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Assessment of a New Healthy Food Policy at Two Food Pantries in Grand Rapids, MI

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Assessment of a New Healthy Food Policy at Two Food Pantries in Grand Rapids, MI

Katherine Dale Hekstra

A Thesis Submitted to the Graduate Faculty of

GRAND VALLEY STATE UNIVERSITY

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Abstract

Background The purpose of food pantries has traditionally been to provide short-term assistance to food insecure individuals, however recent research indicates that food pantries are often used longer periods of time. This increased use indicates a greater importance for food pantries to distribute nutrient-dense foods to food insecure individuals, some who may suffer from chronic disease.

Objectives This study measured food pantry client satisfaction pre- and post- implementation of a new healthy food policy at two Grand Rapids, MI food pantries. An additional purpose was to measure the change in food environment and distribution of nutrient-dense foods after implementation of this policy.

Subjects Food pantry clients were recruited to complete a survey while waiting to utilize the pantry services. The distribution of foods was determined by completion of a food distribution checklist by pantry volunteers.

Methods Pantry clients completed a survey before and after implementation of the new policies. All collection periods lasted one month. Clients completed the pre survey prior to healthy food intervention. Clients then completed the survey at 3 and 6 months post implementation. Pantry volunteers completed the food distribution checklists during the same time periods. Demographic data on the clients was provided by Access of West Michigan. Nutrition Environmental Measurement Survey (NEMS) was used to measure nutrition environment at each pantry at baseline and 6 months post-implementation.

Analysis Frequencies were used to describe discrete characteristics. Food distribution checklists were analyzed for percentage change month to month.

Results The pre-surveys indicated clients wanted to have more access to fruits and vegetables. The clients noticed the increase in fruits and vegetables after implementation of the healthy food policy. Client satisfaction remained high throughout the implementation of the healthy food policy. NEMS indicated one of the pantries had an increase in the healthy food environment. The food distribution checklist at one pantry showed a greater amount of fruits/vegetables and whole grains were distributed to clients at both 3 and 6 months post-implementation.

Conclusion The new healthy food policy improved the nutrition environment and increased the amount of fruits, vegetables and whole grains selected by clients.

Table of Contents

Abstract	3
Table of Contents	5
List of Tables	8
List of Figures	8
Abbreviations	9
Introduction	10
Literature Review	14
Food insecurity and the Hunger-Obesity Paradox	15
Previous Food Pantry Evaluations	16
Summary	17
Materials and Methods	19
Design	19
Pantry Characteristics	19
Pantry 1	19
Pantry 2	19
Client Choice Pantries	19
Subject Selection	20
Sample Size	20
Study Procedures	21
Client Demographic Data	21
Client Food Security Status and Satisfaction	21

Pantry Food Distribution	22
Implementation of Policy	23
Food Pantry Nutrition Environment Assessment	24
Information Provided to the Pantries at the Studies Completion	24
Statistical Plan-Epi Info and SPSS	24
Ethical Considerations	25
Summary	25
Results	26
Survey Completion Rate	26
General Demographics	26
Self-reported Client Health Status	26
Pre-implementation Pantry Satisfaction and Desired Changes	27
Difficulty providing healthy foods, and reasons why. Food preparation knowledge	27
Post-implementation results	28
Food Pantry Environment (NEMS)	28
Pantry food checklists	28
Discussion	29
Tables and Figures	32
Definition of Terms	37
Appendices	39
Appendix A: Pantry 1 Healthy Food Policy	40
Appendix B: Pantry 2 Healthy Food Policy	43

Appendix C: Pantry 1 pre-implementation survey	45
Appendix D: Pantry 2 Pre-implementation Survey	49
Appendix E: Pantry 1 Post-Implementation Survey	53
Appendix F: Pantry 2 Post-implementation Survey	57
Appendix G: Food Pantry Distribution Checklist	61
References	62
Submission agreement for ScholarWorks@GVSU	65

List of Tables

Table 1: Survey completion rate at Pantry 1 and 2	32
Table 2: Age, gender and ethnicity distribution at Pantry 1 and 2	32
Table 3: Food security status of clients at Pantry 1 and 2	32
Table 4: Self-reported health status at Pantry 1 and 2	33
Table 5: Pantry clients' satisfaction and desired food changes prior to implementation of healthy food policy	33
Table 6: Reasons for difficulty providing healthy foods	34
Table 7: Client satisfaction with, and knowledge of healthy food policy and stated changes in foods provide by the pantry post healthy policy implementation at Pantry 1	34
Table 8: Client satisfaction with and knowledge of healthy food policy and stated changes in foods provide by the pantry post healthy policy implementation at Pantry 2	35
Table 9: Food distribution checklist completion rates at Pantry 1 and 2	35

List of Figures

Figure 1: Pantry clients' reported level of difficulty in providing healthy foods to their families (Pantry 1 n=464 and Pantry 2, n=535)	33
Figure 2: Change in the distribution of foods from pre (n=176) to 3 (n=270) and 6 months (n=234) post-implementation of healthy food policy at Pantry 1	36

Abbreviations

Abbreviation	Meaning
NEMS	Nutrition Environment Measures Survey
NOW	Nutritional Options for Wellness program
Pre	Pre-implementation
Post3	Three Month Post-Implementation
Post6	Six Month Post-Implementation
SNAP	Supplemental Nutrition Assistance Program
SPSS	Statistical Package for Social Science
USDA	United States Department of Agriculture

Introduction

Stable access to food is a basic human need and fundamental right. However, this need and right are not fulfilled for millions of people in the United States everyday. Food insecurity is defined as the limited access to adequate food due to a lack of money and other resources and affected 14.3 percent or 17.5 million households in 2013 (Coleman-Jensen, A, Christina, G, and Singh, A 2014). The United States Department of Agriculture's food and nutrition assistance programs are designed to increase food security for low-income households (Coleman-Jensen, A, Christina, G, and Singh, A 2014). It has been shown that the most recent economic recession has caused an increase in the number of Supplemental Nutrition Assistance Program (SNAP) participants across the United States, especially in locations that did not previously have large SNAP participation (Slack, T. 2014). Additionally, it has been shown that there is a strong correlation between using SNAP and seeking out aide from food pantries (Bhattarai, G.R., 2005). This has resulted in a large increase in food pantry use by low-income and food insecure individuals.

Food pantries provide groceries to food insecure individuals. These services are generally considered emergency or short-term assistance (America's Second Harvest, 2001). However, several studies suggest more households have come to depend on food pantries for long-term assistance (Gerger, JL 2001; Greger, 2002; Daponte, B.O. 1998). One study found up to 28% of a food pantry's clients were utilizing food pantry services for up to or more than eight months. Up to 40% of their clients frequented more than one food pantry in one month (Greger, 2002). This demonstrates that this is a rather stable population that continuously relies on a food pantry for aide. America's Second Harvest estimates throughout the United States, food pantries affiliated with America's Second Harvest food bank served approximately 21.3 million people

during the twelve months before their 2001 survey (America's Second Harvest, 2001). Data from Access of West Michigan indicates in 2015 in Kent County over 60,000 individuals visited a pantry within the Pantry Network one or more times last year — about one in every 10 Kent County residents.

Food insecurity is associated with several negative physical and physiological outcomes. These include poor health and lower physical and mental health scores (Stuff, J.E., 2004), physiological suffering (Robaina, K.A., 2013), and poor diet quality which contributes to chronic disease (Leung, C.W., 2014). Feeding America's quadrennial Hunger in America 2014 found a high prevalence of diabetes and hypertension in the populations served by the network of food banks (Weinfield, 2014). Changing what foods are available may improve the eating behaviors of these food insecure individuals at risk for chronic disease.

