A Fresh Fruit and Vegetable Outlet

Audit of Clark County,

Wisconsin

by

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ABSTRACT

Only 40% of Americans eat five or more servings of fruits and vegetables every day. This is unfortunate because of the numerous health benefits derived from these foods, including a reduced risk of obesity and cancer. This study was conducted as part of the Wisconsin Nutrition and Physical Activity State Plan (WIPAN) to assess the fresh fruit and vegetable environment in Clark County, Wisconsin.

In August 2008 and January 2009, audits were conducted of fresh produce outlets within the county. Outlets included grocery stores, convenience stores, farmstands, farmers' markets, and food pantries. A walk-through was conducted, using an audit form provided by WIPAN, to collect data about availability, accessibility, and convenience of fresh produce. Prices of selected fruits and vegetables were also collected.

The quantity of fresh produce offered in convenience stores was very limited, but did not change significantly from winter to summer. Farmstand offerings were greatly reduced in winter. The mean number of fruits offered in grocery stores was significantly higher in the winter than the summer; however, more vegetables were offered in the winter. Every grocery store accepted WIC and Food Share and offered fresh bagged produce. Precut items were offered more often in the summer. Price differences clearly exist between summer and winter for many fresh fruits and vegetables. The results of this study will be used to develop steps to increase the access to fresh fruits and vegetables in Clark County, Wisconsin.

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Chapter I: Introduction

According to Guenther, Dodd, Reedy, and Krebs-Smith (2006), only 40% of Americans consume five or more servings of fruit and vegetables a day. Now that the recommendations for fruit and vegetable intake have increased, less than 10% appear to meet the new guidelines. The United States Department of Agriculture (USDA) (2005) recommends a range of 5 to 13 servings of fruits and vegetables daily depending on calorie needs for a specific age, gender, and activity level. It is important to consume an adequate amount of fruits and vegetables because of the health benefits these foods offer, including a reduced risk of cancer, stroke, and coronary heart disease.

According to Trudeau, Kristal, Li, and Patterson (1998), cost and availability are associated with fruit and vegetable intakes. Liese, Weis, Pluto, Smith, and Lawson (2007, p. 1921) agree that "Both cost and availability of foods have been shown to influence dietary behaviors." It has been found that lower-income areas often have higher food prices than higher-income areas (Cassady, Jetter, & Culp, 2007). McManus, Brown, and Maycock (2007, n.p.) believe that "Access to adequate food supply is important in order to consume a healthy diet." When healthy foods are not available, people cannot make positive changes to their eating habits. It is the selection of food available in the food outlet that is related to the ability to meet dietary recommendations (Baker, Schootman, Barnidge, & Kelly, 2006). Wealthier areas tend to have a greater availability of healthful food choices, but even in low-income areas, urban neighborhoods tend to have a higher proportion of supermarkets and grocery stores than rural areas (Liese et al., 2007). It has been concluded that the rural poor eat less fruits and vegetables than the urban poor

(Kendall, Olson, & Frongillo, 1996). Rural communities are at a greater disadvantage when it comes to fruits and vegetables.

According to Liese et al. (2007, p. 1916) rural areas are often characterized by "high levels of poverty, low housing values, and low educational attainment of the resident population." Liese et al. also reports that throughout the United States, approximately 20% of the population lives in rural communities. Herman, Harrison, & Jenks (2006) found that people with lower incomes and educational levels consume fewer fruits and vegetables than individuals with higher incomes and higher education levels. Many people in rural areas are food insecure. Kendal et al. (1996) found that people who are food insecure are less likely to meet the recommendations for daily fruit and vegetable servings.

Several studies have shown that low-income, rural women with children have a high risk of becoming food insecure and these women have a decreased intake of fruits and vegetables (Kropf, Holben, Holcomb, & Anderson, 2007). Kendall et al. (1996, 1022) stated that "Frequency of consumption of fruit, salad, carrots, vegetables, and all six fruit and vegetable categories combined declined significantly as food insecurity status worsened." It has been found that children in rural areas are often at a heightened risk of being food insecure. According to the USDA Economic Research Service (2005), approximately 15% of rural children rely on food stamps and as many as 40% rely on free or reduced lunches. Many families in rural neighborhoods must rely on federal food assistance programs.

The US Food Stamp Program is the largest nutrition program for low-income individuals and families. In fiscal 2003, approximately 21.3 million people were served

on average each month (USDA, 2007). The Special Supplemental Nutrition Program for Women, Infants, and Children, also known as WIC, is the third largest food and nutrition assistance program in the United States. WIC is available for low-income women, infants, and children under the age of 5. Each month, over 8 million participants are served by the program (USDA, 2008).

Wisconsin is one state that could benefit from an increase in fruit and vegetable consumption. According to a study by the Centers for Disease Control and Prevention (CDC) (2005), only 22.6% of Wisconsin residents consume five or more servings of fruit and vegetables each day. In a report by Trust for America's Health (n.d.)), Wisconsin is ranked the 22nd heaviest state in the United States. Data from the US Department of Health & Family Services (2006) shows that 37% of Wisconsin adults are overweight, with a BMI of 25-30, and 24% are obese, with a BMI greater than 30. That same data shows that number of overweight and obese grew from 47% in 1990 to more than 60% in 2005. Eating more fruits and vegetables would not only have a positive impact on the weight of Wisconsin residents, but it may also help to improve their health. According to Trust for America's Health (n.d.), Wisconsin has a 6.2% incidence of adult diabetes and a 24.5% incidence of hypertension. Clark County is one area in Wisconsin that has problems with fruit and vegetable intake and obesity.

Clark County is located in northwest Wisconsin and encompasses 1,215.64 sq miles (All about Wisconsin, Inc., 2008). According to the Wisconsin Department of Administration (2000), the 2000 US Census recorded a population of 33,557 for Clark County, with a total rural population of 31,092. Clark County also has a fairly high incidence of poverty. According to the 2005 census data, Clark County has a poverty

level of 12.0%, making it tied for the 14th highest poverty level in the state of Wisconsin (USDA Economic Research Service, 2008).

Statement of the Problem

The Wisconsin Nutrition and Physical Activity State Plan is a comprehensive plan to prevent obesity and reduce chronic disease in Wisconsin. The third goal of the Plan is to "Create environments that support and promote healthy eating, daily physical activity and a healthy weight" (WIPAN, 2005, p. 68). One strategy under goal 3 is to assess the existing state and local nutrition environments.

According to a needs assessment of Clark County, Wisconsin, the county suffers from a high incidence of overweight and obesity. The majority of the residents of Clark County live in rural areas and poverty is a large problem. Clark County also has a large elderly population. Elderly individuals in rural communities may have difficulty getting an adequate intake of fruits and vegetables, along with other foods (Marshall, Stumbo, Warren, & Xie, 2001). There are several explanations for this low intake, including cost of items and difficulty preparing them.

Purpose of the Study

The main goal of this study was to assess the fruit and vegetable environment in Clark County, Wisconsin, as a part of the Wisconsin Nutrition and Physical Activity State Plan. Goal 3 of the Plan states that "by 2010, 50 communities in Wisconsin will conduct an environmental audit to determine the number and location of outlets for fruits and vegetables" (Wisconsin Partnership for Activity and Nutrition [WIPAN], 2005, p. 34). This fresh fruit and vegetable outlet audit of Clark County is one step in reaching that goal.

The study took place in August, 2008 and January, 2009, through observation, by determining the types, price, and amounts of fresh produce that are available at fruit and vegetable outlets in the county. Outlets audited included grocery stores, convenience stores/gas stations, farmers' markets, u-pick/farmstands, and food pantries. Quality of the available products was also determined. The overall quality of the produce was documented as $\geq$ 50% acceptable or < 50% acceptable. The next goal was to determine if the outlets provide special accommodations for limited income people. The main focus was WIC and Food Share. Other special accommodations and convenience features were also documented. These include if organic, pre-cut, and bagged products were available. It was also determined if locally grown produce is available at the outlet. Prices of certain fruits and vegetables were also recorded for grocery stores.

Assumptions of the Study

One assumption of this study is that fruit and vegetable availability, price, and quality are the greatest determinants of an individual's fruit and vegetable intake. Another assumption is that a one-day assessment of each outlet will give a picture for the entire season. For example, an audit completed at a grocery store on January 14, 2009 will show the types and amounts of fresh produce available in that outlet for that entire winter.

Definition of Terms

This section consists of various terms found throughout the paper and their definitions.

Alliance of Information and Referral Systems (AIRS): "A professional membership association of more than 1,200 [Information & Referral] organizations,

supporting 28 state and regional affiliates, that brings people and services together" (AIRS, n.d.).

Body mass index (BMI): An indicator of body fat content. It is determined by dividing weight in kilograms by height in meters squared (Brown, 2005).

Carotenoids: "Yellow or red pigments found in carrots, sweet potatoes, leafy vegetables, milk fat, and egg yolk, which can be converted into vitamin A" (Mahan & Escott-Stump, 2004, p. 75).

Certified organic foods: Food produced according to production standards and grown on farms that have been inspected to ensure the farmer is following all rules necessary to meet USDA organic standards. True organic produce will have a certified organic logo (WIPAN, n.d.b).

Clark County Nutrition Coalition "Eat Right Be Fit": A group of individuals from public and private health organizations, along with concerned citizens, who have joined forces to address the problem of overweight, obesity, and inactivity in Clark County, Wisconsin.

Community supported agriculture (CSA) farm: A program under which a farmer grows food for a group of shareholders who pledge to buy a portion of that season's crop (WIPAN, n.d.b).

Constipation: A reduction in the frequency or quantity of stools (Mahan & Escott-Stump, 2004).

