at ETSU for at least 5

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PRINCIPAL INVESTIGATOR: Rachel Ward

TITLE OF PROJECT: Examining the influence of farmers' market managers perceived roles on business opportunities for small- and moderate- size farms and access to healthful foods for low-income households

years after the end of this research. The results of this study may be published and/or presented at meetings without naming you as a subject. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, ETSU IRB, and personnel particular to this, Rachel Ward, MPH, have access to the study records. Your records will be kept completely confidential according to current legal requirements. They will not be revealed unless required by law, or as noted above.

I have decided I want to take part in this research. What should I do now?

By signing below, you confirm that you have read or had this document read to you. You will be given a signed copy of this informed consent document. You have been given the chance to ask questions and to discuss your participation with the investigator. You freely and voluntarily choose to be in this research project.

_____ SIGNATURE OF PARTICIPANT	_____ DATE
_____ PRINTED NAME OF PARTICIPANT	_____ DATE
_____ SIGNATURE OF INVESTIGATOR	_____ DATE
_____ SIGNATURE OF WITNESS (if applicable)	_____ DATE

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PRINCIPAL INVESTIGATOR: Rachel Ward

TITLE OF PROJECT: Examining the influence of farmers' market managers perceived roles on business opportunities for small- and moderate- size farms and access to healthful foods for low-income households

**EAST TENNESSEE STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD**

This Informed Consent will explain about being a participant in a research study. It is important that you read this material carefully and then decide if you wish to be a volunteer.

Why is this study being done?

The purpose of this research is to find out more about the influence of farmers' market managers on farmers' market outcomes. The decision to take part in this research is yours to make. By doing this research, we hope to learn more about farmers' market managers and how they influence access to healthful foods and business opportunities in their communities.

Why am I being invited to take part in this research?

You are being invited to take part in this research because you are a farmer's market manager in Southwest Virginia or East Tennessee.

How long will this take?

You are being asked to participate in a focus group that will last approximately 60 minutes. If you volunteer to take part in this research, you will be one of about 8 farmers' market managers to do so.

What will I be asked to do?

You are being asked to do the following: First, we will ask you to make sure you understand this consent form and then ask that you sign it. Then, we will ask you to participate in a 60-minute focus group (discussion) with other farmers' market managers. Finally, we may ask you to review a survey that will be administered to farmers' market managers in North Carolina.

Are there alternative procedures/treatments?

No, there are no alternative procedures/treatments.

What possible harms or discomforts might I experience if I take part in the research?

It has been determined that the risks associated with this research are no more than what you would experience in everyday life. Participants may feel uncomfortable answering some of the questions in the interview.

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What are the possible benefits I may experience from taking part in this research?

We do not know if you will get any benefits by taking part in this study. This research might help us learn more about how farmers' market managers influence the outcomes of the markets they manage. There may be no personal benefit from your participation but the information gained by doing this research may help others in the future.

What will it cost me to take part in this research?

It will not cost you any money to be part of the research.

Will I be paid for taking part in this research?

Yes. You will receive \$25 upon completing the focus group, and an additional \$10 if you participate in reviewing the survey. Participants will have to provide their full name, street address, and Social Security Number to collect payment for participating in the study.

Do I have to participate in this study?

Participation in this research experiment is voluntary. You may refuse to participate. You can quit at any time. If you quit or refuse to participate, the benefits or treatment to which you are otherwise entitled will not be affected. You may quit by calling Rachel Ward, whose phone number is 828-808-7913. You will be told immediately if any of the results of the study should reasonably be expected to make you change your mind about staying in the study.

Who do I contact with questions about the study?

If you have any questions, problems or research-related medical problems at any time, you may call Rachel Ward at 828-808-7913 or (423) 439-7538). You may call the Chairman of the Institutional Review Board at 423-439-6054 for any questions you may have about your rights as a research subject. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you can't reach the study staff, you may call an IRB Coordinator at 423-439-6055 or 423-439-6002.

How will you keep the information you collect about me secure? How long will you keep it?

Interview recordings will be transcribed verbatim for analysis. Once they are transcribed, the audio recordings will be deleted. Transcriptions will be stored on a password protected computer in a locked office in Lamb Hall Room 303 on ETSU's campus. All study data will be kept for 5 years.

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Subject Initials _____

PRINCIPAL INVESTIGATOR: Rachel Ward

TITLE OF PROJECT: Examining the influence of farmers' market managers perceived roles on business opportunities for small- and moderate- size farms and access to healthful foods for low-income households

Who will know that I took part in this research and learn personal information about me?

Every attempt will be made to see that your study results are kept confidential. A copy of the records from this study will be stored Lamb Hall Room 303 at ETSU for at least 5 years after the end of this research. The results of this study may be published and/or presented at meetings without naming you as a subject. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, ETSU IRB, and personnel particular to this, Rachel Ward, MPH, have access to the study records. Your records will be kept completely confidential according to current legal requirements. They will not be revealed unless required by law, or as noted above.

I have decided I want to take part in this research. What should I do now?

By signing below, you confirm that you have read or had this document read to you. You will be given a signed copy of this informed consent document. You have been given the chance to ask questions and to discuss your participation with the investigator. You freely and voluntarily choose to be in this research project.