The high risk for chronic disease and increased use and dependence on food pantries by families motivated two food pantries in Grand Rapids, Michigan to improve the food quality provided to all of their clients. These two pantries in Kent County will be referred to as Pantry 1 and Pantry 2 to protect their privacy. Currently the food pantries are able to provide more nutritionally adequate food to a subset of their population. Participants in the Nutritional Options for Wellness (NOW) program are able to receive a larger selection of healthy options. This program is designed to provide healthy food and healthy living classes for individuals with a chronic disease that can be controlled by diet. The NOW program requires a doctor referral; the clients are then able to frequent the pantry more often, and are provided different options within the pantry. These options include low sodium, low fat and whole grain options. It was the hope of the two

pantries in this study to potentially provide these healthier options to all of their clients. The general populations of these two pantries are only able to frequent the pantry once per month. The new healthy food policy could not only help those that already have these chronic diseases but potentially prevent new cases from developing.

Recently Pantry 1 and Pantry 2 have taken steps toward increasing fresh, healthy and nutrient dense foods for all of their clients. In the spring of 2015, these pantries implemented a healthy food policy, which guided the organizations' food donations and distribution practices. Their policies were based on the Open Door healthy food donation policy created by the Open Door in Minnesota. The aims of these new healthy food policies were to increase the procurement and distribution of healthy, nutrient dense foods and decrease low nutrient dense foods (Appendix A and B).

This project evaluated the practices of these two pantries to determine if their healthy food policies were being followed. Both of the pantries had specific goals outlined within their policies (Appendix A and B). The main objectives of the healthy food policies were to prioritize or increase access to certain foods. For example, Pantry 1 wished to prioritize fresh fruits. The policies were ratified by their boards of directors, distributed to staff and volunteers and communicated to partners and donors. This study also surveyed the clients of the pantry to gather useful data for the pantries, such as clients' desired changes, attitudes on the change and awareness of the healthy food policy. Due to the differences in the NOW client population, frequency of use and food options, the NOW clients were excluded from the study.

This study was unique because to the best of the investigators knowledge, no other food pantries in Michigan have developed such a policy. Also, the approach to evaluating the changes in pantry practices was novel due to a lack of precedence. At the termination of the study all results were returned to the organizations. We hypothesized that there would be an increased distribution of fruits and vegetables. From baseline to 6 months post-implementation there would be a 50% increase in the distribution of fresh or perishable foods, as well as healthy options such as whole grains and low fat dairy. We also hypothesized that client satisfaction would increase post-policy implementation.

Literature Review

According to the Bureau of Labor Statistics, over the past ten years the cost of tomatoes has increased by 5% and apple costs increased by 29% (2015). These increased food costs force individuals to use coping strategies such as substituting fresh milk for powdered or fresh vegetables for canned or frozen in order to make their money last and their food stretch. Other common coping strategies include adding more inexpensive food such as noodles or potatoes and omitting unaffordable ingredients such as meat (Hoisington, A, 2002; Kempson et al, 2003). When these options are no longer available, when food and money run out, many people go hungry (Coleman-Jensen, A, Christina, G, and Singh, A 2014; Kempson et al, 2003). Food pantries have an opportunity to provide food that is desperately needed by the 14.3 percent of our population that are food insecure (Coleman-Jensen, A, Christina, G, and Singh, A, 2014).

The USDA has defined terms to help describe the ranges of food insecurity in individuals. The ranges are labeled as either food security or food insecurity. Within the food security range an individual can either have high food security or marginal food security. High food security is defined by the USDA as “no reported indications of food-access problems or limitations” and marginal food security is defined as “one or two reported indications - typically of anxiety over food sufficiency or shortage of food in the house. Little or no indication of changes in diets or food intake.” (Coleman-Jensen, A, Christina, G, and Singh, A, 2015). The food insecurity range also has two labels; an individual can have either low food security or very low food security. According to the USDA, people with low food insecurity report that their diet is reduced in quality, variety or desirability, but with no indication of reduced food intake amount. Those with very low food security, report multiple disruptions in eating patterns as well as reduced intake of

all food (Coleman-Jensen, A, Christina, G, and Singh, A, 2015). An individual is assessed by the USDA food security survey to determine their status. Food insecurity is a “house-hold level economic and social condition of limited or uncertain access to food.” (Coleman-Jensen, A, Christina, G, and Singh, A, 2015). This is different from hunger, which is a physiological condition that is felt on the individual level due to a lack of food and may be a result of food insecurity. Both of these have profound effects on a person’s day-to-day life.

Food insecurity and the Hunger-Obesity Paradox

Food insecurity is associated with several negative physical and physiological outcomes. These include poor health and lower physical and mental health scores (Stuff, J.E., 2004), physiological suffering (Robaina, K.A, 2013), and poor diet quality, which is known to increase chronic diseases (Leung, C.W., 2014). Obesity is a health problem faced by many throughout the United States, especially those that are low-income and food insecure (Dinour, L.M, Bergen, D., Yeh, M., 2007). Obesity is associated with an increase in the prevalence of conditions such as cardiovascular disease, diabetes mellitus, disability and increased mortality (Ogden, C.L., 2007). Food insecurity has been shown to increase a woman’s risk for obesity (Martin, 2007; Adams, 2003). This raises the question as to how someone that is food insecure, which by definition has limited access to food, could be obese. The hunger-obesity paradox helps explain this confounding phenomenon.

Several different hypotheses try to explain why a relationship exists between food insecurity and obesity. This relationship is reliably seen in adults, especially women, and not as often in

children. One explanation is that a food insecure individual will choose the “most dietary energy at the lowest costs, with the highest levels of satiety, palatability, pleasure, and satisfaction” leading them to nutrient poor options (Scheier, L.M, 2005). The paradox exists when individuals consume enough calories to meet or exceed their energy requirements but the calories consumed lack the dietary quality to promote optimal health and prevent chronic disease (Tamumihardjo, 1972). The next hypothesis is that the consumption of fruits and vegetables decreases in frequency as food insecurity worsens; this gap in their diet is filled by less nutrient dense foods that can promote obesity (Kendal, 1996). Another possible explanation is that food insecurity may cause changes in a person psychologically and behaviorally such as increased stress, depression, and a preoccupation with food, as well as physical limitations; all of which can increase an adult’s risk for obesity (Dinour, 2007). The last proposed explanation for this phenomenon is cyclical food restriction due to food insecurity, which can result in binge eating habits in times of plenty. Increased body fat, quicker weight gain and decreased lean muscle mass has been associated with cyclical food restrictions (Dinour, 2007). The cause of the hunger-obesity paradox is still unknown, however the need to provide nutritionally adequate food for food insecure individuals is all the more supported.

Previous Food Pantry Evaluations

Previous studies have evaluated if food pantries are able to provide a nutritionally balanced supply of food to their clients (Akobundu et al ,2004; Greger et al, 2002; Bell, M., Wilbur, L., and Smith, C, 1998). Akobundu et al found pre-made food bags provided by food pantries for their clients contained sufficient protein, fiber, iron and folate (2004). However, the food bags had low levels of vitamins A and C, calcium, fruit and dairy (Akobundu et al ,2004). A second

study found three-day food packets created using a standardized checklist contained sufficient protein, iron, and folate; however they contained low levels of calcium, Vitamin A and C (Greger et al, 2002). In both of these studies the food packets were analyzed, not the actual dietary intake of the pantry users. Once the pantry user takes the food home it is distributed throughout the family and each individual may not be receiving a sufficient amount of these nutrients.

Bell, M. et. al examined the diets of individual food pantry users via 24-hour diet recalls (1998). The participants consumed insufficient amounts of protein, iron, calcium, zinc, folate, and vitamins A, C, D and E. Additionally, they consumed inadequate amounts of fruit, vegetables, dairy and meat and too many low nutrient, high fat content foods (Bell, M., Wilbur, L., and Smith, C, 1998). This study shows that when examining the food bags, there appeared to be sufficient nutrients; however a closer look proved that the food did not provide sufficient nutrients once consumed by individuals. Therefore, recording the food distributed by the food pantries may not indicate the actual diets of the food pantry users. When actual recordings of the food intake were done, it was found that food pantry users rely too heavily on low nutrient, high fat content foods that will help them feel full, but will not promote health (Bell, M., Wilbur, L., and Smith, C, 1998).

