Farmers Market Access by Snap-eligible Mothers of Young Children: Barriers and Impact on Nutrition Education Programming for Cooperative Extension

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ABSTRACT

Providing improved access to farmers markets and other local food outlets for low-income audiences is an increasingly popular nutrition intervention strategy to promote consumption of fresh fruits and vegetables and address obesity. The USDA encouraged more farm to fork initiatives and efforts to connect low-income populations with fresh and healthy, local foods through farmers markets through the implementation of the Supplemental Nutrition Assistance Program Nutrition Education (SNAP-Ed) provisions of the Healthy, Hunger-Free Kids Act of 2010. The purpose of this research was to assess the perceived barriers to farmers market access and strategies for overcoming those barriers for low-income individuals and families participating in Cooperative Extension nutrition programming. Data collection procedures included a survey of SNAP-Ed and the Expanded Food and Nutrition Education Program (EFNEP) program assistants, focus group discussions with SNAP-eligible individuals, and a photo elicitation study with mothers of young children. Results from these studies provide insight on how to structure program assistant trainings to encourage the inclusion of an optional farmers market orientation lesson in SNAP-Ed and EFNEP curricula; low-income individuals' perception of healthy food, access to and perception of local foods, benefits and barriers to shopping at farmers markets, and the impact of local foods on diet quality; and how to address perceived barriers through Cooperative Extension nutrition programming for the SNAP-Ed and ENFEP target population of SNAP-eligible mothers of young children. Working with farmers markets is an opportunity to form greater synergy between the arms of Extension (Family and

Consumer Sciences, Community Viability, Agriculture and Natural Resources, and potentially 4-H) related to supporting local food systems while forming collaborative relationships with local farmers markets and community members.

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ATTRIBUTION

The manuscripts presented in this dissertation were conceptualized and written by the doctoral candidate. Meredith Ledlie Johnson was included as an author for her contribution with data collection. Dr. Elena Serrano, Dr. Mary McFerren, Dr. Kathryn Hosig and Dr. Kim Niewolny were included as authors because, as members of the doctoral candidate's doctoral committee, they contributed by providing input and guidance as needed for research design and implementation during the research proposal and subsequent individual and committee meetings.

CH. 1 INTRODUCTION

Almost 700 million people in 76 low and middle-income countries are food insecure, meaning that they may not have adequate availability, access, or ability to utilize the food they need for an active and healthy life. Food insecurity can be an acute or chronic condition, with many possible route causes. These may include: war, poverty, population growth, environmental degradation, policy, disease, and/or a combination of these (ERS, 2013).

However, food security is not only a concern of developing or low-income countries. Food security is a documented public health problem in the United States (ERS, 2013). Two different strategies can be used to decrease food insecurity: addressing the symptoms or addressing the root causes. One strategy used by the United States government to address food security is food assistance programs. The Supplemental Nutrition Assistance Program (SNAP) is one such program.

SNAP, formerly known as the Food Stamp Program, is an entitlement program meaning that anyone who qualifies for the program can receive benefits. SNAP is the largest domestic nutrition assistance program in the United States (FNS, 2013a). As of December 2013, more than 47 million individuals and 23 million households participated in SNAP (FNS, 2013b).

Another problem in the United States in addition to food insecurity is the issue of obesity, which is related to a myriad of chronic diseases including heart disease, diabetes, and some types of cancer. Over 35% of the adult population in the United States is obese leading to an estimated $147 billion in annual medical costs (CDC, 2013). Obesity may disproportionately affect certain

populations, especially low-income women and children. Low-income women are more likely to be obese than high-income women (CDC, 2013). Participating in SNAP may also play a role in obesity. There is a correlation between SNAP participation and obesity in non-elderly women with the length of participation being linked to a higher probability of women being overweight (ERS, 2008). SNAP receipt by Hispanic mothers has also tied to infant and children being overweight in Hispanic populations (Watt, Appel, Robert, Flores & Morris, 2013). SNAP participants also have a lower diet quality than low-income individuals not participating in SNAP (Leung et al., 2012; Leung et al., 2013). The USDA has called for small and in-depth studies that focus on specific target populations which could be used to look at the relationship between obesity, poverty, and food assistance programs (FNS, 2005).

SNAP benefits can be used to buy food at a variety of food outlets, including farmers markets. The acceptance of SNAP benefits at farmers markets may promote food security through by increasing access and availability of fresh and healthy local food while promoting economic and community development. This may be a promising strategy to address food security in the United States because farmers markets are growing in popularity. As of August of 2013 there were 8,144 farmers markets in the United States Department of Agriculture's (USDA) National Farmers Market Directory. The number increased 3.6% from 2012 (USDA AMS, 2013). A link between the use of farmers markets and dietary quality is beginning to emerge from the literature. Though it is still unclear whether farmers market access is directly tied to dietary quality, the presence of a local food economy is negatively associated with obesity

and diabetes in certain locations (Jilcott, Keyserling, Crawford, McGuirt, & Ammerman, 2011; Salois, 2012). Given the growing popularity of farmers markets and the acceptance of SNAP at many farmers market, they may be used to improve the dietary quality of SNAP participants in addition to increasing food security through increased food access.

SNAP-Education (SNAP-Ed) is a nutrition education program which focuses solely on SNAP eligible families and individuals offered by Cooperative Extension through the Land-Grant University System, Recently, in 2013 the USDA implemented the SNAP-Ed provisions of the Healthy, Hunger-Free Kids Act of 2010 (FNS, 2013c). These provisions encouraged more farm to fork initiatives and efforts to connect low-income populations with fresh and healthy, local foods through farmers markets. Through collaboration with Virginia Cooperative Extension SNAP-Ed faculty and Staff, this work is a mixed methods, mostly qualitative, approach to assessing the perceived barriers to local food access through farmers markets for SNAP-eligible individuals and families. This research will inform the development, adaptation, and delivery of SNAP-Ed nutrition programming on farmers markets.

Research Purpose:

1. Assess potential barriers to using farmers market as access points to fresh and healthy local foods for mothers with young children participating in the SNAP-Ed program.
2. Explore perceptions of EFNEP and SNAP-Ed program assistants on the relationship between local food access, agricultural practices and health.

3. Determine EFNEP and SNAP-Ed program assistants' perspectives on the use of farmers markets to promote healthy behaviors in SNAP-eligible individuals and families.
4. Explore perceptions of SNAP-eligible individuals on the relationship between local food access and health.
5. Elucidate personal, social, and environmental factors influencing eating behavior choices for SNAP-eligible individuals.
6. Develop and adapt Cooperative Extension farmers market-focused nutrition programming through a participatory process with SNAP-eligible individuals.
7. Determine whether inclusion of a farmers market orientation lesson in SNAP-Ed curricula has the potential to promote the purchase and consumption of fresh fruits and vegetables.

CH. 2 LITERATURE REVIEW

Food Security in America

Despite the large quantity of food produced by the agricultural industry, food security is still an issue faced by many Americans in both rural and urban areas. According to the USDA, food security is access by all people at all times to enough nutritious food for an active healthy life. In addition to food access, two additional parts to food security include availability and utilization (Barrett, 2010). Food access includes the food options given income, pricing, and other "safety net" arrangements. Utilization is whether individuals use the foods to which they have access (Barrett, 2010). Two aspects of urban food security specifically are food production (either from within cities or from surrounding areas) and food access (promotion of fresh and healthy food to the urban poor) (Morgan & Sonnino, 2010).

According to the USDA, 14.5% or 17.6 million United States households were food insecure for at least part of 2012, which changed very little from 14.6% of United States household in 2011 (ERS, 2013). Health disparities, the differences in health status between groups of people based on a variety of factors including but not limited to socioeconomic status, race, ethnicity, gender, immigration status, and geographic location (Neff, Palmer, McKenzie & Lawrence, 2009), are related to food security status. Certain groups experience food insecurity at higher rates than the national average.

Groups experiencing food insecurity at rates higher than the national average include households with children (20.0%), households with children under the age of six (20.5%),

households with children headed by either a single woman or a single man (35.4 and 23.6% respectively), Black, non-Hispanic households (24.6%), Hispanic households (23.3%), and households with incomes below 185% of the poverty threshold (34.4%) (http://www.ers.usda.gov/). Socioeconomic and environmental problems are associated with food insecurity (Morgan & Sonnino, 2010).

There is often a focus on addressing problems of individual food security, however, community food security should also be considered. The emergency food system, while important, is a short-term fix. Emergency food systems, including food banks, soup kitchens, etc. only acutely alleviate hunger, but do not address the underlying causes of food insecurity. Strengthening community food systems is one strategy in conjunction with the emergency food system, to treat chronic causes of food insecurity. Local foodsheds allow for the building of relationships among people, groups, and institutions within communities and the place within which they are located (Hemenway, 2006). The notion of community food security includes reliance on an environmentally and economically sustainable food system to ensure all members of a community have access to a "safe, culturally acceptable, and nutritionally adequate diet" with an emphasis on social justice (Hamm & Bellows, 2003, p. 23). Community food systems increase self-reliance of communities, potentially decreasing the need for outside emergency food aid. A goal of community food systems is to be economically viable for both farmers and consumers. One strategy for doing this is by connecting low-income consumers directly with local farmers (Feenstra, 1997).

A complex relationship exists between food security status, poverty, and obesity in the United States in that food insecurity may be positively linked to obesity level, in what has been termed a paradox (Dinour, Bergen & Yeh, 2007). In the literature, there is clearly a link between food insecurity and obesity in women, however the relationship between food insecurity and obesity for men and children is less clear (Dinour, Bergen & Yeh, 2007). Women experiencing food insecurity tend to be younger, less-educated, Black or Hispanic, single, live in households with incomes below 185% of the poverty line, and have lower salaries on average than their food secure counter-parts (Jones & Frongillo, 2006). They also tend to have lower self-perceived health status and are physically inactive (Jones & Frongillo, 2006).

Food insecurity is also associated with poorer diet quality (Kropf, Holbe, Holcomb & Anderson, 2007). Dinour (2007) suggests the link between food insecurity and obesity in women may be clearer because more studies exist on women than on men and children and/or because of "maternal deprivation" where women sacrifice the quality of their own diet to ensure the quality of their children's diet does not decrease. There does appear to be a link between decreasing income and rising obesity among non-Hispanic black and Mexican-American men (Ogden, Lamb, Carroll & Flegal, 2010), but decreasing income does not necessarily translate to increasing food insecurity.

One reason there is no clear link between food insecurity and obesity is that the prevalence of obesity among adults has risen across all income levels (Ogden et al., 2010). Eighteen percent of men at or above 350% of the poverty line in 1988-1994 were obese

compared to 32.9% in 2005-2008. For men below 130% of the poverty level the percentage rose from 21.1% in 1988-1994 to 29.2% in 2005-2008. The percentages for women are still clearly higher in low-income populations. The obesity prevalence among women with an income at or above 350% of the poverty level rose to 29.0% in 2005-2008 from 18.6%, while women with an income below 130% of the poverty had prevalence levels at 42% in 2005-2008 (up from 34.5% in 1988-1994) (Ogden et al., 2010).

SNAP Benefits

SNAP is the largest domestic nutrition assistance program in the United States (FNS, 2013a). As of December 2013, more than 47 million individuals and 23 million households participated in SNAP (FNS, 2013b). The program is effective in lowering food insecurity and very low food insecurity rates (Bartfield & Dunifon, 2006; Borjas, 2004; Ratcliffe, McKernan & Zhang, 2011; Yen, Andrews, Chen & Eastwood, 2008).

The main reason for changes in SNAP participation is changes in household income. Nearly 40% of SNAP participants experienced a decrease in earnings and one quarter of participants experienced a decrease in other income sources prior to entering the program. The same holds true for individuals exiting the program. Almost half of the individuals leaving the program had increased earnings in the four months prior to leaving the program and nearly a third had an increase in other income sources (FNS, 2011b). Families with children are twice as likely to enter SNAP as families without children and are more likely to live in poverty. Elderly

individuals are the least likely to enter SNAP, but once in the program they stay in longer than other age groups. Single parent households, individuals with disabilities, participants with less than a high school education, and families with no source of income are also more likely to stay in the program than other groups (FNS, 2011b).

The percentage of SNAP households with no other income sources rose from 8% in 2000 to 20% in 2010 (FNS, 2011a). This can be problematic as SNAP benefits are supposed to supplement existing income, but in the case at least 20% of SNAP households, benefits comprise the entire food budget. Participants often have less than a quarter of benefits left by the end of the month (ERS, 2009), increasing the risk of food insecurity until the next month's benefits are received. This has been called the "Food Stamp Cycle" referring to a monthly three week period of overeating when benefits are available at the beginning of the month followed by a one week period of food deprivation when benefits have been spent (Dinour, Bergen & Yeh, 2007).

The relationship between receiving SNAP benefits and obesity is unclear. SNAP recipients often experience food insecurity, which is positively associated with BMI (Jilcott, Wall-Bassett, Burke & Moore, 2011; Martin & Ferris, 2007; Webb, Schiff, Currivan & Villamor, 2008). There is not a statistically significant difference between overweight status of children experiencing food insecurity and those that are food secure, though the rates of overweight and obesity in children experiencing food insecurity remain high (Eisenmann, Gundersen, Lohman, Garasky & Stewart, 2011).

There is a stronger link between food insecurity and overweight and obesity in women. Food insecurity and SNAP participation have each been shown to be negatively associated with self-perceived health status (Walker, Holben, Kropf, Holcomn & Anderson, 2007; Webb et al., 2008; Yen, Bruce & Jahns, 2012) but whether or not there is a link between SNAP participation independent from food insecurity status remains to be determined. Jilcott et al., (2011) found that women receiving higher amounts of SNAP benefits had lower BMIs than women receiving lower amounts of benefits indicating there may be a role for SNAP benefits in reducing food insecurity and, therefore, contributing to decreasing obesity levels. Jones and Frongillo (2006) also found that full program participation offset weight changes in persistently food-insecure women.

Given the ties between food insecurity and health and the alarming rise of obesity in the U.S., there has been interest in using the SNAP program to promote healthy food choices by limiting the use of benefits to only foods with nutritional value. Currently, only the purchase of hot foods, alcohol, and tobacco are prohibited. Nutritional programs with targeted subsidies can be effective in increasing fruit and vegetable intake, even after a particular intervention is complete (Herman et al., 2008).

New York State asked permission to construct a pilot program which would also prohibit the purchase of sugar-sweetened beverages, which currently account for an annual cost of $4 billion through the SNAP program (Shenkin, 2010). The USDA denied the request saying that the proposal lacked rigorous methods to assess changes in sugar-sweetened beverage

consumption and the effect on the health of SNAP recipients (Brownell, 2011). In 2007, the USDA rejected proposals to further limit food purchases to healthy items for similar reasons, citing that it is too difficult to define food as healthy or unhealthy, food restrictions would increase the costs and complexity of running the program, there is no evidence that restrictions would change participants' food choices, nor is there clear evidence linking receiving benefits with poor dietary choices or negative health outcomes (FNS, 2007). A study on the purchasing decisions of SNAP participants in Greenville, South Carolina showed the highest percentage (25.5%) of the foods purchased could be described as discretionary calories. The next highest percentage of foods were from the meat group (21.8%) followed by grains (17.9%). Vegetables accounted for only 12.5% of total purchases (Cone, 2009).

As opposed to hard policy changes designed to restrict dietary choices of SNAP participants, the USDA currently relies on nutrition education as their main strategy to improve the diets of SNAP participants. The USDA Food and Nutrition Service offers funding for nutrition education through SNAP-Ed (formerly known as Food Stamp Nutrition Education). SNAP-Ed is voluntary for state agencies who must have their budget and educational plans approved by the USDA Food and Nutrition Service and resource match to implement their programs.

As of 2009, 86% of SNAP benefits were redeemed at supermarkets (ERS, 2009). Purchases at supermarkets accounted for two-thirds of all SNAP transactions and 40% of SNAP households only redeemed their benefits in supermarkets and supercenters. Only 4% of SNAP

households did not redeem any of their benefits in supermarkets, but this population tended to receive relatively small amounts of total benefits (FNS, 2011c). This has been shifting lately as government support of local food systems as (evidenced by the Community Food Project Grants Program, the National Farmers Market Promotion Program, the Community Facilities Program, WIC Farmers Market Nutrition Program, Senior Farmers Market Nutrition Program, and EBT Farmers Market initiatives) continues to grow (ERS, 2010a).

After the passage of welfare reform under the Personal Responsibility and Work Opportunity Reconciliation of 1996, the use of food stamps at farmers markets was severely crippled. The Act required the transition from paper food stamps to Electronic Benefits Transfer (EBT) by 2002. Many markets were unable to afford or lacked the infrastructure to purchase and install point of sale (POS) devices. Between 1994 and 1998, benefits redeemed at farmers markets dropped from $6.4 million to $3.8 million (Grace, 2008). Recently, initiatives like the EBT Farmers Markets initiative have worked to reverse this trend. The USDA has a grant program to provide markets with POS devices to accept EBT. Markets that conduct at least $100 of SNAP sales per month are eligible for a free USDA-provided POS device. This initiative not only supports farmers markets by attracting new customers, but also has the goals of ending hunger (the original goal of the Food Stamp program), improving nutrition, and combating obesity (FNS, 2013).

In order to combat the perception that farmers markets are elitist or too expensive (Grace, 2008), some markets offer bonus incentives to attract SNAP recipients in the amount equal to

what recipients spend at markets. The matching incentive programs show promise in increasing the purchase and consumption of fruits and vegetables for low-income consumers while increasing revenue to farmers (Baronberg, Dunn, Nonas, Dannefer & Sacks, 2013; Dimitria, Oberholtzerb & Nischanc, 2013; Linday at al., 2013; Young et al., 2013).

In many cases, farmers cannot be expected to provide incentives for low-income shoppers as markets are a vital source of farmers income. Often the funds for this type of project are provided by private foundations, non-profits, and/or local governments. The bonus dollars serve to incentivize patronage of markets by SNAP recipients while increasing the buying power of low-income individuals so they can afford fresh and healthy foods. For example, markets in Massachusetts offering incentive programs had significantly higher SNAP sales (an average of $2,587) compared to markets not offering incentives (an average of $867) (Massachusetts Department of Agricultural Resources, 2011).

Higher prices, lower convenience than supermarkets or supercenters, and lack of transportation were cited as barriers to farmers market attendance for SNAP recipients (Grace, 2008; Racine, Smith Vaughn & Laditka., 2010). These barriers might be based more on perception than the actual built environment as farmers market prices can be less expensive than supermarkets (Lee et al, 2010). Food quality and social benefits are some other reasons SNAP recipients choose to shop at farmers markets (Grace et al., 2008). Advertising these benefits to SNAP-recipients may increase market attendance.

Food Access and Health

Glanz, Sallis, Saelens & Frank (2005) have divided the built food environment into the community nutrition environment and the consumer nutrition environment. Glanz et al. (2005) posit that the number, type, location and accessibility of food outlets make up the community nutrition environment while what individuals encounter in and around these outlets (including types of food and information on food) make up the consumer nutrition environment. Inequalities in the community nutrition environment and the consumer nutrition environment are present within the United States (Black, Moon & Baird, 2013). It appears greater access to and availability of healthy foods is associated with better dietary outcomes while less access and availability of healthy foods is related to poorer dietary outcomes and obesity levels (Black, Moon & Baird, 2013; Papas et al., 2007). More research is needed to truly characterize the relationship between the built environment and dietary and health outcomes.

The built food environment may affect health by mediating exposure to risk factors of obesity, such as improper nutrition. Given the current food landscape in the U.S., this may be an important issue for many Americans. In 2001, roughly 6% of Americans did not have adequate access to food. A lack of food access can be caused by insufficient transportation and food outlets and a lack of affordability (ERS, 2009). Areas where access to healthy and affordable food is limited are termed 'food deserts'. Food deserts contribute to social disparities in diet and health-related outcomes in the U.S. by disproportionately affecting different populations by income and race (Beaulac, Kristjansson & Cummins, 2009). Supermarket and convenience store access are both associated with diet quality. Higher access to supermarkets is associated with a

healthier diet and lower obesity levels, while the opposite is true of convenience store access (Larson, Story & Nelson, 2009). The same can be said concerning childhood obesity levels (Leung et al., 2011; Rahman, Cushing & Jackson, 2011). Some studies show a lack of access to supermarkets is associated with an increased BMI among women in only metropolitan areas, leading the authors of this study to conclude food outlet access is not directly related to obesity in low-income women, but that urbanity must also be considered (Ford & Dzewaltowski, 2011). Others suggest there is a clear link between food access and obesity in metropolitan and non-metropolitan areas (Jilcott, 2011). By the county level, food outlet density is inversely associated with obesity levels (Jilcott et al., 2011). Populations with the lowest food availability had less healthy diets even when adjusting for socio-demographic factors (Franco et al., 2009).

Some studies have striking results when describing the relationship between food access and diet for minority populations. Morland, Wing & Diez Roux (2002) found that Black Americans' fruit and vegetable intake increased by more than 30% with each additional supermarket in the census tract, well above the 11% increase for white Americans. This may be attributed to the fact that minority, low-income and rural populations often have less access to supermarkets and healthy food items and more access to fast-food restaurants and energy-dense but nutritionally poor food items (Franco, Diez Roux, Glass, Caballero & Brancati, 2008; Larson, Story & Nelson, 2009). Other healthy food access barriers for minority populations include a lack of cooking skills and perceptions of accessible food sources (Fish, Brown & Quandt, 2013).

An additional factor which should be considered is inter-venue variability of healthy food items. This may be important when determining access and availability to healthy foods on an individual community basis. A study on access and availability of healthy food in Baltimore, Maryland found that supermarkets in predominately Black, low-income neighborhoods had less healthy food available than supermarkets in predominately White, high-income neighborhoods (Franco et al., 2008). This may explain why some researchers do not find a link between supermarket availability and healthy diets (Boone-Heinonen et al., 2011) and others do (Franco et al., 2008).

More research is also needed to clarify the relationship between food outlet access and obesity. By the county level in the U.S., density of food outlets was inversely associated with obesity levels (Jilcott et al., 2011). Including other factors, such as vehicle ownership and crime levels also impacts measures of health disparities (Bader, 2010). If obesity and food access follow a "socioeconomic gradient", community-level interventions should be aimed more specifically at high risk populations while still being of benefit to communities as a whole (Salois, 2012).

In addition to considering food access in terms of food deserts, 'food mirages' should also be taken into account. Food mirages are locations where healthy food outlets exist, but food prices are expensive, making the outlet inaccessible to low-income consumers (Breyer & Voss-Andreae, 2013; Everett, 2011; Short, Guthman & Raskin, 2007). Mirages may explain why food outlet accessibility does not always correlate with fruit and vegetable intake or the home food

environment (Ding et al., 2012; Ollberding et al., 2012). According to Guthman (2011), focusing solely on food access in terms of geographical location to the grocery stores privileges the supply chain view of food access and ignores the issue of affordability. Instead, Donald (2013) has suggested food access should also be studied in terms of the global retail environment, other ways in which people access food, and, more broadly, affordability and need.

Other strategies to enhance food access besides increasing the number of supermarkets are worth mentioning. Non-supermarket retailers often perceive customer demand as being higher for unhealthy food items, citing this as a motivator when making stocking decisions (Andreyeva, Middleton, Long, Luedicke & Schwartz, 2011). Interventions focused on changing the perception of retail outlet owners and managers may be used to increase the amount of healthy food items offered at these outlets. Improving public transportation to facilitate supermarket access should be considered in policy decisions. Enhancing food delivery or drop-off services by supermarkets have also been suggested as strategies to increase food access (Robert Wood Johnson Foundation, 2007).

Farmers Markets, Local Food Access and Health

Expanding farmers markets is often cited as a potential community health-promotion strategy as they provide additional outlets to purchase fresh fruits and vegetables (Jilcott Pitts et al., 2013; Lee et al., 2010). There is a growing body of literature looking at the health implications of farmers markets, other direct-to-consumer markets, and community gardens, but

measures of health used and the focus of the studies still vary. It does appear the presence of a local food economy plays a role in obesity and chronic disease prevention. A negative association has been seen between local food and county obesity and diabetes rates and as total per capita dollar volume of direct farm sales increased, the rates of obesity and diabetes fell (Salois, 2012).

Farmers market access is inversely related to obesity prevalence in nonmetropolitan counties in the United States (Jilcott et al., 2011), providing an important point of access for populations without ready access to a supermarket. Among a population of Hispanic immigrant women who defined healthy food as fresh and unprocessed, having a farmers market in a home neighborhood increased consumption of fruit, vegetables, and juice compared to women living in a neighborhood without a farmers market (Park et al., 2011). Including farm stands and farmers markets in Hispanic, Asian, foreign-born and low-income increases the measure of healthy food availability (Bader, Purciel, Yousefzadeh & Neckerman, 2010). McCormack, Laska, Larson & Story, (2010) reviewed studies looking at the nutritional implications of farmers markets. Of the 16 studies reviewed, only six reported greater intake of fruits and vegetables, three reported increased intake of vegetables only, and one found that increased fruit and vegetable intake was associated with farmers market nutrition programs. Though, the perception of these markets is that they are more expensive, the food prices in the agri-food system are kept low through externalization of costs, such as those associated with environmental degradation and health care (Lang, Barling & Caraher, 2009).

As mentioned in the previous section, focusing solely on geographical location of food outlets does not adequately address food access. With farmers markets, as with grocery stores, affordability must be taken into account. Programs designed to increase the affordability of foods from farmers markets may also be effective in increasing low-income consumer willingness to shop at farmers markets (McGuirt et al., 2013). Government nutrition assistance programs which offer targeted subsidies toward fresh fruits and vegetables may be effective at increasing fruit and vegetable purchase and consumption. The role of farmers market nutrition programs is particularly interesting, as these programs appear to be more effective than the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and Senior Nutrition Programs alone in promoting the intake of fresh fruits and vegetables (Herman, Harrison, Afifi & Jenks, 2008; Kropf, Holben, Holcomb & Anderson, 2007; Racine, Smith Vaughn & Laditka, 2010).

Farmers market and CSA managers cite social justice as one of their goals (Allen, 2010). In a study by Guthman, Morris, and Allen (2010) farmers market and CSA managers were asked to estimate the percentage of their customers which were low-income. Farmers market managers estimated that 25% of the customers were low-income while CSA managers estimated only 10% of their customers were low-income. Both of these percentages are fairly low, though farmers markets currently have higher level than CSAs. The majority of managers stated they would also be willing to employ additional strategies to increase access for low-income populations.

Characteristics of Farmers Market Shoppers

Despite growing interest in farmers markets and direct-to-consumer marketing there is not a clear picture who shops at farmers markets and other direct-to-consumer outlets. A study which analyzed data from a subset of nearly 2,000 respondents in the National Cancer Institute's Food Attitudes and Behaviors Survey found that food shoppers tend to be female, over the age of 35 years, and White with an annual household income over $50,000 (Blanck, Thompson, Nebeling & Yaroch, 2011). These demographics are similar to those in other studies of farmers market and other direct-to-consumer outlets which characterize shoppers as a largely White, female population with high education and income levels (Baker, Hamshaw & Kolodinsky, 2009; Darby, Batte, Ernst & Roe, 2008; Govindasamy, Italia & Adelaja, 2002)

It is possible that some demographic characteristics are associated with being the primary household food shopper, as women are more likely to be primary shoppers (Batte, Beaverson & Hooker 2003; Bond, Thilmany, Bond, Govindasamy & Thornsbury, 2006), and are not directly linked to whether these populations choose to shop at farmers markets and/or supermarkets. Further complicating characterization of shoppers is the fact that farmers markets are place-based, meaning they differ from location to location. For example, the population of shoppers at an affluent farmers market in North Berkeley varies from the population which shops at a market in a poorer West Oakland community (Alkon, 2008).