_____ SIGNATURE OF PARTICIPANT	_____ DATE
_____ PRINTED NAME OF PARTICIPANT	_____ DATE
_____ SIGNATURE OF INVESTIGATOR	_____ DATE
_____ SIGNATURE OF WITNESS (if applicable)	_____ DATE

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Chair IRB Coordinator

DOCUMENT VERSION EXPIRES
OCT 22 2014
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PRINCIPAL INVESTIGATOR: Rachel Ward

TITLE OF PROJECT: Examining the influence of farmers' market managers perceived roles on business opportunities for small- and moderate- size farms and access to healthful foods for low-income households

What is this study?

You are invited to participate in a reviewing a survey for a research study on the influence of farmers' market management on farmers' market outcomes in North Carolina. This study is conducted by Rachel Ward, MPH, graduate student at East Tennessee State University through funding by the Southern Sustainable Agriculture Research and Education (SSARE) in partnership with the North Carolina Community Transformation Grant Project, East Carolina University, and the University of North Carolina at Chapel Hill. You are among about 5 farmers' market managers who will pilot this survey.

What will this involve?

This study will take approximately 20-30 minutes of your time. You will be asked to complete a brief online survey and provide your feedback on its readability and content.

You will receive a \$10 check for participating.

Your decision to participate or decline participation in this study is completely voluntary and you have the right to terminate your participation at any time without penalty. You may skip any questions you do not wish to answer. If you want do not wish to complete this survey just close your browser. You will still receive your participant compensation even if you quit or refuse to participate.

Confidentiality

Your participation in this research will be completely confidential. Your answers to market-specific questions will not be used for research purposes; only your feedback on the survey will be used.

Once we collect the data, the e-mail account linked to survey results will be deleted. Survey results will not be linked to any identifying information. Results will be stored in a password-protected computer in Lamb Hall room 305 on ETSU's campus for 5 years.

Every attempt will be made to see that your study results are kept confidential. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, ETSU IRB, and personnel particular to this, Rachel Ward, MPH, have access to the study records.

What are the benefits?

Your participation will help us develop a survey that will be distributed to all farmers' market managers in North Carolina. The NC survey will help us better understand how

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APR 18 2014
By 
Chair IRB Coordinator

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PRINCIPAL INVESTIGATOR: Rachel Ward

TITLE OF PROJECT: Examining the influence of farmers' market managers perceived roles on business opportunities for small- and moderate- size farms and access to healthful foods for low-income households.

farmers' market managers influence access to healthful foods and business opportunities for farmers.

Are there risks or discomforts?

It has been determined that there are no risks to individuals participating in this survey beyond those that exist in daily life. You may feel uncomfortable answering a question. You may refuse to answer or quit at any time.

It will not cost any money to participate in this study.

Who do I contact with questions?

If you have any questions or problems at any time, you may call me, Rachel Ward, at 828-808-7913, or e-mail wardrkj@gmail.com. You may call the Chairman of the Institutional Review Board at 423-439-6054 for any questions you may have about your rights as a research subject. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you can't reach the study staff, you may call an IRB Coordinator at 423-439-6055 or 423-439-6002.

I have read and understand the above consent form, I certify that I am 18 years old or older and, by clicking the submit button to enter the survey, I indicate my willingness voluntarily take part in the study.

SUBMIT

Version 04.15.2014

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By the IRB
APR 18 2014

Chair IRB Coordinator

DOCUMENT VERSION NUMBER
OCT 31 2014
IRB 03

Survey of North Carolina's Farmers' Market Managers

Does this project sound familiar?....

This survey is only for farmers' market managers and is different from the NC Fruit and Vegetable Outlet Inventory which will be conducted April 29-June 30.

What is this study?

You are invited to participate in a research study on the influence of farmers' market management on farmers' market outcomes in North Carolina. This study is being conducted by Rachel Ward, MPH, a graduate student at East Tennessee State University through funding by the Southern Sustainable Agriculture Research and Education (SSARE) Program in partnership with the North Carolina Community Transformation Grant Project, East Carolina University, and the University of North Carolina at Chapel Hill. You are among about 300 farmers' market managers in North Carolina who are invited to participate in this study.

What will this involve?

This study will take approximately 20-30 minutes of your time. You will be asked to complete a brief online survey about your experience managing a farmers' market and your market's outcomes and programs.

You will receive a \$10 check for participating.

Your decision to participate completely voluntary and you have the right to terminate your participation at any time without penalty. You may skip any questions you do not wish to answer. If you do not wish to complete this survey just close your browser or click "Exit This Survey" at the top right of the screen.

If you've entered your contact name, social security number, and mailing address for participant compensation mailing, you will still receive your participant compensation even if you quit or refuse to participate further.

Please note, this information will only be used to process your participant payment and for no other purpose. You may still complete the survey even if you don't wish to provide your SSN!

Confidentiality

Your participation in this research will be completely confidential and data will be averaged and reported in aggregate. The results of this study may be published and/or presented at meetings without naming you as a participant.

Once we collect the data, the e-mail account linked to survey results will be deleted. For analysis and reporting, survey results will not be linked to any identifying information. Your name, address, and social security number are only being collected for participant payment purposes; you do not need to provide this information if you do not wish to be paid for helping with the study. Results will

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By aa
Chair IRB Coordinator

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be stored in a password-protected computer in Lamb Hall room 303 on East Tennessee State University's campus for 5 years.

Every attempt will be made to see that your study results are kept confidential. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, ETSU IRB, and personnel particular to this, Rachel Ward, MPH, have access to the study records.