Summary

According to the annual food security survey conducted by the USDA, very low food secure households can be characterized by the fact that in 2014 ninety-seven percent could not afford to eat balanced meals, 98% worried that their food would run out before they could afford to buy

more and 96% of individuals ate less than they should have because they could not afford more food (Coleman-Jensen, A, Christina, G, and Singh, A, 2015). Food pantries have an opportunity to help these very food insecure households by providing not only food to prevent hunger, but nutritionally adequate food to prevent or treat the chronic diseases experienced by a high percentage of those who use the food pantries. There is an opportunity for food pantries to be very intentional in their actions to fill the need for food in a way that will be truly beneficial for the 17.5 million households that are food insecure (Coleman-Jensen, A, Christina, G, and Singh, A 2014).

Materials and Methods

Design

This study is longitudinal with observational measurements at baseline, 3 and 6-months post implementation of healthy food policy.

Pantry Characteristics

Pantry 1

Pantry 1 is open to clients two days per week for a total of 5.5 hours. It serves 6,000 clients per year.

Pantry 2

Pantry 2 serves 15,000 people each year and is open to clients four days per week for a total of 19 hours. The demographics of Pantry 2 include a high percentage of Hispanic clients. Therefore, the client surveys were translated and administered in Spanish for greater client participation.

Client choice pantries

Both Pantry 2 and Pantry 1 operate as client choice food pantries. In this system, pantry clients work with pantry staff and volunteers to use the USDA's My Plate food guide to select the appropriate amount of foods within the main food groups for their family. The USDA's my plate food guide is adjusted based on family size and is a user-friendly visual aide; it is used throughout both pantries (<http://www.choosemyplate.gov/>).

Subject Selection

Convenience sampling was used to select individuals to complete pantry surveys and pantry food distribution checklists, both at baseline and post policy implementation at 3 and 6 months. At all time periods, the data was collected over a one-month period.

No client was surveyed more than once in the month. Both food pantries have policies in place that allow most pantry users to frequent the pantry only once per month.

Some food pantry users were able to frequent the pantry more than once a month. They were participants in the Nutritional Options for Wellness (NOW) program. This program is designed to provide healthy food and healthy living classes for individuals with a chronic disease that can be partially managed by diet. The NOW program requires a doctor referral, the clients are able to frequent the pantry more often and are provided different options within the pantry. Due to these differences in the client population, frequency of use and food options, these clients were excluded from the study. At Pantry 1, there were 66 NOW clients that utilized the pantry during the study and Pantry 2 had 50 NOW clients during the study.

Sample Size

Pantry 1 is able to accommodate approximately 500 clients per month. All clients were asked to complete the survey, with the goal of 250 surveys and food distribution checklists completed per month of data collection. This was a goal of 50% completion of both the survey and food distribution checklists.

Pantry 2 is able to accommodate approximately 40 clients per day. All clients were asked to complete the survey. The goal was 20 surveys and food distribution checklists to be completed per day, a total of 320 each completed per month. This was a goal of 50% completion of both the survey and food distribution checklist.

Study Procedures

Client Demographic Data

General client population demographics were gathered via the data collected by the pantries during their client intake and stored in a database by Access of West Michigan. Access of West Michigan provided demographic information, including age, gender and ethnicity.

Client Food Security Status and Satisfaction

Both the pre-implementation client survey (Appendix C and D) and post-implementation client survey (Appendix E and F) collected all USDA food insecurity questions, clients' sources of food, pantry satisfaction, difficulty providing healthy foods, reasons for difficulties and health status. The pre- and post- client survey differed in that the pre-survey asked clients which food changes they wished to see occur while the post-client survey asked the client if they had noticed any change in foods offered. Additionally the post-client survey asked if the clients were happy with the changes they noticed, as well asking about their knowledge of and level of support for the healthy food policy.

The USDA defines food insecurity status by the number of affirmative answers to the food insecurity questions. Households that contain children answer additional questions. The security status for a household without children ages 0-17 is defined as follows (USDA, Guide 2000):

- Raw score zero—High food security among adults
- Raw score 1-2—Marginal food security among adults
- Raw score 3-5—Low food security among adults
- Raw score 6-10—Very low food security among adults

The security status for a household with children ages 0-17 was defined as follows (USDA, Guide 2000):

- Raw score zero-2—High food security among adults
- Raw score 3-5—Marginal food security among adults
- Raw score 6-8—Low food security among adults
- Raw score 9-10—Very low food security among adults

At both locations clients must wait a variable amount of time before entering the pantry. This wait time was utilized to complete the survey. The survey was available every day the pantry was open to clients during the collection period. Pre-implementation data was collected for one month. After implementation of the healthy policy, data was collected for one month at both 3 and 6 months after initial data collection.

Pantry food distribution

Based on the pantry's healthy food policies (Appendix A and B), a food distribution checklist was created in order to track the priority foods selected and distributed to the clients. Pantry staff and volunteers used the food distribution checklist (Appendix G) to track the food leaving the pantry with the clients. Specifically, the food distribution checklist tracked fresh vegetables, fresh fruit, whole grain products, low sodium products, minimally processed fruit (frozen, dried,

canned and 100% juice), minimally processed vegetables (frozen, dried, canned and 100% juice), skim and low-fat milk, low fat dairy items and bottled water leaving the pantries. This food distribution checklist was designed to be easy to use, concise and the smallest possible burden on the users. One hundred and seventy-six clients at Pantry 1 and 410 clients at Pantry 2 completed the food distribution checklist at baseline. The number of food distribution checklists completed at Pantry 1 and 2 were 270 and 234 and 61 and 12 at 3 and 6 months, respectively. The change in food distribution was not analyzed at Pantry 2 due to the low number of completed food distribution checklists.

Implementation of policy

Pantry 1 had a soft rollout of their policy; they implemented small changes over a long period of time. Due to the soft rollout, researchers set the implementation date to collect data prior and post-implementation. They communicated their mission to create a healthy community in client outreach materials; however they did not have a formal introduction to the policy. Pantry leaders met with suppliers and donors, and informed them of the newly prioritized items.

Pantry 2 had a specific date for the introduction of the policy and did not implement any changes until that date. They also informed suppliers of their new goals and priorities. The pantry had a press release to inform the public and their community of the changes. Pantry 2 also has information about this policy on their website.

Food pantry nutrition environment assessment

The food environment at each pantry was assessed as though it was a grocery store using Nutrition Environment Measures Survey (NEMS). The purpose of this tool, which was developed by the University of Pennsylvania, is to assess grocery and convenience stores' nutrition environments. The tool focuses on eight types of food indicators; healthy main dishes, fruits, vegetables, whole grain bread, baked chips, beverages, barriers to accessibility and pricing (Glanz, K, 2007; <http://www.med.upenn.edu/nems/measures.shtml>). NEMS was completed at both pantries before policy implementation and 6 months after implementation.

Information Provided to the Pantries at the Studies Completion

A summary of all data collected and this thesis manuscript were provided to the pantries at the completion of the study

Statistical Plan-Epi Info and SPSS

The survey data was entered and cleaned using the Epi Info statistical software for epidemiology developed by the Centers for Disease Control and Prevention (Epi Info). SPSS was used to analyze the frequencies of discrete characteristics.

The checklists for the distribution of foods to clients were entered into Microsoft Excel. The number of each of the priority foods selected at baseline, 3-months and 6-months were entered into the spreadsheet. The percent change in the distribution of each priority food at each measurement was calculated.

Ethical Considerations

A conversation with Paul Reitemier, Chair of the Human Research Committee, indicated that this proposal was exempted for review by the IRB due to the following reason: Category of Exemption Category 101b-2. Participation was voluntary via a survey and was anonymous. The survey was administered in person and no names or coding was attached to the results.

Summary

The healthy food policy evaluation was longitudinal with observational data collected pre, 3 and 6 months post healthy policy implementation. Participants were from a convenience sample of individuals using Pantry 1 and 2. NOW pantry clients were excluded from this study.

Demographic characteristics were obtained from Access of West Michigan. Client satisfaction was measured with a self-completed survey; food leaving the pantry was determined by a food distribution checklist and the nutrition environment was determined by NEMS. This data was collected prior, and 3 and 6 months post implementation of the healthy food policy. Frequencies were used to describe discrete characteristics. Food distribution checklists were analyzed for percentage change from pre-implementation to 3 and 6 months post-implementation. A change in NEMS scores from pre-implementation to 6 months post-implementation was calculated.