Convenience store/gas station: Small store that predominantly sells snack foods and sandwiches (WIPAN, n.d.b).

Diabetes: "A disease characterized by abnormal utilization of carbohydrates by the body and elevated glucose levels" (Brown, 2005, p. 13-2).

Diverticulitis: Inflammation of diverticula. Diverticula are small pouches in the colon that bulge outward (NDDIC, n.d.).

Dyslipidemia: An "elevation of plasma cholesterol and/or triglycerides or a low HDL level that contributes to the development of atherosclerosis" (Merck, 2005).

Farm/roadside stand: A location where an individual farmer sells produce directly to consumers (WIPAN, n.d.b).

Farmers' market: An association of three or more local farmers who gather at a specific location for the purpose of selling produce directly to consumers (WIPAN, n.d.b).

Food pantry: A public or nonprofit organization that distributes food at no cost to individuals in need (WIPAN, n.d.b).

Food insecurity: "Whenever the availability to acquire acceptable foods in socially acceptable ways is limited or uncertain" (Kendall et al., 1996, p. 1019).

FoodShare: The federally funded Food Stamp Program that helps people buy food. This program is called FoodShare in Wisconsin. The FoodShare card is best known as the "Quest Card" (WIPAN, n.d.b).

Fruit and vegetable grower: A local farmer who grows produce for public sale (WIPAN, n.d.b).

Grocery store: A store established primarily for the selling of food. Large grocery stores that also carry products other than food are called supermarkets (WIPAN, n.d.b).

Hypertension: Elevated blood pressure, usually above 140/90 millimeters of mercury (Brown, 2005).

Ischemia: A condition in which blood flow, and therefore oxygen, is restricted to a part of the body (American Heart Association, 2008).

Locally grown: Products that are marketed as local or Wisconsin grown (WIPAN, n.d.b).

Obesity: An excessive amount of body fat (Brown, 2005).

Overweight: A high weight-for-height (Brown, 2005, p. 9-5).

Type 2 diabetes: A disease characterized by high blood glucose levels due to the body's inability to use insulin normally, or to produce enough insulin. This type of diabetes was called adult-onset diabetes and non-insulin dependent diabetes in the past, and its official medical name is type 2 diabetes mellitus.

United Way of American: "A national organization dedicated to leading the United Way movement. Local United Ways create long-lasting community change by addressing the underlying causes of the most significant local issues. Common focus areas include helping children and youth achieve their potential, promoting financial stability and independence, and improving people's health" (United Way of America, 2009).

U-Pick: A farm where consumers can go to pick their own produce (WIPAN, n.d.b).

WIC: A federally funded program that provides food to eligible pregnant women, breastfeeding women, postpartum women, infants, and children up to age five (WIPAN, n.d.b).

Wisconsin Nutrition and Physical Activity State Plan: A comprehensive plan to prevent obesity and reduce chronic disease in Wisconsin. The State Plan is being implemented by the Wisconsin Partnership for Activity and Nutrition (WIPAN, 2005).

Wisconsin Nutrition and Physical Activity Workgroup: "The group formed in 1999 to address childhood overweight in the Child Nutrition Programs. As the group expanded overtime to include more partners its focus shifted to all age groups. This group developed the Nutrition and State Plan. In 2005, the name was changed to the Wisconsin Partnership for Activity and Nutrition" (WIPAN, 2005, p. 77).

Wisconsin Partnership for Activity and Nutrition (WIPAN): "The group that provides statewide leadership to improve the health of Wisconsin residents by decreasing overweight and obesity, improving nutrition and increasing physical activity. The Partnership will facilitate the implementation of the State Plan" (WIPAN, 2005, p. 77).

Limitations of the Study

One limitation of this study is that the data is only being collected during the summer and winter months. Fruit and vegetable availability differs between seasons and farmers markets are only held in the summer months in Wisconsin. The results of this study cannot be generalized to the autumn or spring.

Methodology

The remainder of this research paper will include the methodology of the fresh fruit and vegetable outlet audit, including subject selection and description, instrumentation, data collection procedures, data analysis, and limitations. The results of the research will come next, followed by data interpretation and recommendations for further research.

Chapter II: Literature Review

A discussion of fruit and vegetable intake in America begins this second chapter, followed by information on the benefits of consuming a diet rich in fruits and vegetables. The chapter will continue with a discussion on the obesity problem in Wisconsin and information on the Wisconsin Nutrition and Physical Activity State Plan. Finally, the chapter will conclude with a brief overview of the Clark County Nutrition Coalition and Clark County, Wisconsin.

Fruit and Vegetable Intake in America

Less than half of Americans consume five or more servings of fruits and vegetables each day. In a study by Serdula et al. (1995) only one in five adults reported eating five or more servings per day. The median number of daily servings consumed was 3.5 in the study by Serdula et al. Fruit and vegetable intake in children is also low. In a study of two and five-year old children by Dennison, Rockwell, and Baker (1998), a majority of the children consumed less than one-half of a serving of vegetables per day. Fruit intake was greater, but it was found that "fruit juice accounted for 54% of all fruit servings consumed and 42% of all fruit and vegetable servings consumed" (Dennison et al., p. 374). In a different study, it was found that a large amount of older infants and toddlers "did not consume any fruit or vegetable in a given day" (Ponza, Devaney, Ziegler, Rediy, & Squatrito, 2004, p. S78). The problem of inadequate fruit and vegetable intake is seen in all ages.

A study by Guenther, Dodd, Reedy, and Krebs-Smith (2006), estimated the US population's mean intake of fruits and vegetables to be 4.7 servings per day. The study also found that "mean intakes of starchy vegetables is above recommended levels for

most sex-age groups, whereas intakes of dark green vegetables, orange vegetables, and legumes are less than one third of recommended amounts" (Guenther et al., 2006, p. 1378). Not all fruits and vegetables are nutritionally the same. According to the Dietary Guidelines for Americans 2005, different fruits and vegetables are rich in different nutrients so it is recommended that a variety of fruits and vegetables be chosen each day. Some are good sources of carotenoids, while others are high in vitamin C, folate, potassium, or fiber. There are five vegetable subgroups, and it is suggested that an individual should select from all five groups several times a week. The subgroups consist of dark green, orange, legumes, starchy, and other vegetables (USDA, 2005).

Why Don't People Eat Fruits and Vegetables?

People choose not to eat fruits and vegetables for many reasons. Some people don't like how they taste, but one of the biggest reasons that people don't eat fruits and vegetables is poor access to and high prices of the items. Sparsely populated rural areas have less access to food stores and often face higher prices for food, including fruits and vegetables. Fruits and vegetables led all other food products in price increases between 1982 and 1997, with price increases more than double the price increases for processed food products (Krebs-Smith & Kantor, 2001, p. 492S).

Even if the total United States food supply was adequate to allow for every citizen to adopt the fruit and vegetable recommendations, individual consumers would need to have "sufficient access to quantities of fruits and vegetables at affordable prices and in forms that meet standards for quality, taste, palatability, and convenience" (Krebs-Smith & Kantor, 2001, p. 492S). Convenience in fresh fruits and vegetables has increased average consumption of many vegetables. "The introduction of prepackaged, precut and

other value-added products helped boost average consumption of fresh broccoli by 76% between 1993 and 1999 and average consumption of fresh carrots by 25%" (Krebs-Smith & Kantor, 2001, p. 499S).

Benefits of Fruits and Vegetables

Consuming a healthy, well-balanced diet is the secret to a healthy life. "The major causes of morbidity and mortality in the United States are related to poor diet and sedentary lifestyle" (WIPAN, 2005, p. 11). Specific diseases and conditions that have been linked to a poor diet include cardiovascular disease, type 2 diabetes, hypertension, dyslipidemia, osteoporosis, overweight and obesity, constipation, iron deficiency anemia, oral disease, some types of cancer, and malnutrition (WIPAN, 2005). An adequate intake of fruits and vegetables has a protective effect against some of these conditions and are good sources of many important nutrients.

Several nutrients found in fruits and vegetables include dietary fiber, potassium, folate, and vitamins A, E, and C. The fiber from fruits and vegetables can decrease blood cholesterol levels and may reduce the risk of coronary heart disease. Fiber is also important in bowel function as it may help reduce constipation and diverticulitis. Potassium aids in the maintenance of healthy blood pressure. Folate, also known as folic acid, helps with the formation of red blood cells. When adequate folate is consumed during pregnancy there is a reduced risk of neural tube defects, spin bifida, and anencephaly. Vitamin A helps keep skin and eyes healthy and also aids in the protection from infections. Vitamin E protects vitamin A and essential fatty acids, while vitamin C keeps teeth and gums strong and healthy, helps with wound healing, and aids in the

absorption of iron (USDA, n.d.). Inadequate consumption of these nutrients can lead to many serious problems.

It is estimated that the total worldwide mortality that is attributable to inadequate intake of fruits and vegetables is approximately 2.635 million deaths each year (Lock, Pomerleau, Causer, Altmann, & McKee, 2005). Eating a diet that includes a high amount of fruits and vegetables may reduce the risk of many different diseases and conditions, including that of stroke and other cardiovascular diseases. The risk of type 2 diabetes and the risk of coronary heart disease may also be decreased, as well as the risk of developing kidney stones. Fruit and vegetable consumption may also help to decrease bone loss and protect against certain cancers, including mouth, stomach, and colon-rectum cancer (USDA, n.d.). According to Bazzano (2006, p. 1364), "Observational and experimental studies of fruit and vegetable intake have shown an association with lower blood pressure."