Though researchers have tried to characterize farmers market shoppers using demographic information, certain demographics characteristics are not causal for shopping at farmers markets. Zepeda and Li (2006) suggest demographics are a poor proxy for shopping

preferences. Instead, attitudes towards shopping determine the likeliness of attending direct-to-consumer markets. Consumers who enjoy the experience of shopping at farmers markets are more likely to shop at farmers markets, while consumers who value convenience are less likely to shop at farmers markets (Zepeda & Li, 2006). A study in Colorado found that quality was the main factor in purchasing decisions for restaurant food buyers, not price (Starr, 2003). Having a background in farming and supporting environmental efforts is also typical of market shoppers (Brown, 2003). Positive attitudes towards cooking, knowledge about gardening and shopping at health food stores are associated with market attendance while positive attitudes toward low food prices are negatively associated with market attendance (Zepeda & Li, 2006)..

Agriculture and the Supply Chain

Large food manufacturers and fast food chains have great influence over the American food system. They can exert pressure on policy makers to enact change (Gereffi, 2009). Even USDA dietary recommendations are heavily influenced by industry (Nestle, 2007). Subsidies from the U.S. government mainly go towards corn, soybean, rice, wheat and cotton, while vegetable growers and ranchers receive no subsidies (Harvie, 2006). Subsidies have allowed for cheap replacements of sugar (high-fructose corn syrup and corn syrup) and cheap fat sources (soybean oil) to be readily available. While opinions differ on whether or not subsidies have lowered food prices for consumers (Hawkes, 2007), they have contributed to the widespread availability of processed foods with little nutritional value (Harvie, 2006). The average American consumes 474 more calories per day than in 1970 with the majority of those calories coming

from refined grains and added fats and oils (ERS, 2010c). Dramatically more food is available per person than 40 years ago with an additional 54 lbs of vegetables, 17 lbs of fruit, 11 lbs of caloric sweeteners, 35 lbs of grain, 37 lbs of poultry, 34 lbs of red meat, and 22lbs of cheese being produced per person (ERS, 2010c). So, while plenty of food is available at low prices, the costs associated with declining local economies, health care, and the environment have all been externalized.

One strategy to promote healthy eating would be to redirect subsidies for commodities which are used in processed foods to small farmers producing fresh fruits and vegetables that need additional income to keep afloat. Investing in the production, light processing, and distribution efforts of mid-size and aggregating small farmers will allow for greater access to food outlets like supermarkets (Harvie, Mikkleson & Shak, 2009). Aggregating farmers can build their own value chains, or supply chains which promote the core values of equity and fair pay, sustainability, community, health, and food access (Lyson, 2009). Redirecting subsidies would help to keep the prices of healthy foods low while reflecting a more accurate price of processed foods when they are not supported by government monies. This is not an initiative supported by large industries, which have financial incentive to continue with the current subsidy system as top companies also exert control over many parts, if not all, of the production chain.

The conglomerated nature of supply chains forced many small farmers and growers out of business. The total outlets available to the remaining producers have decreased, leaving them dependent on large processors, supermarket chains, and fast food outlets (Gereffi, 2009). As total

food availability has increased so has the amount of processed food. Processed, energy-dense available at low prices, contributes to an obesogenic environment in the U.S. added fats and sugars contribute to the appeal of conveniently available junk food (Drewnowski, 2004). Policy and nutrition interventions focused on the supply side (instead of the consumer side) of the supply chain should be encouraged (Hawkes, 2009).

Researchers have argued that the food system should focus on the common good and support physical, environmental, and economic health (Azétsop & Joy, 2013; Story, Kaphingst, Robinson-O'Brien & Glanz, 2008). Nutrition-oriented value chains, which focus implications of consumption as opposed to economic outcomes, are another approach to altering the supply chain and addressing chronic disease (Hattersley, 2013). Policy should be used to address all of the factors related to getting food from the farm to the table. This means from production, processing, distribution, preparation, and consumption and should include all of the players in the food system including producers, agriculture and food system workers, policy makers, purchaser, distributors, and consumers (Story et al., 2008).

Policies at the local and regional level can be used to support healthy food systems. Some such policies are zoning laws, growth management laws, mitigation ordinances, environmental laws curbing pesticide use and exposure for workers, and increased clarity within the food system achieved through labeling which would allow consumers to make informed decisions about the food they are buying (Harvie, Mikkelsen & Shak, 2009; Mayo, Pitts, & Chriqui, 2013). Policy at the state and national levels are also made which favor production of certain

commodities in certain regions of the county. These policies may be affected in the future by rising energy and production costs, ideally favoring local food procurement to decrease costs associated with fossil fuels (Swenson, 2008).

Promoting healthy diets could lower health care costs by shifting the focus to prevention and away from treatment. Health care costs in the U.S. related to obesity and malnutrition have reached staggering numbers. In 2008, the aggregate national cost of overweight and obesity was $113.9 billion. The direct medical cost of overweight and obesity was between 5 and 10% of total health care costs (CRC, 2013).

The health care industry and public health professionals should engage in promoting policy changes and legislation to promote healthy and sustainable food systems (Harvie, Mikkelsen & Shak, 2009). Public health organizations, like the American Dietetics Association and the American Public Health Association have added sustainable food systems to their list of goals (Harvie, Mikkelsen& Shak, 2009). The United States Farm Bill and the Child Nutrition and WIC Reauthorization Act are two pieces of health-related legislation that influence agricultural production. Policies within health-care institutions, such as adopting farm-to-institution are a way to support local and sustainable food system (Harvie, Mikkelsen & Shak, 2009). The sheer buying power of institutions like hospitals puts them in a more favorable position to support local food systems than individual consumers. Purchasing groups for large institutions spend billions of dollars in food procurement (Harvie, 2006).

Direct-to-Consumer Markets

In contrast to global markets and big agriculture supply chains, direct-to-consumer markets, such as farmers markets, are growing in popularity. In 1994 there were 1,755 markets nationwide. That number increased to 7,175 in 2011 and 8,144 in 2013. The number of markets has been increasing every year. There was a 16% growth in the number of farmers markets from 2010 to 2011. There was a 3.6% increase from 2012 to 2013 (AMS, 2013).

Direct-to-consumer markets supported by the USDA include farmers markets, farm stands, roadside stands, community supported agriculture (CSA), pick-your-own farms, internet marketing and niche markets. Madsen, Banks, and Bristow (2000) divide direct-to-consumer marketing into three types: 1) face-to-face, 2) one based on spatial proximity, and 3) and a spatially extended where information about producers, production methods, and location are provided to consumers in a way that creates meaning and value. These types of markets provide an outlet for small farmers to sell their products. Small farms, which are more likely to rely solely on direct-to-consumer markets than medium or large farms, accounted for 81% of local food sales in 2008 (ERS, 2011).

Direct-to-consumer markets constitute a growing portion of total agriculture sales with sales reaching $1.2 billion in 2007, up from $551 million in 1997 (ERS, 2010b). Though $1.2 billion is a large amount of money, this is actually only 0.4% of agricultural sales. Sales are higher for farms that engage in other practices, like organic production, tourism and custom work (ERS, 2010b).

Direct-to-consumer markets, like farmers markets, may be beneficial to communities in multiple ways, such as stimulating the economy and promoting community health. Lev, Brewer, & Stephenson, (2003) found that markets can draw customers to downtown business locations. Once at the farmers market, roughly 33% of consumers did additional shopping at neighboring businesses. Although promising, the researchers caution against interpreting the data too narrowly and applying it to specific markets as each market is unique. Markets also serve as an important way to connect urban consumers with rural producers (AMS, 1996), who might otherwise lack access to farm fresh food. In Iowa, 72% of market sales occurred at just five urban markets (Otto & Varner, 2005).

Social Movements

Efforts to remake the agri-food system have taken shape in several social movements including the organic food movement, the slow foods movement, the sustainable agriculture movement, and the local food movement. Social movements are temporary formations which generate new knowledge (Eyerman & Jamison, 1991). Modern Western social movements address sociocultural matters which shape social practices (Melucci, 1996). Many values are inherent within these movements. Some aspects of these movements are that they are a part of a place-based system and that they involve eating seasonally, supporting sustainable production methods, supporting small or family farms, promoting diversity, supporting a local economy, building a network between producers and consumers and empowering citizen eaters (Campbell, 2004).

The local food movement has risen in response to globalization and increasing inequality of the food system due to the deregulation of private institutions and markets (Allen, 2008; Harvey, 2005). The local food movement can describe a diet, social movement, economic strategy, and a proposed solution to addressing problems related to the global foods movement (DeLind, 2010). For instance, there has been a decrease in small farms, decreased agricultural diversity and an increasing dependence of many localities on imported food (UC Sustainable Agriculture Research and Education Program, 2001).

A social movement has rallied around 'local food', but defining the term "local" can be difficult due to variation in understanding of the term among individuals, communities and market places. State lines have been suggested as a way to define local (Darby et al., 2008), but this could be misleading for localities near state borders or for particularly large states. According to the 2008 Farm Act, local is defined as traveling less than 400 miles from its origin or from within the state in which it is produced. The 100-mile diet places the limit at 100 miles. Choosing one definition of local may not be practical. The local food movement is place-based, meaning that it must be adapted to individual locations, is value-oriented, and participatory (DeLind, 2010).

In both developing and developed countries, strengthening local food systems, has been one strategy to address food insecurity. In developing countries local food systems are a necessity to ensure food distribution while in developed countries local food systems are a movement in contrast to the agri-food system (Field, Masakure, & Henson, 2010). Consumers

in developed countries choose to buy local for a variety of reasons including wanting to feel involved with or connected to the food system, wanting to decrease their environmental impact, wanting better quality food, and supporting small farms or sustainable agricultural practices (Coit, 2008). Consumers who shop at grocery stores and direct-to-consumer markets assign value to locally produced foods over those generically labeled as grown in the United States (Darby et al., 2008). Other research supports the willingness of consumers to pay a premium for locally-produced goods (ERS, 2010b). This stands in contrast to the neoliberal construction of consumers who are solely motivated by price in de-regulated markets (Kneafsey, 2010). Individuals and communities involved in the local food movement seek to redefine the consumer-producer relationship by being aware of the origins of food and by linking price with quality to construct value and meaning within the food system (Madsen, Banks & Bristow, 2000).

An additional benefit to buying local is support of local economies. This includes local businesses as well as farmers. A study by the Northeast Regional Center for Rural Development found a positive association between the density of locally-owned businesses and per capita income (Fleming & Goetz, 2010). Within the agri-food system, farmers only receive 15.8 cents of each food dollar for the sale of raw commodities with the rest going to food supply chain industries involved in post farm activities (http://www.ers.usda.gov/Data/FoodDollar/app/).

Food prices may be accurately reflected in the local food systems while in the agri-food system social and ecological costs are externalized (Guthman, Morris & Allen, 2006). The local

foods movement does not externalize costs, which may contribute to the perception that prices are higher for local food. However, purchasing directly from farmers ensures they keep a larger percentage of each dollar. Though there is a general perception of local foods being less accessible to lower income populations, a study comparing the prices of local food to non-local food in Iowa found no statistically significant difference in the price between the two (Pirog & McCann, 2009).

An assumption about direct-to-consumer outlets is that they are beneficial to small-scale farmers and to low-income consumers by cutting out middle men and therefore keeping prices low enough for consumers while maximizing the amount of each food dollar which goes directly to farmers. A survey by Perez and Allen (2007) found that 50% of consumers were willing to pay twice as much and 93% of consumers were willing to pay five cents more in accordance with the United Farms Workers Union "5 Cents for Fairness" campaign for strawberries in order to ensure a living wage for farmworkers. Darby et al. (2008) found no statistically significant interaction between shopper willingness to pay premiums for freshness and willingness to pay premiums for locally-produced food. This indicates that freshness and being locally-produced are not necessarily connected in the minds of customers.

As of 2000, only 1% of Americans lived on farms, down from 40% in the 1940's (Pirog & McCann, 2009). Hired labor has replaced family as the primary labor force on farms (Lobao & Meyer, 2001). Family farms are disappearing in the United States. If local food systems can help to ensure a steady supply of customers for farmers and allow them to keep more of every

food dollar, this could increase the viability and sustainability of owning and running a small farm. Local agriculture is the largest growing segment of the retail food market (Salois, 2012).

A major tenant of the local food movement is decreasing food miles, or the miles food travels to get to the plate. Within the global food system individual components of a meal can each travel thousands of miles. This has become the norm, as consumers across the U.S. have come to expect seasonal foods to be available throughout the year. Varieties favored by large corporations are those that travel and store well but do not necessarily have the same nutritional value as heirloom varieties (Swenson, 2008).

Environmental damage is an externalized cost associated with the agri-food system. The Intergovernmental Panel on Climate Change and the Scientific Expert Group on Climate Change and Sustainable Development both assert that action is required to address climate change (Peters, Bills, Wilkins& Fick, 2008). The local food movement is a potential solution, as fewer miles traveled can decrease petroleum dependence. Food-related energy use increased from 14.4% of the U.S. energy budget in 2002 to an estimated 15.7% in 2007 (ERS, 2010c). It is estimated to currently take ten calories of fossil fuel to produce one calorie for consumption (Pimentel, 1994). On average a processed item will travel over 1,300 miles and produce will travel over 1,500 miles before reaching consumers (Coit, 2008). Though the amount of petroleum used on farms is similar between large scale agriculture and small-scale local agriculture, fuel used during processing and delivery can be lessened by supporting local foods

(Coit, 2008). Currently 18% of total emissions are due to livestock production, which includes clearing crop land for pasture, processing and transportation (FAO, 2006).

The participatory nature of the movement increases community self-reliance and also leaves room for local knowledge, in contrast to the global food system. This has led to a shift in focus from local food systems to community food systems. The goal of community food systems is to strengthen various aspects of communities including environmental, economic, social, and nutritional health. This can be done by strengthening the relationships between the different components of a food system, from production to processing, distribution, and consumption. One of the key goals of community food systems is community food security, or "a condition in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice" (Hamm & Bellows, 2003).

Combining Environmental and Social Justice

Focusing on local foods may promote social justice, or equal access to social rights and opportunities, which is currently lacking in the agri-food system. In the agri-food system, power and land ownership have become increasingly concentrated, resulting in exploitation of farm labor (Allen, 2010). The occupations in the U.S. with the greatest risk are those directly related to large-scale agriculture or processing (Bureau of Labor Statistics, 2009).

Increased interest in local foods constitutes a social movement unto itself, formed around foods which have values, relationships and methods embedded (Starr, 2010). Food itself shifted

from being a commodity in the agri-food system to serving as a means to build community in the local food movement (Starr, 2010).

Local food systems have also been critiqued as unequal and hegemonic, with certain classes having more influence and power, and for not inherently including social justice (Allen, 2010; DuPois & Goodman, 2005). However, if local food systems are viewed as a social movement, then the participation by an elite class could help to strengthen the movement and provide resources for the continued growth of local food systems (Starr, 2010). Local food as a movement has formed around creating a more ecologically sound society, monitoring farming practices, and creating space for farmers as social players within the food system (Starr, 2010). The local food movement also deals with equity, in the sense of equal distribution of goods and providing the opportunity for democratic participation (Allen, 2010).

A possible reason for the popularity of local foods is that the local food movement does have social justice embedded, something which previous food movements (e.g. the organic food movement) did not (Guthman, 2008). The organic foods movement was previously identified with supporting small farms and communities, sustainability, and animal welfare. There has been a public shift in perception as the federal government developed organic food standards and corporations 'co-opted' organic foods (Adams & Salois, 2010).

The local food movement represents an opportunity to combine environmental and social justice movements. Local and community food systems are a combination of the sustainable agricultural movement and the community food security movement (Conner & Levine, 2007).

Many parallels exist between the local food movement and environmental justice and sustainable food movements, including an emphasis on community empowerment, social justice, and environmental sustainability (Campbell, 2004; Gottlieb & Fisher, 1996). Including low-income, SNAP-eligible populations in the local food movement may also impact their sense of empowerment, allowing them to contribute to supporting local farmers and their local community.

Systems-Level Approach

Interventions focused on individual-level factors, such as dieting and weight control, may be beneficial on a small-scale. However, many individuals continue to struggle with overweight and obesity (Mann et al., 2007). Interventions with a wider focus, such as those changing the built environment and food policy, may be more effective for large or population-wide changes (Booth, Pinkston & Poston, 2005; Glanz & Yaroch, 2004; Story et al, 2008). Using a systems-level approach to research and interventions on food security and health is more complicated than an individual or modular focus because it moves beyond the effect of what types of food are purchased and consumed by a target population to look at other influences on diet and food security. This type of approach must also take into account processes and influences from other fields including economics, immunology, ecology, etc. (Hammond & Dube, 2012). The inclusion, or recognition, of low-income populations in local and community food systems is more of a systems-level approach to promote food security and health in the U.S.

Justification of Research

Researchers can work towards social justice within the food system by challenging standard modes of inquiry through designing projects using participatory, problem-solving research to engage real people in real life (Allen, 2008). Community participation is critically important in new and developing research. Currently, some activist efforts to involve diverse populations in community food security and food justice movements reflect activist desires more than the desires of the intended population (Guthman, 2008).

There has already been a call for the use of qualitative methodology to assess food security (Barrett, 2010), allowing individuals to give their perceptions on factors contributing to their food security status. Qualitative methodology is more appropriate than quantitative methodology in creating a common discourse between researchers, practitioners, and community stakeholders, which has been called for by multiple researchers (Campbell, 2004; Feenstra, 2002; Gottlieb, 1996). This allows for common goals to be set, increasing the impact of separate movements by combining efforts (Campbell, 2004). Stakeholder analysis, a methodology used in conflict resolution has been suggested and used by Campbell (2004) for determining stakeholder values, interests, positions, approaches to problems, and sources of power of groups such as the in global food movement, the emergency food movement, the environmental justice movement, the sustainable agriculture movement and amongst consumers. Food systems are an emerging field of study. As such, Story et al. (2008) have pointed out the need for more research

elucidating the personal, social and environmental factors influencing individual and population-wide eating behavior.

Theoretical Framework: Social Cognitive Theory

The Social Cognitive Theory (SCT) explains human functions of triadic reciprocal causation (Bandura, 1986). This theory posits that behavior, cognitive and personal factors, and environment all interact with and influence each other to effect the way individuals learn while paying special attention to the cognitive, vicarious, self-reflective and self-regulatory processes which affect the desire to learn and behavior (Bandura, 1989). Bandura, using the SCT, strikes a balance on the causes of human behavior in the nature versus nurture debate, arguing that humans do not act solely because of their nature or because of external stimuli, but rather through an interaction between the two. This places a focus on experience and observational learning.

Two central constructs of the SCT are self-efficacy and self-regulation. Self-efficacy is an individual's belief in their own ability to achieve goals or perform certain tasks or an individual's perceived control over external factors. Self-regulation involves the development of self-sanctions or demands constructed for an individual to be effective in behavior change (Bandura, 1996). Goal-setting and evaluation (self-satisfaction with meeting goals or self-dissatisfaction with not meeting goals) contribute to an individual's perceived self-efficacy (Schunk & Zimmerman, 1994). Successful behavior change through self-regulation involves goal-setting, planning and persistence (Bandura, 1997).

Smedley and Syme (2000) questioned the effectiveness of promoting health intervention strategies when many social and cultural forces and even the physical environment are in opposition to these changes. Information about the perceived barriers or impediments to attending farmers markets by participants could serve to determine the perceived self-efficacy of participants in control over their lived food environment. In accordance with SCT, participants in this study are viewed as both products of and players in their environment.

Other health promotion studies and interventions have been successful when incorporating SCT into the study design (Bandura, 1998; Buckley & Cameron, 2011; Monteiro et al., 2011; Stephens, McNaughton, Crawford, Macfarlane & Ball, 2011). SCT can be used to address social and structural causes as well as personal causes of health behavior problems and to shed light on which potential policy or societal changes will increase farmers market attendance by low-income populations.

SCT also speaks to the self-efficacy of mothers to improve the quality of their diet and their children's diet. A previous study has shown associations between concepts of the SCT, mothers' diets and BMIs. The authors suggest incorporating ways to build elements of self-efficacy, self-regulation, outcome expectations and coping skills into health promotion studies in order to be effective (Byrd-Bredbenner, Abbot & Cussler, 2011). Another recent study incorporated the SCT to focus on promoting healthy eating behaviors in toddlers by working with children 12 to 36 months old and their mothers focusing on outcomes such as: 1) increasing fruit and vegetable consumption for toddlers, 2) improving toddler self-feeding and self-serving

skills, 3) improved attitudes, self-efficacy, and feeding style related to child feeding, 4) and creation of a more positive social environment during mealtimes (Horodynski, Baker, Coleman, Auld & Lindau, 2011).

For this research in particular, based on the SCT, the researchers assume the perceptions of the participants can be used as a proxy for how others in a similar situation view and learn about a particular environment. Therefore, the researchers will work with and learn from community members about their food shopping behaviors and their perceived barriers to farmers market access. The elucidation of the perceived relationship between food shopping behaviors, farmers market access, and health may also increase feelings of self-efficacy in participants regarding control over their own and, if applicable, their children's diet. An assumption made regarding this study is that the participants will learn about farmers markets through the experience of actually attending a market and observing others in that particular environment. Additionally, working with the SNAP-eligible individuals and especially SNAP-eligible mothers with young children to develop effective nutrition programming may increase their feelings of self-efficacy by allowing them to see their impact on the nutrition programs they are involved in.

SCT is also applicable to the portion of this study focused on working with SNAP-Ed and EFNEP program assistants. The researchers made clear their thoughts and opinions were valued and would directly impact the nutrition programming they are responsible for delivering to increase their perceived control over their jobs. By better targeting farmers market lessons to SNAP-Ed and EFNEP program assistants' clients, the programs should potentially be more

effective in eliciting behavior change. SNAP-Ed and EFNEP program assistants' own self-efficacy with regards to their work should be increased if they are assured of their ability to affect behavior change in their clients and meet their professional goals.

Role of Researcher

Researchers play an important part in data collection when employing qualitative methodology. Therefore, it is essential for researchers to recognize and acknowledge their own biases regarding the subject matter and the ways in which these biases may influence the participants through researcher-participant interaction. All focus group sessions were facilitated by a graduate student from the department of Human Nutrition, Foods and Exercise and the Community Nutrition Coordinator from the Food Security Project in the Family Nutrition Program of Virginia Cooperative Extension. Initial access to participants for focus group discussions was provided through collaboration with SNAP-Ed and EFNEP program assistants. Access to SNAP-Ed and EFNEP program assistants for collaboration purposes and for completion of a survey was provided through collaboration with the Family Nutrition Program (FNP) Project Director.

The researchers have preliminary lenses about the topic coming into the study which warrant discussion. The researchers assumed participants would be willing to talk at length about their food shopping experiences and how these experiences influence food buying decisions and would be willing to shop at new venues like a farmers market. In working in collaboration with the FNP Project Director, researchers are expected to play the dual roles of

researchers and promoters of farmers market patronage by SNAP-Ed participants. The researchers also entered the study assuming participants will provide meaningful insights on the individual and social factors, based upon the SCT model, affecting their willingness to shop at farmers markets, food access and their own health.

Photovoice and Photo Elicitation

Photovoice is a form of action research (AR) used to bring about change on personal, group, and community levels (Wang, Yi, Tao & Carovano, 1998). AR was developed in the mid 1940's by Kurt Lewin. Lewin used PAR with the goal of raising the self-esteem of minority groups through critical reflection and group discussion of problems followed by a group decision on how to proceed (Adelman, 1993). PAR and more community-based participatory research (CBPR) are particularly well suited to addressing health disparities in public health (Minkler & Wallerstein, 2003). CBPR serves for exploring the links and crossover between research, practice, and policy and has been used previously to explore and address food security (Minkler, 2010).

Photovoice methodology works within the framework of the empowerment theory. Photovoice is empowering in that it provides participants an avenue to express their opinions and beliefs, while developing a more reciprocal relationship between policy makers or others with power to affect change and those who generally hold less power. Policy makers or people with power can take advantage of Photovoice methodology to show they value participant input and knowledge of various stakeholders. Photovoice also provides an opportunity for participants to

critically explore and define their own situations and in the past has resulted in increased self-esteem in participants (Wang, Yi, Tao & Carovano, 1998). In addition to being an empowering experience Photovoice, like other CBPR and AR methods, provides a balance between research and action by identifying individual and community strengths, building community capacity, and emphasizing co-learning (Catalani & Minkler, 2009). It has also been used previously to address maternal and child health (Wang & Pies, 2004).

This research project does not use pure Photovoice methodology but instead employs photo elicitation techniques which has been used previously for studies of women's views of health and food choices and of other Extension target populations (Valera, 2009; Johnson, 2010; Stephenson, 2012). Focus group methodology was chosen because it is appropriate for use in quality improvement initiatives (Sharts-Hopko, 2001) and research on health disparities (Ruff, Alexander & McKie, 2005). Focus groups allow the researchers to determine not only an individual's perspective on a topic, but also how that perspective is shaped and modified based on group dynamics, which is an important aspect of focus groups (Stewart, Shamdasani & Rook, 2007).

CH. 3 Family Nutrition Program assistants' perception of farmers markets, alternative agricultural practices and diet quality

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Abstract

Objective: To explore Family Nutrition Program assistants perception of farmers markets and alternative agricultural practices for themselves and their clients.

Methods: Cross-section design, survey of Virginia EFNEP and SNAP-Ed Family Nutrition Program Assistants (n=52) working with limited-resource populations.

Results: Twenty-one to 55% of FNP assistants valued and only 5-8% of FNP assistants perceived their clients valued alternative agricultural practices. Benefits to shopping at farmers markets included supporting local economies and food price, quality and safety. Barriers included lack of transportation, location/convenience, hours, and food prices. Assistants rated the benefits to shopping at farmers markets similarly for themselves and their clients, but rated many of the barriers to shopping at farmers markets as significantly lower ($p < 0.05$) for themselves than for their clients.

Conclusions and Implications: Future assistant trainings should address the connection between agriculture and health and how to overcome barriers to shopping at farmers markets for their clients.

Word Count: 150

Keywords: nutrition education; farmers markets, local; alternative agriculture

Conclusions and Implications: Future educator trainings should address the connection between agriculture and health and how to overcome barriers to shopping at farmers markets for their clients.