Results

Survey completion rate

The completion rate of the client survey for both pantries is summarized in Table 1. There was a goal of 50% completion at both pantries. In the three collection periods, Pantry 1 had rates of 55%, 73% and 50%, respectively. Pantry 2 was able to reach the goal in the pre collection period with a rate of 51%. Post3 and post6 rates were less than the goal with rates of 20% and 28%, respectively.

General demographics

Demographic data obtained by Access of West Michigan is summarized in Table 2. Shown in Table 2, clients at Pantry 1 consisted of mainly Caucasians, while Pantry 2 clients consisted of a higher Hispanic population. Age and gender did not differ between pantries. Pantry 1 serves a large number of immigrants and this contributed to the higher number of other ethnicities in Table 2.

Table 3 indicates the food security status of clients, determined by the USDA food security questions. Pantry 1 and 2 had a similar frequency of households at the food insecure with children level, 47% and 41 %, respectively. Pantry 2 clients had a lower number of households at the food insecurity without children level as compared to Pantry 1.

Self-reported Client Health Status

The self-reported prevalence of health concerns was similar for both pantries (Table 4). A high percentage at both pantries indicated they were told by a doctor to lose weight. The responses for

all of the conditions were similar between the two pantries despite the very different locations and ethnic makeup. The reported prevalence of heart disease was the lowest of the conditions and needing to lose weight was the highest at both pantries.

Pre-implementation Pantry Satisfaction and Desired Changes

The level of satisfaction with the pantry and the desired changes reported during the pre-implementation collection period are summarized in Table 5. Overall, satisfaction was high at both pantries with 84.3% and 74.9% of clients stating either very satisfied or satisfied at Pantry 1 and 2, respectively. At both pantries there were large amounts of clients that stated a desire for increased fresh fruits and vegetables, and meat.

Difficulty providing healthy foods, and reasons why. Food preparation knowledge

Approximately 40% of clients at each pantry reported it was very difficult or difficult to provide their families with healthy food (Figure 1). For both Pantry 1 and 2, the cost of the food and the difficulty transporting groceries home were the most frequently cited difficulties to provide their families with healthy food (Table 6). Pantry 2 clients also indicated that “there is only a corner store near me (gas station, convenience store, etc)”, “low variety at the store close to me”, “no grocery store close to me”, and “time to prepare food”.

A large percentage of pantry clients, 90.3% at Pantry1 and 79.8% at Pantry 2, indicated they knew how to prepare or cook the foods obtained from the pantry.

Post-implementation results

Survey results from the post implementation of the healthy food policy are summarized in Table 7 (Pantry1) and Table 8 (Pantry 2). The level of satisfaction remained high at both pantries after the implementation of the healthy food policy. The clients' knowledge of the new healthy food policy continued to increase from 3 months to 6 months to approximately 90% at both pantries. At both pantries, an increase in fruits and vegetables stocked by the pantries was the most frequent change noticed by the pantry clients.

Food Pantry Environment (NEMS)

The NEMS score at Pantry 1 increased from 14 pre-implementation to 19 six months post-implementation. This is a 36% increase, indicating an increase in the availability of healthy foods at the pantry. Meanwhile at Pantry 2, the NEMS scored dropped from 17 at pre-implementation to 14 six months post- implementation. This is an 18% decrease indicating less availability of healthy foods at this pantry.

Pantry food distribution checklists

The percentage change in what was leaving Pantry 1 from collection period to collection period is in Figure 2. There was an increase in fresh apples from pre to post6 of 136%. Tomatoes increased from pre to post3 187% and pre to post6 103%. Additionally there was an increase in the following leaving the pantry; frozen vegetables, bottled water, whole grains, low fat dairy from pre to post3, and post6.

Discussion

This is the first study to assess client satisfaction and impact of a new healthy food policy on food distribution and change in nutrition environment at food pantries. Minnesota's Open Door Program implemented a similar healthy food policy; however their assessment of the impact of this policy was limited. This study indicates that client satisfaction was high at pre-implementation and remained unchanged with the implementation of the healthy food policy. The healthy food policy increased the distribution of fruits and vegetables and whole grains and increased the nutrition environment at one pantry.

Individuals who are food insecure often purchase low cost, high calorie foods to prevent hunger (Hoisington, A, 2002; Kempson et al, 2003). Fruits and vegetables may not be selected due to their expense and low caloric value (Coleman-Jensen, A, Christina, G, and Singh, A, 2015; Hoisington, A, 2002; Kempson et al, 2003). This study found despite high amounts of food insecurity in the food pantry clients, they desired increased access to fruits and vegetables. After implementation of the healthy food policy, the clients were aware of the increased amounts of fruits and vegetables in the pantry and the majority were satisfied with this change. This study also indicated the increased access resulted in increased distribution of fruits and vegetables to the clients. As there was a high prevalence of obesity and diabetes (Pantry 1), this increased distribution of fruits and vegetables may be preventative in the progression of disease. This study is unable to assess this relationship as we did not collect the diet intake of individuals in the household.

A large percentage of clients using these 2 food pantries indicated it was difficult to obtain healthy foods for their families. The cost of food and lack of transportation were most cited reasons for this difficulty. However, at Pantry 2 lack of access to healthy foods due to the food environment was also indicated due to the lack of grocery stores with healthy foods. These barriers to healthy food indicate the important role of the pantry's healthy food policy on increasing access to fruits and vegetables for these individuals.

Limitations of this study included that chronic diseases were self-reported. We did not ask about health insurance and it is possible this sample had limited health insurance and therefore low diagnosis of chronic disease. This is suggested by the number of NOW clients, the program requires a physician referral to access the NOW section of the pantry. The larger Pantry 2, which had a similar number of NOW clients to the much smaller Pantry 1, indicates possible undiagnosed chronic disease. There were additional limitations in this study, including, this study was longitudinal; however we obtained a convenience sample at each time point and did not follow the same clients through the intervention. The dependency on the volunteers to complete the food distribution checklist as the clients shopped resulted in varied collection rates at each measurement time. In fact, the poor collection at Pantry 2 made it impossible to measure the change in food distribution over the study time period. Finally, pre-implementation occurred during the spring, the 3-month collection time was in the summer and the 6-month collection time occurred in the fall. Therefore, the greater distribution of fruits and vegetables at 3 months was probably influenced by the summer produce donations. However, the increased distribution of whole grains at 3 and 6 months and the increased nutrition environment would not be influenced by the seasons. A strength of this study was the longitudinal collection of data to

measure the impact of the healthy food policy over time. Another strength was the successful implementation and outcomes of the healthy food policies in 2 pantries with different methods in implementing the policy, different ethnicities, and locations in within the city.

Recommendations for the future include a re-assessment of Pantry 2's nutritional environment.

The researchers plan to share results not only with Pantry 1 and 2 directors but other Grand Rapids Pantry directors to encourage adaptation of healthy food policy.