Lock et al. (2005) suggests that increasing fruit and vegetable consumption by individuals up to 600 grams each day could reduce the total worldwide incident of disease by 1.8%. The incident of ischemic heart disease would decrease by 31%, and the incident of ischemic stroke would decrease by 19%. The incidence of cancers would also decrease. Stomach cancer could decrease by 19%, esophageal cancer by 20%, lung cancer by 12%, and colorectal cancer by 2%. The incidence of overweight and obesity can also be decreased with an adequate intake of fruits and vegetables.

Fruits and vegetables can help with weight maintenance and weight loss. Most fruits and vegetables are low in both fat and calories, and do not contain cholesterol. They can lead to a lower caloric intake when eaten in place of higher-calorie foods (CDC,

2008). Fiber found in fruits and vegetables promotes a feeling of fullness while providing fewer calories than many other foods (USDA, n.d.). Fruits and vegetables can play a large and important role in strategies to control weight and prevent overweight and obesity (Bazzano, 2006).

Obesity in Wisconsin

Almost two-thirds of Wisconsin adults are either overweight or obese, with approximately one in every four adults being obese. According to WIPAN (2005, p. 8), from 1990 to 2004, "the prevalence of obesity in Wisconsin has more than doubled." Wisconsin is ranked 22nd in the nation for obesity rates (Trust for America's Health, n.d.). Overweight and obesity rates differ among age groups, genders, and ethnicities. The highest prevalence is among individuals age 55 to 64, at 73%, while the lowest prevalence is found in 18-24 year olds. Of the 60% of Wisconsin adults who are overweight or obese, the majority (69%) are male. When comparing ethnicities, African American adults have the highest prevalence, at 73%, followed by American Indian and Hispanic, both with 66%, Caucasian with 59%, and Asian with 39% (WIPAN, 2005). Adults are not the only group with weight problems, as adolescents and children are also affected.

According to the Trust for America's Health (n.d.), 9.9% of high school students in Wisconsin are overweight. WIPAN increased that estimate to 11%, with 15% being at risk of overweight. African American teens have the highest prevalence of at risk for overweight and overweight, followed by Asian, Hispanic, and then American Indian and Caucasian (WIPAN, 2005). Both Trust for America's Health (n.d.) and WIPAN (2005) agree that there is between a 13.0% and 14.0% prevalence of childhood overweight in

Wisconsin. WIPAN (2005) adds that 16.3% of children are at risk of overweight. This puts Wisconsin at 28th in the nation for childhood overweight (Trust for America's Health, n.d.) The lowest prevalence of at risk of overweight and overweight is among African American children, while the highest prevalence is among American Indian children, followed by Hispanic, Asian, and then Caucasian children (WIPAN, 2005).

Obesity in Wisconsin has many associated health problems, including hypertension and diabetes. From 2004-2006 the prevalence of hypertension in Wisconsin adults was approximately 24.5%, giving the state a ranking of 31. During those same years, the prevalence of type 2 diabetes mellitus in Wisconsin adults was 6.2% (Trust for America's Health, n.d.).

Wisconsin Nutrition and Physical Activity State Plan

"The Wisconsin Nutrition and Physical Activity Plan to prevent obesity and related chronic disease provides a statewide focus for obesity prevention, management and health promotion through nutrition and physical activity" (WIPAN, 2005, p. 3). The Plan was developed in partnership between the Wisconsin Nutrition and Physical Activity Program and the Wisconsin Nutrition and Physical Activity Workgroup (WINPAW). In 2005, WINPAW was renamed the Wisconsin Partnership for Activity and Nutrition to accurately reflect the role and mission of the group. The mission of WIPAN (2005, p. 18) is to "improve the health of Wisconsin residents by decreasing overweight and obesity, improving nutrition and increasing physical activity."

WIPAN is a partnership group made up of various public and private organizations, programs, and coalitions with one common goal: to improve the health of all Wisconsin residents. WIPAN provides the leadership for interventions and activities

that address overweight and obesity prevention and management. To tackle the area of overweight and obesity, the Wisconsin Nutrition and Physical Activity State Plan has developed four key focus areas. These include promotion and support of breastfeeding, increased physical activity, reduced television time, and increased fruit and vegetable consumption (WIPAN, 2005).

The first step of the Plan is background assessment to determine where the state is starting from. According to WIPAN (2005, p. 19), the purpose of this work is to "assess the local and state infrastructure to prevent and manage obesity, improve nutrition and increase physical activity".

Clark County Nutrition Coalition

The Clark County Nutrition Coalition is one partner in WIPAN. The Coalition is located in Clark County, Wisconsin, and headed by three dietitians from the Clark County Health Care Center and the Clark County WIC Program. The nutrition coalition is a group of concerned citizens, along with individuals from public and private health organizations, who have joined together to address the problem of overweight, obesity, and inactivity in Clark County.

Clark County, Wisconsin

Clark County is located in northwest Wisconsin. In 2005, the population of Clark County was recorded as 34,098 (City-Data.com, n.d). In 2000, the population in the county living in rural areas was measured at 31,092 (Wisconsin Department of Administration, 2000). According to the U.S. Census Bureau (n.d.), approximately 75% of Clark County residents are high school graduates, while only 10% have bachelor's degrees or higher. Clark County is a farming community where a large number of Amish

and Mennonite families reside. The county has a fairly high incidence of poverty. According to the 2005 census data, Clark County has a poverty level of 12.0%. This is the 4th highest poverty level in the state of Wisconsin (USDA Economic Research Service, 2008).

Chapter III: Methodology

Collaboration

This study was conducted for the Clark County Nutrition Coalition "Eat Right Be Fit" as a part of the Wisconsin Nutrition and Physical Activity State Plan. Goal 3 of the Plan states that "by 2010, 50 communities in Wisconsin will conduct an environmental audit to determine the number and location of outlets for fruits and vegetables" (WIPAN, 2005, p. 34). This fresh fruit and vegetable outlet audit of Clark County is one step in reaching that goal.

Subject Selection and Description

A proposal was submitted to the University of Wisconsin-Stout Institutional Review Board for the Protection of Human Subjects in Research (IRB). After a review of the proposal, approval was granted on the basis that the research does not involve human subjects or official records about human subjects. A copy of the approval is located in Appendix A.

The food outlets audited include all grocery stores, convenience stores, farmer's markets, fruit and vegetable growers/u-pick/farmstands, and food pantries found in Clark County, Wisconsin. Community supported agriculture (CSA) farms are included in the audit tool, but there are none located in Clark County, Wisconsin. A copy of the data collection protocol is located in Appendix B. Outlets were located by several means. Convenience stores and grocery stores were found using phone books, and the Internet and the Internet was also used to find farmer's markets. Newspapers were utilized to find farmstands, but word-of-mouth was most useful. Food pantries were located by dialing 211, a service run by the United Way of America (UWA) and the Alliance for

Information and Referral Systems (AIRS). This service was developed to connect people with community and human services (United Way and AIRS, 2009).

In August 2008, 8 grocery stores, 20 convenience stores, 6 farmer's markets, 23 farmstands, and 5 food pantries were audited. In January 2009, 7 grocery stores, 20 convenience stores, 2 farmstands, and 5 food pantries were audited. One grocery store had closed several months before and only two farmstands were still open in January. Appendices C and D contain tables of the outlets audited in August 2008 and a table of those audited in January 2009.

Instrumentation

A fresh fruit and vegetable outlet audit tool was developed specifically by WIPAN for the audits of the Wisconsin Nutrition and Physical Activity State Plan and was obtained from the dietitians of the Clark County Nutrition Coalition "Eat Right Be Fit". A copy of the audit form can be found in Appendix E. The survey included the name, address and phone number, the months of operation and the days and hours of operation of the outlet. The survey also included the number of fruits and vegetables offered and the quality of the produce. Other information on the audit included acceptance of WIC or Food Share by the outlet and if organic, pre-cut, bagged, or locally grown products were available. A form was constructed by the researcher to collect data on produce price. A copy of this form can be found in Appendix F.

Data Collection Procedures

The audit was conducted in August, 2008 and again in January, 2009 through observation. A walk-through was conducted, utilizing the audit form from WIPAN and the price form, to collect the necessary data. No problems were encountered from any

workers at the outlets. All were happy to participate in the study and most managers were more than willing to answer any questions that arose.

Data Analysis

A number of statistical analyses were used in this study. The Statistical Program for Social Sciences, version 16.0, was used to analyze the data. Descriptive and frequency statistics were run on fruit and vegetable prices, on the number of grocery stores accepting WIC and Foodshare, and on the number offering convenience items. A paired samples t-tests was performed for fruits and vegetables offered in five or more grocery stores, to determine if price differences exist between summer and winter months. A t-test was also performed to compare the total number of fruits and vegetables offered in the summer and in the winter. Values for all statistical analyses were determined to be significant at the 99.5% confidence level, with statistical significance at $p \leq 0.005$.

Limitations

A limitation of this study is that fact that only one county was audited. Caution should be exercised when generalizing the results of this study to other counties in Wisconsin. Also, the country is rural and more closely reflects a lower socioeconomic economy than that of a more urban location. A second limitation is that the prices of fresh fruits and vegetables at convenience stores were only collected in winter so there were no prices to analyze for convenience stores in the summer. Also, many of the farmstands were difficult to find because they are not advertised. Therefore, some may have been missed during data collection. Finally, the study was only conducted in summer and

winter. Further collection of data, particularly in fall and spring, would allow researchers to look at how seasonality of produce would impacts prices, especially in grocery stores.