What are the benefits?

Your participation will help us understand how farmers' market managers' attitudes and beliefs influence business outcomes and community food access.

Are there risks or discomforts?

It has been determined that there are no risks to individuals participating in this survey beyond those that exist in daily life. You may feel uncomfortable answering a question. You may refuse to answer or quit at any time.

It will not cost any money to participate in this study.

Who do I contact with questions?

If you have any questions or problems at any time, you may call me, Rachel Ward, at 828-808-7913, or e-mail wardrk@goldmail.etsu.edu. You may call the Chairman of the Institutional Review Board at East Tennessee State University at 423-439-6054 for any questions you may have about your rights as a research subject. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you can't reach the study staff, you may call an IRB Coordinator at 423-439-6055 or 423-439-6002.

I have read and understand the above consent form, I certify that I am 18 years old or older and, by clicking the submit button to enter the survey, I indicate my willingness to voluntarily take part in the study.

SUBMIT

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APPENDIX C

Summary of Health Belief Model Constructs; n=60

Construct	Item	Mean Score (SD)
Perceived vulnerability of the community to nutrition and hunger issues	Healthy food is not affordable	2.75(0.75)
	Healthy food is too expensive	2.63(0.80)
	Healthy food is not accessible	2.39(0.64)
	There are plenty of places to buy healthy food	2.36(0.55)
	People in the community don't eat enough healthy foods	3.03(0.83)
	People in the community have healthy eating habits	2.79(0.69)
Perceived severity of nutrition and hunger issues in the community	Hunger is a problem in the community	2.61(0.59)
	Obesity is a problem in the community	3.05(0.63)
	Most people are at a healthy weight	2.91(0.50)
	People are generally healthy	2.62(0.59)
Cues to action	I'm aware of the NC Community Transformation Grant Project to establish and enhance farmers' markets	1.68(1.01)
	I'm aware of grants to make healthy food more affordable at farmers' markets	2.48(0.87)
	The Cooperative Extension Office has been a resource for the farmers' market I manage	2.95(0.89)
	I am familiar with organizations that support farmers' markets	2.77(0.65)
	I know where to find resources for the market	2.79(0.67)
Motivation	It's important that everyone feel welcome at the market	3.73(0.45)
	It's important that everyone can shop at the market	3.75(0.44)
	Ensuring the products sold at the market are locally grown/made is important to me	3.73(0.52)
	Helping small businesses is important to me	3.77(0.42)
	I enjoy facilitating a place where the community can gather	3.70(0.46)
	Creating a family atmosphere at the market is important to me	3.69(0.46)
	Low-income people in my community feel welcome at the farmers' market	3.29(0.65)
	Having a diverse mix of products is important to me	3.71(0.49)

Perceived barriers	It's a challenge to offer a diverse mix of products at the market	2.89(0.85)
	The city where the market is held makes it easy to operate	1.90(0.82)
	The owners where the market is held makes it easy to operate	1.60(0.82)
	People in the community support the market	1.85(0.71)
	I feel supported by the community	1.98(0.65)
	I feel supported by the vendors	1.80(0.55)
	I feel supported by the board of directors	1.40(0.98)
SNAP/EBT benefits*	Providing SNAP/EBT makes it easier for people to buy healthy food	3.72(0.47)
	SNAP/EBT is an important feature of the farmers' market	3.73(0.47)
	Having SNAP/EBT at the farmers' market makes healthy food more affordable	3.27(0.79)
	Having SNAP/EBT at the market is a good thing for the community	3.9(0.30)
	Having SNAP/EBT at the farmers' market helps the hunger problem in my community	3.18(0.87)
	Having SNAP/EBT at the farmers market makes healthy eating easier in my community	3.54(0.52)
	Having SNAP/EBT at the market helps the local economy	3.27(0.65)
	Having SNAP/EBT encourages low-income people to come to the market	3.36(0.50)
	SNAP/EBT barriers*	People in my community use SNAP/EBT at the farmers' market
It's a challenge to attract people to use SNAP/EBT at my the farmers' market		3.00(1.00)
People in my community are aware of SNAP/EBT at the market		3.09(0.83)
Lack of transportation prevents people from using SNAP/EBT at the market		3.09(0.83)
The board of directors like the SNAP/EBT program		3.63(0.67)
Farmers like the SNAP/EBT program		3.45(0.68)
Farmers trust the SNAP/EBT program		3.36(0.81)
I trust the SNAP/EBT program		3.45(0.69)
The market can afford to operate the SNAP/EBT program		3.09(0.70)
The SNAP/EBT program does not take much time to operate		2.45(0.93)
The SNAP/EBT system is complicated		2.54(0.93)