Tables and Figures

Table 1: Survey completion rate at Pantry 1 and 2

	Percent Completed- Pantry 1		Percent Completed- Pantry 2
Pre (n=102)	55%	Pre (n=267)	51%
Post3 (n=181)	73%	Post3 (n=121)	20%
Post6 (n=181)	50%	Post6 (n=147)	28%

Table 2: Age, gender and ethnicity distribution at Pantry 1 and 2*

	Pantry 1 (n=3,626)	Pantry 2 (n= 7,015)
Age		
Under 18	40%	47%
19-29	16%	14%
30-39	12%	11%
40-49	10%	10%
50-59	11%	10%
60-69	7%	5%
70-79	3%	2%
80+	1%	1%
% Female	53%	52%
% Male	46%	48%
Ethnicity		
African American	23%	29%
Hispanic	13%	46%
White/Caucasian	44%	10%
Other	16%	6%

*** Data provided by Access of West Michigan**

Table 3: Food security status of clients at Pantry 1 and 2

Food Security Status	Pantry 1 (n= 464)	Pantry 2 (n= 535)*
Food secure-With children	53%	59%
Food insecure- With children	47%	41%
Food secure-Without children	52%	72%
Food insecure- Without children	48%	28%
% Clients obtain 60% Food at pantry	38%	19%

***137 Surveys were completed in Spanish**

Table 4: Self-reported health status at Pantry 1 and 2

	Pantry 1 (n= 464)	Pantry 2 (n= 535)*
Lose weight	50.2%	40.0%
Hypertension	40.1%	34.8%
High cholesterol	31.9%	31.6%
Heart disease	12.5%	14.2%
Diabetes	30.4%	12.0

***137 Surveys were completed in Spanish**

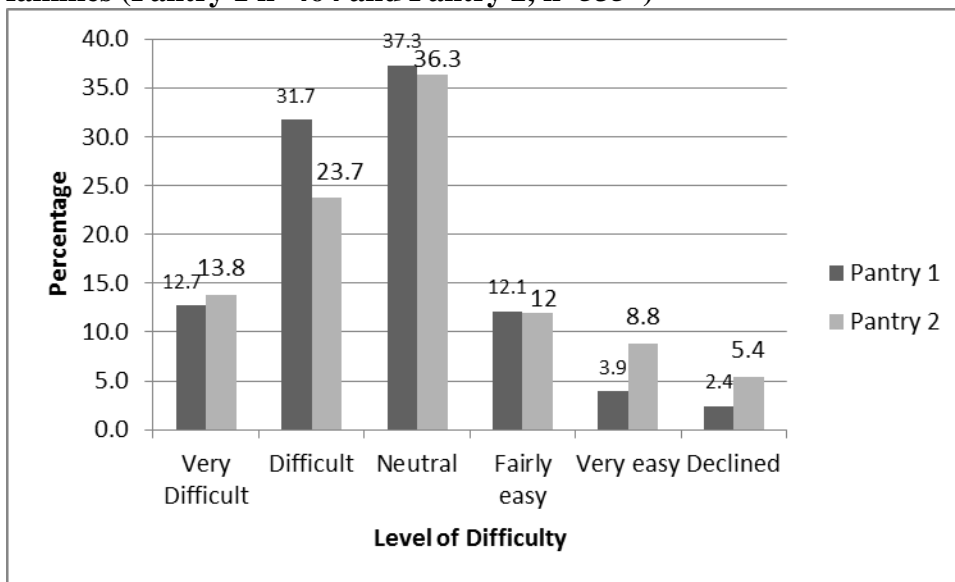
Table 5: Pantry clients’ satisfaction and desired food changes prior to implementation of healthy food policy

	Pantry 1 (n= 102)	Pantry 2 (n= 267)*
Level of Satisfaction with the Pantry		
Very Satisfied/Satisfied	84.3%	74.9%
Neutral	3.9%	7.9%
Unsatisfied/Very unsatisfied	8.8%	12.3%
Desired Changes		
More fresh fruits and vegetables	75.4%	62.2%
More frozen fruits and vegetables	27.9%	27.7%
More dairy	59.6%	26.8%
More eggs	26.9%	38.3%
More Whole grain	22.0%	15.2%
More Meat	71.4%	51.6%

***79 Surveys were completed in Spanish**

****More meat was not included as an option on the Spanish surveys**

Figure 1: Pantry clients’ reported level of difficulty in providing healthy foods to their families (Pantry 1 n=464 and Pantry 2, n=535*)



*** 137 Surveys were completed in Spanish**

Table 6: Reasons for difficulty providing healthy foods

	Pantry 1 (n= 464)	Pantry 2 (n= 535)*
Cost	54.5%	39.2%
Transportation to get the groceries home	12.93%	24.1%
Time to Prepare	6.47%	9.7%
No grocery store close to me	2.59%	14.4%
Only a corner store is near me (gas station, convenience store, etc)	3.12%	16.7%
Low variety at the store close to me	2.72%	15.8%

***137 Surveys were completed in Spanish**

Table 7: Client satisfaction with, and knowledge of healthy food policy and stated changes in foods provide by the pantry post healthy policy implementation at Pantry 1

	Post3 (n= 181)	Post6 (n= 181)
Level of Satisfaction with the Pantry		
Very Satisfied/Satisfied	79.5%	86.3%
Neutral	8.3%	3.3%
Unsatisfied/Very unsatisfied	9.4%	6.7%
Policy knowledge	89%	93.9%
Noticed change	54.1%	65.7%
Happy with change	62.4%	64.6%
Change		
More fresh fruits and vegetables	38.8%	47.6%
More frozen fruits and vegetables	12.4%	11.8%
More dairy	22.2%	20.8%
More eggs	23.2%	23.4%
More whole grain	11.5%	18.3%
Less candy/pop	7.8%	5.3%
More meat	19.9%	20.5%
Less meat	12.4%	30.5%

Table 8: Client satisfaction with and knowledge of healthy food policy and stated changes in foods provide by the pantry post healthy policy implementation at Pantry 2

	Post3 (n=121)*	Post6 (n= 147)**
Level of Satisfaction with the Pantry		
Very Satisfied/Satisfied	76.8%	83%
Neutral	9.1%	9.5%
Unsatisfied/Very unsatisfied	9.9%	4.7%
Policy knowledge	75.2%	91.2%
Noticed change	57%	85.7%
Happy with change	74.1%	66.1%
Change		
More fresh fruits and vegetables	60.2%	66.6%
More frozen fruits and vegetables	25.1%	33.3%
More dairy	28.6%	22.4%
More eggs	24.4%	19.0%
More whole grain	21.4%	46.9%
More meat	10.7%	8.3%
Less meat	22.1%	8.3%

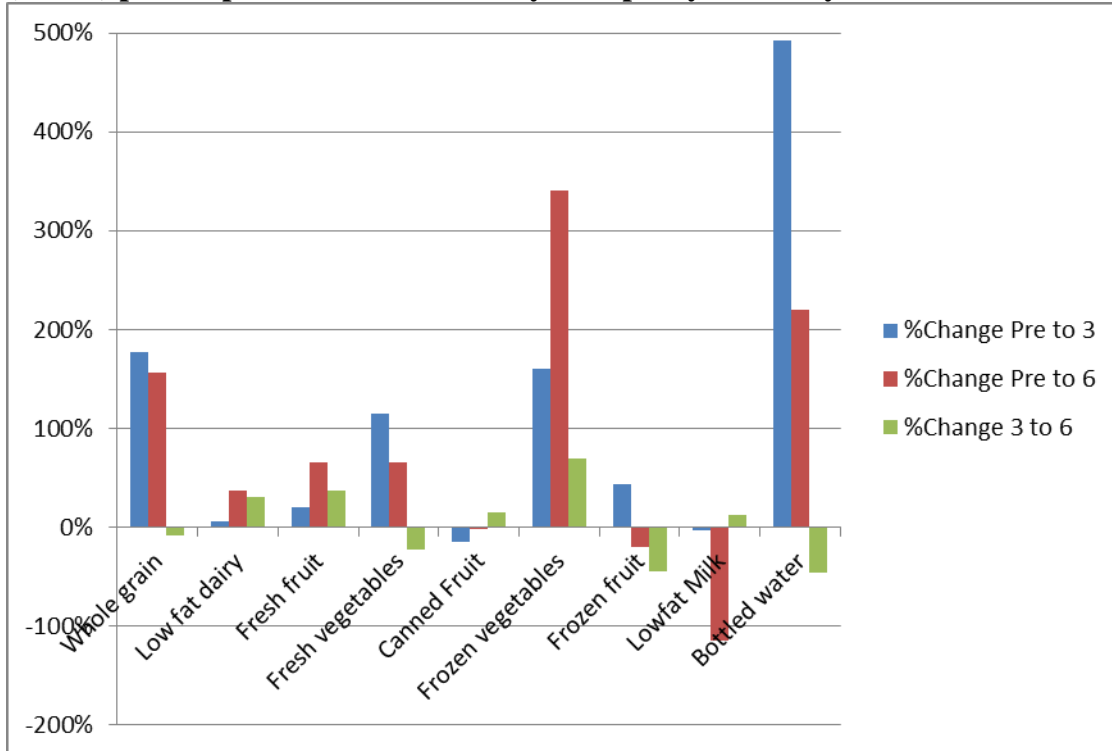
* 38 Surveys were completed in Spanish

**20 Surveys were completed in Spanish

Table 9: Food distribution checklist completion rates at Pantry 1 and 2

	Percent Completed- Pantry 1		Percent Completed- Pantry 2
Pre (n=176)	55%	Pre (n=410)	78%
Post3 (n=270)	73%	Post3 (n=61)	10%
Post6 (n=234)	50%	Post6 (n=12)	2%