Chapter IV: Results

The main objective of this study was to assess the fruit and vegetable environment in Clark County, Wisconsin and how this environment changes between summer and winter months. The summer audit was performed in August, 2008, and the winter audit was performed in January, 2009, through observation, by determining the types, price, and amounts of fresh produce that were available at fruit and vegetable outlets in the county. Walk-throughs were conducted of grocery stores, convenience stores/gas stations, farmers' markets, u-pick/farmstands, and food pantries. One grocery store closed over the fall months and since no winter data was collected for this site, it was excluded from all statistical analysis.

Fruits were offered in eight convenience stores in the winter; however, in summer, this increased to ten convenience stores (Table 1). Four convenience stores offered vegetables in both the winter and the summer.

Table 1

The Number of Convenience Stores Offering Fresh Fruits and Vegetables in the Summer and Winter in Clark County, Wisconsin

	Fruits	Vegetables
Number of Convenience Stores Offering in Winter	8	4
Number of Convenience Stores Offering in Summer	10	4

Note: A total of twenty-one convenience stores were audited in both the winter and summer.

Two farmstands offered fruits in the winter months (Table 2). This number jumped to seventeen farmstands in the summer months. Vegetables were offered at no farmstands in the winter; however, twenty-one farmstands offered vegetables in the summer.

Table 2

The Number of Farmstands Offering Fresh Fruits and Vegetables in the Summer and Winter in Clark County, Wisconsin

	Fruits	Vegetables
Number of Farmstands Offering in Winter	2	0
Number of Farmstands Offering in Summer	17	21

Note: A total of twenty-three farmstands were open and audited in the summer. Only two were open in the winter.

Only one food pantry offered fresh produce in the winter (Table 3). Three food pantries offered fresh produce in the summer.

Table 3

The Number of Food Pantries Offering Fresh Produce in the Summer and Winter in Clark County, Wisconsin

	Number of Food Pantries Offering Fresh Produce
Winter	1
Summer	3

Note: A total of five food pantries were audited in both the summer and winter.

In winter, the minimum number of fruits offered in any grocery store was six (Table 4). In summer, this number jumped to eleven. The maximum number of fruits by any store in winter and summer was twenty-one and twenty-two, respectively. The mode was fourteen in the winter and twenty in the summer. During winter months, only 14.3% of grocery stores carried eighteen types of fruit or more; however, 71.5% of grocery stores carried eighteen or more types of fruits in the summer.

Table 4

The Number of Fresh Fruits Offered in Grocery Stores in Summer and Winter in Clark County, Wisconsin

Number of Fruits Offered	Winter		Summer	
	Number of Grocery Stores	Percentage of Grocery Stores	Number of Grocery Stores	Percentage of Grocery Stores
6	1	14.3%	0	0%
7	0	0%	0	0%
8	0	0%	0	0%
9	0	0%	0	0%
10	0	0%	0	0%
11	0	0%	1	14.3%
12	1	14.3%	0	0%
13	0	0%	0	0%
14	2	28.6	0	0%
15	0	0%	0	0%
16	1	14.3%	0	0%
17	1	14.3%	1	14.3%
18	0	0%	1	14.3%
19	0	0%	1	14.3%
20	0	0%	2	28.6%
21	1	14.3%	0	0%
22	0	0%	1	14.3%

The minimum number of vegetables offered in any grocery store in both the winter and the summer was fourteen (Table 5). The maximum numbers of vegetables offered by any store in the winter was twenty and twenty-one in the summer. The modes were eighteen and twenty in the winter and fourteen and seventeen in the summer. Eighteen or more vegetables were offered in 57.2% of grocery stores in the winter and 42.9% of grocery stores in the summer.

Table 5

The Number of Fresh Vegetables Offered in Grocery Stores in Summer and Winter in Clark County, Wisconsin

Number of Vegetables Offered	Winter		Summer	
	Number of Grocery Stores	Percentage of Grocery Stores	Number of Grocery Stores	Percentage of Grocery Stores
14	1	14.3%	2	28.6%
15	0	0%	0	0%
16	1	14.3%	0	0%
17	1	14.3%	2	28.6%
18	2	28.6%	1	14.3%
19	0	0%	1	14.3%
20	2	28.6%	0	0%
21	0	0%	1	14.3%

The mean number of fruits offered was 14.29 ± 4.64 in the winter and 18.14 ± 1.34 in the summer (Table 6). The difference in the number of fruits offered was found to be significantly higher ($t(6) = -4.36$, $p = 0.005$) in summer. See table 7. No statistical difference ($t(6) = 0.701$, $p = 0.510$) was found between the mean number of vegetables offered in the summer (17.57 ± 0.81) and the mean number offered in the winter (17.14 ± 0.96).

Table 6

Comparison of the Mean Number of Fresh Fruits and Vegetables Offered in Seven Grocery Stores in Clark County, Wisconsin

	Winter Means ± SD	Summer Means ± SD
Fruits	14.29 ± 4.64^{a}	18.14 ± 1.34^{b}
Vegetables	17.57 ± 0.81	17.14 ± 0.96

[ab] Means with different letters are significantly different at $p = 0.005$.

Table 7

A Comparison of the Mean Difference in the Number of Fresh Fruits and Vegetables Offered in Seven Grocery Stores in Clark County, Wisconsin

	Mean Difference	Standard Deviation	t	Degrees of Freedom	Significance (2-tailed)
Fruits	-3.86	2.34	-4.36	6	0.005
Vegetables	0.43	1.62	0.701	6	0.510

All seven grocery stores accepted WIC and Food Share in both the winter and summer months (Table 8). Every grocery store offered bagged fruits or vegetables regardless of the season. The number of grocery stores offering organic or precut produce was higher in the summer than in the winter. The number of stores offering organic items increased from one in the winter to three in the summer and the number of stores offering precut items increased from three to five. No grocery stores offered locally grown produce during the winter; however, three stores offered locally grown items during the summer.

Table 8

The Number of Grocery Stores That Offer Various Services or Convenience Items in Winter and Summer in Clark County, Wisconsin

	Number of Grocery Stores Offering in Winter	Number of Grocery Stores Offering in Summer
WIC	7	7
Food Share	7	7
Bagged	7	7
Organic	1	3
Precut	3	5
Locally Grown	0	3

The number of grocery stores that offered avocadoes, bananas, coconuts, grapefruit, lemons, and limes did not change between the winter and summer months (Table 9). There was also no change in the number of grocery stores that offered oranges, pineapples, and red delicious apples. On the other hand, some fruits were offered in more stores in the summer than in the winter. The number of grocery stores that offer cantaloupe, pears, and red grapes increased from six to seven. Honeydew melon was offered in four stores in the winter and increased to five stores in the summer. Cherries were offered in zero stores in the winter, but two in the summer. Grocery stores offering plums increased from one in the winter to five in the summer. Watermelon was offered in three stores in the winter; however this increased to seven stores in the summer. The number of stores offering blueberries, nectarines, and peaches increased from one in the winter to seven in the summer. Alternatively, some fruits were offered in more grocery stores in the winter than in the summer. Apricots were offered in one store in the winter, but none in the summer. Kiwi fruit and strawberries were offered in six grocery stores in the winter. This decreased to five stores in the summer. Mangos were offered in four stores in the winter and two in the summer.

Table 9

The Number of Grocery Stores in Clark County, Wisconsin, that Carry Fresh Fruit Items and the Mean Prices of These Items

Fruit Item	Number of Winter Grocery Stores	Winter Mean ($) ± SD	Number of Summer Grocery Stores	Summer Mean ($) ± SD
Avocadoes	6	0.98 ± 0.36	6	1.52 ± 0.26
Bananas	7	0.64 ± 0.04	7	0.64 ± 0.36
Coconuts	3	2.02 ± 0.42	3	1.89 ± 0.53
Grapefruit	6	0.79 ± 0.11	6	1.02 ± 0.12
Lemons	7	0.78 ± 0.12	7	0.90 ± 0.15
Limes	6	0.53 ± 0.15	6	0.49 ±0.21
Oranges	7	0.88 ± 0.26	7	0.91 ± 0.21
Pineapples	5	4.17 ± 0.84	5	4.11 ± 0.78
Red Delicious Apples	7	1.38 ± 0.45	7	1.85 ± 0.40
Cantaloupe	6	3.52 ± 0.64	7	2.35 ± 0.48
Pears	6	1.24 ± 0.29	7	1.18 ± 0.32
Red Grapes	6	2.07 ± 0.39	7	1.76 ± 0.34
Honeydew Melon	4	2.97 ± 1.19	5	3.45 ± 0.32
Cherries	0	-	2	3.99 ± 0.00
Plums	1	2.29[a]	5	1.25 ± 0.21
Watermelon	3	4.28 ± 1.53	7	4.69 ± 0.57
Blueberries	1	3.39[a]	7	2.98 ± 0.49
Nectarines	1	2.29[a]	7	1.70 ± 0.32
Peaches	1	2.29[a]	7	1.70 ± 0.32
Apricots	1	3.39[a]	0	-
Kiwi Fruit	6	0.43 ± 0.15	5	0.42 ± 0.05
Strawberries	6	3.30 ± 1.42	5	3.41 ± 0.39
Mangos	4	1.62 ± 0.43	2	1.29 ± 0.14

[a] There are no standard deviations for those items that were only offered in one store.

The number of grocery stores that offered baby carrots, broccoli, cauliflower, celery, green cabbage, large carrots, lettuce, radishes, and yellow onions was seven during both the winter and the summer (Table 10). Grape tomatoes were offered in six grocery stores in the winter and in the summer, and roma tomatoes were offered in five. In the winter and in the summer, two grocery stores offered greenhouse tomatoes and peas. The number of grocery stores offering cucumbers and red potatoes increased from six in the winter to seven in the summer. Fresh corn was only offered in one grocery store in the winter; however, in the summer seven stores carried fresh corn. On the other hand, the number of grocery stores offering beans, and spinach decreased from three in the winter to two in the summer. Russett potatoes and rutabagas were offered in seven stores in the winter, but only six and five stores in the summer, respectively. Squash and asparagus were both offered in six grocery stores in the winter; however, only four stores offered squash and two offered asparagus in the summer.