Self-efficacy to operate SNAP/EBT*	I am confident in my ability to operate the SNAP/EBT program	3.45(0.52)
	I am confident in my ability to organize the SNAP/EBT program	3.36(0.67)
	I am confident in my ability to promote the SNAP/EBT program	2.90(0.83)
	I am confident in my ability to encourage vendors to participate in the SNAP/EBT program	3.36(0.54)
	I am confident in my ability to explain the SNAP/EBT program to vendors	3.45(0.52)
SNAP/EBT Benefits**	Providing SNAP/EBT would make it easier for people to buy healthy food	3.19(0.65)
	SNAP/EBT would be an important feature of the farmers' market	3.06(0.71)
	Having SNAP/EBT at the farmers' market would make healthy food more affordable	3.19(0.65)
	Having SNAP/EBT at the market would be a good thing for the community	3.11(0.64)
	Having SNAP/EBT at the farmers' market would help the hunger problem in my community	2.83(0.71)
	Having SNAP/EBT at the farmers market would make healthy eating easier in my community	3.07(0.58)
	Having SNAP/EBT at the market would help the local economy	2.93(0.61)
	Having SNAP/EBT would encourage low-income people to come to the market	3.15(0.67)
SNAP/EBT barriers**	People in my community would use SNAP/EBT at the farmers' market	2.82(0.71)
	It would be challenge to attract people to use SNAP/EBT at my the farmers' market	2.31(0.79)
	Lack of transportation would prevent people from using SNAP/EBT at the market	2.44(0.71)
	The board of directors like the SNAP/EBT program	2.57(0.77)
	Farmers like the SNAP/EBT program	2.45(0.71)
	Farmers trust the SNAP/EBT program	2.44(0.75)
	I trust the SNAP/EBT program	2.80(0.84)
	The market can afford to operate the SNAP/EBT program	2.67(0.83)
	The SNAP/EBT program would not take much time to operate	2.19(0.86)
	The SNAP/EBT system is complicated	2.54(0.87)

Self-efficacy to operate the SNAP/EBT program**	I am confident in my ability to operate the SNAP/EBT program	2.73(0.94)
	I am confident in my ability to organize the SNAP/EBT program	2.74(0.86)
	I am confident in my ability to promote the SNAP/EBT program	2.81(0.74)
	I am confident in my ability to encourage vendors to participate in the SNAP/EBT program	2.83(0.76)
	I am confident in my ability to explain the SNAP/EBT program to vendors	2.88(0.80)
Self-efficacy to operate the market	I am confident in my ability to manage the farmers' market	3.45(0.50)
	I am confident in my ability to promote the farmers' market	3.45(0.58)
	I am confident in my ability to promote the market to low-income people in the community	3.02(0.74)

* Scores for managers who do not have SNAP/EBT at their farmers' markets; n=12

**Scores for managers who do not have SNAP/EBT at their farmers' markets; n=48

APPENDIX D

Farmers' Market Manager Survey

North Carolina Spring 2014 Farmers' Market Manager Survey

The first questions ask about the market you manage.

1. Farmers' Market Name (the farmers' market you manage)

2. Farmers' Market City

3.

The following questions ask about the market you manage and your experience as a manager.

3. What is your age in years?

4. Including 2014, how many seasons (e.g., May-October) have you managed this farmers' market?

5. Are you paid to manage the farmers' market?
 Yes
 No

Now, we're going to ask about some questions about farmers' market operations.

6. This question is about PAID farmers' market employees.

Including you, how many full-time (30 hours/week) seasonal workers does your market employ?

Including you, how many part-time (less than 30 hours/week) seasonal workers does your market employ?

Including you, how many full-time (30 hours +/week) year round workers does your market employ?

Including you, how many part-time (less than 30 hours/week) year round workers does your market employ?

7. This question is about VOLUNTEERS working at the Market.

Including you, how many volunteers work at your market?

8. Including 2014, how many years has the farmers' market been in operation?

North Carolina Spring 2014 Farmers' Market Manager Survey

9. Please provide the farmers' market hours in the day, hour and month format.

For example:

Tuesday and Thursday, 1pm-3pm, November-March

Wednesday and Saturday, 8am-12pm, May-October

Friday and Saturday, 8am-3pm, June-October and Online from November-March

10. How many vendors participated at your market in 2013? (Count each producer/vendor only once. Do not count each separate time they participated in the market).

11. On average, how many vendors participated at your market each week in 2013?

12. What was the total annual revenue from producer/vendor sales at your market in 2013?

(Please estimate if you do not know the exact figure?)

13. In 2013, how many vendors at your market only sold farm products they produced themselves? (Count each producer/vendor only once. Do not count each separate time they participated in the market).

14. On average, how many customers visited the market each week in 2013?

15. Please rank the **3** MOST important reasons you believe people in the community shop at the farmers' market and rank them in order of importance.

	The Most Important Reason	The 2nd Most Important Reason	The 3rd Most Important Reason
Freshness and quality of the products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Variety of products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taste and texture of the products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support of local agriculture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access to federal nutrition benefits at the market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Price of products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to know how foods are produced	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you chose other, please clarify what you mean.

North Carolina Spring 2014 Farmers' Market Manager Survey

16. Which of the following statements about your market was MOST true in 2013?

- We have more demand than supply (we need more producers/vendors)
- We have more supply than demand (we need more customers)
- Our supply and demand are roughly equal

17. Who develops rules, regulations, and producer/vendor criteria for your market (select all that apply)?

- State government agency
- City/municipal government agency
- Non-profit (501(c)(3)) or community organization
- Board of directors/steering committee
- Manager
- Other (Please clarify what you mean)

4.

The next questions are about the community where the farmers' market is located.

North Carolina Spring 2014 Farmers' Market Manager Survey

18. Please state if you agree or disagree with the following statements about the community where the farmers' market is located.

	Strongly Disagree	Disagree	Agree	Strongly Agree
Many people in the community have trouble <u>affording</u> healthy food, like fresh fruits and vegetables.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For most people in the community, healthy food is too expensive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Many people in the community have trouble <u>accessing</u> healthy food, like fresh fruits and vegetables.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are plenty of places for people in the community to buy fresh fruits and vegetables.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in the community don't eat enough healthy foods, like fruits and vegetables.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in the community generally have healthy eating habits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Please state if you agree or disagree with the following statements about the community where the farmers' market is located.