Figure 2: Change in the distribution of foods from pre (n=176) to 3 (n=270) and 6 months (n=234) post-implementation of healthy food policy at Pantry 1



Definition of Terms

Food Security

Food security is defined as the state of having reliable access to a sufficient quantity of affordable, nutritious food.²⁸ The USDA uses four terms to define food security; high food security, marginal food security, low food security, very low food security. Food security is measured through the use of surveys such as the *Adult Food Security Survey Module* which have been created by the USDA.¹⁴ The number of affirmative answers to survey questions is used to determine food security. Scoring for the *Guide to Measuring household food security* is as follows:

The security status for a household without children ages 0-17 is defined as follows:

- Raw score zero—High food security among adults
- Raw score 1-2—Marginal food security among adults
- Raw score 3-5—Low food security among adults
- Raw score 6-10—Very low food security among adults

The security status for a household with children ages 0-17 is defined as follows:

- Raw score zero-2—High food security among adults
- Raw score 3-5—Marginal food security among adults
- Raw score 6-8—Low food security among adults
- Raw score 9-10—Very low food security among adults

Food Secure:

High food security – no reports of reduced quality, variety, or desirability of diet as well as little or no indication of reduced food intake.

Marginal food security – one or two indications of reduced quality, variety, or desirability of diet and little or no indication of reduced food intake.

Food Insecure:

Low food security – reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake.

Very low food security - reports of multiple indications of disrupted eating patterns and reduced food intake.

Appendices

Appendix A: Pantry 1 Healthy Food Policy

Pantry 1 Healthy Foods Policy

1. Purpose

Streams of Hope believes that every person has the right to access healthy foods. A Healthy Food Policy will outline practices, priorities and guidelines for the foods we purchase, receive, and distribute to the community. We have a unique opportunity to change the health of our community by providing our clients with good tasting, healthier foods that feed their mind, body, and soul. Our communities' health matters because it reduces health care cost, decreases chronic diseases, increases productivity in the classroom and workplace and improves the quality of life for all those involved.

2. Nutrition Guidelines & Commitments

The nutrition guidelines Streams of Hope will use are the recommendations from the “Dietary Guidelines for Healthy Americans” (www.health.gov/dietaryguidelines/2010.asp).

a. Key Recommendations:

1. Reduce sodium intake.
2. Consume less than 300 mg per day of dietary cholesterol.
3. Keep *trans* fatty acid consumption as low as possible which includes partially hydrogenated oils.
4. Reduce intake of foods that contain solid fats, added sugars, and refined grains.
5. Increase vegetable and fruit intake.
6. Increase whole-grain intake.
7. Increase intake of fat-free or low-fat milk and milk products, such as milk, yogurt, cheese, or fortified soy beverages.
8. Use oils to replace solid fats.
9. Choose a variety of protein food, which include seafood, lean meat and poultry, eggs, beans and peas, soy products, and unsalted nuts and seeds.

b. The following foods will be prioritized for distribution in the food center:

1. Fresh fruits
2. Fresh vegetables
3. Whole grain products
4. Food low in sodium
5. Food low in saturated and trans fats
6. Lean sources of protein (animal and vegetable sources, canned or frozen)
7. Fruit that is minimally processed (canned, frozen, or dried, whole, cut-up, or pureed) or 100% fruit juice
8. Vegetables that are minimally processed (frozen, canned, or dried/dehydrated, whole, cut-up or mashed) and 100% vegetable juice
9. Products that are high in calcium but also low in fat
10. Beverages including: 100% fruit juice, skim/low-fat milk, bottled water
11. Basic staple foods that tend to provide the best nutrition per dollar

c. The following foods will be minimally distributed in the food center:

1. Candy
2. All sodas in bottles or cans and other sugary, non-nutrient dense beverages
3. Sweet bakery type items such as donuts, cakes, cookies, cinnamon rolls, pies and pastries
4. Ramen Noodles

3. Implementation: Purchased and Donated Product

Guidelines for purchased product will be stricter since there is more control over what money is spent on. Guidelines for donated product will be a little less strict.

- a. Purchased Product – Streams of Hope is committed to purchasing only those food products that are on our recommended list and that provide the best nutrition per dollar.
- b. Donated Product – Streams of Hope will communicate healthy food drive guidelines to all food drive partners and stores. Streams of Hope will also consider the nutritional value of any donations offered to make sure that we are following the “Dietary Guidelines for Healthy Americans” . We will share our nutritional values and preferences with those donors and we will work with them to determine better healthier food options that can be donated to us or locate an alternative location to distribute their donations. Our pantry will strive to provide 75% healthier food options from our current selections for our clients.

4. Broader Nutrition Commitments

Streams of Hope will also offer and participate in additional activities that support healthy eating.

- a. Current activities:
 1. Nutritional Options for Wellness Program
 2. Nutritional Eating Classes
 3. Exercise Classes
 4. Taste-testing and cooking demonstrations
 5. Partnering with area farm markets and agencies for fresh produce
 6. Community Garden
- b. Future ideas and activities
 1. Plant fruit trees
 2. Partner with local organizations, schools, businesses, and churches to host a healthy food drive or a targeted food drive for specific healthy items.
 3. Display of healthy recipes made available to clients to take home.
 4. Streams of Hope can be a place of learning for the community on food and nutrition issues.

5. External Approach: Talking Points (The Importance of Offering Healthier Foods)

a. Eliminating Hunger vs. Healthier Food

ELIMINATING HUNGER IS NOT JUST ABOUT PROVIDING CALORIES, it is about the nutrients the healthier foods contain and their internal affect on our bodies. It is possible to feed individuals enough calories to maintain their weight, but they can still be malnourished. If we focus on the cost of providing healthier meals, we lose the ability to see the greater long-term economic impact that poor health and chronic disease has on society as a whole.

Food insecure individuals are less likely to eat fruit and vegetables and more likely to fill the gaps with processed foods high in sugar, fat, and calories. This type of eating leads to a high

risk of chronic disease and malnutrition (Food Insecurity Among Dutch Food Bank Recipients: A Cross-Sectional Study, BMJ Open 2014).

b. Limiting Choices

By offering healthier foods you are providing them MORE CHOICES. Many of the people we serve live in areas that have limited access to healthier options and if they have access to healthier foods it does not mean they can afford them. Healthier foods are the most expensive foods at the store. Providing healthier meals allows people to have the opportunity to eat the important nutrients needed to live a quality life free from chronic disease and malnutrition.

Low-income groups have a 20% higher risk of diabetes than high-income groups (Diabetes Research and Clinical Practice 2013).

c. Food Police

NOT OFFERING healthier meals is exercising GREATER REGULATION and CONTROL over the community's health. Surveys show that the poor, homeless, and hungry want access to healthy meals and fresh fruits and vegetables. The problem is they don't have access in their neighborhoods or the cost is too great at the stores. If we can provide a healthier meal we can model the importance of healthier eating and its impact on the body.

Americans who live in the most poverty-dense areas or are food insecure have higher rates of obesity than Americans who are food secure (American Diabetes Association 2011, FRAC.org 2013). Each year 300,000 people die of diseases from obesity.

d. Turning Away Donations

Providing healthier meals can have a massive impact on health care costs, leading to savings for all of us. The consumption of healthier meals proves to reduce chronic diseases and improve mental health. It is not about turning away foods; IT IS ABOUT ACCEPTING THE RIGHT FOODS that allows us to improve the quality of meals we provide in turn alleviating the health problems of the communities we serve.