Keywords: nutrition education; farmers markets, local; alternative agriculture

INTRODUCTION

The Supplemental Nutrition Assistance Program education (SNAP-Ed) and the Expanded Food and Nutrition Education Program (EFNEP) are two of the largest national nutrition education programs in the United States, directed by the US Department of Agriculture, reaching approximately 4.5 million people and over 500,000 low-income families, respectively.[1] Traditionally these programs have focused on food production, preparation, and safety, as well as managing food budgets and resources, health, and, more recently, physical activity. Program implementation has resulted in positive impacts on fruit and vegetable intake, overall diet quality, reading nutrition labels, stretching food dollars, storing and thawing food appropriately,

meeting the recommended amounts of moderate physical activity among low-income populations, and quality of life.[2,-5] Recently, USDA has encouraged Cooperative Extension to use SNAP-Ed to connect their limited resource populations with fresh and healthy local foods through farmers markets;[6] largely given that the lack of access and availability to fresh foods, such as fruits and vegetables, has been tied to health disparities in addition to obesity and diabetes risk across the US.[7-9] Increasing access, or even perceived access, to fresh foods may increase the consumption of fruits and/or vegetables.[10-15] The use of federal benefit dollars at markets may also foster and support local economies and small farms.[16,17]

The use of SNAP-Ed to connect limited resource populations with farmers markets as suggested by the USDA can be accomplished through several strategies, including the encouragement of the use of farmers markets and roadside stands as access points to fresh fruits and vegetables through the use of Electronic Benefit Transfer (EBT) and incentive programs at farmers markets, which match the value of federal nutrition benefits spent at farmers markets. Past research shows that eating local foods and/or the use of EBT/incentive at farmers markets leads to increases in fruit and vegetable consumption and/or sales.[18-20]

Yet, for SNAP-Ed to be effective in reaching the goal of connecting low-income consumers to farmers markets, extensive training and professional development of the Cooperative Extension's Family Nutrition Program (FNP) assistants (the professionals responsible for delivering EFENP and SNAP-Ed program in Virginia) is requisite. To date, little is known of FNP assistants' perceptions and attitudes towards farmers markets and alternative

agricultural practices, particularly within EFNEP and SNAP-Ed. The perception of educators and whether or not they value a program is important if a program is to be effective and elicit behavior change.[21-23] Considering that EFNEP and SNAP-Ed assistants may represent the target population as para-professionals,[24] FNP assistants may face many of the struggles that their participants face in accessing local fruits and vegetables. Therefore, they may be resistant or less effective in encouraging these initiatives in practice.

The purpose of this study was to explore EFNEP and SNAP-Ed assistants' perception of farmers markets and alternative agricultural practices, as they relate to health and perceived barriers and benefits for shopping at farmers markets for assistants and their clients, based upon the conceptual framework that access and availability to sustainable, community food systems impact dietary quality and overall health. The results will provide insight into strengths and challenges of addressing these perceptions and guide the development of trainings and future curricular materials. The results will also be relevant to other states and para-professionals.

METHODS

Participants

A secure, electronic survey was designed to assess Virginia Cooperative Extension (VCE) EFNEP and SNAP-Ed adult FNP assistants' (those responsible for teaching an adult population) thoughts and perceptions about farmers markets, food, food shopping, food preparation,

alternative agricultural practices and health. Consent was implied upon completion of the survey. The Virginia Tech Institutional Review Board approved all aspects of the study.

Survey

The FNP assistants were asked to rate and rank the importance of barriers to and benefits of shopping at farmers markets on a scale from one to 10 with one being a not important barrier and a 10 being a very important barrier. For benefits a one was a not important benefit and a 10 was a very important benefit. Barriers and benefits were identified through a pilot study consisting of a focus group discussion and farmers market tour with limited resource mothers, with input from other researchers and through a search of the literature for identification of critical contributors and themes.[25-27] The FNP assistants' attitudes and their perception of their clients' attitudes towards alternative food production practices were assessed using categories previously adapted from Project EAT.[28,29] As with the study by Pelletier et al (2012) definitions of these terms were not provided, so responses were based upon the FNP assistants' perception of these terms. Questions on socio-demographic characteristics (gender, age, educational level, salary, time spent as an FNP assistant for the VCE FNP) and factors related to health (self-perceived health status, cooking skills,[30] meals prepared at home, fruit and vegetable intake) were also included in the survey. Finally, participants were asked if information on farmers markets should be included in the curricula.

Study Design

The study utilized a cross sectional design, consisting of a secure, electronic survey. The questionnaire was developed by the researchers specifically for this study. Face validity was achieved through reviews by expert researchers and practitioners, specializing in local food access and the impact on diet, weight, and health. Questions were also pilot-tested with junior researchers and nutrition students. The questionnaire was emailed to VCE FNP adult assistants (n=54) by the state's FNP director. In exchange for participation, assistants were entered into a raffle for an e-reader device. It consisted of 49 total questions and required approximately 15-30 minutes to complete. Fifty-four questionnaires were begun and 52 were completed. Informed, voluntary consent was implied by the completion of the survey.

Analysis

Descriptive statistics were used to summarize quantitative data from questions on sociodemographic and dietary characteristics and the attitudes and perception of the FNP assistants on alternative production practices. The data was checked for normality using a Shapiro-Wilk Test. T tests ($P < 0.05$) were used to assess differences between FNP assistants' attitudes towards alternative agriculture practices and the perceived attitudes of their clients. T tests were also used to assess the difference in ratings of benefits to barriers to shopping at farmers markets for FNP assistants and their perceptions of the benefits and barriers for their clients. Bonferroni corrections for multiple comparisons within data sets were also included. Non- parametric Spearman's rank correlation test was used to assess the relationship between FNP assistants' own shopping patterns, self-rated cooking skills, self-perceived health status, and

attitudes towards alternative agriculture practices. All analyses were conducted in SAS JMP version 10 (Cary, NC 2010).[31]

RESULTS

Participant Characteristics

Out of 54 FNP assistants in the state of Virginia, 52 completed the survey. All survey participants were female. The mean age of the participants was 48.8 ± 11.9 years, the mean salary was ~$28,000 ± ~3500, and the mean years of experience as a VCE FNP assistants was 7.6 ± 6.5 years. Fifty-seven percent of the participants had at least some college education. The mean daily servings of fruit and vegetable consumed by the participants were 3.0 and 3.4 servings respectively. Of the respondents 36% reported having good health, and 58% reported having very good/excellent health. Only 4% rated their health as fair and 2% rated their health as poor. The majority of FNP assistants prepare their own meals at home either 3-4 days per week (36%) or 5-7 days per week (63%) and rate their cooking skills as good (27%), very good (46%), or excellent (23%).

Farmers Market Availability and Shopping Behaviors

The mean number of farmers markets in the town or city where the FNP assistants' office was located was 2.2 with 1.7 accepting EBT and 1.5 offering a matching dollar incentive program. The mean number of farmers markets in the town or city where FNP assistants lived was 2.0

with 1.5 accepting EBT and 1.4 offering a matching dollar incentive program. For 82% of the participants, the travel time to the farmers market they shop at most frequently was 20 minutes or less.

Of the survey participants, only 15% shop at a farmers market weekly, 25% shop at a farmers market monthly, 46% rarely shop at a farmers market, and 13% never shop at a farmers market. Farmers markets are not the sole source of local foods, so participants were also asked how often they buy locally-grown foods. Eight percent never, 15% rarely, 52% sometimes and 25% regularly buy locally grown foods. The majority of the FNP assistants purchased most of their produce from a supermarket or Walmart (52% and 28% respectively) while only 4% bought the majority of their produce from a farmers market. The largest percentage of FNP assistants (61%) shop for food at the food outlet closest to their home, while 26% shop at the food outlet closest to where they work, and 13% shop at an outlet which is not the closest outlet to their work or home.

Attitudes Toward Alternative Agriculture Practices

The percentages of FNP assistants saying it was very important that their food was organically grown, made with organic ingredients, not processed, locally grown or grown using sustainable agricultural practices ranged from 21-55%. In contrast, the percentages of FNP assistants saying it was important that their clients' food was organically grown, made with organic ingredients, not processed, locally grown or grown using sustainable agricultural practices ranged from 5-8% (Table 1).

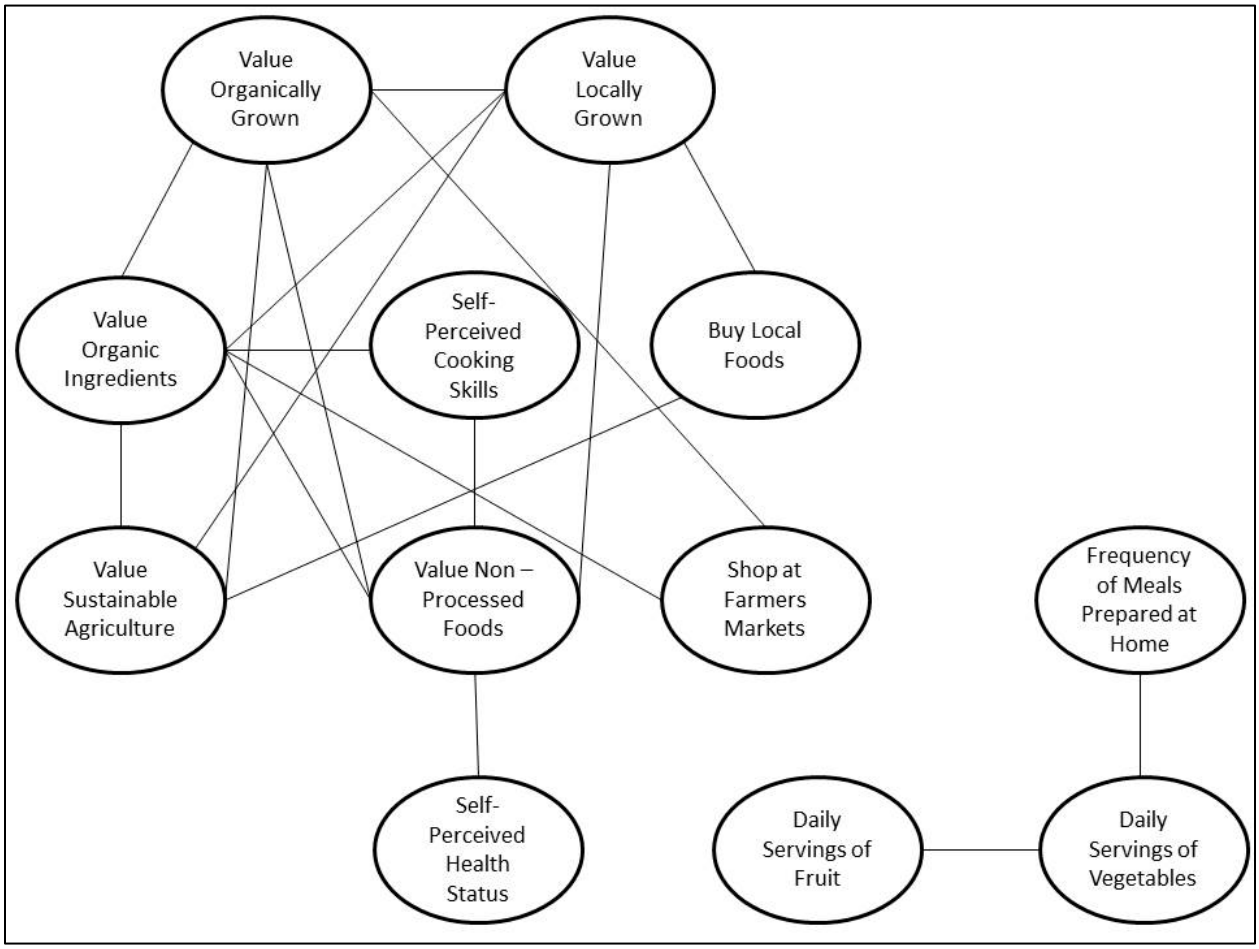
Table 1: Descriptive statistics of EFNEP and SNAP-Ed FNP Assistants' (n=52) rating of importance of alternative agricultural practices for themselves and for their clients.

How important is it to you that your food is	**Not at all (%)**	**A little (%)**	**Somewhat (%)**	**Very (%)**
Organically grown	25	29	25	21
Made with organic ingredients	29	29	18	24
Not processed	4	7	34	55
Locally grown	9	7	46	38
Grown using sustainable agricultural practices	5	16	41	38
How important is it to your clients that their food is	**Not at all (%)**	**A little (%)**	**Somewhat (%)**	**Very (%)**
Organically grown	42	38	15	5
Made with organic ingredients	52	32	11	5
Not processed	27	45	23	5
Locally grown	29	36	30	5
Grown using sustainable agricultural practices	55	26	11	8

Attitudes towards alternative agricultural practices were estimated for a correlation to self-perceived cooking skills, frequency of meal preparation at home, frequency of shopping at

farmers markets, self-perceived health status, daily servings of fruits consumed, and daily servings of vegetables consumed (Figure 1).

Figure 1. Correlations Between Health-Related Factors and Attitudes Towards Sustainable Agricultural Practices For SNAP-Ed and ENFEP FNP Assistants. Lines connecting factors represent statistically significant correlations. Non- parametric Spearman's rank correlation test was used to assess relationships between variables. (*n*=52).



Valuing non-processed foods, organically grown foods, and foods with organic ingredients were found to have the most significant correlations. Self-perceived health status, the frequency of meals prepared at home, daily servings of fruit consumed, and daily servings of vegetables consumed were found to have the fewest significant correlations.

Benefits and Barriers to Shopping at Farmers Markets

FNP assistants rated benefits and barriers to shopping at farmers markets on a scale from 1-10 for themselves and their clients (Table 2).

Table 2. Potential barriers and benefits to shopping at farmers markets for SNAP-Ed and EFNEP FNP Assistants (n=52) for themselves and those perceived for their clients rated on a scale from 1-10. Starred *p* values were considered significant. T tests were used to assess differences.

Barriers	**EFNEP and SNAP-Ed FNP Assistants**	**EFNEP and SNAP-Ed Client**	***p* Value (<0.05)**	**Bonferroni adjusted *p* value (<0.002) significance**
Price of food	5.0	7.4	0.0*	Sig.
Lack of food choice or variety	3.9	5.2	0.0*	Not Sig.
People there	2.6	4.6	0.0*	Not Sig.

Uncomfortable atmosphere	2.6	4.8	0.0*	Sig.
Hours of market	4.7	6.2	0.0*	Not Sig.
Location/convenience	4.0	7.7	0.0*	Sig.
Lack of transportation	3.3	8.8	0.0*	Sig.
Parking	2.9	3.9	0.1	Not Sig.
Not liking to shop outside	1.9	3.8	0.0*	Sig.
Safety of food	2.8	3.6	0.1	Not Sig.
Quality of Food	2.7	3.6	0.1	Not Sig.
<u>Benefits</u>	**EFNEP and SNAP-Ed FNP Assistants**	**EFNEP and SNAP-Ed Client**	***p* Value (<0.05)**	**Bonferroni adjusted *p* value (0.002) significance**
Finding specific foods or a special diet (gluten-free options	4.4	5.1	0.2	Not Sig.

for example)				
Quality of food	7.8	7.5	0.7	Not Sig.
Price of food	6.1	7.0	0.1	Not Sig.
Safety of food	6.8	6.2	0.8	Not Sig.
Food choice	6.7	6.4	0.7	Not Sig.
A wider variety of produce available	6.6	6.2	0.7	Not Sig.
Supporting the local economy	8.4	5.8	1.0	Not Sig.
Knowing who grows your food	7.5	5.2	1.0	Not Sig.
Social experience	5.4	4.8	0.8	Not Sig.
Fresh air	6.3	5.1	1.0	Not Sig.
Availability of unique foods	5.8	4.2	1.0	Not Sig.

On behalf of their clients, FNP assistants identified the quality of the food, the price of the food, the choice of foods available, safety and variety of the food as the top benefits to shopping at farmers markets. For themselves, FNP assistants identified supporting the local economy, the

quality of food, knowing who grows their food, and the safety of foods available as the top benefits to potentially shopping at farmers markets.

For their clients, FNP assistants identified a lack of transportation, the location/convenience, the price of the food, and the hours of the market as the top barriers to shopping at a farmers market. For themselves, FNP assistants identified the price of food, the hours, the location/convenience, and a lack of food choice or variety as the top barriers to shopping at farmers markets.

While the ratings for the benefits for shopping at farmers markets were similar between those for the FNP assistants themselves and the perceived benefits for their clients, assistants rated many barriers for shopping at farmers markets as significantly higher for their clients than themselves. The barriers rated as more significant for clients than assistants included: price of food, lack of food choice or variety, people at the market, an uncomfortable atmosphere, the hours of the market, the location/convenience of the market, a lack of transportation, and not liking to shop outside. Despite the barriers, 94% of the FNP assistants thought information on farmers markets should be included with the FNP curricula.

DISCUSSION

The results from this study offer several findings. The majority of FNP assistants have farmers markets available either near their homes or offices with 84% saying it was somewhat or very important to have locally grown food. Two of the top benefits to shopping at farmers markets

were supporting the local economy and knowing who grows their food. However, relatively few (15%) of the FNP assistants regularly shopped at farmers markets. It is estimated that American consumers spend 0.2% of food dollars at farmers markets.[32] In line with previous research, the price of the food and the hours of the market, convenience, were the top two barriers to shopping at farmers markets, in line with past research on motivators for food purchases[33,34] despite the fact they valued the benefits of buying local foods and shopping at farmers markets. For their clients, FNP assistants identified the price of food as both a top benefit of and barriers to shopping at farmers markets. This seemingly contradictory information may be reflective of the place-based nature of farmers markets[35] and variability in prices. The FNP assistants answers may have differed based on the affordability of foods at the farmers market in their area.

The FNP assistants had a high self-perceived health status, ate an average of 3.0 and 3.4 servings of fruits and vegetables, respectively each day (compared to the national average of 1.1 and 1.6 servings, respectively),[36] and all but one of the FNP assistants reported a high frequency of preparing meals at home (3-4 days per week), which has previously been shown to be associated with fruit and vegetable intake, health and obesity.[37-41] However, in contrast to previous work by Pelletier et al. (2012), where positive attitudes toward alternative agricultural practices were associated with higher dietary quality, there was no association between health-related factors and attitudes towards farmers markets and alternative agricultural practices for FNP assistants. For example, there was no correlation found between daily consumption of fruits

and vegetables and shopping at farmers markets. This indicates clear messages about farmers market benefits, as well as the *whys, whens, and hows*, need to be developed.

A strength of this study is the responsiveness of the FNP assistants to the survey. This response rate is indicative of the population and their responsiveness to the state's FNP Director. This information can then be operationalized to design and structure future FNP assistant trainings. Limitations for this study include that participants were not provided with definitions of alternative agricultural practices. This was done because no popular consensus exists for each of the terms and because providing definitions may have offered leading responses from participants. Additionally, the researchers do not know the actual access of clients to farmers markets. Information on clients is based on the perception and beliefs of the FNP assistants. However, the FNP assistants included in this study are from the community in which they teach; increasing the likelihood of accurate responses compared to educators who are not a part of the population of interest. Finally, the information gathered through this survey is specific to VCE FNP assistants and should be confirmed in other states and organizations before being used to guide programming.

IMPLICATIONS FOR RESEARCH AND PRACTICE

A factor which must be addressed during future assistant trainings is that FNP assistants perceived the benefits to shopping at farmers markets as similar for themselves and their clients

but the barriers to shopping at farmers markets as higher for their clients. Assistants must be given simple, feasible strategies to help their clientele overcome these barriers or identify other strategies for accessing local fresh produce.

One example of a method which FNP assistants may be encouraged to include in nutrition programming is the use of local produce in cooking demonstrations. This is particularly important if promoting farmers markets to low-income populations is to be an effective intervention to increase fruits and vegetables consumption and possibly impact obesity rates. This information should be included in future FNP assistant trainings along with information on how to address key barriers and promote self-efficacy in participants (and assistants) for accessing local foods.

Future research is warranted to explore participants' attitudes toward programs on this topic, to determine if FNP assistants' perception of the barriers and benefits to accessing farmers markets accurately reflect their clients views, to determine effective training strategies to clarify the relationships between alternative agricultural strategies and local foods and dietary quality, effects of EBT on purchasing patterns at farmers markets and other local food outlets, and to elucidate the relationship between FNP assistants and client perceptions of health and local foods. If significant real or perceived barriers to accessing farmers markets do exist for SNAP-Ed and EFNEP clients, evidence-based guidance should be provided to FNP assistants to help their clients overcome these barriers.

REFERENCES

1. National Institute of Food and Agriculture. Nutrition. 2013. Available at http://www.nifa.usda.gov/nutrition.cfm
2. National Institute of Food and Agriculture. The Expanded Food and Nutrition Education Program (EFNEP). 2010. Available http://www.nifa.usda.gov/nea/food/efnep/pdf/2010_Revrack_card.pdf
3. Koszewski W, Sehi N, Behrends D and Tuttle E. The Impact of SNAP-ED and EFNEP on program graduates 6 months after graduation. *J Extension.* 2011;49(5):1-8.
4. Lovett K. Minnesota's Statewide Supplemental Nutrition Assistance Program Education (SNAP-Ed) evaluation system demonstrates participant outcomes. *J Nutr Educ Beha.* 2011;43(4S1):S27-28.
5. Auld G, Baker S, Bauer L, Koszewski W, Procter S and Steger M. EFNEP's impact on the quality of life of its participants and educators. *J Nutr Educ Behav.* 2013; in press.
6. Food and Nutrition Service Release FNS-0005.13. SNAP Nutrition Education Grants Program Streamlined, Will Focus on Critical Problem of Obesity, United States Department of Agriculture Website http://www.fns.usda.gov/pressrelease/2013/fns-000513. Accessed June 25, 2013.
7. Larson, N. I., Story, M. T., & Nelson, M. C. (2009). Neighborhood environments: disparities in access to healthy foods in the U.S. *Am J Prev Med.* 2009;36(1):74-81.

8. Rahman T, Cushing R, and Jackson R. Contributions of built environment to childhood obesity. *Mt Sinai J Med*. 2011;*78*(1): 49-57.
9. Jilcott S, Keyserling T, Crawford T, McGuirt J and Ammerman A. Examining associations among obesity and per capita farmers' markets, grocery stores/supermarkets, and supercenters in US counties. *J Am Diet Assoc*. 2011; *111*(4): 567-572.
10. Rose D. and Richards R. (2004). Food store access and household fruit and vegetable use among participants in the US Food Stamp Program. *Public Health Nutr*. 2004;7(8):1081–1088.
11. Caldwell EM, Kobayashi MM, DuBow WM and Wytinck SM. Perceived access to fruits and vegetables associated with increased consumption. *Public Health Nutr*: 2008;12(10): 1743–1750.
12. Gustafson A, Sharkey J, Samuel-Hodge C, Jones-Smith J, Cai J, and Ammerman, A. Food Store Environment Modifies Intervention effect on Fruit and Vegetable Intake among low-Income women in North Carolina. *J Nutr Metab*. 2012.DOI: 10.1155/2012/932653.
13. Evans A, Jennings R, Smiley A, Medina J, Sharma S, Rutledge R, Stigler M & Hoelscher D. Introduction of farm stands in low-income communities increases fruit and vegetable among community residents. *Health & Place*. 2012; 18(5)1137-43.
14. Grin B, Gayle T, Saravia D, and Sander L. Use of farmers markets by mothers of WIC recipients, Miami-Dade County, Florida, 2011. 2013. Preventing Chronic Disease:10:E95

15. Haynes-Maslow L, Parsons S, Wheeler S and Leone L. A qualitative study of perceived barriers to fruit and vegetable consumption among low-income populations, North Carolina, 2011. *Prev Chronic Dis*. 2013. doi: 10.5888/pcd10.120206.
16. Hanson, K. (2010). The Food Assistance National Input-Output Multiplier (FANIOM) Model and Stimulus Effects of SNAP. Washington, DC: U.S. Department of Agriculture, Economic Research Service. Available at http://www.ers.usda.gov/Publications/ERR103/ERR103.pdf .
17. Food and Nutrition Service. The benefits of increasing the supplemental nutrition assistance program (SNAP) participation in your state. 2011. Available at http://www.fns.usda.gov/snap/outreach/pdfs/bc_facts.pdf
18. Rose N, Serrano E, and Hosig K, The 100-mile diet: a community approach to promote sustainable food systems impacts dietary quality. *J Hunger Environ Nutr*. 2008; 3(2):270-285.
19. Buttenheim A, Havassy J, Fang M, Glyn J and Karpyn A. Increasing supplemental nutrition assistance program/electronic benefits transfer sales at farmers' markets with vendor-operated wireless point-of-sale terminals. *J Acad Nutr Diet*. 2012;112(5):636-41
20. Bertmann F, Ohri-Vachaspati P, Buman M, and Wharton C. Implementation of wireless terminals at farmers' markets: impact on SNAP redemption and overall sales. *Am J Public Health*. 2012; 102(7):e53-5. doi: 10.2105/AJPH.2012.300727.

21. Dickin K, Dollahite J and Habicht J. Nutrition behavior change among EFNEP participants is higher at sites that are well managed and whose front-line nutrition educators value the program. *J Nutr*. 2005; 135(9)2199-2205.
22. Harris K, Wheeler A, and Kacmar M. Leader–member exchange and empowerment: Direct and interactive effects on job satisfaction, turnover intentions, and performance. *Leadersh Q*. 2009; 20: 371–382.
23. Dickin K, Dollahite J and Habicht J. Job satisfaction and retention of community nutrition educators: The importance of perceived value of the program, consultative supervision, and work relationships. *J Nutr Educ Behav*. 2010;42:337-344.
24. Warrix M. Professional development for paraprofessionals organizing a one day multi agency conference. *J Extension*. 1998; 36(3). Available at http://www.joe/1998june/iw3.php
25. Grace C, Grace T, Becker N, and Lyden J. Barriers to using urban farmers' markets: An investigation of food stamp clients' perceptions. *J Hunger Environ Nutr*. 2007; 2(1)55-75.
26. Colasanti K, Conner D, and Smally S. Understanding barrier to farmers' market patronage in Michigan: Perspectives from marginalized populations. *J Hunger Environ Nutr*. 2010; (5)316-338.
27. Flamm L. Barriers to EBT use at farmers' markets: Lessons in empowerment evaluation from rural Ohio. *J Hunger Environ Nutr*. 2011; (6):54–63.

28. Robinson-O'Brien R, Larson N, Neumark-Sztainer D, Hannan P, Story, M. Characteristics and dietary patterns of adolescents who value eating locally grown, organic, nongenetically engineered, and nonprocessed food. *J Nutr Educ Beha* . 2009;41(1):11-18.

29. Pelletier J, Laska M, Neumark-Sztainer D, and Story, M. Positive attitudes toward organic, local, and sustainable food are associated with higher dietary quality among young adults. *J Acad Nutr Diet*. 2012;113(1):127-132.

30. Hartmann C, Dohle S, and Siegrist M. Importance of cooking skills for balanced food choices. *Appetite*. 2013; 65:125-131.

31. JMP, Version 10. SAS Institute Inc., Cary, NC, 1989-2012.

32. Briggs S, Fisher A, Lott M, Miller S, Tessman N. Real food, real choice: Connecting SNAP recipients with farmers markets. http://www.foodsecurity.org/pub/ RealFoodRealChoice_SNAP_FarmersMarkets.pdf. Accessed January 17, 2011.

33. Glanz K, Basil M, Maibach E, Goldberg J, and Synder D. Why Americans eat what they do: taste, nutrition, cost, convenience, and weight control concerns as influences on food consumption. *J Am Diet Assoc*. 1998; 98(10)1118-1126.

34. Bellows A, Alcaraz V and Hallman W. Gender and food, a study of attitudes in the USA towards organic, local, US grown, and GM-free foods. *Appetite*. 2010;55(3):540-550.

35. Alkon A. From value to values: sustainable consumption at farmers markets. *Agric Human Values*. 2008;25(4): 487-498.