Table 10

The Number of Grocery Stores in Clark County, Wisconsin, that Carry Fresh Vegetable Items and the Mean Prices of These Items

Vegetable Item	Number of Winter Grocery Stores	Winter Means ($) ± SD	Number of Summer Grocery Stores	Summer Means ($) ± SD
Baby Carrots	7	1.35 ± 0.28	7	1.46 ± 0.42
Broccoli	7	1.60 ± 0.46	7	1.28 ± 0.39
Cauliflower	7	2.19 ± 0.87	7	1.82 ± 0.94
Celery	7	1.31 ± 0.21	7	1.29 ± 0.27
Green Cabbage	7	0.50 ± 0.07	7	0.55 ± 0.10
Large Carrots	7	0.83 ± 0.08	7	0.79 ± 0.09
Lettuce	7	1.75 ± 0.21	7	1.26 ± 0.26
Radishes	7	1.42 ± 0.17	7	1.49 ± 0.19
Yellow Onions	7	0.63 ± 0.18	7	0.68 ± 0.16
Grape Tomatoes	6	2.09 ± 0.25	6	2.87 ± 0.47
Roma Tomatoes	5	1.53 ± 0.30	5	1.45 ± 0.36
Greenhouse Tomatoes	2	2.19 ± 0.71	2	1.74 ± 0.07
Peas	2	5.70 ± 1.85	2	6.39 ± 2.82
Cucumbers	6	0.89 ± 0.25	7	0.66 ± 0.07
Red Potatoes	6	0.66 ± 0.17	7	0.85 ± 0.18
Corn	1	0.53[a]	7	0.40 ± 0.10
Beans	3	1.66 ± 0.47	2	1.84 ± 0.64
Spinach	3	5.94 ± 3.38	2	5.58 ± 2.25
Russett Potatoes	7	0.43 ± 0.11	6	0.63 ± 0.33
Rutabagas	7	0.68 ± 0.07	5	0.89 ± 0.45
Squash	6	0.94 ± 0.23	4	1.37 ± 0.48
Asparagus	6	3.62 ± 0.38	2	3.39 ± 0.57

[a] There are no standard deviations for those items that were only offered in one store.

The mean prices of avocados, grapefruit, lemons, and cantaloupe, and red delicious apples changed greatly from the winter to the summer (Table 11). A significant

increase from winter to summer was found in the mean fruit price differences for avocados ($t(5) = -4.50$, $p = 0.006$), grapefruit ($t(4) = -3.02$, $p = 0.039$), and lemons ($t(6) = -2.49$, $p = 0.047$. See table 12. A significant decrease was seen in the mean fruit price difference for cantaloupe ($t(5) = 3.37$, $p = 0.020$). The mean price difference for red delicious apples tended to be higher in summer, but not significantly ($t(6) = -2.14$, $p = 0.076$). The mean price for bananas did not change from the winter to the summer (0.64 ± 0.04). The mean prices for red grapes, kiwi fruit, limes, oranges, and pears changed from the winter to the summer, but these differences were found to be not significant.

Table 11

Comparison of Summer and Winter Grocery Store Mean Fruit Prices in Clark County, Wisconsin, when Item was Offered in Five or More Locations

Fruit Item	Winter Means ($) ± SD	Summer Means ($) ± SD	Number of Grocery Stores Offering Item
Avocados	0.98 ±0.34	1.52 ± 0.26	7
Grapefruit	0.79 ± 0.12	1.05 ± 0.09	6
Lemons	0.78 ± 0.12	0.89 ± 0.15	7
Cantaloupe	3.52 ±0.64	2.41 ± 0.49	6
Red Delicious Apples	1.38 ± 0.45	1.85 ± 0.40	7
Bananas	0.64 ± 0.04	0.64 ± 0.04	7
Red Grapes	2.07 ±0.39	1.84 ± 0.29	6
Kiwi Fruit	0.39 ± 0.14	0.42 ± 0.05	5
Limes	0.53 ± 0.15	0.49 ± 0.21	6
Oranges	0.88 ± 0.26	0.91 ± 0.21	7
Pears	1.24 ± 0.29	1.21 ± 0.34	6

Table 12

Comparison of Summer and Winter Grocery Store Mean Fruit Price Differences in Clark County, Wisconsin, when Item was Offered in Five or More Locations

Fruit Item	Mean Difference ($)	Standard Deviation ($)	t	Degrees of Freedom	Significance (2-tailed)
Avocados	-0.55	0.30	-4.50	5	0.006
Grapefruit	-0.26	0.19	-3.02	4	0.039
Lemons	-0.11	0.12	-2.49	6	0.047
Cantaloupe	1.10	0.81	3.37	5	0.020
Red Delicious Apples	-0.47	0.58	-2.14	6	0.076
Bananas	0.01	0.02	1.44	6	0.200
Red Grapes	0.23	0.43	1.32	5	0.243
Kiwi Fruit	-0.02	0.11	-0.50	4	0.645
Limes	0.04	0.13	0.73	5	0.499
Oranges	-0.03	0.33	0.23	6	0.824
Pears	0.03	0.14	0.60	5	0.576

The mean prices of lettuce and grape tomatoes changed greatly from the winter to the summer (Table 13). A significant decrease from winter to summer was found in the mean vegetable price difference for lettuce ($t(6) = 4.30$, $p = 0.005$), while a significant increase from winter to summer was found for grape tomatoes ($t(5) = -2.93$, $p = 0.033$). See table 14. The mean price differences for broccoli ($t(6) = 2.33$, $p = 0.059$), cauliflower ($t(6) = 2.24$, $p = 0.066$), and cucumbers ($t(5) = 2.39$, $p = 0.063$) tended to decrease from winter to summer, but this was not significant. The mean price differences for green cabbage, baby and large carrots, celery, yellow onions, russet and red potatoes, radishes, and rutabagas were found to be not significant.

Table 13

Comparison of Summer and Winter Grocery Store Mean Vegetable Prices in Clark County, Wisconsin, when Item was Offered in Five or More Locations

Vegetable Item	Winter Means ($) ± SD	Summer Means ($) ± SD	Number of Grocery Stores Offering Item
Lettuce	1.75 ± 0.21	1.26 ± 0.26	7
Grape Tomatoes	2.09 ± 0.25	2.87 ± 0.47	6
Broccoli	1.60 ± 0.46	1.28 ± 0.39	7
Cauliflower	2.19 ± 0.87	1.82 ± 0.94	7
Cucumbers	0.89 ± 0.25	0.63 ± 0.05	6
Green Cabbage	0.50 ± 0.07	0.55 ± 0.10	7
Baby Carrots	1.35 ± 0.28	1.46 ± 0.42	7
Large Carrots	0.83 ± 0.85	0.79 ± 0.09	7
Celery	1.32 ± 0.21	1.29 ± 0.27	7
Yellow Onions	0.63 ± 0.18	0.68 ± 0.16	7
Russett Potatoes	0.44 ± 0.12	0.63 ± 0.33	6
Red Potatoes	0.66 ± 0.17	0.86 ± 0.20	6
Radishes	1.42 ± 0.17	1.49 ± 0.19	7
Rutabagas	0.67 ± 0.08	0.89 ± 0.45	5

Table 14

Comparison of Summer and Winter Grocery Store Mean Vegetable Price Differences in Clark County, Wisconsin, when Item was Offered in Five or More Locations

Vegetable Item	Mean Difference ($)	Standard Deviation ($)	t	Degrees of Freedom	Significance (2-tailed)
Lettuce	0.49	0.30	4.30	6	0.005
Grape Tomatoes	-0.79	0.66	-2.93	5	0.033
Broccoli	0.33	0.37	2.33	6	0.059
Cauliflower	0.37	0.44	2.24	6	0.066
Cucumbers	0.26	0.27	2.39	5	0.063
Green Cabbage	-0.04	0.10	-1.16	6	0.289
Baby Carrots	-0.11	0.51	-0.58	6	0.586
Large Carrots	0.03	0.05	1.85	6	0.113
Celery	0.03	0.29	0.26	6	0.801
Yellow Onions	-0.05	0.29	-0.47	6	0.652
Russett Potatoes	-0.19	0.40	-1.17	5	0.297
Red Potatoes	-0.20	0.27	-1.78	5	0.135
Radishes	-0.07	0.14	-1.37	6	0.220
Rutabagas	-0.22	0.44	-1.12	4	0.324

The results of this study will be used to determine the availability and accessibility that people have to fresh fruits and vegetables in Clark County, Wisconsin. The county will be split up into regions of great access, good access, and poor access, which will be expanded upon in Chapter five. Once the county is divided into regions, steps will be taken to improve fresh fruit and vegetable access in the community. These steps will be outlined in Chapter five.

Chapter V: Discussion

Most Americans do not consume the recommended servings of fruits and vegetables. This is unfortunate because fruits and vegetables offer many health benefits, including a reduced risk of cancer, stroke, and coronary heart disease. Cost and availability are both associated with fruit and vegetable intake. McManus, Brown, and Maycock (2007, n.p.) believe that "Access to adequate food supply is important in order to consume a healthy diet." When healthy foods are not available, people cannot make positive changes to their eating habits. It is the selection of food available in the food outlet and the prices of these food items that are related to the ability to meet dietary recommendations.