	Strongly Disagree	Disagree	Agree	Strongly Agree
Hunger is a problem in the community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most people in the community have enough food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Obesity is a problem in the community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most people in the community are at a healthy weight.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in the community are generally healthy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following questions are about your experiences managing the farmers' market.

North Carolina Spring 2014 Farmers' Market Manager Survey

20. Please state if you agree or disagree with the following statements about farmers' market resources.

	Strongly Disagree	Disagree	Agree	Strongly Agree
I am aware of the North Carolina Community Transformation Grant Project's effort to enhance and establish farmers' markets in the state.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware of grants to make healthy food more affordable at farmers' markets.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Cooperative Extension Office has been a resource for the farmers' market I manage.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am familiar with organizations that support farmers' markets.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

North Carolina Spring 2014 Farmers' Market Manager Survey

21. Please state if you agree or disagree with the following statements about your role as a farmers' market manager.

	Strongly Disagree	Disagree	Agree	Strongly Agree
It is important that low-income people feel welcome at the farmers' market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important that everyone in the community is able to shop at the farmers' market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a diverse mix of products at the market is important to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensuring the products sold at the market are locally grown/made is important to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helping small businesses is important to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is a challenge to offer a diverse mix of products at the market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy facilitating a place where the community can gather.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creating a family atmosphere at the market is important to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low-income people in my community feel welcome at the farmers' market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

North Carolina Spring 2014 Farmers' Market Manager Survey

22. Which aspects of your job as farmers' market manager do you believe to be **MOST important? Please rank in order of importance, with "1" representing the most important aspect of your job, and "6" representing the least important aspect of your job.**

	1- Most important	2	3	4	5	6- Least important
Making healthy food more affordable in my community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Making healthy food more accessible in my community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting local agriculture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting local artisans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting the local economy in general	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Making the community a better place	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you chose other, please clarify what you mean.

23. Please state if you agree or disagree with the following statements about farmers' market support.

	Strongly Disagree	Disagree	Agree	Strongly Agree	N/A
The city where the market is held makes it easy to operate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The corners of the space where the market is held are easy to work with.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in the community support the farmers market.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know where to find resources for the market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel supported by the community as a market manager.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel supported by the vendors as a market manager.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel supported by the steering committee/board of directors as a market manager.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. In 2013, did individual vendors operate SNAP/EBT at the farmers' market?

- Yes
- No

North Carolina Spring 2014 Farmers' Market Manager Survey

25. In 2013, was SNAP/EBT handled through a market-wide program? For example, did the market operate SNAP/EBT centrally?

- Yes
 No

5.

These questions ask about your experiences operating the SNAP/EBT program at the market.

26. Were you responsible for managing SNAP/EBT at your Market?

- Yes
 No

27. What was the value of SNAP/EBT sales at your market in 2013?

28. How many customers participated in SNAP/EBT at your market in 2013?

North Carolina Spring 2014 Farmers' Market Manager Survey

29. Please evaluate the following questions about the SNAP/EBT program.

	Strongly Disagree	Disagree	Agree	Strongly Agree
Providing SNAP/EBT at the farmers' market makes it easier for people to buy healthy food in my community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SNAP/EBT is an important feature of the farmers' market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having SNAP/EBT at the farmers' market makes healthy food more affordable to people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having SNAP/EBT at the farmers' market is a good thing for my community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having SNAP/EBT at the farmers' market helps the hunger problem in my community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having SNAP/EBT at the farmers' market makes healthy eating easier in my community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in my community use SNAP/EBT at the farmers' market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is a challenge to attract people to SNAP/EBT at the farmers' market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having SNAP/EBT at the market helps the local economy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having SNAP/EBT encourages low-income people to come to the market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in my community are aware of SNAP/EBT at the market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of transportation prevents people from using SNAP/EBT at the market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The board of directors/steering committee like the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Farmers like the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Farmers trust the	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

North Carolina Spring 2014 Farmers' Market Manager Survey

SNAP/EBT program.

I trust the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The market can afford to operate the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The SNAP/EBT program does not take much time to operate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The SNAP/EBT system is complicated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't know much about the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to operate the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to manage the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to provide the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to encourage vendors to participate in the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to explain the SNAP/EBT program to vendors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6.

These questions ask about the SNAP/EBT program.

North Carolina Spring 2014 Farmers' Market Manager Survey

30. Please evaluate the following statements about the SNAP/EBT program.

	Strongly Disagree	Disagree	Agree	Strongly Agree
Providing SNAP/EBT at the farmers' market would make it easier for people to buy healthy food in my community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SNAP/EBT would be an important feature of the farmers' market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing SNAP/EBT at the farmers' market would make healthy food more affordable to people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing SNAP/EBT at the farmers' market would be a good thing for my community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing SNAP/EBT at the farmers' market would help the hunger problem in my community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing SNAP/EBT at the farmers' market would make healthy eating easier in my community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in my community who would use SNAP/EBT at the farmers' market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having SNAP/EBT at the market would help the local economy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having SNAP/EBT would encourage low-income people to come to the market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in my community ask about SNAP/EBT at the market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People who would use SNAP/EBT at the market cannot get there because they lack transportation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The board of directors/steering committee like the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Farmers like the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Farmers trust the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

North Carolina Spring 2014 Farmers' Market Manager Survey

I find the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The market can afford to operate the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The SNAP/EBT program would not take much time to operate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The SNAP/EBT system is complicated.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't know much about the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to operate the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to organize the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to promote the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to encourage vendors to participate in the SNAP/EBT program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to explain the SNAP/EBT program to vendors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7.