36. Centers for Disease Control and Prevention. State Indicator Report on Fruits and Vegetables, 2013. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services; 2013.
37. Lin B, Frazão E and Guthrie J. Away-from-home foods increasingly important to quality of American diet U.S. Department of Agriculture Information Bulletin, 749Food and Rural Economics Division, Economic Research Service, Washington DC; 1999.
38. Kant AK and Graubard BI. Eating out in America, 1987–2000: trends and nutritional correlates. *Prev Med*. 2004; 38(19);243-249.
39. O'Dwyer NA, Gibney MJ, Burke SJ, McCarthy SN. The influence of eating location on nutrient intakes in Irish adults: implications for developing food-based dietary guidelines. *Public Health Nutr*. 2005;8(3):258-265.
40. Bes-Rastrollo, Basterra-Gortari FJ, Sánchez-Villegas A, Marti A, Martinez JA and Martinez-Gonzales MA. A prospective study of eating away-from-home meals and weight gain in a Mediterranean population: the SUN (Seguimiento Universidad de Navarra) cohort. *Public Health Nutr*. 2010;13(9):1356-1363.
41. Mak TN, Prynee CH, Fitt E, Bates B and Stephen AM. Patterns of sociodemographic and food practice characteristics in relation to fruit and vegetable consumption in children: results from the UK National Diet and Nutrition Survey Rolling Programme (2008-2010). *Public Health Nutr* 2013;7:1-12.

CH. 4 Understanding low-income Virginians' perception of healthy food, local food, and food access: Implications for nutrition programming

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Abstract

Providing improved access to farmers markets and other local food outlets for low-income audiences is an increasingly popular nutrition intervention strategy to promote consumption of fresh fruits and vegetables and address obesity. A cross sectional approach using four focus group discussions with 26 total participants, was used to explore Supplemental Nutrition Assistance Program-eligible Virginians' perception of healthy food, access to and perception of local foods, benefits and barriers to shopping at farmers markets, and the impact of local foods on diet quality. A thematic approach was used to identify themes from qualitative data gathered during the focus groups discussions. Themes identified included a generational gap in the perception of local foods, differences in the perception of local food compared to food from supermarkets, and real and perceived barriers to local food access. Targeting marketing efforts toward younger, low-income individuals; marketing food as fresh, clean, and 'unsprayed; and

focusing on addressing cost instead of transportation barriers may be effective in promoting farmers markets to low-income populations. Results can provide guidance to organizations and programs marketing local foods to low-income consumers and be used to make these programs more targeted and culturally appropriate.

Keywords: food access, farmers markets, local food

Introduction

Providing improved access to farmers markets and other local food outlets for low-income audiences is an increasingly popular nutrition intervention strategy to promote consumption of fresh fruits and vegetables and address obesity. Currently, a lack of access to and availability of fresh foods has been tied to health disparities in addition to obesity and diabetes risk across the United States (Larson, Story & Nelson, 2009; Rahman, Cushing & Jackson, 2011; Jilcott et al., 2011) while increasing access, or even perceived access, to fresh, local foods may increase the consumption of fruits and/or vegetables (Gustafson, 2012; Evans, 2012; MacMillan, Winham & Wharton, 2012; Grin, 2013; Haynes-Maslow, 2013).

There are several recognized barriers to food access cited in sources of community-based reports and popular press, such as lack of or limited transportation, seasonality of food choices, lack of variety, lack of awareness and convenience (McLaughlin & Merrett, 2002; Leone et al., 2012), though little formal research has been completed on the subject. Barriers to local food access may exist which render traditional or currently used marketing initiatives for local food venues less effective for a low-income audience. These barriers may be rooted in social

constructs, such as poverty, social class and gender, which influence access more than the built environment (Allen & Sachs, 1991; Gracia, de Magistris & Nayga, 2012). For example, the marketing of sustainability and farmers markets in the local food movement may be tied to the image of the white, middle-class nuclear family, privileging white, heterosexuals over other groups (Alkon & McCullen, 2011; Pilgeram, 2012). Therefore, if increasing access to local foods is to be an effective dietary intervention, more information is warranted on how the priority audience relates to the aesthetics and social constructs of a food outlet and how these inform views toward healthy food, food access and motivations influencing food and shopping choices.

The purpose of this study was to explore perception of healthy food, access to and perception of local foods, benefits and barriers to shopping at farmers markets, and the impact of local foods on diet quality. The results can provide guidance to organizations and programs marketing local foods to low-income consumers, such as Cooperative Extension, departments of agriculture and health, farmers markets, food councils, garden initiatives, etc. and be used to make these programs more targeted and culturally appropriate.

Experimental Methods

The study utilized a cross sectional, mixed methods approach consisting of focus group discussions and a short questionnaire intended to explore perceptions of low-income populations toward farmers markets, local foods and health.

Recruitment

In order to explore barriers to farmers market and local food access by low-income audiences participants were recruited if they met eligibility criteria for the Supplemental Nutrition Assistance Program (SNAP), outlined by the SNAP-Education Program guidelines (USDA, 2013). To inform Extension nutrition programming SNAP-eligible individuals were recruited with assistance from Virginia Cooperative Extension Family Nutrition Program (FNP) EFNEP and SNAP-Education (SNAP-Ed) Educators for participation in focus group discussions. FNP Educators recruited program participants through the Department of Social Services (the location of SNAP offices), The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) offices, health clinics, food banks, and other locations with high proportions of SNAP participants. Participants were provided with refreshments and a $25 monetary incentive in exchange for participation in this study. All procedures were approved by the Virginia Tech Institutional Review Board. Written, voluntary informed consent was obtained from all participants.

Focus Group Discussions

Discussions were 60-90 minutes in duration and led by a trained focus group facilitator and co-moderator, following the protocol outlined by Krueger (Krueger & Casey, 2000). Each session was audio-taped and field notes were taken. Focus group questions, developed specifically for this project by field and content experts, were partially adapted from previous studies and formative work with SNAP-eligible populations (Byker, 2012; 2013). Participants were asked about their perception of healthy food, access to and perception of local foods,

benefits and barriers to shopping at farmers markets, and the impact of local foods on diet quality. Participants also completed a short questionnaire prior to focus group discussions covering demographic characteristics including gender, age, educational achievement, annual household income, and the number of children/dependents living at home.

Data Analysis

A thematic approach (Creswell, 2007; Lindseth, 2004) was used to identify themes from the qualitative data collected during the focus group discussions. The data were then coded by the researchers in an inductive and iterative fashion to further identify themes (Strauss, 1987). More specifically, the transcripts were reviewed and coded based on topics related to food access, availability, and culture. Emergent themes from the codes were checked against field notes. A separate researcher then checked the codes and themes against the transcripts. Transcripts were then reviewed for quotes which fit into the previously identified themes. Finally, the quotes were analyzed based on how they contributed to each theme and the quotes which best exemplified those themes were identified. Based on preliminary analyses of the transcripts, themes were identified separately for 'older' and 'younger' audiences. For the purpose of this study participants were designated as 'older' if they were above 40 years of age and 'younger' if they were 40 years of age or below.

Results

Demographics

A total of four focus group discussions were held in four counties in central and western Virginia between September and October of 2013. A range of five to nine individuals were recruited per focus group, with a total of 26 participants. Three participants (11.5%) were male and 23 (88.5%) were female. The mean age was 38.5 years. The average participant had a high school education attainment or less, had an annual household income of less than $10,000, ate an mean of 2.0 servings of fruits per day and 2.6 servings of vegetables per day.

The mean age of older participants was 58.4 years while the average age of younger participants was 26 years of age. The majority of older participants had a high school degree or some high school education and had an annual household income of less than $10,000. The average younger participant had some college or continuing education with an annual household income of between $10,001-$20,000.

Themes

Responses from participants were divided into three major categories or themes by the researchers (figure 1) with smaller patterns identified for each theme. The three main themes were 1) a generational gap in the perception of local, fresh foods, 2) attitudes toward food, and 3) perceived access to local foods. Two of the themes identified were expected based on the focus group discussion guide and literature (attitudes toward food and perceived access to local foods). The theme of a generational gap existing in the perception of local, fresh foods emerged from the data during the analysis process. The age of the participants was related to how they valued freshness of food and how that was tied to the nutritional value of the food and their overall

health. There was also a generational gap in how local food was tied to a sense of community and as a way to provide a link to participants' culture.

The themes were inter-related. The theme of a generational gap was related to the participants' perception of food itself as being safe and of good quality. The perception of food as being of good quality and fresh varied based on age and could, therefore, be placed under the theme of a generational gap or perception of food. There was not a clear generational gap in the perception of perceived access to local foods so that was designated as a stand-alone category. Participants first identified transportation as the main barrier to local food access. After further discussion the barriers of distance and cost of transportation were uncovered. Those barriers may have been masking the barriers of convenience and farmers markets being an unreliable food source due to the cost of food.

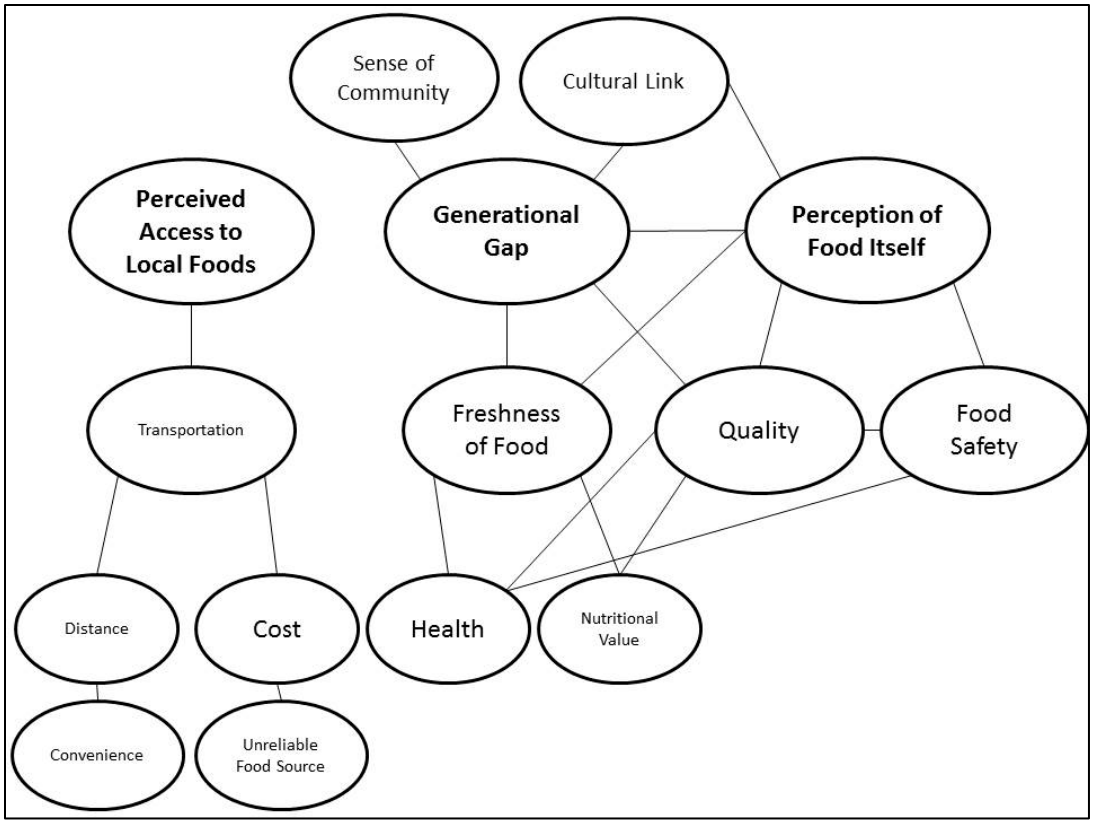

Figure 2. Concept Map of Themes and Patterns Developed From Responses From SNAP-Eligible Individuals. The larger circles denote themes. Smaller circles denote patterns for each theme. Lines denote connections between patterns and themes.

Generational gap in the perception of local, fresh foods. A significant generational gap existed in the attitude towards farmers markets and, more generally, toward fresh fruits and vegetables. Older participants tended to have positive attitudes toward fresh, local foods, perceiving them to be of a better quality than food from other food outlets. For example, when asked how shopping at farmers market would affect her health one older participant responded:

> "It would taste better. You know if you're diabetic, you've got medical needs. The nutrition is still in the vegetables and stuff. Stuff comes out of the cans and there's no nutrition. I mean it's got to be all gone out." She also said, "Because it's [the produce from farmers markets] fresh. You know it ain't been in no tin can for antique years."

Another older participant stated:

> I go [to the market] periodically, especially if I want something fresh to fix like string beans or things like that. They do have a variety of things down there, even meats that you might want to fix, cook with rather. I find that theirs is real good.

Fresh fruits and vegetables from other food outlets tended to not be as highly valued by older participants. When describing food from the store participants expressed dissatisfaction with the quality:

> You get them [tomatoes and cucumbers] in the stores they say that they're home grown tomatoes. They're not. In the summer the tomatoes and cucumbers in the stores are kind of bad and kind of mushy and got mold on it. And I looked at them and said, 'no thank you.' I don't want no cucumbers, I don't want no tomatoes. I'll pass on it.

Younger participants' attitudes toward fresh local foods tended to be less positive. While they recognized fruits and vegetables as healthy, they were not their preferred choice of food. When asked to describe her ideal healthy meal participants responded: "Lots of greens, fruit. I don't eat this by the way, what I'm supposed to eat. But I'm trying to learn how to cook healthy but I still put butter and sugar in everything." Another participant said, "I don't eat that much [healthy food] but when I do I say healthy foods are, I say greens and fruit and that's it. And baked food." Some younger participants regarded fresh, local foods as better quality even though they did not choose to purchase local foods. For example, one participant remarked, "It's

a better quality [at the market]. Because it's fresh. I don't shop there. My grandparents used to have a garden. It tastes better too."

The generational gap between perception of local foods and farmers markets became especially apparent when many of the younger participants identified farmers markets as being more appropriate for use by an older population. "I think about older people shopping at farmers markets… I guess they are just so used to growing fruits and vegetables." Younger participants were also aware of senior groups which traveled to farmers markets from senior centers together.

Older participants indicated they would value being able to purchase their foods from farmers markets for quality and nutritional benefits. Younger participants, however, were more hesitant in expressing interest in and valuing of local foods. Many younger participants acknowledged that purchasing their food from farmers markets would positively impact their health, at least in the short term, but they also indicated they would eventually fall back into established, less healthy eating patterns.

Older participants described either having gardens themselves or recalling neighbors and family members with gardens. These gardens provided a source of fresh fruits and vegetables while also connecting participants to family and friends and providing a sense of community. Participants spoke fondly of family, friends and neighbors with gardens who shared, or continue to share produce as a means of support in times of food insecurity or due to an overabundance of

fresh food. Older participants expressed positive associations with their own gardens. “To get some of the best cucumbers I’ve ever had in my life is you go down my back steps…”

Although a minor theme, some younger participants mentioned gardens, expressing positive associations with their parents’ and grandparents’ gardens. Of the younger participants, some seemed disinterested in the idea of having their own garden or having to work to grow their own food. Older and younger participants also lacked access to fresh fruits and vegetables from gardens. Barriers to having gardens included: 1) living in areas where stray dogs and cats may defecate in beds; rendering food unsafe for consumption, 2) vandalism from neighbors and children, 3) lack of space, 4) lack of time and 5) lack of interest.

Perception of food.

Fresh. Overall, participants perceived fresh, local foods as being cleaner and, safer than food from grocery stores. Food from farmers markets was perceived as cleaner than grocery stores because it is not sprayed with water to keep it looking fresh and wasn’t handled or touched by as many shoppers as food from the grocery store. “I’d be more apt to go from a farmers market and just bite into a tomato where I wouldn’t go to Walmart and just bite a tomato.”

Organic. Food at farmers markets was seen as safer because it is less likely to be ‘sprayed’ with chemicals while it was grown. Though participants did not necessarily identify this attribute of produce as ‘organic,’ some participants recognized being able to speak directly with growers or producers enabled them to make purchasing choices based on food safety, or more specifically what chemicals were used to grow their food.

> I'd want to know what they put on the plants. You know bugs and stuff. There's so much stuff out there. You don't know what they're spraying on there… I don't want to eat something that maybe might damage you later. You don't know because certain food they might spray something on there that I'd be allergic to… You've got to ask questions.

Factors related to food access. Participants identified fuel costs associated with transportation and a lack of transportation as being a main barrier to accessing farmers markets. However, upon further discussion concerns about transportation were masking other concerns about accessing local foods. Many participants reported living within walking distance to or a short drive from farmers markets. The distance to farmers markets was often comparable or shorter than distances to supermarkets, dollar stores, or convenience stores. Participants had steady access to cars, either their own car or one borrowed from friends or family for their normal food shopping. When asked if a local farmers market was easy to get to a participant responded: "uh uh because I ain't walking." When asked if her normal shopping location was easy to get to the same participant responded, "Yeah, because I go get my dad's van then." Some participants indicated they traveled an hour or more to get to stores or food banks where they could obtain free or low-cost food. A participant commented on the practice of buying items in bulk from a farmers market to get a cheaper price:

> Where we live you can't have that. We don't have the option for that unless we come over here [25 minutes from their home] and then you don't know how much you're giving for it, you know. So that's why I just don't go to them [farmers markets].

Discussion

In this population there was a clear generational gap in the view of fresh, local foods. Older participants expressed valuing fresh, quality fruits and vegetables more because they do

not have convenient access to such foods. Younger participants may not value fresh, local foods due to shifts in rural communities away from agriculture. Rural economies have moved away from farm and agriculture-related jobs to jobs in the service industry (Smith & Tickamyer, 2011). One possible contributing factor to younger participants' lack of interest in accessing farmers markets or utilizing gardens as a source of fresh food is that leaving farms and agriculture behind may be seen as an act of progress or of a higher social status for this population.

Participants reported transportation as a barrier, however they were willing to travel similar and/or longer distances to other food outlets. Instead, it appeared that cost and convenience were the 'true' barriers to accessing fresh fruits and vegetables from farmers markets. As a result, providing additional modes of transportations to local food outlets may not be an ineffective strategy for increasing local food consumption. Reducing cost may be more beneficial, such as the WIC, Senior Farmers Market Nutrition and SNAP Farmers Market Programs, which have documented increases in sales and consumption of fruits and vegetables by low-income populations (Herman, 2006; Rose, 2008; Racine, 2010; Buttenheim, 2012; Bertmann, 2012). Incentives, matched benefit programs, and mobile farmers markets may also be fruitful (Payne et al., 2013; Young et al., 2013; Baronberg et al., 2013; Abusabha, Namjoshi, & Klein, 2011; Dover et al., 2013). In general, participants had positive associations with gardens even if they were unwilling to garden themselves or faced unique barriers, such as threats of vandalism or health risks from stray dogs and cats.

Conclusions

The issue of access to local foods is clearly more complex than just 'what' and 'where' but also includes sociocultural attributes. Instead, researchers must dig deeper to and consider sociocultural factors in addition to logistical concerns of cost and convenience for low-income to promote food access. A potential strategy to promote farmers markets to older, low-income populations is through increased partnerships between churches and other emergency food outlets with farmers markets. Though making transportation opportunities to farmers markets may not impact market attendance, making sure low or no cost food options are there may be effective in bringing older, low-income populations to farmers markets and other local food access points. This would serve to familiarize low income populations with farmers market so they would consider them as a viable food shopping location.

Given these findings, other strategies to address access issues must be explored. For example, efforts to improve quality of life in impoverished areas and neighborhoods may be effective in providing safe gardening spaces. School gardens may be an effective strategy for providing gardening spaces and leading to increased fruit and vegetable consumption for younger generations in areas where the concerns listed above limit gardening opportunities (Heim, Stang & Ireland, 2009; Parmer et al., 2009). More recently, WIC gardens are a promising initiative for reaching mothers of young children. However, peer-reviewed evaluations of such programs are needed to determine reach and effectiveness.

These findings suggest that local foods should be marketed as being fresh, clean, and 'unsprayed' (as opposed to organic) to reach a larger segment of the low-income population. Further, nutrition education alone may not be enough to elicit behavior change in younger populations. Some younger participants acknowledged shopping at farmers markets would positively impact their health but they were unwilling to commit to changing their long-term behavior, even if they knew there were health benefits. Therefore, initiatives or interventions which include other strategies to elicit behavior change, such as policy, should also be considered. Behavior models, such as Social Cognitive Theory (Bandura, 1986), may be useful in guiding future initiatives. Possible limitations of this study include that the data collected is specific to this population and may not be transferrable to other populations. Areas for further research include exploring the move away from fresh foods and agriculture in younger populations and how this impacts diet quality.

References

1. Abusabha, R., Namjoshi, D. & Klein, A. (2011). Increasing access and affordability of produce improves perceived consumption of vegetables in low-income seniors. *Journal of the American Dietetics Association, 111,* 1549-1555.
2. Alkon, A.H. & McCullen, C.,G. (2011). Whiteness and farmers markets: Performances, perpetuations…contestations? *Antipode, 43*(4), 937-959.
3. Allen, P.L. & Sachs, C.E. (1991). The social side of sustainability, class, gender and

ethnicity. *Science as Culture, 2* (13); 569–590.

4. Baronberg, S., Dunn, L., Nonas, C., Dannefer, R. & Sacks, R. (2013). The impact of New York City's Health Bucks Program on electronic benefit transfer spending at farmers markets, 2006-2009. *Preventing Chronic Disease*, 10, E163. doi: 10.5888/pcd10.130113.
5. Bertmann, F., Ohri-Vachaspati, P., Buman, M. & Wharton, C. (2012). Implementation of wireless terminals at farmers' markets: impact on SNAP redemption and overall sales. *American Journal of Public Health, 102*, e53-5. doi: 10.2105/AJPH.2012.300727.
6. Buttenheim, A., Havassy, J., Fang, M., Glyn, J. & Karpyn, A. (2012). Increasing supplemental nutrition assistance program/electronic benefits transfer sales at farmers' markets with vendor-operated wireless point-of-sale terminals. *Journal of the Academy of Nutrition and Dietetics, 112*, 636-41.
7. Byker, C., Misyak, S., Shanks, J. & Serrano, E. (2013). Do farmers' markets improve diet of participants using federal nutrition assistance programs? A literature review. *Journal of Extension,* In Press.
8. Byker, C., Shanks, J., Misyak, S. & Serrano, E. (2012). Characterizing farmers' market shoppers: A Literature review. *Journal of Hunger & Environmental Nutrition, 7,* 38-52.
9. Carr, P.J. & Kefalas, M. (2009). *Hollowing out the middle: The rural brain drain and*

what it means for America. Boston, MA: Beacon.

10. Creswell, J.W. (2007). Qualitative inquiry & research design: Choosing among five approaches (Second ed.). *Thousand Oaks, CA: SAGE*.

11. Dover, S.E., Buys, D.R., Allocca, S., & Locher, J.L. FIELD NOTES: PEOPLE, PROGRAMS, & POLICIES. Farmers' market produce delivery program for mitigating nutritional risk in older adults. *Journal of Hunger & Environmental Nutrition, 8*, 1-10.

12. Evans, A., Jennings, R., Smiley, A., Medina, J., Sharma, S., Rutledge, R., Stigler, M. & Hoelscher, D. (2012). Introduction of farm stands in low-income communities increases fruit and vegetable among community residents. *Health & Place, 18*, 1137-1143.

13. Grace, C., Grace, T., Becker, N., & Lyden, J. (2007). Barriers to using urban farmers' markets: An investigation of Food Stamp clients' perceptions. *Journal of Hunger & Environmental Nutrition, 1*, 55-75.

14. Gracia, A., de Magistris, T. & Nayga, R.M. (2012). Importance of social influence in consumers' willingness to pay for local food: Are there gender differences? *Agribusiness, 28*(3), 361-371.

15. Grin, B., Gayle, T., Saravia, D., & Sander, L. (2013). Use of farmers markets by mothers of WIC recipients, Miami-Dade County, Florida, 2011. *Preventing Chronic Disease, 10*, E95.

16. Gustafson, A., Sharkey, J., Samuel-Hodge, C., Jones-Smith, J., Cai, J., & Ammerman, A. (2012). Food Store Environment Modifies Intervention effect on Fruit and Vegetable Intake among low-Income women in North Carolina. *Journal of Nutrition & Metabolism*. DOI: 10.1155/2012/932653.

17. Haynes-Maslow, L., Parsons, S., Wheeler, S. & Leone, L. A qualitative study of perceived barriers to fruit and vegetable consumption among low-income populations, North Carolina, 2011. *Preventing Chronic Disease*, doi: 10.5888/pcd10.120206.

18. Heim, S., Stang, J. & Ireland, M. (2009). A garden pilot project enhances fruit and vegetable consumption among children. *Journal of the American Dietetics Association, 109*, 1220-1226.

19. Herman, D., Harrison, G.G. & Jenks, E. (2006). Choices made by low-income women provided with an economic supplement for fresh fruit and vegetable purchase. *Journal of the American Dietetics Association, 106*, 740-744.

20. Jilcott, S., Keyserling, T., Crawford, T., McGuirt, J. & Ammerman, A. (2011). Examining associations among obesity and per capita farmers' markets, grocery stores/supermarkets, and supercenters in US counties. *Journal of the American Dietetics Association, 111*, 567-572.

21. Kropf, M.L., Holben, D.H., Holcomb, J.P. Jr, & Anderson, H. (2007). Food security

status and produce intake and behaviors of Special Supplemental Nutrition Program for Women, Infants, and Children and Farmers' Market Nutrition Program participants. *Journal of the American Dietetics Association, 107*, 1903-1908.

22. Krueger, R.A. & Casey, M.A. (2000). *Focus groups: A practical guide for applied research*. (Second ed.). Thousand Oaks, CA: SAGE.

23. Larson, N. I., Story, M. T., & Nelson, M. C. (2009). Neighborhood environments: disparities in access to healthy foods in the U.S. *American Journal of Preventative Medicine, 36,* 74-81.

24. Leone, L.A., Beth, D., Ickes, S.B., Macguire, K., Nelson, E., Smith, R.A., Tate, D.F. & Ammerman A.S. (2012). Attitudes toward fruit and vegetable consumption and farmers' market usage among low-income North Carolinians. *Journal of Hunger & Environmental Nutrition, 7*, 64-76.

25. Lindseth, A.N. (2004). A phenomenological hermeneutical method for researching lived experience. *Scandinavian Journal of Caring Science, 8*, 145-153.

26. MacMillan Uribe, A.L., Winham, D.M. & Wharton, C.M. (2012). Community supported agriculture membership in Arizona. An exploratory study of food and sustainability behaviors. *Appetite,* 59, 431-436.

27. McLaughlin, P. & Merrett, C.D. (2002). Community-supported agriculture: Connecting

farmers and communities for rural development. *Rural Research Report. Macomb, IL: Illinois Institute for Rural Affairs*.

28. Parmer, S.M., Salisbury-Glennon, J., Shannon, D. & Struempler, B. (2009). School gardens: an experiential learning approach for a nutrition education program to increase fruit and vegetable knowledge, preference, and consumption among second-grade students. *Journal of Nutrition Education & Behavior, 41*, 212-217.
29. Payne, G.H, Wethington, H., Olsho, L., Jernigan, J., Farris, R. & Walker, D.K. (2013). Implementing a farmers' market incentive program: perspectives on the New York City Health Bucks Program. *Preventing Chronic Disease, 10*, E145. doi: 10.5888/pcd10.120285.
30. Pilgeram, Ryanne. (2012). Social sustainability and the white, nuclear family: Construction of gender, race, and class at a Northwest farmers' market. *Race, Gender & Class, 19*(1/2), 37-60.
31. Racine, E.F., Smith Vaughn, A. & Laditka, S.B. (2010). Farmers' market use among African-American women participating in the Special Supplemental Nutrition Program for Women, Infants, and Children. *Journal of the American Dietetics Association, 110*, 441-446.
32. Rahman, T., Cushing, R., & Jackson, R. (2011). Contributions of built environment to childhood obesity. *Mt Sinai Journal of Medicine, 78*, 49-57.
33. Rose, N., Serrano, E. & Hosig, K. (2008). The 100-mile diet: a community approach to

promote sustainable food systems impacts dietary quality. *Journal of Hunger & Environmental Nutrition, 3,* 270-285.