The purpose of this study was to assess the fruit and vegetable environment in Clark County, Wisconsin, and how this environment changes between summer and winter months. The audits were performed in August, 2008, and January, 2009, through observation. Walk-throughs were conducted of grocery stores, convenience stores/gas stations, farmers' markets, u-pick/farmstands, and food pantries, by determining the types, price, and amounts of fresh produce that were available at these sites.

Limitations

One limitation of this study is that only one county was audited. Caution should be used when generalizing the results of this study to other counties in Wisconsin. Also, Clark County is rural and more closely reflects a lower socioeconomic economy than that of a more urban location. A second limitation is that the study was only conducted in summer and winter. The results of the research do not include data from spring and fall. Also, the prices of fresh fruits and vegetables at convenience stores were only collected

in winter so there were no prices to analyze for convenience stores in the summer. Also, many of the farmstands were difficult to find because they were not advertised. Therefore, some farmstands may have been missed during data collection.

Conclusions

The quantity of fresh fruits and vegetables offered in convenience stores was very limited. Although the offerings were limited, they did not change significantly from winter to summer. On the other hand, farmstand offerings were greatly reduced in winter. The number of farmstands audited decreased from twenty-three stands in the summer to two in the winter. Also, the two farmstands open in the winter did not offer vegetables, only fruits. Like the farmstands, the number of food pantries offering fresh produce was also lower in the winter. This is due to the fact that the only time food pantries in Clark County can offer fresh produce is when the produce is donated by members of the community. Some food pantries cannot even store fresh produce when it is donated and the food goes to waste.

The mean number of fruits offered in grocery stores increased significantly from the winter to the summer. The growing season for all Wisconsin-grown fruit is the summer months so these items from Wisconsin and neighboring states would be more accessible to grocery stores and grocery store suppliers during the summer months. The average number of fresh vegetables offered in the winter and summer did not change significantly, but by looking at the number of grocery stores that offer eighteen or more vegetables, one can see that grocery stores offered more vegetables in the winter than in the summer. This may be due to competition from the farmers' markets and farmstands in the summer months. Grocery store owners may believe that they cannot contend with the

other fresh produce outlets so they do not carry as many vegetables as they do in winter when there is no competition.

Every grocery store accepted WIC and Food Share and offered fresh bagged produce. Fresh, organic produce was rare in all grocery stores, with only one store carrying organic items in winter and three in summer. Precut items were also offered more often in the summer than the winter. Since gardens cannot be grown in winter, locally grown produce is not available in grocery stores during the winter months. Even though locally grown produce is highly available in the summer, these items were only offered in three out of the seven stores in the summer.

Price differences clearly exist between summer and winter for many fresh fruits and vegetables. When comparing the mean prices of fruit items that were offered in five or more grocery stores, six of the items increased in price in the summer and four of the items decreased in price. Bananas remained the same price throughout summer and winter. Four of the fruit price differences were found to be significant. When looking at the mean prices of the vegetable items that were offered in five or more grocery stores, seven items increased in price and six items decreased in price in the summer. Avocados, grapefruit, and lemons were significantly higher and cantaloupe were significantly lower in summer compared to winter. Two of these differences were found to be significant, with lettuce decreasing and grape tomatoes increasing in price in summer compared to winter.

Recommendations

Several actions can be taken to increase the availability and accessibility of fresh fruits and vegetables. To begin with, convenience stores could increase the amount of

fruits and vegetables offered. Also, if convenience stores in Clark County began accepting WIC checks, the number of places that low income families could purchase items would increase greatly. Also, farmstands need to have better advertising. Many of the stands rely on homemade signs at the end of dirt roads. These are not adequate to inform consumers of farmstand locations. Increasing and improving farmstand advertising would increase consumer usage of these farmstands and therefore could increase fruit and vegetable consumption. Another recommendation is to improve the fresh produce storage facilities in food pantries. Having more food pantries offer vouchers for fresh fruits and vegetables may be a better option since it would reduce the need for food pantries to carry and store fresh produce.

One step grocery stores could take to support increased fruit and vegetable consumption in the community is to increase the organic, precut, and locally grown items that they stock. Research has shown that convenience in fresh fruits and vegetables has increased average consumption of many vegetables. Fresh-cut fruits and vegetables, such as short cut carrots, prepackaged salads, locally grown items, and exotic and specialty produce help to fuel increased consumption (Krebs-Smith & Kantor, 2001).

Future Research

As stated in Chapter four, the results of this study will be used to divide Clark County, Wisconsin, into regions of great access, good access, and poor access. Audit analysis instructions are located in Appendix G. Great access will be those areas where: (1) Within ten miles, there are three or more grocery stores with ten or more types of fruits and ten or more types of vegetables and the overall produce quality is 50% or more acceptable; (2) Within ten miles, there is a farmers' market or farmstand available five or

more days a week during the summer months; (3) Within ten miles, there is at least one weekend farmers' market, (4) Certified organic produce is available; (5) A community supported agriculture site is available; (6) Two or more convenience stores offer fresh fruits and vegetables; and (6) Most grocery stores accept WIC and Food Share (Wisconsin Partnership for Activity and Nutrition, n.d.a). If these guidelines are strictly followed, no areas in Clark County, Wisconsin will be classified as having great access.

Good access is defined as an area where: (1) Basic needs are met; (2) Within ten miles, there are two or more grocery stores with ten or more types of fruits and ten or more types of vegetables and produce whose quality is 50% or more acceptable; and (3) The community has the opportunity to purchase farm-fresh produce through a farmers' market, farmstand, and/or a community supported agriculture site (WIPAN, n.d.a). Several locations in Clark County, Wisconsin may be classified as having good access. Poor access is defined as those locations where: (1) Year-round access is at-risk or does not exist; (2) Within ten miles there is one or zero grocery stores with ten or more types of fruits and ten or more types of vegetables and produce where less than 50% is acceptable; and (3) Citizens might have access to farmstands or farmers' markets (WIPAN, n.d.a). Many regions of Clark County will be classified as having poor access due to distances between grocery stores.

After the county is divided into regions, WIPAN has developed a list of steps that can be taken by communities to improve fruit and vegetable access in their areas. The first step is to increase the number of grocery stores with good/great access to fruits and vegetables in the areas of the community that have poor/no access. The second step is to improve access to farm fresh produce by making it possible for residents to purchase the

items through farmers' markets and/or farmstands one or more days a week. The third step is to improve access to farm fresh produce by making it possible for residents to purchase the items through a community supported agriculture site. At this time, there are no community supported agriculture sites in Clark County, Wisconsin. The fourth and last step is to improve access to fresh fruits and vegetables in certain areas of the county by increasing the number of convenience stores that offer fresh produce.

Further collection of data, particularly in fall and spring, would allow researchers to look at how seasonality of produce would impact prices, especially in grocery stores. Also, expanding the study to compare findings, especially price data, of several counties in Wisconsin would allow the researcher to study the differences between rural and urban counties. It has been suggested that the rural poor eat less fruits and vegetables than the urban poor (Kendall, Olson, & Frongillo, 1996). This may be due to the fact that rural communities are at a greater disadvantage when it comes to fruits and vegetables because urban neighborhoods tend to have a higher proportion of supermarkets and grocery stores than rural areas (Liese, Weis, Pluto, Smith, & Lawson, 2007).

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Appendix A: IRB Approval

STOUT
UNIVERSITY OF WISCONSIN

Research Services
152 Voc Rehab Building

University of Wisconsin-Stout
P.O. Box 790
Menomonie, WI 54751-0790

715/232-1126
715/232-1749 (fax)
http://www.uwstout.edu/rs/

Date: July 17, 2008

To: Robyn Verschay

Cc: Carol Seaborn

From: Sue Foxwell, Research Administrator and Human Protections Administrator, UW-Stout Institutional Review Board for the Protection of Human Subjects in Research (IRB) Susan Foxwell

Subject: **Protection of Human Subjects**

After review of your project, "*A Fresh Fruit and Vegetable Outlet Audit of Clark County, Wisconsin,*" I concur that your research **does not** involve human subjects or official records about human subjects. Therefore, your project does not need further review and approval of the Institutional Review Board (IRB) for the Protection of Human Subjects.

This project has been reviewed by the UW-Stout IRB as required by the Code of Federal Regulations Title 45 Part 46

Thank you for your cooperation with the IRB and best wishes with your project.

***NOTE: This is the only notice you will receive – no paper copy will be sent.**

SF:ls

Appendix B: Wisconsin Fruit and Vegetable Audit Collection Protocol

Wisconsin Fruit & Vegetable Audit Tool
Data Collection Protocol

1. Determine who, preferably one person, will be collecting the data in your county, city, or neighborhood. Ensure all data collectors are using the same procedures and protocol for collecting data.
   Note: It is ideal to have the same person collect the data in the specified section of the county, city, or neighborhood.

2. Depending on the area (rural, suburban, or urban), define the audit area; use county/city/neighborhood maps, zip codes, school district boundaries, or census blocks to determine the boundaries from which the audit will be completed. This step is especially crucial if you are collecting data from a large metropolitan area or population-dense county.

3. Determine the known access points for fruits and vegetables (farmers' market, Community Supported Agriculture Farm, food pantry) prior to beginning the data collection by using the internet (Google maps) or phone book. Document these establishments on a separate piece of paper and use them to guide your assessment. However, do not rely solely on the internet or phone for determining access points; assessing the environment as a whole is crucial. Furthermore, utilize other known resources:
   - Farm Fresh Atlases
   - SavorWisconsin.com
   - Department of Agriculture, Trade, and Consumer Protection
   - Department of Health and Family Services—Farmers' Market Nutrition Program

Note: Use 211 to find food pantries. Food pantries need not be visited to determine their ability to store fresh produce (their hours and supply of foods may be irregular)

4. When assessing the county, city, or neighborhood it is best to begin in one part of the county/city/neighborhood and work through the area in a manner that is easy for you to remember where you have collected data and where data still needs to be collected.