These final questions ask about your overall experiences managing the farmers' market.

31. Please evaluate the following statements about managing the farmers' market.

	Strongly Disagree	Disagree	Agree	Strongly Agree
I feel I have done a good job managing the farmers' market.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to promote the farmers' market to the community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to promote the farmers' market to low-income people in the community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8.

APPENDIX E

Qualitative Themes and Select Illustrative Quotes

Themes and select quotations from focus groups with farmers' market managers in Southwest Virginia, East Tennessee, and Western North Carolina, n=8

Theme	Select Quotation
Manager's role	<p><i>"Manager. That would be talkin' with vendors. For me, it's talking with vendors, farmers and the customers, as well as the town. Liaison between the town with everyone."</i> –Rural farmers' market manager</p> <p><i>"I do a little more of the volunteer coordination for the information booth and the handling of the credit card machine and that kind of thing. And we both deal with, you know, vendor issues or anything that might come up - pretty much share that job."</i> –Rural farmers' market manager</p> <p><i>"Promotion is one of the biggest things we do just both in terms of ... through social media, through the paper, through just being there. Trying to get the word out, not only for the market, but for the individual vendors. Trying to do some of the education."</i> –Rural farmers' market manager</p>
Motivation	<p><i>"I think probably the importance of, I feel, the importance of preserving farmers' markets. Especially with a lot of political movements right now in terms of the disappearance of farmers' markets. I just feel passionate about keeping local food production, small farmers and small growers, those type of people in business and fully supported by the community."</i></p> <p><i>"Teaching people in the community that farmers need to pay their bills after October, too. Just like you do! They need to clothe their children. They need to feed their animals...When I have [farmer's name] calling me who has a cattle farm who has slaughtered a bunch of cattle and who has all this meat and no place to sell it and I have to say "No" to him, it upsets me for a week. Now that I have been on these farms, I get it...I get it. I understand. I need to find a way to bring him to the market so people can buy his product, so he can pay his bills, so he can put shoes on his kids' feet."</i></p>
Market's contributions to the community	<p><i>"I would probably say the Wholesome Wave Grant we implement, doubling the dollars for EBT participants, has been a crucial piece of community development in terms of matching dollar for dollar EBT cardholders when they come to the market. So I think it's not only boosted the local economy for the grower with that influx of cash, but also helps those economically disadvantaged people to come to the market, eat healthier food, really be exposed to the market"</i></p>

	<i>community, and just moving in a more positive direction health wise, I think, altogether. That's been a great grant to get people healthier in the community.” –Rural farmers’ market manager</i>
Enjoyment	<p><i>“Every weekend I cry. And I don’t know why! And it just comes out. I don’t know why it happens. I see this family environment. I’ll give you an example. The first day of the market, January 4th...All the farmers are showing up. They’re hugging and kissing and high fiving each other. They’re already family. They all want to be next to each other the way they were in the summer markets and there’s already this family there. And that’s really sweet. “ –Urban farmers’ market manager</i></p> <p><i>“Yes it does. And I love the culture of the farmers market. I love the culture of the community. It’s a family. We are literally family in that community.” – Rural farmers’ market manager</i></p>
Challenges	<p><i>“He challenge has been when a particular vendor gets unhappy with something and then trying to step back and not take things personally.” –Rural farmers’ market manager</i></p> <p><i>“I think trying to, for lack of better words, keep everyone happy is also a really big challenge because they don’t necessarily know what’s going on behind the scenes in terms of decision making and rule making. And then enforcement. And you’re always on the front line doing the enforcing. And so you’re constantly kind of the bad guy in the situation.” – Rural farmers market manager</i></p> <p><i>“One of them is dealing with the church where the market is at. We had a big dispute over me having a key to the church and them feeling like the market was like taking advantage of having access to the church – like using their water. So it was narrowed down to only the vendors using the bathroom. Everyone was up in arms, like so angry. We definitely got over the hump and that was the biggest issue with the church.”</i></p> <p><i>“[Retail space where the market is located] wants us to stay because we’re bringing people...and...people are staying and shopping now. But [they] in turn [are] not willing to help the [farmers’ market organization name] retain the winter market. So, it needs to be a two way street. And that’s not happening. And the merchants also find that it’s beneficial and they don’t want us to pull out. But then again there’s no incentive for us to stay there.”</i></p>
SNAP/EBT perceptions	<i>“... And it’s definitely, every one of those \$1 tokens came from somebody that couldn’t buy in our market the previous year. And I would collect every two weeks, and many times it would be \$600 worth of tokens. Of just the \$1 tokens. And that was. I think most of our vendors realize that was business we wouldn’t have had previously. So, I think it made a big difference on our members outlook on it.” –Urban farmers’ market manager</i>