34. Smith, K. & Tickamyer, A.R. (Eds.). (2011). *Economic restructuring and family well-being in rural America.* University Park, PA: Pennsylvania State University Press.

35. Strauss, A. (1987). *Qualitative analysis for social scientists*. Cambridge, England: Cambridge University Press.

36. United States Department of Agriculture, Food and Nutrition Services. (2013) Supplemental Nutrition Assistance Program Education guidance. Retrieved from http://snap.nal.usda.gov/snap/Guidance/FY2014SNAP-EdGuidance.pdf

37. United States Department of Agriculture, Food and Nutrition Services. (2013). WIC Farmers Market Nutrition Program. Retrieved from http://www.fns.usda.gov/wic/WIC-FMNP-Fact-Sheet.pdf

38. Virginia Department of Health. (2013). WIC approved food list: Effective April 1, 2012. Retrieved from http://www.vahealth.org/DCN/Publications/Files/PDFs/WICfood%20List%202012%20web%20Eng.pdf

39. Young, C.R., Aquilante, J.L., Solomon, S., Colby, L., Kawinzi, M.A., Uy, N., & Mallya, G. (2013). Improving fruit and vegetable consumption among low-income customers at farmers markets: Philly Food Bucks, Philadelphia, Pennsylvania, 2011. *Preventing Chronic Disease,* 10:E166. doi: 10.5888/pcd10.120356.

CH. 5 Low-income mothers' perception of barriers to using farmers markets to access local foods

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Abstract: This study reports on the Supplemental Nutrition Assistance Program-Education (SNAP-ED) and the Expanded Food and Nutrition Education Program (EFNEP) target population's perceptions of barriers to using farmers markets as access points to fresh and healthy local foods. Four mothers with young children from a rural county photographed their shopping experience at a local farmers market. Using the photo elicitation process to organize their thoughts and develop themes related to food access, the mothers identified barriers to shopping at farmers markets. The results from this study can provide guidance to SNAP-Ed program assistants as well as farmers market coordinators on creating a more welcoming atmosphere and promoting utilization of farmers markets by low-income populations. The development of experiential-based opportunities to address and strategize solutions to these barriers is critical if farmers markets are encouraged as an avenue for promoting healthy eating.

Keywords: Rural health, Experiential Learning, Farmers Markets

Introduction

The goal of Supplemental Nutrition Assistance Program-Education (SNAP-Ed) is to teach limited-resource families and youth to "make healthier food choices and become better managers of available food resources for optimal health and growth." Traditionally, the program has focused on basic nutrition, physical activity, safe food handling and food shopping on a budget (VCE, 2013). In 2013 the USDA implemented the Supplemental Nutrition Assistance Program nutrition education (SNAP-Ed) provisions of the Healthy, Hunger-Free Kids Act of 2010 (USDA, 2013). These provisions encouraged more farm to fork initiatives and efforts to connect low-income populations with fresh and healthy, local foods through farmers markets. This amended the mission of SNAP-Ed to not only consider what foods are chosen by limited-resource families but where the foods are from and how they are grown.

As a result, in Virginia, the Food Security Project was created to ensure all of participants of SNAP-Ed have equal access to affordable, nutritious, culturally appropriate food. One of the main strategies has been to focus on eliminating food deserts through supporting farmers markets' outreach to SNAP families. This effort goes hand in hand with SNAP-Ed and ENFEP efforts to educate SNAP families about the ability to use their benefits at farmers markets and the benefits of doing so.

The aim of this photo elicitation study was to engage SNAP-Ed and EFNEP's target population of low-income mothers with young children in a participatory discussion on barriers

to farmers markets access to guide the development of an enhanced experiential-based farmers market orientation lesson for SNAP-Ed curricula.

Methodology

This study was designed as a qualitative exploration of SNAP-eligible mothers with young children, the target population for SNAP-Ed and EFNEP in Virginia, on using farmers markets as an access point to fresh fruits and vegetables and as means to provide experiential learning opportunities as a part of Virginia Cooperative Extension nutrition programming. Photo elicitation, or the process of using photographs during the interview process to elicit information from participants, has been used previously for studies of women's views of health and food choices and of other Extension target populations (Valera, 2009; Johnson, 2010; Stephenson, 2012).

Participants were recruited from a rural Virginian county through the local program assistant. Participants were asked to participate through ongoing nutrition classes. The names and contact information for eight women, currently or recently participating in the nutrition classes, who displayed interest in participating in the study were provided by the program assistant. Of those eight women, six initially agreed to participate in the study. Of those six women, one chose to leave the study prior to the second meeting and an additional woman left the study prior to the third meeting for a total of four participants completing the study.

All procedures were approved by the Virginia Tech Institutional Review Board. Written, voluntary informed consent was obtained from all participants. Participants were compensated for participating in the study, based on a rolling scale.

Photo Elicitation Process

Study parameters were adapted from photovoice methodology. In photovoice studies, participants are given cameras and briefly trained on photography methods and ethical use. The goals are to 1) record realities in their everyday lives, 2) participate in group discussions to critically reflect on photographs, and 3) to provide an avenue to reach policymakers and others with power to make change (Wang & Burris, 1997). Photovoice methodology is fully participatory, even during the analysis phase. Participants choose the photos to be explored during group discussion and work with the researchers to identify and explore themes. The participatory nature of Photovoice may generate multiple meanings per image which can be further divided into issues, themes, or theories (Wang, Yi, Tao & Carovano, 1998).

For this study, participants were asked to record the realities of their food shopping experience at a farmers market in a rural county. Participants were informed prior to beginning the study that the themes, ideas and recommendations generated through critical reflection on their photographs would be shared with Extension management/administration with the intention of informing current and future nutrition programming initiatives.

First Meeting. Participants were given a disposable camera and a brief training on photography ethics (e.g. taking pictures of people in public places, etc). The participants were

charged with completing the following tasks prior to the second meeting: 1) take a self-portrait of themselves with their disposable camera to ensure proper identification of the film and 2) visit their primary food shopping location(s) and take pictures representative of their experience, including what they liked, what they didn't like, what they would change, and what they would keep the same. Participants were informed that these pictures would serve as a point of comparison for a group visit to the farmers market following a farmers market orientation lesson. Participants were asked to take as many pictures as they needed to describe their experience and use the remaining exposures on the disposable cameras for personal photographs.

Second Meeting. Participants were given the optional Eat Smart, Move More farmers market orientation lesson. Participants had already participated in the six core Eat Smart, Move More nutrition lessons prior to beginning the photo study. Lesson topics include: 1) safe food preparation practices, 2) adding fruits and vegetables into diets, 3) reading nutrition labels and using those labels to make smart dietary choices, 4) portion sizes, 5) understanding MyPlate, and 6) and choosing to move more throughout the day.

The researchers then provided another disposable camera to participants and conducted a farmers market field trip as an experiential learning opportunity in conjunction with the orientation lesson. Participants were again asked to take a self-portrait of themselves with their disposable camera to ensure proper identification of the film and pictures representative of their experience, including what they liked, what they didn't like, what they would change, and what they would keep the same. Following the farmers market field trip, the researchers conducted a

debriefing with participants to gather information on participants' immediate impressions of the experience of shopping at the farmers market.

Third Meeting. This photo elicitation process was loosely based on the photovoice methodology presented by Stephenson (2012). The researchers provided participants with printed copies of their photographs of their shopping experience at their primary food shopping location(s) and the farmers market. Participants were also provided with a copy of their photographs to keep. Through a group discussion, participants provided feedback on their visit to the farmers market, using their primary shopping experience as a reference point. Participants used their photographs to organize and express their thoughts about barriers to food access, ways to address those barriers, and opportunities to ensure quality and effective nutrition education programming on farmers markets access and utilization. Through the group discussion process, initial themes and topics on barriers to accessing farmers markets were developed by the participants. Photographs which represented points of discussion were chosen by the participants and taped to flip charts according to topics. The researchers captured notes on participants' thoughts on the flip charts next to the photographs using permanent markers. This session was audio recorded. An additional theme was identified by the researchers using the flip chart notes. Participants also identified opportunities for including experiential-based learning activities and opportunities into a farmers market curriculum. These opportunities were divided into themes by the researchers.

Results and Discussion

Through the photo elicitation process, participants identified concerns/barriers to using farmers markets as an access point for fresh and healthy local foods (Table 3). Participants identified inconvenience and awareness as the two main themes of access barriers. Topics under the theme of "inconvenience" included work interfering with farmers market hours of operation, food availability, shopping with children, and physical navigation of a market. One participant worked within one block of the farmers market but was unable to attend during her 30 minute lunch break, where she was expected to remain available in case of a rush of customers. Participants did not feel they were able to ask for time off from work to shop at the farmers market during the designated hours.

The inconvenience of shopping with children at the market was another major concern as it would require extra effort in an open air market. This also tied into the researcher identified theme of a perceived social stigma associated with shopping at farmers markets. The participants valued the anonymity afforded them by shopping at a grocery store with regards to their EBT use. Participants did not want to draw attention to them by using their EBT cards at the market. Crying or misbehaving children were identified as another way for participants to draw unwanted attention to themselves.

A lack of awareness was the other major theme identified by participants. The participants were not always aware of the market itself but more importantly they were unaware of information about food prices and availability. The participants relied heavily on sales ads from grocery stores to plan their menus, which are not available at farmers markets.

Table 3: Identified Concerns/Barriers For Using Farmers Markets as an Access Point For Fresh, Local Foods.

Theme	Concern	Impact on Farmers Market Access
Inconvenience	Days/Hours of Operation	Work and hours of childcare interfered with the ability to go to the market
	Food choice and availability	Some farmers markets do not have foods from all of the food groups for sale, forcing participants to shop at other locations
	Family-friendliness	Difficult to shop with children at farmers market
	Physical navigation	Markets can be hard to navigate, don't have the option to use motorized carts
Awareness	Unsure of prices	Hard to plan ahead
	Unsure of availability	Hard to plan ahead
Awareness/social stigma*	Unsure of EBT acceptance	Participants preferred EBT acceptance to be well advertised so they would not have to draw attention to their EBT use
Social stigma*	Child behavior (i.e. children crying in public)	Trying to control children outdoors will lead to extra attention
	Lack of anonymity	Vendors and other shoppers were able to identify the participants when they used their EBT cards

*Designates a researcher derived theme

Participants also identified positive aspects of shopping at farmers markets which could be highlighted in nutrition programming and used to craft experience-based learning opportunities (Table 4). Participants requested information and demonstrations on food preservation and storage to ensure they do not waste valuable fresh produce.

The barrier of a social stigma associated with EBT use is contrasted by positive social aspects of a farmers market shopping experience. Participants valued the ability to speak directly with growers to gather information on food quality and safety in order to get the best possible quality food for their families. The local farmers market also had tables available and coffee and tea available for purchase. Participants suggested this area could be used to couch group nutrition classes as a 'girl's day out.' They identified this would make nutrition classes and farmers markets a more socially enjoyable experience.

Finally participants identified budgetary concerns for inclusion in the curriculum. While getting an adequate amount of food to feed their families was a concern, participants also valued being able to speak directly with growers/producers to get the best quality food possible with their budgetary constraints. They requested information on simple meals which could be made solely from items available at the farmers market so they would not have to travel to an additional location for other grocery items.

Table 4: Identified Opportunities For Including Experiential-Based Learning Into Farmers Market Curriculum.

Theme	Opportunity	Supporting access
Food knowledge	Knowledge of food preservation	Ability to use food, maximize

		value, prevent food waste
	Direct contact with grower/producer	Ability to gather first-hand knowledge on food quality and safety
Socialization	Area for social gatherings, meeting people	Provided an opportunity for a girls' outing/educational experiences
Budget	EBT-matching programs	Stretch food budget
	Advertise higher perceived food quality and taste	Better quality for at a certain price point and better taste

Implications for Extension

There are real challenges with connecting at-risk audiences with farmers market including: 1) a lack of awareness of farmers markets (the existence of markets, what is available at the markets, and the price of food), 2) the inconvenience of a venue which necessitates visiting other locations for a time-constrained population and which is not always easy to navigate with children or with a disability, and 3) calling undue attention to factors which highlight differences in social classes. For Extension agents to foster farm-to-fork initiatives, they need to understand the constraints and context of different food outlets, especially among low-income audiences, in order to serve a broader audience than who is traditionally served by these markets. Currently, the average demographic served by farmers markets are Caucasian females over the age of 50 with an annual household income between $20,000-&79,999 (Govindasamy, Italia & Adelaja, 2002; Baker, Hamshaw & Kolodinsky, 2009).

Many opportunities exist for Extension to empower individuals to access healthy local foods through farmers market in addition to the dissemination of farmers market nutrition program coupon and local food guides (Abel, Thomson & Maretzki, 1999). To this end, based on a pilot study with the target population, VCE developed a lecture farmers market orientation lesson for optional inclusion within SNAP-Ed nutrition curricula for 2013 farmers market season, approximately April through October. However, the curriculum was missing an experience-based learning component. Experiential learning is a corner stone of Cooperative Extension education as the inclusion of 'learning by doing' enhances the learning process (Richardson, 1994). Short-term experiential learning opportunities have been shown to increase nutrition knowledge and impact food behaviors among low-income adults (Franck, 2012; Rustad & Smith, 2013). Though all learning is experiential, not all experiences provide equal opportunity for learning (Dewey, 1938). Therefore, an educational experience should be crafted which adequately addresses farmers market access barriers which includes a concrete experience with room for reflection using the information gathered in this study (Dewey, 1938, Kolb, 1984).

Based on the information presented here, SNAP-Ed and EFNEP have a unique opportunity to increase synergy between three of the arms of Extension: Family and Consumer Sciences (FCS), Agriculture and Natural Resources (ANR) and community viability. Many FCS agents in Virginia already perform cooking or food preservation demonstrations at farmers markets. Through coordination with other areas of Extension, program assistants can align their farmers market-based lessons for low-income mothers with these cooking/gardening

demonstrations to provide the mothers with a welcoming atmosphere at their local farmers market.

Limitations for this study include the small sample size and attrition rate. Traditionally, reaching diverse and/or low-income audiences with SNAP-Ed and EFNEP Extension programming has been difficult due to multiple barriers (Schauber & Castania, 2001; Benavente, Jayarante & Jones, 2009; Richard, Williams & Mustain, 2003). The information gathered through this study is specific to this population and should be confirmed in other states and with other populations.

Future research should focus on the evaluation of increasing access to farmers markets on the dietary habits of limited-resource families, participant attitudes toward local foods, and process evaluation of program delivery by facilitators.

References

1. Abel, J., Thomson, J. & Maretzki, A. (1999).Extension's role with farmers' markets: Working with farmers, consumers and communities. The Journal of Extension, 37(5). Retrieved from http://www.joe.org/joe/1999october/a4.php
2. Baker, D., Hamshaw, K. & Kolodinsky, J. (2009). Who shops at the market? Using consumer surveys to grow farmers markets: Finding from a regional market in Northwestern Vermont. *The Journal of Extension*, *47*(6). Retrieved from: http://www.joe.org/joe/2009december/a2.php

3. Benavente, L.M., Jayaratne, K.S.U. & Jones, L. (2009). Challenges, alternatives, and educational strategies in reaching limited income audiences. *Journal of Extension, 47*(6). Retrieved from http://www.joe.org/joe/2009december/rb2.php
4. Dewey, J. (1938). *Experience and education*. New York: The Macmillan Company.
5. Franck, K., Vineyard, M., Olson, A., & Peterson, A. (2012). Experiential cooking programs for low-income adults: strategies for success. *Journal of Extension, 50*(2). Retrieved from http://www.joe.org/joe/2012april/tt5.php
6. Govindasamy, R., Italia, J. & Adelaja A. (2002). Farmers' markets: Consumer trends, preferences and characteristics. *The Journal of Extension, 40*(1). Retrieved from http://www.joe.org/joe/2002february/rb6.php
7. Johnson, C.M., Sharkey, J.R., McIntosh, A.W. & Dean, W.R. (2010). "I'm the Momma": Using photo-elicitation to understand matrilineal influence on family food choice. *BMC Womens Health, 10*, 21.
8. Kolb, D. A. (1984). *Experiential Learning: Experience as the source of learning and development*. New Jersey: Prentice Hall.
9. Richardson, J.G., Williams, J.Y., & Mustian, R.D. (2003). Barriers to participation in extension expanded foods and nutrition programs. *Journal of Extension, 41*(4). Retrieved from http://www.joe.org/joe/2003august/a6.php

10. Rustad, C. & Smith, C. (2013). Nutrition knowledge and associated behavior changes in a holistic, short-term nutrition education intervention with low-income women. *Journal of Nutrition Education and Behavior, 45*(6), 490-498.
11. Schauber, A. & Castania, K. (2001). Facing issues of diversity: Rebirthing the Extension service. *Journal of Extension, 39*(6). Retrieved from http://www.joe.org/joe/2001december/comm2.html
12. Stephenson. L. (2012). My community, my voice: Rural older adults speak through photography. *Journal of Extension, 50*(1). Retrieved from http://www.joe.org/joe/2012february/a7.php
13. USDA Food and Nutrition Service. (2013). SNAP Nutrition Education Grants Program Streamlined, Will Focus on Critical Problem of Obesity. Release No. FNS-0005.13. Retrieved from http://www.fns.usda.gov/pressrelease/2013/fns-000513
14. Valera, P., Gallin, J., Schuk, D. & Davis, N. (2009). "Trying to Eat Healthy" a Photovoice study about women's access to healthy food in New York City. *Journal of Women and Social Work, 24*(3), 300-314.
15. Virginia Cooperative Extension. (2013). Family Nutrition Program: About. Retrieved from http://www.fcs.ext.vt.edu/fnh/fnp/about/index.html#select=1
16. Wang, C. & Burris M.A. (1997). Photovoice: concept, methodology, and use for participatory needs assessment. *Health Education & Behavior, 24*(3),369-87.

17. Wang, C., Yi, W.K., Tao, Z.W., & Carovano, K. (1998). Photovoice as a participatory health promotion strategy. *Health Promotion International, 13*(1), 75-86.

CH. 6 CONCLUSIONS

This project was a mixed-methods, mostly qualitative approach to assess the perceived barriers to local food access through farmers markets for individuals eligible to participate in SNAP-Ed and EFNEP. In the preceding pages the perceptions of SNAP-Ed and EFNEP program assistants and the perceptions of individuals eligible to participate in SNAP-Ed and EFNEP on the relationship between local food access and health were explored. Additionally, the perception of mothers with young children participating in SNAP-Ed of farmers markets and the opportunities for Cooperative Extension nutrition programming were also explored.

This research has implications for a variety of audiences including SNAP-Ed and ENFEP program assistants, Cooperative Extension on a broader scale, farmers market managers, and low-income populations or those experiencing food insecurity. In this final chapter, the implications for each of these groups will be discussed. Reflections on the research, the appropriateness of using farmers market access as a nutrition intervention, gaps in current knowledge, areas for future research and suggestions for steps forward are given.

Implications for SNAP-Ed and EFNEP Program Assistants

This research was meant to be directly applicable to SNAP-Ed and EFNEP program assistants. The findings may be operationalized to impact their work in various ways, including influencing their own desire to teach an optional farmers market lesson following in-service trainings, how they can best encourage shopping at farmers markets and teach the optional farmers market lesson to have the greatest impact on program participants, and as an opportunity

to use farmers markets for recruitment of future SNAP-Ed and EFNEP participants as farmers markets cater more to low-income audiences.

Based on the findings from the survey on their perception of the impact of farmers markets on nutrition behaviors for themselves and their clients, training materials for the optional farmers market lesson can be developed which address their specific concerns related to including a lesson of this nature and on this topic in the SNAP-Ed curricula. The biggest concern identified through that portion of the research was that program assistants did not necessarily see a connection between farmers markets and/or alternative agricultural practices and health. Program assistants must value the farmers market lesson for them to teach it and teach it effectively (Dickin, Dollahite & Habicht, 2010).

The USDA encouraged more farm to fork initiatives and efforts to connect low-income populations with local foods through farmers markets and through the implementation of the SNAP-Ed provision of the Healthy, Hunger-Free Kids Act of 2010 (FNS, 2013c), the reasons behind this initiative are not being effectively communicated to those responsible for delivering nutrition programming on the ground. Virginia Cooperative Extension program assistants were trained in the farmers market orientation lesson through a live webinar format. The live webinar included information on delivering the orientation to the target population. However, the reasoning and motivation behind connecting low-income populations to farmers markets was not clearly articulated.

There is currently a dearth of research on the impact of farmers market and local food access on dietary behaviors. As this information emerges in the literature the results and implications should be synthesized and conveyed to program assistants in a clear and concise manner through future in-service or online trainings. Based on this work, it may be useful to communicate to program assistants that low-income study participants perceived accessing local foods through farmers markets would positively impact their diet, at least in the short-term.

The portion of this research exploring the perceptions of individuals eligible to participate in SNAP-Ed and EFNEP can be used to target the information provided in the optional farmers market orientation lesson to better fit the needs of this population. The results from the photo elicitation study in particular will be useful for crafting an experiential learning component to the existing lecture-based farmers market orientation lesson. An experiential learning component will allow for the lesson to be more interactive, involving program participants to a greater extent in their own education and potentially increasing the efficacy of the lesson. Crafting a more effective lesson would benefit program assistants if they were able to show greater changes in fruit and vegetable intake and nutrition-related behaviors for their clients.

The inclusion of the optional farmers market orientation lesson should also serve to encourage SNAP-Ed program assistants to form relationships with their local farmers market managers. Once strong relationships are in place, program assistants can ask farmers market managers to contribute to the optional farmers market lesson. Regardless of involvement from Cooperative Extension, efforts to draw low-income consumers in to farmers markets using EBT

machines, matching programs and other initiatives will continue. The increasing amount of federal benefit dollars that are being spent at markets provides program assistants with the opportunity to use farmers markets as a recruitment site for EFNEP and SNAP-Ed participants.

Implications for Cooperative Extension

The practice of using access to farmers markets as a nutrition intervention has implications for Cooperative Extension which reach beyond those for SNAP-Ed and EFNEP program assistants. The USDA mandated the inclusion of farmers markets in nutrition education to expand the scope of existing nutrition education efforts (FNS, 2013c). This mandate encourages coordination between SNAP-Ed and other health promotion initiatives. Beyond providing States with increased flexibility in how they address the needs of SNAP-eligible populations in their state, the mandate is also meant to shift health promotion initiative from focusing on individual health to public health and community-based approaches (FNS, 2013c).

Unfortunately, USDA does not provide evidence that connecting low-income populations to fresh and healthy foods through farmers markets is an effective strategy for promoting increased fruit and vegetables consumption, promoting health, and/or preventing chronic disease or obesity. This has shifted the responsibility of providing this evidence to States through evaluation of programs once they are already in place. This is a problem for Cooperative Extension in explaining the value of such programs to Extension agents, specialists and assistants. As this information becomes available, it should be conveyed to agents, specialists and assistants if they are to effectively administer and promote the inclusion of farmers markets

in Cooperative Extension curricula. If evidence is not available, this also calls into question the effectiveness of using farmers markets as a nutrition intervention. Agents, specialist and assistants should be given flexibility in whether or not they include a farmers market lesson into curricula, based on their experience with their clients.

Before evaluation data becomes readily available, connecting low-income audiences to communities through local foods is an opportunity for Cooperative Extension to increase synergy throughout the arms of Extension (Family and Consumer Sciences, Community Viability, Agriculture and Natural Resources, and 4-H). Suggestions found in the literature on strategies for Extension to promote farmers markets include for Family and Consumer Sciences to offer workshops on food preservation techniques and cooking demonstrations at farmers markets (Abel, 1999). This research has confirmed those suggestions would be applicable for low-income audiences as well as those traditionally served by farmers markets. Community Viability Programs can take advantage of farmers market-based interventions to encourage food dollars to be spent locally and kept in the community. The use of federal benefit dollars spent at farmers markets is an additional revenue stream that could support local economies. Bringing in low-income consumers to farmers markets means an additional form of support for small farmers using farmers markets as a direct to consumer outlet, which would be of interest to the Agriculture and Natural Resources arm of Cooperative Extension. Additionally, workshops on gardening techniques could be offered by Agriculture and Natural Resources to contribute to creating a welcoming atmosphere for low-income consumers.

In addition to opportunities for collaboration across the arms of Extension, using farmers markets-based nutrition interventions can connect Extension with local food systems through the formation of relationships with farmers market managers. A way to initiate relationships with farmers market managers is through the provision of promotional materials for SNAP participant outreach for markets which are not performing outreach to SNAP families due to time or budgetary constraints. Additionally, Extension could play a larger role in the grant application process for EBT machine from the USDA.

The Food Security Project (see Chapter 5) is an example of a program built around crossing disciplinary boundaries within Extension. In Virginia, The Food Security Project was created under the Family and Consumer Sciences arm of Extension to address the needs of SNAP-Ed and EFNEP participants. One of the main strategies employed within the project has been to focus on eliminating food deserts and increasing food access through supporting farmers market outreach to SNAP families. The project was a logical fit with Family and Consumer Sciences because Family and Consumer Science educators try to positively impact the lives of their clientele by giving them the skills needed to prevent chronic disease with a healthy diet, manage their budget effectively and shop for food wisely. Farmers markets provide a community-based setting to teach many of the lessons Family and Consumer Science educators are already teaching. Though the Food Security Project was created under the Family and Consumer Sciences arm of Extension, any of the other three arms of Extension (Community Viability, Agriculture and Natural Resources, and 4-H) would be an equally fitting home for the

project, or similar projects in other states, depending on the availability of funds and organizational capacity.

In Virginia Cooperative Extension, Community Viability has five program areas including: 1) civic leadership and engagement, 2) community enterprise and resiliency, 3) community food system and enterprises, 4) community planning 5) and emerging community issues. The support and growth of farmers markets while tying low-income consumers to other segments of the community clearly fits within these program areas, especially the community food systems and enterprises focus (VCE, 2013). The mission of Agriculture and Natural Resources is to help sustain the profitability of agricultural production. Increasing the income of small farmers as a result of supporting farmers markets by connecting them to low-income consumers as an alternative revenue stream would fall within that mission. The fourth arm of Extension, 4-H, could also potentially house a Food Security Project by shifting the focus to youth involvement in strengthening the food system and creating programs to familiarize youth with concepts of community food systems. The 4-H Food, Nutrition and Health program area is a logical area in which to include information on individual and community food security so youth can begin to think about food on a systems level. Involving youth in healthy cooking demonstrations at local farmers markets would help to familiarize them with how farmers markets can positively impact individual and community health while providing a welcoming environment for low-income shoppers. The Career and Economic Education focus of 4-H is an appropriate place to tie in with community food systems. Some 4-H participants may be

interested in running small to mid-size farming operations as a career later in life. By building close working with relationships with the farmers at farmers markets through a Food Security Project, 4-H participants would be able to gain experience in the practical aspects of selling goods from small to mid-size farming operations. Some farmers markets are also offering "youth markets" to give youth experiencing with selling food.

Food Security Projects should be implemented in other states. The Community Nutrition Coordinator, or project lead, is a valuable asset to Extension due to the complicated nature of community work and relationship building. It would be useful to have an individual whose role is to manage collaborative efforts between the arms of Extension and with community organizations with the goal of impacting community food security. One of the strengths of the project is, as explained above, that the project would be appropriate for any of the arms of Extension. Location of the project within Extension could be based on interest, capacity and availability of funds.