5. Special considerations when collecting data are as follows:
   - When to collect the data
     a. Farmstands/farmers'markets/CSA— Audit information should be collected at farmstands, farmer's markets & CSAs between August 1 and September 15

     b. Grocery stores— Audit information concerning grocery stores, convenience stores and food pantries should be collected between January 1 and April 30.

- If you want a good year round picture of fruit and vegetable accessibility in grocery & convenience stores conduct 2 audits. One should be conducted January-April and the second audit conducted July – September. **Please note:** If only one is conducted, it should be done between January – April

- What counts as a type of fruit or vegetable? When counting the number of fruits and vegetables at a venue, count types of fruits or vegetables rather than varieties. In other words, if a venue has 6 different varieties of apples, count that as 1 rather than 6—The venue has 1 type of fruit—apples --- not 6.

6. For the purposes of the audit tool, the following fruit and vegetable outlets are defined as follows:
   - Grocery Store- A **grocery store** is a store established primarily for the retailing of food. A grocer, the owner of a grocery store, stocks different kinds of foods from assorted places and cultures, and sells them to customers. Large grocery stores that stock products other than food, such as clothing or household items, are called supermarkets. Small grocery stores that mainly sell fruits and vegetables are known as produce markets (U.S) or greengrocers (Britain), and small grocery stores that predominantly sell snack foods and sandwiches are known as convenience stores or delicatessens.
     Source:
     http://en.wikipedia.org/wiki/Grocery_store

     Convenience Store/Gas Station- small grocery stores that predominantly sell snack foods and sandwiches are known as convenience stores or delicatessens.
     Source:
     http://en.wikipedia.org/wiki/Grocery_store

     Farmers' Market-means an association of local farmers who assemble at a defined location for the purpose of selling their produce directly to consumers. Three or more farmer's must be present at a market for it to be considered a viable market.

     Community Supported Agriculture (CSA) Farm-means a program under which a farmer or group of farmers grows food for a group of shareholders or subscribers who pledge to buy a portion of the farmer's crop for that season

     Fruit and Vegetable Grower- a local farmer that grows fruits and/or vegetables for public sale.

U-Pick- a farm at which consumers can go to pick their own foodstuffs (ex: apples, pumpkins, berries)

Farm/Roadside Stand-means a location at which an individual farmer sells his or her produce directly to consumers;

Food Bank: A public or nonprofit organization with an established operation to provide food to food pantries, soup kitchens, hunger relief centers, or other places that provide food to people who may not be able to afford food.

Food Pantry: A public or nonprofit organization that distributes food at no cost to people who may not be able to afford food.

7. Further audit tool definitions:

a. **Accepts WIC**: The WIC Program is a federally funded program that provides food to eligible pregnant women, breastfeeding women, postpartum women, infants, and children up to age five. WIC participants receive checks to spend at a grocery store or at a pharmacy. "Accepts WIC" is a grocery store or pharmacy authorized by the State of Wisconsin to accept WIC checks. The store or pharmacy must display a sign, sticker or other evidence of WIC authorization in an area visible to customers.

b. Accepts FoodShare: FoodShare refers to the federally funded Food Stamp Program that helps people with little or no money to buy food. In Wisconsin, the program is called FoodShare. The program may also be identified through the name of the plastic card that recipients use to purchase the food. This card is called the "Quest Card." "Accepts FoodShare" is a place, such as a grocery store or a farmers' market , authorized by the United States Department of Agriculture to accept FoodShare purchases. It is not a requirement that the vendor display a sign that FoodShare purchases are accepted.

c. **Certified Organic foods** are produced according to certain production standards. For crops, it means they were grown without the use of conventional pesticides, artificial fertilizers, human waste, or sewage sludge, and that they were processed without ionizing radiation or food additives.[1] In most countries, organic produce must not be genetically modified. Look for the certified organic logo to be sure organic produce is truly organic.

Before a product can be labeled "organic" a government approved certifier inspects the farm where the food is grown to make sure the

farmer is following all the rules necessary to meet USDA organic standards. Companies that handle or process organic food before it gets to the local supermarket must be certified as well

To qualify as an organic product in this audit, a product must be certified organic.

d. **Pre-cut/Bagged Fresh Fruit & Vegetables**:
Produce that has been freshly-cut, washed, packaged and maintained with refrigeration or surrounded by ice. Fresh cut means produce is in a raw state, trimmed and/or peeled and cut into 100% usable product that is bagged or pre-packaged and is ready to eat or cook. Quality means produce is not showing signs of browning, off-color, softening and/or decay.

e. Local foods. For the purpose of this audit, local foods will be defined as products that are marketed as local or Wisconsin made. The products must be promoted through signage or on the front of the package. A product made in Wisconsin but not actively promoted as such would not be included.

f. Overall Quality of produce.
≥ 50% Acceptable = 50% or more of the fruits & vegetables in the store are in peak condition, of top quality, have good color, are fresh, firm and clean. Less than 50% are in unacceptable condition They are not bruised, old looking, mushy, dry, overripe, have dark sunken spots in irregular patches or have cracked or broken surfaces, signs of shriveling or excessive softening.

≤ 50% Acceptable = Less than 50% or more of the fruits & vegetables in the store are in peak condition, of top quality, have good color, are fresh, firm and clean. More than 50% are in unacceptable condition. They are bruised, old looking, mushy, dry, overripe, have dark sunken spots in irregular patches or have cracked or broken surfaces, signs of shriveling or excessive softening.

Appendix C: Fresh Fruit and Vegetable Outlets Audited in August, 2008

Grocery Stores	Convenience Stores	Farmers' Markets	Farmstands	Food Pantries
Bob and Caryl's IGA	Abbotsford BP	Abbotsford Farmers' Market	Central Wisconsin Produce Auction	Community United Pantry
County Market	Abbyland Travel Center	Greenwood Farmers' Market	Cloverdale Country Store	Greenwood Food Pantry
Loyal Foods	Auto-Stop Self Service Gas Station	Loyal Farmers' Market	Early Bloom Greenhouse	Indianhead Community Action Agency
Marty's Foods	Bob S. Corner Garage	Neillsville Farmers' Market	Fairview Produce	Loyal Community Food Pantry
Mayville Market	Creekside Convenience	Owen Farmers' Market	Four Sprouts Veggies	Neillsville Food Pantry
Roger's Grocery	Drescher Oil Co.	Thorp Farmers' Market	Freemont Produce	
Scott & Lori's Family Foods	Express Mart		Kelsey Gardens	
Thorp SuperValu	Granton Convenience		Mayflower Bulk Foods and Furniture	
	Greenwood Heartland Co-op Services		No name	
	Greenwood Kwik Trip		No name	
	Harmony Country Co-op		No Name	
	Heartland Co-op Svcs Convenience Store		North Mound Greenhouse	
	Loyal Kwik Trip		Panther Creek Produce	
	Neillsville Bread & Butter		Pine Creek Produce	
	Neillsville Heartland Co-op Services		Pinedale Variety	
	Neillsville Kwik Trip		Self-Serve	
	Super 29 Shell		Self-Serve	
	Thorp BP		Self-Serve	
	Withee Mobil Mart		Self-Serve	
	Withee Oil Co.		The Hoovers	
			Things That Grow	
			Walker's Strawberries	
			Warren's Berry Farm	

Appendix D: Fresh Fruit and Vegetable Outlets Audited in January, 2009

Grocery Stores	Convenience Stores	Farmers' Markets	Farmstands	Food Pantries
Bob and Caryl's IGA	Abbotsford BP	None	Cloverdale Country Store	Community United Pantry
County Market	Abbyland Travel Center		Mayflower Bulk Foods and Furniture	Greenwood Food Pantry
Marty's Foods	Auto-Stop Self Service Gas Station			Indianhead Community Action Agency
Mayville Market	Bob S. Corner Garage			Loyal Community Food Pantry
Roger's Grocery	Creekside Convenience			Neillsville Food Pantry
Scott & Lori's Family Foods	Drescher Oil Co.			
Thorp SuperValu	Express Mart			
	Granton Convenience			
	Greenwood Heartland Co-op Services			
	Greenwood Kwik Trip			
	Harmony Country Co-op			
	Heartland Co-op Svcs Convenience Store			
	Loyal Kwik Trip			
	Neillsville Bread & Butter			
	Neillsville Heartland Co-op Services			
	Neillsville Kwik Trip			
	Super 29 Shell			
	Thorp BP			
	Withee Mobil Mart			
	Withee Oil Co.			

Appendix E: Audit Tool

Fresh Fruit & Vegetable Outlet Audit Tool

Date Audit Completed:

County:_____ Person Conducting Audit: _____

Directions: Please list all fresh fruit & vegetable outlets in your county including grocery stores, convenience stores, farmer's markets, CSA Farms, Farm Stands and other places where fresh fruits and vegetables are sold.