In Michigan, 37% of adults and adolescents report consuming fruits and vegetables less than one time daily. The median daily vegetable intake among Michigan adults is a mere 1.6 servings. Participants in one study of food pantry users indicated foods eaten in less than acceptable quantities included fruits and vegetables and salad, dairy and meat. Many of them said they buy only canned fruit and vegetables because they are cheaper.

1. Emergency Foodshelf Network. Handout from Healthy Food Policy Roundtable. Attended on 07-23-14. www.emergencyfoodshelf.org
2. The Open Door Healthy Food Donation Policy. www.theopendoorpantry.org
3. California Nutrition and Healthy Eating Initiative Resource Guide

Appendix B: Pantry 2 Healthy Food Policy

Purpose

PANTRY 2 is committed to providing nutritious food to its neighbors. It is widely recognized that nutrition is a key component in maintaining health and preventing chronic disease. There is strong evidence that those affected by food insecurity are at the highest risk for obesity and other diet related illnesses. We believe that every person has the right to access healthy foods.

Nutrition Guidelines

The nutritional guidelines PANTRY 2 will use follow the recommendations from the “Dietary Guidelines for Healthy Americans”

PANTRY 2 will prioritize distributing:

- Fresh vegetables and fruit
- Whole grain products
- Food low in sodium
- Lean sources of protein (plant and animal sources; canned, dried, or frozen)
- Fruits that are minimally processed (canned, frozen, or dried; whole, cut-up, or pureed) or 100% fruit juice
- Vegetables that are minimally processed (frozen, canned, or dried/dehydrated; whole, cut-up, or mashed) or 100% vegetable juice
- Dairy products that are high in calcium, but also low in fat
- Beverages including: 100% fruit or vegetable juice, skim/low-fat milk, bottled water
- Basic staple foods that tend to provide the best nutrition per dollar

PANTRY 2 will not distribute:

- All diet or regular sodas in bottles or cans and other sugary, non-nutrient dense beverages (i.e. energy drinks, vitamin waters, punches or “ades”, sweetened iced teas, or Frappuccinos)
- Hard candy and lollipops
- Gum
- Chocolate bars or pieces (not including meal replacement, diet supplement or sport bars)
- Soft candy (i.e. marshmallows, caramels, taffy, licorice, gummy items)

Nutrition Rationale: These foods contain little to no vitamins, minerals, or other protective nutrients for the body. When eaten in excess, they lead to an increase in obesity, heart disease, and diabetes risks. These foods are also often more accessible for people on a limited food budget.

Implementation

Purchased Products:

- PANTRY 2 will purchase top quality, fresh produce to make available each week
- In addition to nutrition, PANTRY 2's purchased foods will reflect the culturally specific needs of our neighbors

Donated Products:

- PANTRY 2 will communicate healthy food drive guidelines to all new food drive partners
- PANTRY 2 will consider the nutritional value of any bulk donation offered and will not take donations that fall under the "Dietary Guidelines for Healthy Americans"
- In addition to foods that PANTRY 2 will not ever distribute, bulk donations of cookies, snack cakes, and chips will not be accepted
- We will share our nutritional values and preferences with those donors and we will work with them to determine better healthier food options that can be donated to us or locate an alternative location to distribute their donations.

Nutritional Commitments

PANTRY 2 will also offer and participate in additional activities that support healthy eating.

Current activities:

- Nutritional Options for Wellness Program
- Nutritional Eating Classes
- Exercise Classes
- Taste-testing and cooking demonstrations
- Partnering with area farm markets and agencies for fresh produce
- Pantry Garden (certified Farm)
- Fruit trees (orchard)

Future ideas and activities

- Partner with local organizations, schools, businesses, and churches to host a healthy food drive or a targeted food drive for specific healthy items.
- Display of healthy recipes made available to clients to take home.
- Better display of produce

Created	Dec 2014
Revised	

1. Emergency Foodshelf Network. Handout from Healthy Food Policy Roundtable. Attended on 07-23-14. www.emergencyfoodshelf.org
2. The Open Door Healthy Food Donation Policy. www.theopendoorpantry.org
3. California Nutrition and Healthy Eating Initiative Resource Guide

Appendix C: Pantry 1 pre-implementation survey

Pantry 1 Survey

Thank you for taking the time to complete our survey, we appreciate your input.

1. Overall, how satisfied are you with the Food Center? (Circle one)

1	2	3	4	5
Very Satisfied	Satisfied	Neutral	Unsatisfied	Very Unsatisfied

2. What percentage of your monthly food comes from:

(place an "X" on one box per question)

The Pantry 1 Center?

10%
 20%
 1/3
 40%
 1/2
 60%
 80%
 100%

The Grocery Store?

10%
 20%
 1/3
 40%
 1/2
 60%
 80%
 100%

Other food pantries, community meal programs, or mobile food trucks?

10%
 20%
 1/3
 40%
 1/2
 60%
 80%
 100%

Other sources? Examples, farmers markets, gardens, family/friends

10%
 20%
 1/3
 40%
 1/2
 60%
 80%
 100%

3. If you could change the selection of foods available at the pantry, what would you change? (Select as many as you want)

- | | |
|--|--|
| <input type="checkbox"/> More fresh fruits/vegetables | <input type="checkbox"/> Less fruits/vegetables |
| <input type="checkbox"/> More frozen fruits/vegetables | <input type="checkbox"/> Less Dairy (milk, butter, yogurt) |
| <input type="checkbox"/> More dairy (milk, butter, yogurt) | <input type="checkbox"/> Less eggs |
| <input type="checkbox"/> More eggs | <input type="checkbox"/> Less Whole grains |
| <input type="checkbox"/> More whole grains | <input type="checkbox"/> Less doughnuts/cakes |
| <input type="checkbox"/> More donuts/cakes | <input type="checkbox"/> Less ramen/canned pasta |
| <input type="checkbox"/> More ramen/canned pasta | <input type="checkbox"/> Less candy/pop |
| <input type="checkbox"/> More candy/pop | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> More Meat | <input type="checkbox"/> Less meat |

4. How difficult is it to provide your family with healthy foods, such as fruits and vegetables? (Circle one)

1	2	3	4	5
Very Difficult	Difficult	Neutral	Fairly Easy	Very Easy

5. If you selected 1 or 2, what makes it difficult to provide healthy foods? (Select as many as apply)

- | | |
|---|---|
| <input type="checkbox"/> Time to prepare | <input type="checkbox"/> Cost |
| <input type="checkbox"/> No grocery store close to me | <input type="checkbox"/> My family doesn't like fruits and vegetables |
| <input type="checkbox"/> Transportation to get the groceries home | <input type="checkbox"/> My family doesn't know how to prepare a lot of fruits and vegetables |
| <input type="checkbox"/> Low variety at the store close to me | <input type="checkbox"/> These foods are not a priority for my family |
| <input type="checkbox"/> Only a corner store is close to me (gas station, convenience store, etc) | <input type="checkbox"/> Other _____ |

6. Do you or someone in your household, know how to prepare or cook all of the food you get from the food pantry?

- A. Yes
- B. No

The following questions ask you about common health concerns. Knowing more about the health concerns of families who use the pantry will help guide our selection of foods for the Pantry.

Has a doctor or other health care professional ever said that you or someone in your household:	Yes	No
7. Should lose weight?		
8. Has hypertension, also called high blood pressure?		
9. Has high blood cholesterol?		
10. Has heart disease, or cardiovascular disease?		
11. Has diabetes or sugar disease, including borderline or pre-diabetes?		

Please tell me if any of these statements were often true, sometimes true, or never true for your household in the past 12 months. (Choose one answer per statement)

	Often True	Sometimes True	Never True
12. We worried whether our food would run out before we got money to buy more.			
13. The food that we bought just didn't last and we didn't have money to get more.			
14. We couldn't afford to eat balanced meals.			

15. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food?

- A. Yes
- B. No

16. (If Yes, to Question 15) How often did this happen?

- A. Almost every month
- B. Some months but not every month
- C. Only 1 or 2 months?