A previously unexplored opportunity for Extension to increase the use of farmers markets as access points to fresh fruits and vegetables for low-income consumers and to increase ties with the community is the emergency food system. This system could ensure sources of no to low-cost food are available at farmers markets which may be too costly for some individuals eligible to participate in SNAP-Ed and EFNEP. Study participants identified transportation as a barrier to shopping at farmers markets, but upon further discussion participants were hesitant or refused to travel only when they were unsure of their ability to afford quality food in sufficient

quantities. Extension should encourage food banks and soup kitchens to partner with farmers markets. This would make farmers markets a more attractive option to low-income consumers. Once low income consumers were familiar with farmers markets as a food outlet (i.e. the types of foods available and the prices) they may feel more comfortable spending at least a portion of their limited food budget there.

Implications for Farmers Market Managers

One objective of this research was to explore the appropriateness of using farmers market access as a nutrition intervention and whether farmers markets should be valued as a way to increase access to fresh and healthy local foods. Local foodsheds allow for the building of relationships among people, groups, and institutions within communities and the place where they are located (Hemenway, 2006). The notion of community food security includes reliance on an environmentally and economically sustainable food system to ensure all members of a community have access to a "safe, culturally acceptable, and nutritionally adequate diet" with an emphasis on social justice (Hamm & Bellows, 2003). Community food systems strive to be economically viable for both farmers and consumers and to increase self-reliance of communities, therefore potentially decreasing the need for outside emergency food assistance. One strategy for doing this is connecting limited-resource consumers directly with local farmers (Feenstra, 1997).

Farmers market managers can approach the topic of making farmers markets more accessible to low-income consumers from a social justice perspective. Strengthening community

food systems is one strategy, in conjunction with the emergency food system, to treat causes of food insecurity, prevent or treat chronic diseases through increased access to local food, and enhance community viability and community food security. They can also approach the topic from an economic perspective in that farmers markets can serve as a space to connect farmers with low-income consumers. Low-income consumers could serve as a new customer base compared to the individuals in a higher socioeconomic bracket which are the traditional patrons of farmers markets (Govindasamy, Italia & Adelaja, 2002; Baker, Hamshaw & Kolodinsky, 2009; Byker, 2013). SNAP-eligible consumers bring in federal benefit dollars as a revenue stream to which farmers did not previously have access to.

Farmers market managers can operationalize the findings from this research by using the perceptions of SNAP-Ed and EFNEP program assistants and program participants, and SNAP-eligible individuals to build marketing campaigns and outreach opportunities in their markets. Encouraging findings from this research include that many SNAP-eligible study participants recognize the potential for farmers markets to positively impact their health, at least in the short-term. Many participants also perceive the food found at farmers markets to be of a superior quality to food found at grocery stores. These participants would shop at farmers markets if they were assured the food would be affordable.

Matching incentive programs were highly valued by participants as a way to increase their food budget and affordability of farmers markets. If matching incentive programs are not currently in place, farmers market managers should reach out to local businesses and other

potential funding sources. Farmers market managers can pitch matching incentive programs as a chance for local businesses to engage in social justice and community outreach work. Matching incentive programs are especially beneficial for farmers markets and local farmers. These programs provide a market with a stream of money from a private donor or fundraising effort to match the amount of government assistance funds spent by low-income consumers at farmers markets. These types of matching incentive programs are successful in promoting increased purchasing and consumption of fresh fruits and vegetables by low-income consumers to provide additional revenue to farmers (Baronberg, Dunn, Nonas, Dannefer & Sacks, 2013; Dimitria, Oberholtzerb & Nischanc, 2013; Linday at al., 2013; Young et al., 2013).

The atmosphere of a market was a large factor in whether or not study participants were willing to shop at farmers markets. If Extension personnel have not been in contact with farmers market managers then managers should actively seek out relationships with their local SNAP-Ed and EFNEP program assistants, Agents and/or Specialists. This will allow them to take advantage of educational opportunities offered by Extension (cooking demonstrations, educational materials, and promotional materials). These activities create a welcoming environment for low-income consumers while also appealing to customers in other socioeconomic brackets.

Participants often wanted a structured shopping experience similar to what they are familiar with at a grocery store. They wanted to know whether EBT is accepted, the hours of operation, and what basic food items are available before entering a market. Study participants

requested sales papers similar to those from grocery stores. This would let them plan their shopping trips ahead of time. This may not be feasible for most farmers markets. Participants suggested easily visible signage stating EBT acceptance and hours of operation which highlight some basic, recognizable foods available for purchase (potatoes, onions, bread, chicken, etc). A market map may also be useful to low-income consumers so they can easily and efficiently navigate a market. Participants also requested activities, such as scavenger hunts, to occupy children.

Farmers market managers should develop outreach and advertising materials specifically for low-income consumers and partner with local Departments of Social Services and Health Department to distribute these materials. Study participants identified that receiving information on farmers markets while receiving information on using their food assistance benefits would increase the likelihood of their shopping at farmers markets.

Advertising efforts should be adjusted to include the vocabulary and values of low-income consumers. For example, based on the work with program assistants and program participants the value of 'organic', 'sustainable', or 'local' food may not be apparent or clear to low-income consumers. For example, SNAP-eligible study participants valued chemical-free, 'unsprayed' food options, but did not recognize this as 'organic.' Based on this work and a study by Blitstein, Snider, & Evans (2012), advertising materials should highlight that farmers markets are a source of healthy, quality fruits and vegetables for families.

If market managers lack the resources to develop marketing materials they should seek out and form relationships with local SNAP-Ed and EFNEP Program Assistants, Agents and/or Specialists. The Community Nutrition Coordinator for Virginia Cooperative Extension, used formative research to develop free outreach and educational materials for farmers market managers for the purpose of reaching out to SNAP-eligible families. If Food Security Projects are implemented in other states (see the above section on implications for Extension), targeted and culturally appropriate materials may become available in other locations.

Implications For Populations Experiencing Food Insecurity

This research would not be designated as community-based participatory research, which is a collaborative research strategy between researchers and local stakeholders that acknowledges and embraces the value of different perspectives, local knowledge, and lived experience. An essential aspect of community-based participatory research is the inclusion of community stakeholders from the onset of, and throughout, an entire project as a democratic strategy for social change (Greenwood & Levin, 2007). However, one of the goals of the photo elicitation portion of this research was to use a participatory process with mothers of young children, the target population for SNAP-Ed and EFNEP, to develop educational materials and to adjust a SNAP-Ed farmers market orientation lesson to better fit their needs and overcome their perceived barriers in using farmers markets to access fresh fruits and vegetables.

Interactive participation in research has been shown to be a critical component of sustainable agriculture and sustainable development projects, leading to greater efficiency,

increased understanding and social cohesion, greater transparency and accountability, and increased empowerment of low-income individuals compared to non-participatory development projects (Pretty, 1995; Eksvard & Rydberg, 2010). A participatory development process can better foster community empowerment (contributing to feelings of community well-being and more sustainable changes in the local food system) than if potential fixes and/or strategies are imposed by community outsiders or 'experts' (Harrison, 1998; Christens, 2012). Therefore, low-income mothers with young children should continue to be involved in an iterative process of development, implementation, and evaluation of Cooperative Extension nutrition programming.

A critique of this work is the target population did not have input in the choice of the research topic or the development of research questions. For the initial and continued development of the SNAP-Ed farmers market orientation lesson to be truly participatory, mothers of young children should have been involved in the development of the research. The lack of participation of the target population in the development of the research topic can also call into the appropriateness of using farmers markets as a nutrition intervention. The inclusion of farmers markets in Cooperative Extension nutrition programming to potentially increase access to and consumption of fruits and vegetable intake is a strategy imposed by outside 'experts,' calling into question the relevance of including farmers markets information in nutrition education curricula.

However, both current and potential SNAP-Ed and EFNEP participants indicated that shopping at farmers markets would positively impact their dietary habits on a short-term basis

(one to three months). Some participants were interested in using farmers markets as a way to access quality fruits and vegetables and as a site for cooking and food preservation demonstrations. Photo elicitation participants also identified farmers market field trips as a valuable experiential learning component of nutrition education curricula, describing it as "nutrition education in action." More research is needed to evaluate the short-term and long-term impact of including farmers markets in nutrition education curricula on the dietary habits of SNAP-Ed and ENFEP participants and their families. Triangulation of program assistant surveys with low-income populations could help to externally validate the survey findings on farmers market access barriers and guide future initiatives.

Other participants displayed no interest or were even opposed to accessing farmers markets. This research was conducted in rural communities so this may be due to participants' desire to separate themselves from an agricultural past. Additionally, the place-based nature of farmers markets means the prices of fruits and vegetables will vary between locations and may price out program participants, especially if matching incentive programs are not available. Farmers markets were not a routine place to shop for most participants and as many participants expressed a desire for a structured shopping experience, this may make them uncomfortable. Participants may also be uncomfortable shopping at farmers markets due to a perceived social stigma. If SNAP-Ed and EFNEP program assistants are very familiar with their local farmers markets and have a strong working relationship with farmers market managers this may help to alleviate some of the tension SNAP-Ed and EFNEP program participants feel.

Optional farmers market nutrition education may still be useful for the portion of the SNAP-Ed and EFNEP participants who would be open to shopping there. SNAP-Ed and EFNEP program assistants, as representatives of the community in which they teach and who interact with the target population on a personal level should be able to judge if their clientele would be open to the idea of shopping at farmers markets. Overall, using farmers markets to access fresh fruits and vegetables may be a promising nutrition intervention strategy for only a certain portion of SNAP-Ed and EFNEP participants. Specifically, it may be more feasible to use farmers market access to improve the diet of SNAP and WIC-eligible participants than participants of SNAP alone.

REFERENCES

1. Abel, J., Thomson, J. & Maretzki, A. (1999). Extension's role with farmers' markets: Working with farmers, consumers and communities. *The Journal of Extension, 37*(5). Retrieved from http://www.joe.org/joe/1999october/a4.php
2. Adams, D. C., & Salois, M.J. (2010). Local versus organic: A turn in consumer preferences and local willingness-to-pay. *Renewable Agriculture and Food Systems, 25*, 331-341.
3. Adelman, C. (1993). Kurt Lewin and the origins of action research. *Educational Action Research, 1*(1), 7-24.
4. Agriculture Marketing Service. USDA. (1996). *Famers' market survey report*. Washington, DC: U.S. Government Printing Office Burns, A.F. & Johnson, D.N.
5. Agricultural Marketing Service. USDA. (2013). Retrieved from http://www.ams.usda.gov/AMSv1.0/farmersmarkets
6. Alkon, A. (2008). From value to values: sustainable consumption at farmers markets. *Agriculture and Human Values, 25*(4), 487-498.
7. Allen, P. (2008). Mining for justice in the food system: Perceptions, practices, and possibilities. *Agriculture and Human Values, 25*, 157-161.
8. Allen, P. (2010). Realizing justice in local food systems. *Cambridge Journal of Regions, Economy and Society*, 3(2), 295-308.

9. Andreyeva, T., Middleton, A. E., Long, M. W., Luedicke, J., & Schwartz, M. B. (2011). Food retailer practices, attitudes and beliefs about the supply of healthy foods. *Public Health Nutrition, 14*(6), 1024-1031.

10. Azétsop, J. & Joy, T.R. (2013). Access to nutritious food, socioeconomic individualism and public health ethics in the USA: a common good approach. *Philosophy, Ethics & Humanities in Medicine*, 8(1), 16.

11. Bader, M. D., Purciel, M., Yousefzadeh, P. & Neckerman, K.M. (2010). Disparities in neighborhood food environments: Implications of measurement strategies. *Economic Geography*, *86*(4), 409-430.

12. Baker, D., Hamshaw, K. & Kolodinsky, J. (2009). Who shops at the market? Using consumer surveys to grow farmers' markets: Findings from a regional market in Northwestern Vermont. Journal of Extension, 47(6), 6FEA2.

13. Bandura, A. (1989). Human agency in social cognitive theory. *American Psychology, 44*(9), 1175-1184.

14. Bandura, A. (1996). Social cognitive theory of human development. In T. Husen, & Postlethwaite, T.N. (Ed.), *International Encyclopedia of Education* (2nd ed., pp. 5513-5518). Oxford: Pergamon Press.

15. Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

16. Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and Health*, *13*, 623-649.

17. Baronberg, S., Dunn, L., Nonas, C., Dannefer, R. & Sacks, R. (2013). The impact of New York City's Health Bucks Program on electronic benefit transfer spending at farmers markets, 2006-2009. *Preventing Chronic Disease, 26*(10), E163.
18. Barrett, C. B. (2010). Measuring food insecurity. *Science, 327*(5967), 825-828.
19. Bartfeld, J. & Dunifon, R. (2006). State-level predictors of food insecurity among households with children. *Journal of Policy Analysis and Management, 25*(4), 921-942.
20. Batte, M. T., Beaverson, J., & Hooker, N. (2003). Organic food labels: A customer intercept survey of central Ohio food shoppers. Columbus, OH: Ohio State University.
21. Beaulac, J., Kristjansson, E., & Cummins, S. (2009). A systematic review of food deserts, 1966-2007. *Preventing Chronic Disease, 6*(3), A105. Retrieved from http://www.cdc.gov/pcd/issues/2009/ jul/08_0163.htm.
22. Black, C., Moon, G. & Baird, J. (2013). Dietary inequalities: What is the evidence for the effect of the neighbourhood food environment? *Health Place*. doi: 10.1016/j.healthplace.2013.09.015
23. Blanck, H. M., Thompson, O. M., Nebeling, L. & Yaroch, A. L. (2011). Improving fruit and vegetable consumption: use of farm-to-consumer venues among US adults. *Preventing Chronic Disease, 8*(2), A49.
24. Blitstein, J.L., Snider, J. & Evans, W.D. (2012). Perceptions of the food shopping environment are associated with greater consumption of fruits and vegetables. *Public Health Nutrition, 15*(6), 1124-1129.

25. Booth, K. M., Pinkston, M. M. & Poston, W. S. (2005). Obesity and the built environment. *Journal of the American Dietetics Association, 105*(5 S1), S110-117.

26. Bond, J. K., Thilmany, D., Bond, C.A., Govindasamy, R., & Thornsbury, S. (2006). Direct marketing of fresh produce: Understanding consumer purchasing decisions. *Choices, 21*(4), 229-236.

27. Borjas, G. J. (2004). Food insecurity and public assistance. *Journal of Public Economics, 88*(7-8), 1421-1443.

28. Breyer, B. & Voss-Andreae, A. (2013). Food mirages: Geographic and economic barriers to healthful food access in Portland, Oregon. *Health & Place, 24*, 131-139.

29. Brown, C. (2003). Consumers' preferences for locally produced food: A study in Southeast Missouri. *American Journal of Alternative Agriculture, 18*(4):213–224.

30. Brownell, K. D. & Ludwig, D.S. (2011). The Supplemental Nutrition Assistance Program, soda, and USDA policy. *The Journal of the American Medical Association, 306*(12), 1370-1371.

31. Buckley, J., & Cameron, L. D. (2011). Automaticity of exercise self-regulatory efficacy beliefs in adults with high and low experience in exercise self-regulation. *Journal of Sport Exercise Psychology, 33*(3), 325-348.

32. Byrd-Bredbenner, C., Abbot, J. M., & Cussler, E. (2011). Relationship of social cognitive theory concepts to mothers' dietary intake and BMI. *Maternal and Child Nutrition, 7*(3), 241-252.

33. Campbell, M. C. (2004). Building a common table: The role for planning in community food systems. *Journal of Planning Education and Research, 23,* 341-355.

34. Catalani, C. & Minkler, M. (2009). Photovoice: A review of the literature in health and public health. *Health Education & Behavior, 37,* 424-450.

35. Center for Disease Control and Prevention. (2013). Overweight and obesity: Adult obesity facts. Retrieved from http://www.cdc.gov/obesity/data/adult.html

36. Coit, M. (2008). Jumping on the next bandwagon: An overview of the policy and legal aspects of the local food movement. *Journal of Food Law & Policy, 45*.

37. Coleman-Jensen, A. & Nord, M. (2013, September 4). Food security in the U.S.: Key statistics & graphics. Retrieved from http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx#.UrDylPSrwnc

38. Cone, L., Smith, S. & Powers, A. (2009). Food purchasing choices of Supplemental Nutrition Assistance Program (SNAP) participants in Greenville County, South Carolina. *Journal of Nutrition Education and Behavior, 41*(4), S26.

39. Conner, D.S. & Levine, R. (2007). Circles of association: The connections of community-based food systems. *Journal of Hunger & Environmental Nutrition, 1*(3), 5-25.

40. Darby, K., Batte, M.T., Ernst, S. & Roe, B. (2008). Decomposing local: A conjoin analysis of locally produced food. *American Journal of Agricultural Economics, 90*(2), 476-486.

41. DeLind, L. B. (2010). Are local food and the local food movement taking us where we want to go? Or are we hitching our wagons to the wrong stars? *Agriculture and Human Values, 28*(2), 273-283.

42. Dickin, K., Dollahite, J. & Habicht, J. (2005). Nutrition behavior change among EFNEP participants is higher at sites that are well managed and whose front-line nutrition educators value the program. *The Journal of Nutrition, 135*(9), 2199-2205.

43. Dickin, K., Dollahite, J. & Habicht, J. (2010). Job satisfaction and retention of community nutrition educators: The importance of perceived value of the program, consultative supervision, and work relationships. *Journal of Nutrition Education and Behavior, 42*,337-344.

44. Dimitria, C., Oberholtzerb, L. & Nischanc, M. (2013). Reducing the geographic and financial barriers to food access: Perceived benefits of farmers' markets and monetary incentives. *The Journal of Hunger & Environmental Nutrition, 8*(4), 429-444.

45. Ding, D., Sallis, J.F., Norman, G.J., Saelens, B.E., Harris, S.K., Kerr, J., Rosenberg, D., Durant, N. & Glanz, K. (2012). Community food environment, home food environment, and fruit and vegetable intake of children and adolescents. *The Journal of Nutrition Education and Behavior, 44*(6), 634-638.

46. Dinour, L. M., Bergen, D. & Yeh, M. C. (2007). The food insecurity-obesity paradox: a review of the literature and the role food stamps may play. *Journal of the American Dietetics Association, 107*(11), 1952-1961.

47. Donald, B. (2013). Food retail and access after the crash: Rethinking the food desert problem. *The Journal of Economic Geography, 13*, 231-237.

48. Drewnowski, A. (2004). Obesity and the food environment: dietary energy density and diet costs. *American Journal of Preventative Medicine, 27*(3S), 154-162.

49. DuPuis, M.E. & Goodman, D. (2005). Should we go "home" to eat?: Toward a reflexive politics of localism. *Journal of Rural Studies, 21*(3), 359-371.

50. Economic Research Service. USDA. (2008). *Food Stamps and obesity: What do we know?* (EIB-34) Ver Ploeg, M. & Ralston, K. Retrieved from http://www.ers.usda.gov/publications/eib-economic-information-bulletin/eib34.aspx#.UrD9lvSrwnc

51. Economic Research Service. USDA. (2009). *Access to affordable and nutritious food: Measuring and understanding food deserts and their consequences.* (Report to Congress). Retrieved from http://www.ers.usda.gov/media/242675/ap036_1_.pdf

52. Economic Research Service. USDA. (2010a). *Benefit redemption patterns in the Supplemental Nutrition Assistance Program*. Retrieved from http://www.fns.usda.gov/benefit-redemption-patterns-supplemental-nutrition-assistance-program

53. Economic Research Service. USDA. (2010b). *Local food systems: Concepts, impacts, and issues.* (Economic Research Report: no 97). www.ers.usda.gov/publications/err-economic-research.../err97.aspx

54. Economic Research Service. USDA. (2010c). *Energy use in the U.S. food system*. (Economic Research Report: no 94). Washington, DC. Retrieved from www.ers.usda.gov/media/136418/err94_1_.pdf

55. Economic Research Service. USDA. (2011). *Food dollar series: Food dollar application*. Retrieved from http://www.ers.usda.gov/Data/FoodDollar/app/

56. Economic Research Service. USDA. (2011). *Direct and Intermediated marketing of local foods in the United States*. (Economic Research Report no 128). Retrieved from http://www.ers.usda.gov/publications/err-economic-research-report/err128/report-summary.aspx#.UrQfPvSrwnc

57. Economic Research Service. USDA. (2013). *Global food security*. Retrieved from http://www.ers.usda.gov/topics/international-markets-trade/global-food-security.aspx#.UrDvJvSrwnc

58. Eisenmann, J. C., Gundersen, C., Lohman, B. J., Garasky, S. & Stewart, S. D. (2011). Is food insecurity related to overweight and obesity in children and adolescents? A summary of studies, 1995-2009. *Obesity Reviews, 12*(5), e73-83.

59. Eksvard, K. & Rydberg, T. (2010). Integrating participatory learning and action research and systems ecology: A potential for sustainable agriculture transitions. *Systemic Practice and Action Research,* 23, 467-486.

60. Ervin, R. B. (2011). Healthy eating index-2005 total and component scored for adults aged 20 and over: National health and nutrition examination survey, 2003-2004. National Health Statistics Report, no 44. : Center for Disease Control and Prevention.

61. Everett, M. (2011). Practicing anthropology on a community-based public health coalition: lessons from HEAL. *Annals of Anthropological Practice, 35*(2), 10-26.

62. Eyerman, R. & Jamison, A. (1991). *Social movements: a cognitive approach*. Oxford: Polity Press.

63. Fleming, D. & Goetz, S. J. (2010). Does local firm ownership matter? *Economic Development Quarterly,* 25(3), 277-281.

64. Food and Agriculture Organization of the United Nations. (2006). *Livestock's long shadow: Environmental issues and options*. Rome, Italy: Steinfeld, H., Gerber, P., Wassenaar, T., Castel, V., Rosales, M., & de Haan, C.

65. Farmers markets and local food marketing: Farmers markets and direct-to-consumer marketing. (2013). Retrieved December 18, 2013 from http://www.ams.usda.gov/AMSv1.0/farmersmarkets

66. Feenstra, G. W. (1997). Local food systems and sustainable communities. *American Journal of Alternative Agriculture, 12*(1), 28-36.

67. Feenstra, G. W. (2002). Creating space for sustainable food systems: Lessons from the field. *Agriculture and Human Values, 19*(1), 99-106.

68. Field, S., Masakure, O., & Henson, S. (2010). Rethinking localization- a low-income country perspective: The case of Asian vegetables in Ghana. *Cambridge Journal of Regions, Economy and Society, 3*(2), 261-277.

69. Fish, C.A., Brown, J.R. & Quandt, S.A. (2013). African American and Latino Low Income Families' Food Shopping Behaviors: Promoting Fruit and Vegetable Consumption and Use of Alternative Healthy Food Options. *The Journal of Immigrant and Minority Health.* doi 10.1007/s10903-013-9956-8

70. Food availability (per capita) data system (2013). Retrieved December 19, 2013 from http://www.ers.usda.gov/data-products/food-availability-(per-capita)-data-system/summary-findings.aspx#.UrLb0vSrwnc

71. Food and Nutrition Service. USDA. (2005). *Obesity, poverty, and participation in nutrition assistance programs*. (Report No. FSP-04-PO). Retrieved from http://www.fns.usda.gov/sites/default/files/ObesityPoverty.pdf

72. Food and Nutrition Service. USDA (2007). *Implications of restricting the use of Food Stamp Benefits*. Retrieved from http://www.fns.usda.gov/implication-restricting-use-food-stamp-benefits

73. Food and Nutrition Service. USDA. (2011a). *Characteristics of Supplemental Nutrition Assistance Program households: Fiscal year 2010*. Retrieved from http://www.fns.usda.gov/supplemental-nutrition-assistance-program-participation-rates-fiscal-year-2010

74. Food and Nutrition Service. USDA. (2011b). *Dynamics of Supplemental Nutrition Assistance Program participation in the mid-2000s*. Retrieved from http://www.fns.usda.gov/dynamics-supplemental-nutrition-assistance-program-participation-mid-2000s

75. Food and Nutrition Service. USDA. (2011c). *Benefit redemption patterns in the Supplemental Nutrition Assistance Program.* Retrieved from http://www.fns.usda.gov/benefit-redemption-patterns-supplemental-nutrition-assistance-program

76. Food and Nutrition Service. USDA. (2013a). *Supplemental Nutrition Assistance Program*. Retrieved from http://www.fns.usda.gov/snap/supplemental-nutrition-assistance-program-snap

77. Food and Nutrition Service. USDA. (2013b). Program data: Supplemental Nutrition Assistance Program. Retrieved from http://www.fns.usda.gov/pd/SNAPmain.htm

78. Food and Nutrition Service. USDA. (2013c). *SNAP Nutrition Education Grants Program streamlined, will focus on critical problem of obesity*. (Release No. FNS-0005.13). Retrieved from http://www.fns.usda.gov/pressrelease/2013/fns-000513

79. Franco, M., Diez Roux, A. V., Glass, T. A., Caballero, B. & Brancati, F. L. (2008). Neighborhood characteristics and availability of healthy foods in Baltimore. *American Journal of Preventative Medicine, 35*(6), 561-567.

80. Gereffi, G., Lee, J., & Christian, M. (2009). US-based food and agricultural value chains and their relevance to healthy diets. *Journal of Hunger & Environmental Nutrition, 4*, 357-374.

81. Greenwood, D.J., & Levin, M. (2007). *Introduction to action research* (2nd ed.). Thousand Oaks, CA: SAGE Publications.

82. Glanz, K. & Yaroch, A.L. (2004). Strategies for increasing fruit and vegetable intake in grocery stores and communities: policy, pricing, and environmental change. *Preventative Medicine, 39*(S2), S75-S80.

83. Glanz, K., Sallis, J.F., Saelens, B.E. & Frank, L.D. (2005). Healthy nutrition environments: concepts and measures. *The American Journal of Health Promotion, 19*(5), 330-333.

84. Gottlieb, R. & Fisher, A. (1996). Community food security and environmental justice: Searching for a common discourse. *Agriculture and Human Values, 3*(3), 23-32.

85. Govindasamy, R., Italia, J. & Adelaja A. (2002). Farmers' markets: Consumer trends, preferences and characteristics. *The Journal of Extension, 40*(1). Retrieved from http://www.joe.org/joe/2002february/rb6.php

86. Grace, C., Grace, T., Becker, N. & Lyden, J. (2008). Barriers to using urban farmers' markets: An investigation of food stamp clients' perceptions. *Journal of Hunger & Environmental Nutrition, 2*(1), 55-75.

87. Guthman, J. (2008). Bringing good food to others: Investigating the subjects of alternative food practice. *Cultural Geographies, 15*, 431-447.

88. Guthman, J. (2011). *Weighing in: Obesity, food justice and the limits of capitalism*. Berkeley: University of California Press.

89. Guthman, J., Morris, A. & Allen, P. (2006). Squaring farm security and food security in two types of alternative food institutions. *Rural Sociology, 71*, 662-684.

90. Hamm, M.W. & Bellows, A.C. (2003). Community food security and nutrition educators. *Journal of Nutrition Education and Behavior, 35*(10), 37-43.

91. Hammond, R.A. & Dube, L. (2012). A systems science perspective and transdisciplinary models for food and nutrition security. *Proceedings of the National Academy of Sciences in the United States of America, 109*(31), 12356–12363.