	<p><i>“But people who realized what we could do, it was like you could just, they were thrilled. The fact that they felt like they could afford fresh, healthy food was great.” –Rural farmers’ market manager</i></p> <p><i>“I’d say like 98% are completely on board with it. They’re supportive and excited that it’s income for them, too. Support for the local economy. But then there are, yeah there are the few that for political reasons and for personal reasons who are extremely against it. There are one if not two vendors who don’t accept the coins. It’s just a personal choice.” – Rural farmers’ market manager</i></p> <p><i>“So. No one had a problem with that. Once we explained how we’ll do it “It’s done here. As soon as you’re over, we’ll get your tokens right now.” Nobody had a problem with it.”—Rural farmers’ market manager</i></p> <p><i>“We haven’t had much of a problem with it. It took people a little to understand the system. And we pay out once a month. But if somebody needs to get cashed out that day we’ll do it. And there’s a couple of vendors who do regularly get cashed out.”-- Rural farmers’ market manager</i></p>
SNAP/EBT challenges	<p><i>“.... it’s way to expensive for us because they market’s funds solely come from vendor fees, which is \$80 for a season, or \$15 a day. It would take up like getting the EBT machine would be more than half of the year’s funding. So it just feels like a huge commitment for not necessarily knowing the gain quite yet.”</i></p> <p><i>“They said they felt like our money and time shouldn’t go toward EBT, but rather just getting people at market in the first place through administering credit and debit card through square on my iPhone which is how we do it.”</i></p> <p><i>“And we have a core of really regular EBT customers, but it’s not a very big core. We would like to feel like we’re reaching more people with that and we’ve struggled with exactly how to do that.”</i></p>
Rules and restrictions	<p><i>“We also have a rule that vendors need to be from within a 100 mile radius. For craft vendors, they and their immediate family have to make the craft. That’s our way to prohibit yard sale kind of stuff. You know, keep the quality up. We’ve talked about having a jurying committee for crafts--we haven’t gotten to that point.” –Rural farmers’ market manager</i></p> <p><i>“We also have a rule. We’re supposed to be a producer market. We’re working on making it so a vendor may be able to sell some items that aren’t available at the market as long as they can identify the local... It still has to be within that 100 mile radius...but identify the local farm it’s coming from. And that’s mainly just to increase the amount of availability of</i></p>

product". –Rural farmers' market manager

"We have to stand guard over that rule pretty carefully. But the farmers like it because they know they won't be overrun." –Rural farmers' market manager

Themes and select quotations from interviews with farmers selling at farmers' markets in Southwest Virginia, East Tennessee, and North Carolina, n=8

Theme	Relevant Quotation
Direct-consumer sales	<p><i>"I would say one of the motivations was to get premium price for our product. Yes, thinking back to when we started in such a small way...An outlet for some of the preserves that we were making, and I guess those two reasons were primary way back then. To get that premium price." -Participant 2</i></p> <p><i>"Ahhhh Money. When you've got a product you've gotta get it out there and direct sales is one of the best ways, and it's something that anybody...It's one of the ways of marketing a product that turns over immediate cash and pretty much anybody of any size can take part in. So that was the number one motivation." –Participant 7</i></p> <p><i>"I had a large garden, and most of the time I had a surplus, and the fact it's the great way to engage in the community as well. Kind of our business started as an edible landscaping business. It didn't catch on very well around here, so we just kind of started selling produce as part of it." –Participant 3</i></p> <p><i>"So we knew that they were a good source of income for farms. So, I we started at the [Name] Farmers Market. We sold there for 5 or 6 years. And the motivation was just another income stream. As a small farm, you have to figure out lots of different avenues. It was just like a diversification thing." –Participant 4</i></p>
Characteristics of an attractive market	<p><i>"... We've found that there is very much a limit to how many cheese sellers can find it profitable to be in the same market depending on the market size. So we really examine that, too. We're only in one market, I think, with another cheese seller – and that's by design." –Participant 7</i></p> <p><i>"A variety of things that are going to entice the public to come there because I think if we only sold produce, a lot of people won't come. Or people would say, you know, I need other things and I don't just want to come there...You know, it's a convenience factor for some people. So I think it's really important to have diversity in a market." –Participant 6</i></p> <p><i>"I'm also an organic farmer. For me it's important to be at a market where there are other organic</i></p>

	<p><i>producers, and so there's a consciousness about that."</i> –Participant 6</p> <p><i>"There's a lot of good people that sell there. We knew a circle of the vendors before we started. It's not really a competitive market; instead everyone tries to help each other out. So, we like that aspect as well."</i> –Participant 3</p>
Characteristics of a good manager	<p><i>"Well, I think organizational skills are critical there. To be able to set up properly to begin with. And then you have to administer it. You have to be able to anticipate and also react to any changes or last minute things that might happen. And be able to work through that quickly so everything stays on track."</i> –Participant 5</p> <p><i>"I think that first and foremost a good farmers market manager has excellent communication skills. They have to be able to communicate clearly, frequently with the vendors. We have to know what's expected, and what we can and can't do. And when we can and can't do something. And...just communication is very important."</i> –Participant 8</p> <p><i>"...I think good communication is a really important skill to have because you're managing so many different types of people that are typically stubborn and difficult to deal with types of people. You have to be a good communicator and you have to be really firm."</i> –Participant 4</p> <p><i>"I think another thing is fairness. Fairness to the participants in the market. Not having favorites, in essence. Or...choosing one side over another. I think that's really important. You know, listening to all sides of an issue is really important. Enforcing the rules is kind of a big part of fairness, too. If there's a set of rules that they may not be, you know, there may not be a committee or a um...you know, voting on the rules. But by agreeing to participate in the market you accept the rules, then those rules need to be enforced and followed."</i> –Participant 8</p> <p><i>"Just....If you don't....if the market manager doesn't things to help promote. Vendors definitely contribute to promoting the market. But the manager has to advertise, has to do things to promote it, think of ways to get the vendors involved and excited. So very, very important."</i> –Participant 6</p>
The influence of management on sales	<p><i>"I really think the manager is key to successful economics of the market. It influences it pretty heavily. Not in terms of the day-to-day, like on my Saturday my personal interaction, but his or her</i></p>