	Address/ Phone Number	Months of Operation	Days/Hours of Operation	Types/Amounts of Produce	Special Accommodations for Limited Income People	Comments
Grocery Store(s):						
SAMPLE Sample City Market	456 Main St Sample City, WI (111) 222-3333	Year round	M-Sun 6 AM-10 PM	• Fruits ☐ 0 or None ☐ 1-9 types ☐ ≥10 types • Vegetables ☐ 0 or None ☐ 1-9 types ☐ ≥10 types	☐ Accepts WIC ☐ Accepts Food Share	☐ Organic Available ☐ Pre-Cut Available ☐ Bagged Available ☐ Locally Grown Available ☐ Overall Produce Quality o ≥ 50% acceptable o < 50% acceptable ☐ Other:
				• Fruits ☐ 0 or None ☐ 1-9 types ☐ ≥10 types • Vegetables ☐ 0 or None ☐ 1-9 types ☐ ≥10 types	☐ Accepts WIC ☐ Accepts Food Share	☐ Organic Available ☐ Pre-Cut Available ☐ Bagged Available ☐ Locally Grown Available ☐ Overall Produce Quality ☐ ≥ 50% acceptable ☐ < 50% acceptable ☐ Other:
				• Fruits ☐ 0 or None ☐ 1-9 types ☐ ≥10 types • Vegetables ☐ 0 or None ☐ 1-9 types ☐ ≥10 types	☐ Accepts WIC ☐ Accepts Food Share	☐ Organic Available ☐ Pre-Cut Available ☐ Bagged Available ☐ Locally Grown Available ☐ Overall Produce Quality ☐ ≥ 50% acceptable ☐ < 50% acceptable ☐ Other:

	Address/ Phone Number	Months of Operation	Days/Hours of Operation	Types/amounts of produce	Special accommodations for limited income people	Comments
Convenience Store/Gas Station:						
				• Fruits ☐ 0 or None ☐ 1-9 types ☐ ≥10 types • Vegetables ☐ 0 or None ☐ 1-9 types ☐ ≥10 types		
				• Fruits ☐ 0 or None ☐ 1-9 types ☐ ≥10 types • Vegetables ☐ 0 or None ☐ 1-9 types ☐ ≥10 types		
				• Fruits ☐ 0 or None ☐ 1-9 types ☐ ≥10 types • Vegetables ☐ 0 or None ☐ 1-9 types ☐ ≥10 types		
				• Fruits ☐ 0 or None ☐ 1-9 types ☐ ≥10 types • Vegetables ☐ 0 or None ☐ 1-9 types ☐ ≥10 types		

	Address/ Phone Number	Months of Operation	Days/Hours of Operation	Types/amounts of produce	Special accommodations for limited income people	Comments
Farmers' Market(s):						
				☐ Fruits o Certified Organic ☐ Vegetables o Certified Organic	☐ Accepts WIC/Senior Checks ☐ Accepts Food Share	
				☐ Fruits o Certified Organic ☐ Vegetables o Certified Organic	☐ Accepts WIC/Senior Checks ☐ Accepts Food Share	
				☐ Fruits o Certified Organic ☐ Vegetables o Certified Organic	☐ Accepts WIC/Senior Checks ☐ Accepts Food Share	
				☐ Fruits o Certified Organic ☐ Vegetables o Certified Organic	☐ Accepts WIC/Senior Checks ☐ Accepts Food Share	

	Address/ Phone Number	Months of Operation	Days/Hours of Operation	Types/amounts of produce	Special accommodations for limited income people	Comments
CSA (Community Supported Agriculture):						
				☐ Fruits o Certified Organic ☐ Vegetables o Certified Organic		

				☐ Fruits o Certified Organic ☐ Vegetables o Certified Organic		
				☐ Fruits o Certified Organic ☐ Vegetables o Certified Organic		

	Address/ Phone Number	Months of Operation	Days/Hours of Operation	Types/amounts of produce	Special accommodations for limited income people	Comments
Fruit and Vegetable Growers/U-Pick/Farm Stands:						
				☐ Fruits o Certified Organic ☐ Vegetables o Certified Organic		
				☐ Fruits o Certified Organic ☐ Vegetables o Certified Organic		
				☐ Fruits o Certified Organic ☐ Vegetables o Certified Organic		

	Address/ Phone Number	Months of Operation	Days/Hours of Operation	Types/amounts of produce	Special accommodations for limited income people	Comments
Food Pantry/Food Bank:						
				☐ Fresh Produce Available ☐ Fresh Produce Not Available		o Can Store Fresh Produce o Can Not Store Fresh Produce
				☐ Fresh Produce Available ☐ Fresh Produce Not Available		o Can Store Fresh Produce o Can Not Store Fresh Produce
				☐ Fresh Produce Available ☐ Fresh Produce Not Available		o Can Store Fresh Produce o Can Not Store Fresh Produce
				☐ Fresh Produce Available ☐ Fresh Produce Not Available		o Can Store Fresh Produce o Can Not Store Fresh Produce

Are there areas of your county where residents do not have access to fresh fruits and vegetables within a 10 mile radius of where they live? Please list/describe the location of these areas.

Appendix F: Audit Price Form

Location _____ Date _____

	Fruits	Varieties/Prices
	Apples	
	Apricots	
	Avocados	
	Bananas	
	Berries	
	Cherries	
	Coconuts	
	Grapefruit	
	Grapes	
	Kiwi Fruit	
	Lemons	
	Limes	
	Mangos	
	Melons	
	Nectarines	
	Oranges	
	Peaches	
	Pears	
	Pineapples	
	Plums	
	Vegetables	Varieties/Prices
	Asparagus	
	Beans	
	Broccoli	
	Cabbage	
	Carrots	
	Cauliflower	
	Celery	
	Corn	
	Cucumbers	
	Kohlrabi	
	Lettuce	
	Onions	
	Peas	
	Potatoes	
	Radishes	
	Rutabagas	
	Spinach	
	Squash	
	Tomatoes	

Appendix G: Audit Analysis Instructions

Fruit and Vegetable Audit Analysis

I. Why a community's access to fresh fruits and vegetables is important:

Increasing access to fruits and vegetables can positively affect the overall health of our community. The vitamins and minerals found in fruits and vegetables may help reduce the risk for diseases such as cancer, heart disease and stroke. Studies have also shown that people who eat more fruits and vegetables tend to have fewer problems with their body weight and health problems associated with overweight and obesity.

Eating locally grown produce provides many nutritional benefits, and if you pick your own, you're getting a great form of physical activity as well. Locally grown foods are fresher and have an overall better quality. Local produce not only includes the produce you would pick or purchase at a local farm or farmers' market, but also produce at the local grocery or convenience stores.

There are other important benefits of choosing locally grown produce. Local produce maintains its nutritional value because there are minimal losses through transportation compared to imported produce. Buying locally grown produce supports the local agricultural community and can boost the local economy with food dollars.

Of course not all of the fresh fruits and vegetables are locally grown, especially in our Wisconsin climate. Imported produce has the same nutritional benefits as fresh produce, including important vitamins and minerals. They also are a good source of fiber and help to increase the variety of fruits and vegetables available in Wisconsin.

In summary, improved access to quality, fresh produce will be a positive step in influencing people to choosing a healthier diet. This will help to get us to our goal of creating communities that support and promote healthy eating and a healthy weight

II. What the Fruit & Vegetable Audit Tool Tells Us About Our Community:

A. Plot on a map the locations of the fresh fruit and vegetable outlets

1. ***What areas of the community/county have great access?*** Great access is defined as a location where:
    a. Consumers have choices and convenience
    b. Within 10 miles, there are three or more grocery stores with the following:
        - 10 or more types of fruits and 10 or more types of vegetables
        - the overall produce quality is 50% or more acceptable

c. Within 10 miles, there is a farmers' market or farmstand available five or more days a week during the summer months
d. Within 10 miles, there is at least one weekend farmers' market
e. Certified organic produce is available
f. A CSA is available
g. Two or more convenience stores offer fresh fruits and vegetables
h. Most grocery stores accept WIC and FoodShare

Areas of the community/county with great access:

2. ***What areas of the community/county have good access?*** Good access is defined as a location where:
   a. Basic needs are met
   b. Within 10 miles, there are two or more grocery stores with the following:
      - 10 or more types of fruits and 10 or more types of vegetables
      - produce whose quality is 50% or more acceptable
   c. The community has the opportunity to purchase farm-fresh produce through a farmers' market, farmstand, and/or a CSA

Areas of the community/county with good access:

3. ***What areas of the community/county have poor access?*** Poor access is defined as a location where:
   a. Year-round access is at-risk or does not exist
   b. Within 10 miles there is one or zero grocery stores with the following:
      - 10 or more types of fruits and 10 or more types of vegetables
      - produce where less than 50% or more is acceptable
   c. Might have access to farmstands or farmers' markets.

Areas of the community/county with poor access:

III. Next Steps: Improving fruit and vegetable access in our community

Using the information above, what are the next steps that need to be taken to improve fruit and vegetable access in our community/county? Check the goal you will work on.

_____ 1. Increase the number of grocery stores with good/great access to fruits and vegetables in the following areas of the community with poor/no access: _____

_____

_____ 2. Improve access to farm fresh produce in the following area of the community/county by making it possible for residents to purchase it through a farmers' markets or farmstands one or more days each week. Area of community/county:_____

_____ 3. Improve access in the following area of the community/county to farm fresh produce by making it possible for residents to purchase it through a CSA. Area of the community/county: _____

_____ 4. Improve access to fresh fruits and vegetables in the following area of the community/county by having two or more convenience stores offer fresh fruits and vegetables. Area of the county/community:_____

_____ 5. Other:_____

Activities and time line:

Transfer your goal to the top of the workplan on the next page. Record the activities you need to take to achieve the goal you've set a well as the person who will be responsible for carrying out the activity, when the activity will be accomplished and how you'll evaluate if you've improved fruit and vegetable access.

Improving Fruit and Vegetable Access Workplan

Dates: _____ to _____

Goal:		
Activity	Responsible Person	Completion date