92. Harvie, J. (2006). Redefining healthy food: An ecological health approach to food production, distribution, and procurement. Concord, CA: The Center for Health Design. Retrieved from http://isfusa.org/publications/Redefining%20Healthy%20Food.pdf

93. Harvey, D. (2005). *A brief history of neoliberalism*. Oxford: Oxford University Press.

94. Harvie, J., Mikkelsen, L. & Shak, L. (2009). A new health care prevention agenda: Sustainable food procurement and agricultural policy. *Journal of Hunger & Environmental Nutrition, 4*(3), 409-429.

95. Hattersley, L. (2013). Agri-food system transformations and diet-related chronic disease in Australia: a nutrition-oriented value chain approach. *Agriculture and Human Values, 30*(2), 299-309.

96. Hawkes, C. (2009). Identifying innovative interventions to promote healthy eating ssing consumption-oriented food supply chain analysis. *The Journal of Hunger and Environmental Nutrition,* 43(3-4), 336-356.

97. Herman, D.R., Harrison, G.G., Afifi, A.A. & Jenks, E. (2008). Effect of a targeted subsidy on intake of fruits and vegetables among low-income women in the Special Supplemental Nutrition Program for Women, Infants, and Children. *The American Journal of Public Health, 98*(1), 98-105.

98. Hemenway, T. (2006). Understanding Our Food shed and securing it for the future, *The Journal of the Coalition for a Livable Future, 8*(2), 8-10.

99. Horodynski, M. A., Baker, S., Coleman, G., Auld, G., & Lindau, J. (2011). The Healthy Toddlers Trial Protocol: an intervention to reduce risk factors for childhood obesity in economically and educationally disadvantaged populations. *BMC Public Health, 11,* 581-587.

100. Jilcott Pitts, S.B., Wu, Q., McGuirt, J.T., Crawford, T.W., Keyserling, T.C. & Ammerman, A.S. (2013). Associations between access to farmers' markets and supermarkets, shopping patterns, fruit and vegetable consumption and health indicators

among women of reproductive age in eastern North Carolina, U.S.A. *Public Health Nutrition, 16*(11), 1944-1952.

101. Jilcott, S. B., Keyserling, T., Crawford, T., McGuirt, J. T. & Ammerman, A. S. (2011). Examining associations among obesity and per capita farmers' markets, grocery stores/supermarkets, and supercenters in US counties. *Journal of American Dietetics Association, 111*(4), 567-572.

102. Jilcott, S. B., Wall-Bassett, E. D., Burke, S. C. & Moore, J. B. (2011). Associations between food insecurity, supplemental nutrition assistance program (SNAP) benefits, and body mass index among adult females. *Journal of the American Dietetics Association, 111*(11), 1741-1745.

103. Johnson, C.M., Sharkey, J.R., McIntosh, A.W. & Dean, W.R. (2010). "I'm the Momma": Using photo-elicitation to understand matrilineal influence on family food choice. *BMC Womens Health, 10*, 21.

104. Jones, S. J. & Frongillo, E. A. (2006). The modifying effects of Food Stamp Program participation on the relation between food insecurity and weight change in women. *Journal of Nutrition, 136*(4), 1091-1094.

105. Kirschenmann, F., Stevenson, S., Buttel, F., Lyson, T., & Duffy, M. (2008). Why worry about the agriculture in the middle? In T. Lyson, Stevenson, G.W., & Welsh, R. (Ed.), *Food and the mid-level farm: Renewing an agriculture in the middle* (pp. 3-22). Cambridge, MA: MIT Press.

106. Kneafsey, M. (2010). The region in food-important or irrelevant? *Cambridge Journal of Regions, Economy and Society*, 1-14.

107. Kropf, M. L., Holben, D. H., Holcomb, J. P., Jr. & Anderson, H. (2007). Food security status and produce intake and behaviors of Special Supplemental Nutrition Program for Women, Infants, and Children and Farmers' Market Nutrition Program participants. *Journal of the American Dietetics Association, 107*(11), 1903-1908.

108. Lang, T., Barling, D. & Caraher, M. (2009). *Integrating health, environment and society*. Oxford: Oxford University Press.

109. Larson, N. I., Story, M. T. & Nelson, M. C. (2009). Neighborhood environments: disparities in access to healthy foods in the U.S. *The American Journal of Preventative Medicine, 36*(1), 74-81.

110. Lee, R. E., Heinrich, K.M., Medina, A.V., Regan, G.R., Reese-Smith, J.Y., Jokura, Y. & Maddock, J.E. (2010). A picture of the healthful food environment in two diverse urban cities. *Environmental Health Insights, 21*(4), 49-60.

111. Leung, C.W., Laraia, B.A., Kelly, M., Nickleach, D., Adler, N.E., Kushi, L.H. & Yen, I.H. (2011). The influence of neighborhood food stores on change in young girls' body mass index. *The American Journal of Preventative Medicine, 41*(1), 43-51.

112. Leung, C.W., Ding, E.L., Catalano, P.J., Villamor, E., Rimm, E.B. & Willett, W.C. (2012). Dietary intake and dietary quality of low-income adults in the Supplemental

Nutrition Assistance Program. *The American Journal of Clinical Nutrition, 96*(5), 977-988.

113. Leung C.W., Blumenthal, S.J., Hoffnagle, E.E., Jensen, H.H., Foerster, S.B., Nestle, M., Cheung, L.W., Mozaffarian, D & Willett, W.C. (2013). Associations of food stamp participation with dietary quality and obesity in children. *Pediatrics, 131*(3), 463-472.

114. Lev, L., Brewer, L. & Stephenson, G. (2003). Research brief: How do farmers' markets affect neighboring businesses. Oregon Small Farms Technical Report: no 16. Corvalis, OR: Oregon State University Extension Service. Retrieved from http://smallfarms.oregonstate.edu/sites/default/files/publications/techreports/TechReport16.pdf

115. Lindsay, S., Lambert, J., Penn, T., Hedges, S., Ortwine, K., Mei, A., Delaney, T. & Wooten, W.J. (2013). Monetary matched incentives to encourage the purchase of fresh fruits and vegetables at farmers markets in underserved communities. *Preventing Chronic Disease, 14*(10), E188.

116. Lobao, L. & Meyer, K. (2001). The great agricultural transition: Crisis, change, and social consequences of twentieth century US farming. *Annual Review of Sociology, 27,* 103-124.

117. Madsen, T., Banks, J., & Bristow, G. (2000). Food supply chain approaches: Exploring their role in rural development. *Sociologia Ruralis, 40*(4), 424-438.

118. Mann, T., Tomiyama, A.J., Westling, E., Lew, A.M., Samuels, B. & Chatman, J. (2007). Review Medicare's search for effective obesity treatments: diets are not the answer. *American Pyschologist, 62*(3), 220-233.

119. Martin, K. S., & Ferris, A. M. (2007). Food insecurity and gender are risk factors for obesity. *Journal of Nutrition Education Behavior, 39*(1), 31-36.

120. Massachusetts Department of Agricultural Resources. (2011). Supplemental Nutrition Assistance Program Benefits at Massachusetts farmers' markets: Program evaluation. Retrieved from http://www.mass.gov/eea/docs/agr/markets/farmersmarkets/snap-program-evaluation.pdf

121. Mayo, M.L., Pitts, S.B. & Chriqui, J.F. (2013). Associations between county and municipality zoning ordinances and access to fruit and vegetable outlets in rural north Carolina, 2012. *Preventing Chronic Disease, 5*(10), E203.

122. McCormack, L. A., Laska, M. N., Larson, N. I., & Story, M. (2010). Review of the nutritional implications of farmers' markets and community gardens: a call for evaluation and research efforts. *Journal of American Dietetics Association, 110*(3), 399-408.

123. McGuirt, J.T., Jilcott Pitts, S.B., Ward, R., Crawford, T.W., Keyserling, T.C. & Ammerman, A.S. Examining the influence of price and accessibility on willingness to shop at farmers' markets among low-income Eastern North Carolina women. *The Journal of Nutrition Education and Behavior*. doi: 10.1016/j.jneb.2013.06.001

124. Melucci, A. (1996) *Challenging codes: Collective action in the information age*. New York, NY: Cambridge University Press.

125. Minkler, M. (2010). Linking science and policy through community-based participatory research to study and address health disparities. *American Public Health Association, 100*(S1), S81-87.

126. Minkler, M., & Wallerstein, N. (2003). Introduction to community based participatory research. In M. W. Minkler, N. (Ed.), *Community-based participatory research for health* (pp. 3-26). San Fransisco: Jossey-Bass.

127. Monteiro, S. M., Jancey, J., Howat, P., Burns, S., Jones, C., Dhaliwal, S. S., McManus, A., Hills, A.P., & Anderson, A. S. (2011). The protocol of a randomized controlled trial for playgroup mothers: Reminder on Food, Relaxation, Exercise, and Support for Health (REFRESH) Program. *BMC Public Health, 11*, 648-655.

128. Morland, K., Wing, S. & Diez Roux, A. (2002). The contextual effect of the local food environment on residents' diets: the atherosclerosis risk in communities study. *American Journal of Public Health, 92*(11), 1761-1767.

129. Morgan, K. & Sonnino, R. (2010). The urban foodscape: World cities and the new food equation. *Cambridge Journal of Regions, Economy and Society*, 3, 209-224.

130. Neff, R. A., Palmer, A.M., McKenzie, S.E., & Lawrence, R.S. (2009). Food systems and public health disparities. *Journal of Hunger & Environmental Nutrition, 4*(3-4), 282-314.

131. Nestle, M. (2007). *Food politics: How the food industry influences nutrition and health* (Second ed.). Berkeley and Los Angeles, CA: University of California Press.

132. Ogden, C., Lamb, M., Carroll, M. & Flegal, K. (2010). Obesity and socioeconomic status in adults: United States, 2005-2008. NCHS data brief, no 50. Hyattsville, MD: National Center for Health Statistics.

133. Ollberding, N.J., Nigg, C.R., Geller, K.S., Horwath, C.C., Motl, R.W. & Dishman, R.K. (2012). Food outlet accessibility and fruit and vegetable consumption. *The American Journal of Health Promotion, 26*(6), 366-370.

134. Otto, D. & Varner, T. (2005). *Consumers, vendors, and the economic importance of Iowa farmers' markets: An economic impact survey analysis*. Retrieved from http://www.leopold.iastate.edu/sites/default/files/pubs-and-papers/2005-05-consumers-vendors-and-economic-importance-iowa-farmers-markets-economic-impact-survey-analysis.pdf

135. Papas, M. A., Alberg, A. J., Ewing, R., Helzlsouer, K. J., Gary, T. L. & Klassen, A. C. (2007). The built environment and obesity. *Epidemiology Reviews, 29,* 129-143.

136. Park, Y., Quinn, J., Florez, K., Jacobson, J., Neckerman, K. & Rundle, A. (2011). Hispanic immigrant women's perspective on healthy foods and the New York City retail food environment: A mixed-method study. *Social Science & Medicine, 73*(1), 13-21.

137. Perez, J. & Allen, P. (2007). *Farming the college market: Results of a consumer study at UC Santa Cruz Center Research Brief*. Santa Cruz, CA: Center for Agroecology and Sustainable Food Systems.

138. Peters, C., Bills, N.L., Wilkins, J.L. & Fick, G.W. (2008). Foodshed analysis and its relevance to sustainability. *Renewable Agriculture and Food Systems, 24*(1), 1–7.

139. Pimentel, D. G., M. (1994). *Food, land, population and the U.S. economy*. Washington, D.C.: Carrying Capacity Network.

140. Pirog, R. & McCann, N. (2009). *Is local food more expensive? A consumer price perspective on local and non-local foods purchased in Iowa.* Retrieved from http://www.leopold.iastate.edu/pubs-and-papers/2009-12-local-food-more-expensive

141. Pretty, J.N. (1995). Participatory learning for sustainable agriculture. *World Development, 23*(8), 1247-1263.

142. Racine, E. F., Smith Vaughn, A., & Laditka, S. B. (2010). Farmers' market use among African-American women participating in the Special Supplemental Nutrition Program for Women, Infants, and Children. *Journal of the American Dietetics Association, 110*(3), 441-446.

143. Rahman, T., Cushing, R. A., & Jackson, R. J. (2011). Contributions of built environment to childhood obesity. *Mt Sinai Journal of Medicine, 78*(1), 49-57.

144. Ratcliffe, C., McKernan, S., & Zhang, S. (2011). How much does the Supplemental Nutrition Assistance Program reduce food insecurity? *The American Journal of Agricultural Economics, 93*(4), 1082-1098.

145. Robert Wood Johnson Foundation. (2007). *The links between the neighborhood food environment and childhood nutrition.* Oakland, CA: Mikkelsen, L. & Chehimi, S.

146. Ruff, C. C., Alexander, I. M., & McKie, C. (2005). The use of focus group methodology in health disparities research. *Nursing Outlook, 53*(3), 134-140.

147. Salois, M. J. (2012). Obesity and diabetes, the built environment, and the 'local' food economy in the United States, 2007. *Economics & Human Biology*, *10*(1), 35-42.

148. Schunk, D. H., & Zimmerman, B. J. (Eds.). (1994) *Self-regulation of learning and performance: Issues and educational implications.* Hillsdale, NJ: Erlbaum.

149. Sharts-Hopko, N. C. (2001). Focus group methodology: when and why? *Journal of Association of Nurses in AIDS Care, 12*(4), 89-91.

150. Shenkin, J. D. & Jacobson, M.F. (2010). Using the Food Stamp Program and other methods to promote healthy diets for low-income consumers. *American Journal of Public Health, 100*(9), 1562-1564.

151. Short, A., Guthman, J. & Raskin, S. (2007). Food deserts, oases, or mirages? Small markets and community food security in the San Francisco Bay area. *Journal of Planning Education and Research, 26* (3), 352-364.

152. Smedley, B., & Syme, S.L. (2000). *Promoting health intervention strategies from social and behavioral research*. Washington DC: National Academies Press.

153. Starr, A. (2010). Local food: A social movement? *Cultural Studies ↔ Critical Methodologies, 10*(6), 479-490.

154. Starr, A., Card, A., Benepe, C., Auld, G., Lamm, D., Smith, K. & Wilken, K. (2003). Sustaining local agriculture: Barriers and opportunities to direct marketing between farms and restaurants in Colorado. *Agriculture and Human Values, 20*(3), 301-321.

155. Stephens, L. D., McNaughton, S. A., Crawford, D., Macfarlane, A. & Ball, K. (2011). Correlates of dietary resilience among socioeconomically disadvantaged adolescents. *European Journal of Clinical Nutrition, 65*(11), 1219-1232.

156. Stephenson. L. (2012). My community, my voice: Rural older adults speak through photography. *Journal of Extension, 50*(1). Retrieved from http://www.joe.org/joe/2012february/a7.php

157. Stewart, D. W., Shamdasani, P.N. & Rook, D.W. (2007). *Focus groups: Theory and practice* (Second ed.). Thousand Oaks, CA: Sage Publications.

158. Story, M.., Kaphingst, K.M., Robinson-O'Brien, R. & Glanz, K. (2008). Creating healthy food and eating environments: policy and environmental approaches. *Annual Review of Public Health, 29*, 253-272.

159. Swenson, D. (2008). Estimating the production and market value-based impacts of nutritional goals in NE Iowa: Iowa State University. Retrieved from

http://www.leopold.iastate.edu/sites/default/files/pubs-and-papers/2008-02-estimating-production-and-market-value-based-impacts-nutritional-goals-ne-iowa.pdf

160. UC Sustainable Agriculture Research and Education Program. (2001). *Placer County Foodshed Report*. Davis, CA: King, S. & Feenstra, G.

161. Valera, P., Gallin, J., Schuk, D. & Davis, N. (2009). "Trying to Eat Healthy" a Photovoice study about women's access to healthy food in New York City. *Journal of Women and Social Work, 24*(3), 300-314.

162. Walker, J. L., Holben, D. H., Kropf, M. L., Holcomb, J. P., Jr., & Anderson, H. (2007). Household food insecurity is inversely associated with social capital and health in females from special supplemental nutrition program for women, infants, and children households in Appalachian Ohio. *Journal of the American Dietetics Association, 107*(11), 1989-1993.

163. Wang, C., & Pies, C.A. (2004). Family, maternal, and child health through photovoice. *Maternal and Child Health Journal, 8*(2), 95-102.

164. Wang, C., Yi, W.K., Tao, Z.W., & Carovano, K. (1998). Photovoice as a participatory health promotion strategy. *Health Promotion International, 13*(1), 75-86.

165. Warrix M. (1998). Professional development for paraprofessionals organizing a one day multi agency conference. *Journal of Extension, 36*(3). Available at http://www.joe/1998june/iw3.php

166. Watt, T.T., Appel, L., Roberts, K., Flores, B. & Morris, S. (2013). Sugar, stress, and the supplemental nutrition assistance program: early childhood obesity risks among a clinic-based sample of low-income Hispanics. *Journal of Community Health, 38*(3), 513-520.

167. Webb, A. L., Schiff, A., Currivan, D. & Villamor, E. (2008). Food Stamp Program participation but not food insecurity is associated with higher adult BMI in Massachusetts residents living in low-income neighbourhoods. *Public Health Nutrition, 11*(12), 1248-1255.

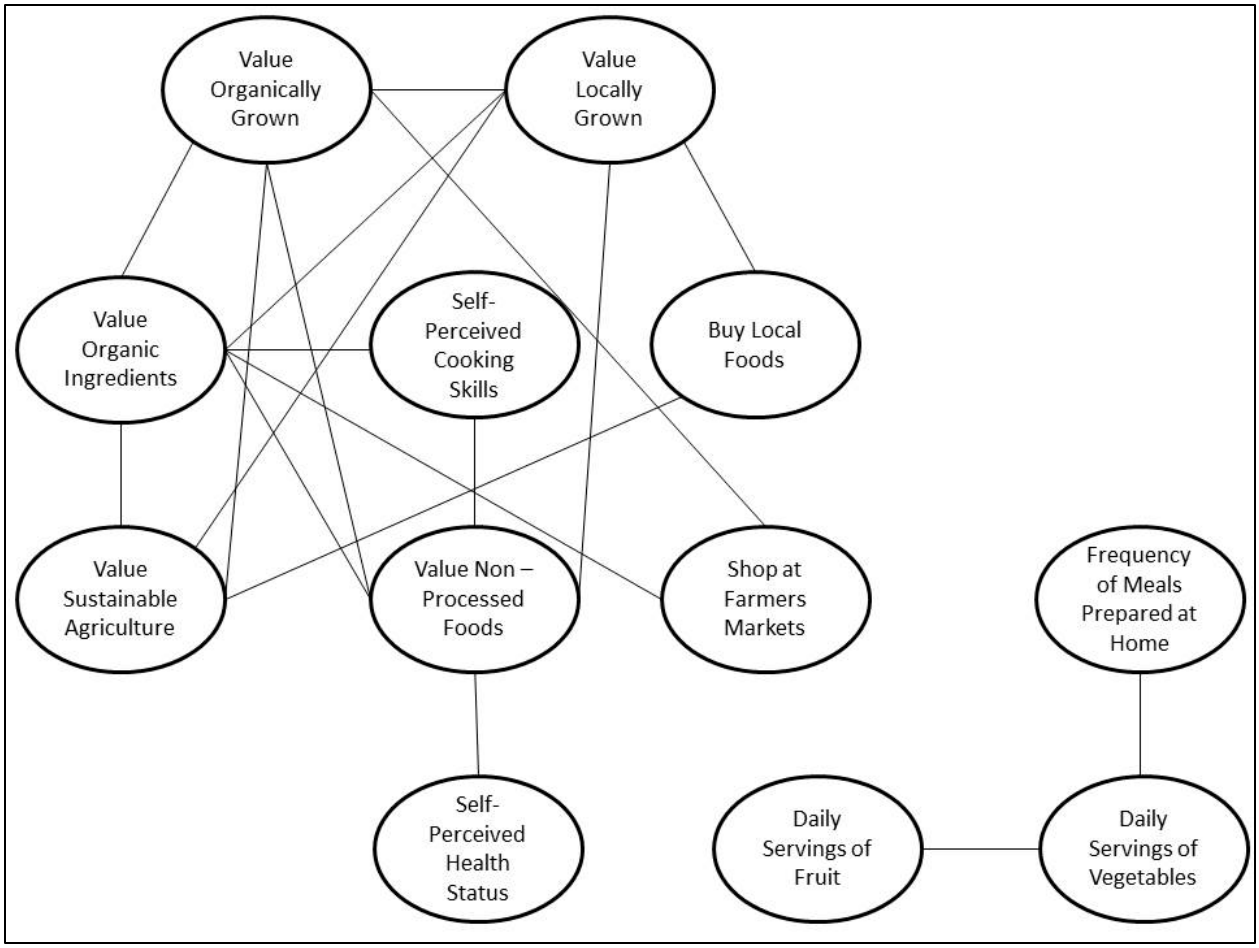
168. Yen, S. T., Andrews, M., Chen, Z., & Eastwood, D.B. (2008). Food Stamp Program participation and food insecurity: An instrumental variables approach. *American Journal of Agricultural Economics, 90,* 117-132.

169. Young, C.R., Aquilante, J.L, Solomon, S., Colby, L., Kawinzi, M.A., Uy, N. & Mallya, G. (2013). Improving fruit and vegetable consumption among low-income customers at farmers markets: Philly Food Bucks, Philadelphia, Pennsylvania, 2011. *Preventing Chronic Disease, 3*(10), E166.

170. Zepeda, L. & Li, J. (2006). Who buys local food? *Journal of Food Distribution Research, 37*(3), 1-11.

APPENDICES

Appendix A: Annotated List of Figures


Value Organically Grown
Value Locally Grown
Value Organic Ingredients
Self-Perceived Cooking Skills
Buy Local Foods
Value Sustainable Agriculture
Value Non – Processed Foods
Shop at Farmers Markets
Frequency of Meals Prepared at Home
Self-Perceived Health Status
Daily Servings of Fruit
Daily Servings of Vegetables

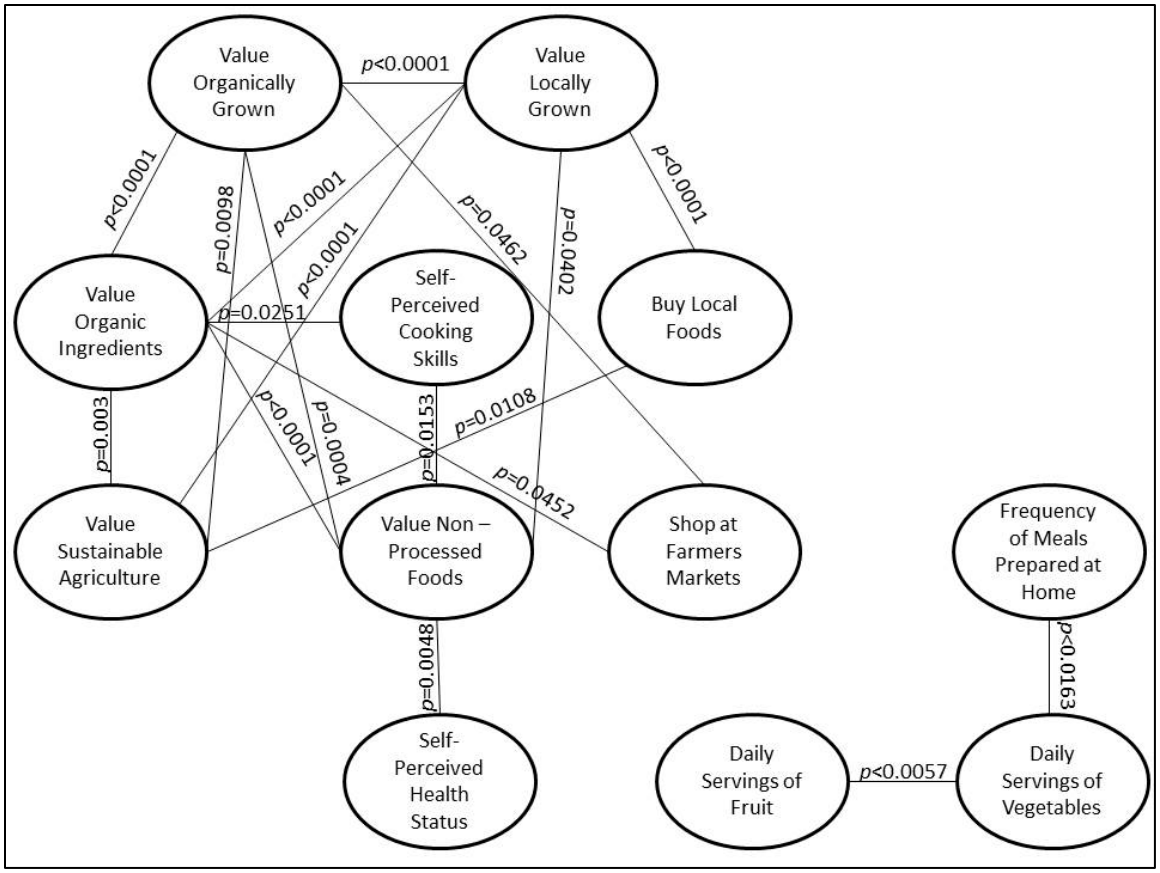


Figure 1. Correlations between health-related factors and attitudes towards sustainable agricultural practices for SNAP-Ed and ENFEP FNP Assistants (n=52). Non- parametric Spearman's rank correlation test was used to assess relationships between variables. Valuing non-processed foods, organically grown foods, and foods with organic ingredients were found to have the most correlations. Self-perceived health status, the frequency of meals prepared at home, daily servings of fruit consumed, and daily servings of vegetables consumed were found to have the fewest correlations. There was no association between health-related factors and attitudes towards farmers markets and alternative agricultural practices for FNP assistants.