	<p><i>role as the manager influences the experience as an economic success.... Yeah, I think it makes a big difference. We really struggled for years in crappy markets with poor management and promotion.”</i> –Participant 4</p> <p><i>“Partially...I think probably the most biggest way they could effect sales would be advertising, whether it be on Facebook or on radio or on TV or whatever. Making the public aware of what’s available. If they’re aware someone at the market that’s selling something, and someone’s looking for that item, point them in the right direction.”</i> –Participant 1</p> <p><i>“The only.... Ok...The only way the could impact is if they really promote the market. So, if they promote the market and more people come, that’s definitely going to impact my sales. Again ,the [Name] Market manager at the time was not promoting. Was not advertising or creating events to engender more participation from the community.”</i> –Participant 6</p>
SNAP/EBT experiences	<p><i>“I like it. I think it’s a good thing. I’m certainly not one to see that dropped because it brings additional sales to the vendors.”</i> –Participant 1</p> <p><i>“I am really proud to be a participant in the program because it allows people who would not be shopping at the farmer’s’ market otherwise to shop there and to help provide underprivileged people with access to good, healthy, local food....So, our sales have increased as a result of being in the SNAP program. It gives us access to a larger market as well.”</i> – Participant 3</p> <p><i>“It’s worked out pretty well for us. I think we’ve made sales that we wouldn’t have made otherwise.”</i>- Participant 7</p> <p><i>“My sales at market really increased because of that, and I know a lot of other people’s have too.”</i>- Participant 8</p> <p><i>“Farmers markets – some farmers markets- can be more upper class, and you know, that, frankly for us, it’s good. Because our prices are not the highest at the market, by any means, but they tend to be higher than Wal-Mart, maybe. So you know, it’s great that people area able to get actual, real fresh produce. So, I’m delighted that’s offered.”</i>—Participant 8</p>

APPENDIX F

Application of Health Belief Model Constructs to Select Aim 3 Quotes

	Quotation
Perceived barriers (general)	<i>“One of them is dealing with the church where the market is at. We had a big dispute over me having a key to the church and them feeling like the market was like taking advantage of having access to the church – like using their water.” – Farmers’ market manager</i>
Perceived benefits (general)	<i>“Ahhhh Money. When you’ve got a product you’ve gotta get it out there and direct sales is one of the best ways, and it’s something that anybody...It’s one of the ways of marketing a product that turns over immediate cash and pretty much anybody of any size can take part in.” – Farmer</i>
Cues to action	<i>“I would probably say the Wholesome Wave Grant we implement, doubling the dollars for EBT participants, has been a crucial piece of community development in terms of matching dollar for dollar EBT cardholders when they come to the market.” – Farmers’ market manager</i>
Motivation	<i>“Teaching people in the community that farmers need to pay their bills after October, too. Just like you do! They need to clothe their children. They need to feed their animals...” – Farmers’ market manager</i> <i>“Yes it does. And I love the culture of the farmers market. I love the culture of the community. It’s a family. We are literally family in that community.” – Farmers’ market manager</i>
SNAP/EBT barriers	<i>“.... it’s way to expensive for us because they market’s funds solely come from vendor fees, which is \$80 for a season, or \$15 a day. It would take up like getting the EBT machine would be more than half of the year’s funding. So it just feels like a huge commitment for not necessarily knowing the gain quite yet.”-Farmers’ market manager</i>
SNAP/EBT benefits	<i>“But people who realized what we could do, it was like you could just, they were thrilled. The fact that they felt like they could afford fresh, healthy food was great” – Farmers’ market manager</i> <i>“I am really proud to be a participant in the program because it allows people who would not be shopping at the farmer’s’ market otherwise to shop there and to help provide underprivileged people with access to good, healthy, local food” – Farmer</i>
SNAP/EBT self-efficacy	<i>“Once we explained how we’ll do it “It’s done here. As soon as you’re over, we’ll get your tokens right now.” Nobody had a problem with it.”—Farmers market manager</i>

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Book Chapters:

Greever, C., Ward, R., Williams, C. (2014) "The Growing Problem of Diabetes in Appalachia". *Clinics, Cultures, Communities: Appalachian Health Examined*. Jefferson, NC: McFarland Press

Honors and Awards:

Tennessee Higher Education Commission Harold Love Outstanding Community Involvement Award, 2014
Southern Sustainable Agriculture Research and Education Graduate Student Research Grant, 2013-2014
Second Place, Appalachian Student Research Forum, 2013
Tennessee's LIFE PATH Scholarship, summer 2012
East Tennessee State University ASPIRE Appalachia Scholarship, summer 2012
East Tennessee State University College of Public Health Chair's Service Award, 2012
East Tennessee State University College of Public Health Humanitarian Scholar, 2012