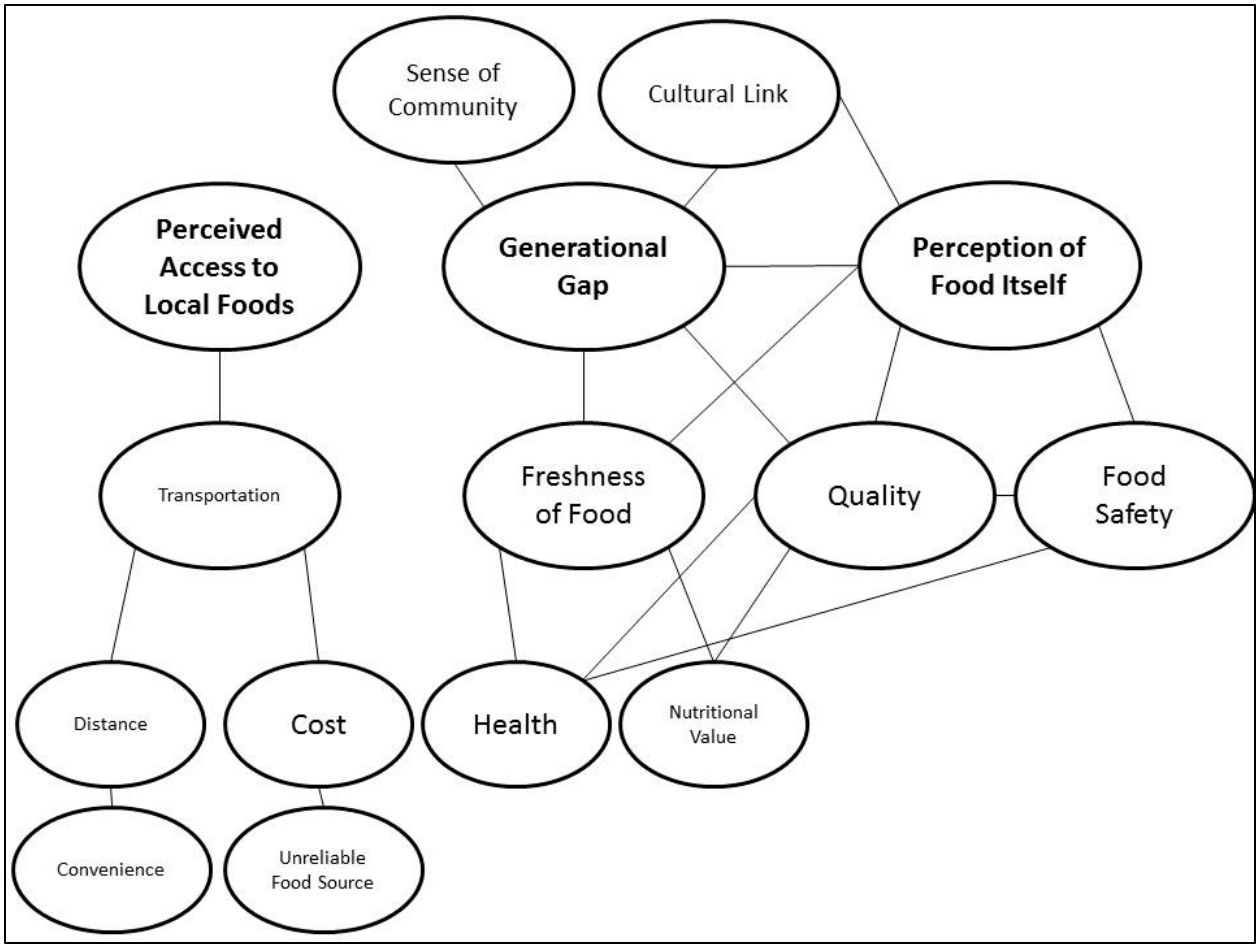


Figure 2. Concept map of themes and patterns developed from responses from focus group discussions on the relationship between farmers markets, local food access, and health with SNAP-eligible individuals. The three main themes were 1) a generational gap in the perception of local, fresh foods, 2) attitudes toward food, and 3) perceived access to local foods. Two of the themes identified were expected based on the focus group discussion guide and literature (attitudes toward food and perceived access to local foods). The theme of a generational gap existing in the perception of local, fresh foods emerged from the data during the analysis process.

Appendix B: SNAP-Eligible Individual Focus Group Discussion Informed Consent

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Focus Group Informed Consent

Title of Project: Healthy Start Photovoice
Investigator: Sarah Misyak, Meredith Ledlie-Johnson, Mary McFerren, Elena Serrano,

I. Purpose of this Research/Project

The purpose of this study is to determine barriers to farmers' market attendance for mothers with young children participating in SNAP and the impact of shopping location on diet quality.

II. Procedures

In agreeing to participate, you will be asked to attend a focus group discussion which will last between 60 and 90 minutes. You will be asked to share your personal thoughts and opinions during these meetings.

III. Risks

The proposed research presents minimal risks to subjects.

IV. Benefits

Besides monetary compensation, there is no direct benefit or promise of benefit to participants in the study that would encourage participation. There may be some social benefit in exploring your thoughts on farmers markets, food, and health with others in similar circumstances.

The wider benefit of this research is in its contribution to the academic knowledge in the field of food security, food systems, and health. The research will also be used to inform market managers on how to widen their customer base by attracting low-income populations and SNAP-Ed management on how to promote farmers markets to participants.

V. Extent of Anonymity and Confidentiality

Only the investigators listed above will have access to the audio files associated with the focus groups. To help maintain confidentiality your name will be assigned a code when the focus group data is transcribed and coded.

We will carefully maintain procedures to protect confidentiality. At no time will the researcher release the focus group audio files that feature identifiable persons to anyone other than individuals working on the project without your written consent.

VI. Compensation
You will be compensated for your time if you choose to participate. You will be compensated with $25 for participating in this focus group discussion.

VII. Freedom to Withdraw
You are free to withdraw from the study at any time without penalty.

VIII. Subject's Responsibilities
I voluntarily agree to participate in this study. I have the following responsibilities:

- Complete a short survey
- Attend a focus group discussion

IX. Subject's Permission
I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

Participant's Signature _____ Date _____

Printed Name _____

Researchers' Signature _____ Date _____

Printed Name _____

A copy of this form has been given to me to keep. If I have any questions in the future about this project I can contact the following:

Dr. Elena Serrano,
Principal Investigator
serrano@vt.edu/540- 231-3464
201 Wallace Annex (0430)
Virginia Tech
Blacksburg, VA 24061

Dr. David Moore
IRB Chair
moored@vt.edu/540-231-4991
Office of Research Compliance
2000 Kraft Drive, Suite 2000
Blacksburg, VA 24060

Appendix C: Photo Elicitation Study Informed Consent Form

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Focus Group Informed Consent

Title of Project: Healthy Start Photovoice
Investigator: Sarah Misyak, Meredith Ledlie, Mary McFerren, Elena Serrano,

I. Purpose of this Research/Project

The purpose of this study is to determine barriers to farmers' market attendance for mothers with young children participating in SNAP and the impact of shopping location on diet quality.

II. Procedures

In agreeing to participate, you will be asked to attend seven SNAP-Ed lessons. These will be weekly discussions and each is expected to last less than 1.5 hours. You will be asked to fill out the standard Family Nutrition Program Family Record before and after the lessons. You will also be asked to attend three focus group sessions which will be about 1.5 hours each. You will be asked to share your personal thoughts and opinions during these meetings.

To help facilitate the discussions, we will be providing you with a digital camera and will ask you to participate by taking photographs of your food shopping experience and family dinner. These will involve you taking pictures that are representative of your everyday life and our particular discussion topics (e.g. "what do you like or not like about where you currently shop for food" and "what do you like or not like about the farmers' market?") to bring to the next group meeting. Introductions and guidance on the photo project will be provided in detail during our first meeting.

III. Risks

The proposed research presents minimal risks to subjects.

IV. Benefits

Besides monetary compensation, there is no direct benefit or promise of benefit to participants in the study that would encourage participation. There may be some social benefit in the women

exploring their thoughts on farmers' markets and food insecurity with other mothers contending with similar circumstances and decisions.

The wider benefit of this research is in its contribution to the academic knowledge in the field of food security and obesity and the field of the impact of health of local food. The research will also be used to inform market managers on how to widen their customer base by attracting low-income populations and SNAP-Ed management on how to promote farmers' markets to participants.

V. Extent of Anonymity and Confidentiality

Only the investigators listed above will have access to the audio, video and digital image files associated with the focus groups unless you agree to share your photographs by signing a media release form. To help maintain confidentiality your name will be assigned a code when the focus group data is transcribed and coded.

Any photographic images acquired concerning the participants will be carefully managed to maintain confidentiality. Such images will only be used for group discussions during the course of the project and maybe used for presentations at academic conferences. Images may also be used as references during the transcribing and coding processes. At no time will participant images be associated with the participant's real name or other personal information.

We will carefully maintain procedures to protect confidentiality. At no time will the researcher release the focus group audio, video and/or digital image files that feature identifiable persons to anyone other than individuals working on the project without your written consent.

VI. Compensation

You will be compensated for your time if you choose to participate. No compensation will be provided for the six, standard SNAP-Ed lessons but you will be compensated with $25 for using their benefits at the farmers' market during seventh lesson, which includes the field trip. Compensation on a sliding scale will be used for the three Photovoice Sessions. Participants will receive $25 for participating in the first session, $35 for the second session, and $40 for the third session.

VII. Freedom to Withdraw

You are free to withdraw from the study at any time without penalty. You will receive compensation for the portions of the study you do complete.

VIII. Subject's Responsibilities

I voluntarily agree to participate in this study. I have the following responsibilities:

- Attend the seven SNAP-Ed lessons

- Attend the three Photovoice focus group sessions
- Use a disposable camera to document your food shopping experience and family dinner
- Complete a short survey and the standard FNPFR form

IX. Subject's Permission

I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

Participant's Signature _____ Date _____

Printed Name _____

Researchers' Signature _____ Date _____

Printed Name _____

A copy of this form has been given to me to keep. If I have any questions in the future about this project I can contact the following

Dr. Elena Serrano,
Principal Investigator
serrano@vt.edu/540- 231-3464
201 Wallace Annex (0430)
Virginia Tech
Blacksburg, VA 24061

Dr. David Moore
IRB Chair
moored@vt.edu/540-231-4991
Office of Research Compliance

Appendix D: Program Assistant Survey

Dear Virginia Program Assistants (PAs),
We would appreciate your participation in this survey on your thoughts and feelings about farmers markets, food, food shopping, and food preparation. In cooperation with the Family Nutrition Program mandate to connect SNAP-Ed participants to farmers markets accepting Electronic Benefit Transfer (EBT- a system for issuing SNAP benefits using debit card technology), we are trying to determine how PAs across the state of Virginia view farmers markets. The information you provide may help with curriculum development, guide future in-service trainings, and provide information on the barriers to farmers market attendance by SNAP-Ed eligible individuals and families.
*In exchange for participation in this survey you will be entered into a raffle for an e-reader (i.e. Kindle). The odds of winning are 1 in 65.
Any information you provide will be kept confidential and will not be used against you (such as in your performance review.) You are free to withdraw from the survey at any time without penalty.
The survey should take between 15-30 minutes of your time. There is no time limit.
Thank you again for your participation and your ongoing work across the state of Virginia.

We will first be asking you questions about how you personally view farmers markets, then we will ask you about participants from your classes.

Farmers Markets Near Where You Work

1. How many farmers market do you have in the town or city *where your office is located* (VCE unit office)?
    a. 0
    b. 1
    c. 2
    d. 3
    e. More than 3
1. If at least one, how many accept EBT (a system for issuing SNAP benefits using debit card technology)?
    a. 0
    b. 1
    c. 2
    d. 3
    e. More than 3
    f. All
    g. Don’t know

2. How many of the farmers markets offer a matching program for EBT users (i.e. if you spend $5, you receive an additional $5 benefit)?
    a. 0
    b. 1
    c. 2
    d. 3
    e. More than 3
    f. All
    g. Don't know

Farmer's Markets Near Where You Live

3. How many farmers market do you have in the county or city *where you live*?
    a. 0
    b. 1
    c. 2
    d. 3
    e. More than 3
4. If at least one, how many accept EBT?
    a. 0
    b. 1
    c. 2
    d. 3
    e. More than 3
    f. All
    g. Don't know
5. How many of the farmers markets offer a matching program for EBT users (i.e. if you spend $5, you receive an additional $5 benefit)?
    a. 0
    b. 1
    c. 2
    d. 3
    e. More than 3
    f. All
    g. Don't know
6. Which farmers market do you shop at most frequently?
    a. A farmers market nearest to where I work

b. A farmers market nearest to where I live
c. A farmers market which is not the closest to where I work or live, but that I like for other reasons
d. I don't shop at farmers markets

7. How long does it take you to get to the farmers market you shop at most frequently?
    a. 0 -5 minutes
    b. 5 – 10 minutes
    c. 10 – 20 minutes
    d. 20 – 30 minutes
    e. 30 – 45 minutes
    f. > 45 minutes

General Questions About Farmers Markets

8. How often do you buy locally-grown foods?
    a. Never
    b. Very Rarely
    c. Sometimes
    d. Regularly
9. If you answered never or very rarely for number 9, what are the barriers preventing you from shopping at a farmers market? Please provide a ranking from 1-10 for each barrier (1 being a very small barrier and 10 being a large barrier)
    a. Price of food
    b. Lack of food choice or variety
    c. People there
    d. Uncomfortable atmosphere
    e. Hours of market
    f. Location/convenience
    g. Lack of transportation
    h. Parking
    i. Not liking to shop outside
    j. Safety of food
    k. Quality of food
    l. Other_____
10. If you do shop at farmers markets, what are the benefits to shopping there? Rank each benefit on a scale from 1-10 with 1 being a not important benefit and 10 being a very important benefit.

a. Finding specific food for a special diet (gluten-free options for example)
b. Quality of food
c. Price of food
d. Safety of food
e. Food choice
f. A wider variety of produce available
g. Supporting local economy
h. Knowing who grows your food
i. Social experience
j. Fresh air
k. Availability of unique foods
l. Other_____

11. Where do you buy the majority of your produce?
    a. Wal-mart
    b. The supermarket (i.e. Kroger's or Food Lion)
    c. A corner or convenience store
    d. Dollar Tree or Dollar Store
    e. Farmers market
    f. Roadside stand
    g. Other_____
12. Is the location where you buy the majority of your food the closest food shopping location to your work or your home?
    a. Yes
    b. No
13. Based on the food you have available in your house right now, how difficult would it be for you to prepare a healthy meal?
    a. Very difficult
    b. Somewhat difficult
    c. Not difficult
14. On average, how many days a week do you prepare meals at home?
    a. 0
    b. 1-2
    c. 3-4
    d. 5-7
15. How would you rate your cooking skills?

a. Poor
b. Fair
c. Good
d. Very good
e. Excellent

16. How would you rate your health status?
    a. Poor
    b. Fair
    c. Good
    d. Very good
    e. Excellent

General Questions About Food

17. How important is it you that your food is organically grown?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very
18. How important is it you that your food is made with organic ingredients?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very
19. How important is it you that your food is not processed?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very
20. How important is it to you that your food is locally grown?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very
21. How important is it to you that your food is grown using sustainable agricultural practices?
    a. Not all

b. A little
c. Somewhat
d. Very

22. Please rank the following attributes about your food in order of importance to you. Put the most important attribute at the top and least important attribute at the bottom.
    a. It is important that my food is organically grown
    b. It is important that my food is made with organic ingredients
    c. It is important that my food is not processed
    d. It is important that my food is locally grown
    e. It is important that my food is grown using sustainable agriculture practices.

Now we want you to consider how most of your participants view farmers markets.

Client Information:

1. Where do your clients buy the majority of their food?
    a. Wal-mart
    b. The supermarket (i.e. Kroger's, Food Lion)
    c. A corner or convenience store
    d. Dollar Tree or Dollar Store
    e. Farmers market
    f. Roadside stand
    g. Other_____
2. How well do your clients understand how food is grown?
    a. Not at all
    b. Not very much
    c. Some
    d. A lot
3. How well do your clients understand how food is prepared?
    a. Not at all
    b. Not very much
    c. Some
    d. A lot
4. How important is it your clients that their food is organically grown?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very

5. How important is it to your clients that their food is made with organic ingredients?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very
6. How important is it to your clients that their food is not processed?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very
7. How important is it to your clients that their food is locally grown?
    a. Not at all
    b. A little
    c. Somewhat
    d. Very
8. How important is it to your clients that their food is grown using sustainable agricultural practices?
    a. Not all
    b. A little
    c. Somewhat
    d. Very
9. Please rank the following attributes about your clients' food in order of importance to them. Put the most important attribute at the top and least important attribute at the bottom.
    a. It is important that my clients that their food is organically grown
    b. It is important that my clients that their food is made with organic ingredients
    c. It is important that my clients that their food is not processed
    d. It is important that my clients that their food is locally grown
    e. It is important that my clients that their food is grown using sustainable agriculture practices.
10. How often do your clients buy locally-grown foods?
    a. Never
    b. Very Rarely
    c. Sometimes
    d. Regularly

11. How often do your clients shop at farmers markets?
    a. Never
    b. Very Rarely
    c. Sometimes
    d. Regularly
12. If your clients do not regularly shop at farmers markets, what are the barriers preventing them from doing so? Please rank each barrier from 1-10 with 1 being a not important barrier and 10 being a very important barrier.
    a. Price of food
    b. Lack of food choice or variety
    c. People there
    d. Uncomfortable atmosphere
    e. Hours of market
    f. Location/convenience
    g. Lack of transportation
    h. Parking
    i. Discomfort with shopping outside
    j. Safety of food
    k. Quality of food
    l. Other_____
13. If you do shop at farmers markets, what are the benefits to shopping there? Please rank each benefit from 1-10 with 1 being a not important benefit and 10 being a very important barrier.
    a. Finding specific food for a special diet (gluten-free options for example)
    b. Quality of food
    c. Price of food
    d. Safety of food
    e. Variety of food
    f. Supporting local economy
    g. Knowing who grows your food
    h. Social experience
    i. Fresh air
    j. Other_____
14. Do you think information on farmers markets should be included in SNAP-Ed curricula?
    a. Yes

b. No
c. Don’t know

15. If you answered no to number 13, why? Rank each reason on a scale from 1-10 with 1 being a not important reason and 10 being a very important reason.
    a. I am not interested
    b. I don’t have time to add this topic to my existing programs
    c. My clients are not interested (i.e. it will not be well-received)
    d. This will not benefit my clients
    e. There are more important topics to cover
    f. Other_____

Personal information:

1. Which county or cities do you serve?
2. How long have you been a PA?
3. What is your gender?
    f. Female
    g. Male
4. Age:
5. Educational level
    a. High school graduate or High school equivalency
    b. Some college
    c. Bachelor’s degree
    d. Master’s degree
6. What is your salary?
7. How often do you shop at farmers markets?
    a. Never
    b. Rarely
    c. Monthly
    d. Weekly
8. How many servings of fruits do you eat each day?
    a. 0
    b. 1
    c. 2
    d. 3
    e. 4
    f. ≥5

9. How many servings of vegetables do you eat each day?
    a. 0
    b. 1
    c. 2
    d. 3
    e. 4
    f. ≥5
10. Is there anything you would like to add or comment on?

Thank YOU for your time and your answers!

Appendix E: Photo Elicitation Focus Group Discussion Guide

Healthy Start

Pre-Group Preparation

First Focus Groups:

- Name cards
- Marker pens
- Post it pads
- Blackboard and chalk or (better) flip chart
- Audio recording set up
- Cameras
- Notebooks
- Snacks and drinks
- Media release forms

Second and Third Focus Groups:

- Printed photos in an envelope labeled with participant name
- Name cards
- Marker pens
- Post it pads
- Blackboard and chalk or (better) flip chart
- Audio recording set up
- Snacks and drinks

Discussion Guide

First Meeting

Introduction (10 mins)

(Ensure name cards are completed)

Hello. Thank you for coming. We are here to talk about your thoughts and opinions surrounding food shopping.

Before we begin, we have a survey we would like you to fill out that provides us with information on your home environment. *(Co-investigators will hand out surveys for participants to fill out and collect when completed).*

My name is Sarah and I am a graduate student at Virginia Tech. Another student is also in the room – she is here to take notes. This helps me remember what you said later.

I think this first meeting will last about an hour to an hour and a half. We will be spending this first session making sure we are all acquainted and discussing the basics of the photo project. Throughout our discussions and interactions, remember your honest opinion is most important. We do ask that we all keep each other's identities, participation and remarks private. We hope you'll feel free to speak openly and honestly.

To start off, let's go around and say our names, to make sure everyone is clear on that. Please also say your name, occupation, number of children, etc *(Respondents to introduce themselves briefly with the following details: name, occupation, number of children, etc. Record summary details below. Keep to one or two sentences.)*

Before we begin, it is important for us to let you know you will be compensated for your time. You will receive $25 for participating in this focus group session, $35 for the second focus session, and $40 for the third focus group session. You can withdraw at any time without losing the money for the sessions you have participated in.

Topic Introduction

We are interested in you helping us understand a little more about where you choose to shop for food, why you choose to shop there, and what you like and don't like about that location. We also want to discuss farmers' markets and what you think about them. We feel that this can be helpful to other SNAP participants. With your help, we can provide farmers' market managers and SNAP-Ed management with a better understanding of how you determine where to shop and what to buy.

Photo Project Introduction

Most of us don't have the time - or even desire - to think about how we define what is natural or what is unnatural or when this is important, we just know. This is where we feel the photo project will come in handy. We will give you a disposable camera. Over the few weeks, we will ask you to visit your primary food shopping location when your SNAP benefits are released and take photographs that reflect what your personal opinion about what you like and what you don't like about that experience with the first camera. As soon as possible after you do your food shopping please take a picture of your family dinner, no matter where it is. Please also take at least one picture of yourself at the shopping location so we can identify your film if there is some sort of mix up with the cameras. After the first shopping trip, the group will visit your local farmers' market together when benefits are first released the following month. We will give you $25 after this farmers' market trip for you spend on whatever you want. Please take photographs that reflect your personal opinion about what you like and what you don't like with the second camera. As soon as possible after the farmers' market shopping experience please take a picture of your family dinner. We will give you a self-addressed mailing envelope. Please mail *both* cameras back to us so we can get those developed for you and provide you with your pictures during the second focus group session.

When we get together again during the second focus group session, we will ask you to look through your photographs and take notes on how the photographs reflect your thoughts and feelings about each shopping trip; specifically what you like and what you don't like. We will then ask everyone to talk about what their photos represents to them and then discuss the photos as a group.

As mentioned in the consent form you signed, we will not use the photographs outside of our discussion group unless you sign the media release form, but we do ask you to keep your personal safety and individual privacy in mind when taking pictures. Please ask permission before taking an individual's photo and do not risk your personal safety to take a picture.

We want to make sure everyone is comfortable with the cameras before sending you off. Has everybody used a disposable camera before?

(Hand out the cameras). Do you have any questions about the cameras or the project?

We have for you a notepad that contains some of the information we outlined today about the photo project that might be helpful. Please feel free to take this with you and jot down any notes about your experience. We have also included our contact information in case you have any questions or concerns about the project.

Second Meeting

General greeting:

Give the participants their photographs and allow 15-25 for participants to go through their photographs.

Have a participant volunteer to go first and share one of their photos:

> What do you see in this photography?

Probes:

> What does this this photo represent?
> How does this photograph make you feel?
> What do you think about this?
> How does this relate to our lives?

Each participant will take a turn sharing their photographs with the group and the other group members will be asked to comment on the picture as well. Participants will then ask to collaborate on finding themes by making categories or clusters of photos. The discussion around making these clusters will be promoted by the following questions:

> What ideas are related?
> What did many people mention?
> Did someone else say the opposite?
> Are there ideas/behaviors you saw repeatedly?
> Which issues were obvious?

After the themes are created by the group, individuals will have a chance to comment on why they agree or disagree with certain categorizations of the photos.

Third Meeting

During the third session we will revisit the themes from the second focus group session. Participants will be asked if they have thought of anything else they would like to add or clarify.

Because we are interested in your insight and what farmers' market managers and SNAP-Ed management can learn from SNAP participants like you, we would like to ask you what in particular you would like to let them know. What did you like about the farmers' market? What did you not like? What would you like to see changed? What could they do to encourage you to shop at the market in the future? We'll list some ideas on the board and then discuss them as a group. Right now we're just brainstorming so please let's withhold judgment until we have heard everyone's initial ideas and then we can talk about everything.

Probes:

> Why haven't you shopped at the farmers' market before?
> Would it be easy for you to get to the farmers' market on a regular basis?
> Did you have fun shopping at the market? Do you normally have fun food shopping?
> Would you bring your kids to the farmers' market?

We would also like to discuss your diet. Do you think where you shop affects what you eat? Did you buy different foods at the farmers' market than at your normal food shopping location? If so, why?

Probes:

> How many fruits and vegetables do you normally buy?
> How many fruits and vegetables did you buy at the farmers' market?
> Did you try something new at the farmers' market?

For the final meeting, we ask participants if they have any final thoughts on the process or personal insights into the experience that they would like to share. We will then thank the participants for their time.

Appendix F: Institutional Review Board Approval Letter

VirginiaTech

Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu
website http://www.irb.vt.edu

MEMORANDUM

DATE: September 10, 2013

TO: Elena L Serrano, Sarah Anne Misyak, Meredith L Ledlie

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires April 25, 2018)

PROTOCOL TITLE: Healthy Start Photovoice

IRB NUMBER: **12-490**

Effective September 10, 2013, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the Amendment request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

http://www.irb.vt.edu/pages/responsibilities.htm

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As:	**Expedited, under 45 CFR 46.110 category(ies) 6,7**
Protocol Approval Date:	**June 4, 2013**
Protocol Expiration Date:	**June 3, 2014**
Continuing Review Due Date*:	**May 20, 2014**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

* Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt.edu) immediately.

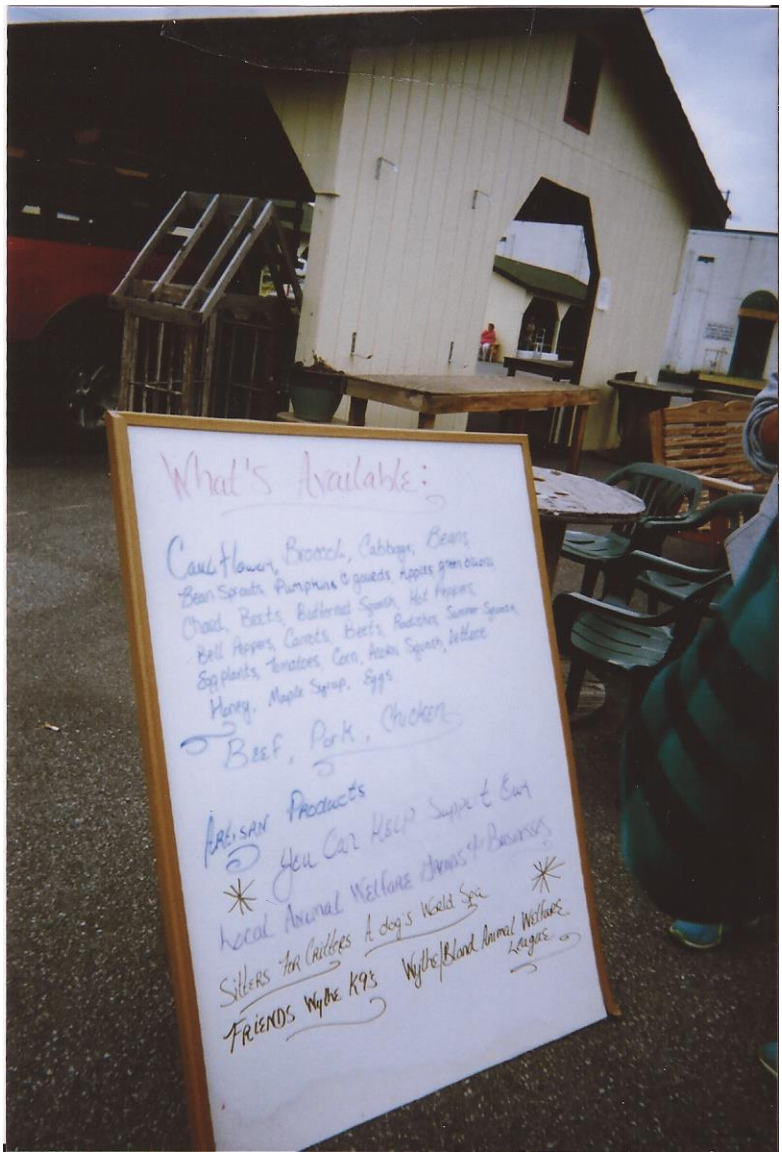
Appendix G: Photographs from Photo Elicitation

Picture 1: Hours of operation prohibit shopping at farmers markets.

Pictures 2-4: A variety of food choice and availability at farmers markets and grocery were valued by participants.

Picture 5: Physical navigation with the use of motorized scooters was valued at grocery stores.

Picture 6: Participants wanted to know what foods were available prior to entering a farmers market.



Picture 7: Participants wanted EBT acceptance to be clearly advertised.


od Neighbor.
eat Rates.
StateFarm
276-228-3149
WYTHEVILLE
FARMERS
MARKET
ACCEPTS
DEBIT/CREDIT
& EBT/SNAP