	Yes	No
17. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?		
18. In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food?		
19. In the last 12 months, did you lose weight because there wasn't enough money for food?		
20. In the last 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?		

21. (If yes to question 20) How often did this happen?

- A. Almost every month
- C. Some months but not every month
- D. Only 1 or 2 months?

Only answer questions 22-29 if there are children, ages 0-17, in your household.

Please tell me if any of these statements were often true, sometimes true, or never true for your household in the past 12 months. (Choose one answer per statement)

	Often True	Sometimes True	Never True
22. We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food.			
23. We couldn't feed our children a balanced meal, because we couldn't afford that.			
24. The children were not eating enough because we just couldn't afford enough food.			

	Yes	No
25. In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food?		
26. In the last 12 months, were the children ever hungry but you just couldn't afford more food?		
27. In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food?		

28. (If yes to question 27) How often did this happen?

- A. Almost every month
- B. Some months but not every month
- C. Only 1 or 2 months?

29. In the last 12 months, did any of the children ever not eat for a whole day because there wasn't enough money for food?

- A. Yes
- B. No

Appendix D: Pantry 2 Pre-implementation Survey

Pantry 2 Survey

Thank you for taking the time to complete our survey, we appreciate your input.

1. Overall, how satisfied are you with the Food Center? (Circle one)

- | | | | | |
|----------------|-----------|---------|-------------|------------------|
| 1 | 2 | 3 | 4 | 5 |
| Very Satisfied | Satisfied | Neutral | Unsatisfied | Very Unsatisfied |

2. What percentage of your monthly food comes from:

(place an "X" on one box per question)

The Pantry 2 food Center?

- 10% 20% 40% 60% 80% 100%

The Grocery Store?

- 10% 20% 40% 60% 80% 100%

Other food pantries, community meal programs, or mobile food trucks?

- 10% 20% 40% 60% 80% 100%

Other sources? Examples, farmers markets, gardens, family/friends

- 10% 20% 40% 60% 80% 100%

3. If you could change the selection of foods available at the pantry, what would you change? (Select as many as you want)

- | | |
|--|--|
| <input type="checkbox"/> More fresh fruits/vegetables | <input type="checkbox"/> Less fruits/vegetables |
| <input type="checkbox"/> More frozen fruits/vegetables | <input type="checkbox"/> Less Dairy (milk, butter, yogurt) |
| <input type="checkbox"/> More dairy (milk, butter, yogurt) | <input type="checkbox"/> Less eggs |
| <input type="checkbox"/> More eggs | <input type="checkbox"/> Less Whole grains |
| <input type="checkbox"/> More whole grains | <input type="checkbox"/> Less doughnuts/cakes |
| <input type="checkbox"/> More donuts/cakes | <input type="checkbox"/> Less ramen/canned pasta |
| <input type="checkbox"/> More ramen/canned pasta | <input type="checkbox"/> Less candy/pop |
| <input type="checkbox"/> More candy/pop | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> More Meat | <input type="checkbox"/> Less meat |

4. How difficult is it to provide your family with healthy foods, such as fruits and vegetables? (Circle one)

- | | | | | |
|----------------|-----------|---------|-------------|-----------|
| 1 | 2 | 3 | 4 | 5 |
| Very Difficult | Difficult | Neutral | Fairly Easy | Very Easy |

5. If you selected 1 or 2, what makes it difficult to provide healthy foods? (Select as many as apply)

- | | |
|---|---|
| <input type="checkbox"/> Time to prepare | <input type="checkbox"/> Cost |
| <input type="checkbox"/> No grocery store close to me | <input type="checkbox"/> My family doesn't like fruits and vegetables |
| <input type="checkbox"/> Transportation to get the groceries home | <input type="checkbox"/> My family doesn't know how to prepare a lot of fruits and vegetables |
| <input type="checkbox"/> Low variety at the store close to me | <input type="checkbox"/> These foods are not a priority for my family |
| <input type="checkbox"/> Only a corner store is close to me (gas station, convenience store, etc) | <input type="checkbox"/> Other _____ |

6. Do you or someone in your household, know how to prepare or cook all of the food you get from the food pantry?

- A. Yes
B. No

The following questions ask you about common health concerns. Knowing more about the health concerns of families who use the pantry will help guide our selection of foods for the Pantry

Has a doctor or other health care professional ever said that you or someone in your household:	Yes	No
7. Should lose weight?		
8. Has hypertension, also called high blood pressure?		
9. Has high blood cholesterol?		
10. Has heart disease, or cardiovascular disease?		
11. Has diabetes or sugar disease, including borderline or pre-diabetes?		

Please tell me if any of these statements were often true, sometimes true, or never true for your household in the past 12 months. (Choose one answer per statement)

	Often True	Sometimes True	Never True
12. We worried whether our food would run out before we got money to buy more.			
13. The food that we bought just didn't last and we didn't have money to get more.			
14. We couldn't afford to eat balanced meals.			

15. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food?

- A. Yes
- B. No

16. (If Yes, to Question 15) How often did this happen?

- D. Almost every month
- E. Some months but not every month
- F. Only 1 or 2 months?

	Yes	No
17. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?		
18. In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food?		
19. In the last 12 months, did you lose weight because there wasn't enough money for food?		
20. In the last 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?		

21. (If yes to question 20) How often did this happen?

- A. Almost every month
- E. Some months but not every month
- F. Only 1 or 2 months?

Only answer questions 22-29 if there are children, ages 0-17, in your household.

Please tell me if any of these statements were often true, sometimes true, or never true for your household in the past 12 months. (Choose one answer per statement)

	Often True	Sometimes True	Never True
22. We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food.			
23. We couldn't feed our children a balanced meal, because we couldn't afford that.			
24. The children were not eating enough because we just couldn't afford enough food.			

	Yes	No
25. In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food?		
26. In the last 12 months, were the children ever hungry but you just couldn't afford more food?		
27. In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food?		

28. (If yes to question 27) How often did this happen?

- A. Almost every month
- B. Some months but not every month
- C. Only 1 or 2 months?

29. In the last 12 months, did any of the children ever not eat for a whole day because there wasn't enough money for food?

- A. Yes
- B. No

Appendix E: Pantry 1 Post-Implementation Survey

Pantry 1 Survey

Thank you for taking the time to complete our survey, we appreciate your input.

1. Overall, how satisfied are you with the pantry? (Circle one)

1 2 3 4 5
Very Satisfied Satisfied Neutral Unsatisfied Very
Unsatisfied

2. What percentage of your monthly food comes from:

The Pantry 1 Center?

10% 20% 1/3 40% 1/2 60% 80% 100%

The Grocery Store?

10% 20% 1/3 40% 1/2 60% 80% 100%

Other food pantries, community meal programs, or mobile food trucks?

10% 20% 1/3 40% 1/2 60% 80% 100%

Other sources? Examples, farmers markets, gardens, family/friends

10% 20% 1/3 40% 1/2 60% 80% 100%

3. We value that everyone has a right to eat healthy. Are you aware of our mission to create a healthy community?

- a. Yes
- b. No

4. In the past three months, have you noticed a change in the foods available at the pantry?

- a. Yes
- b. No

5. (If Yes, to question 4) Of the foods listed, what has changed? (Select as many as you want)

- | | |
|--|--|
| <input type="checkbox"/> More fresh fruits/vegetables | <input type="checkbox"/> Less fruits/vegetables |
| <input type="checkbox"/> More frozen fruits/vegetables | <input type="checkbox"/> Less Dairy (milk, butter, yogurt) |
| <input type="checkbox"/> More dairy (milk, butter, yogurt) | <input type="checkbox"/> Less eggs |
| <input type="checkbox"/> More eggs | <input type="checkbox"/> Less Whole grains |
| <input type="checkbox"/> More whole grains | <input type="checkbox"/> Less doughnuts/cakes |
| <input type="checkbox"/> More donuts/cakes | <input type="checkbox"/> Less ramen/canned pasta |
| <input type="checkbox"/> More ramen/canned pasta | <input type="checkbox"/> Less candy/pop |
| <input type="checkbox"/> More candy/pop | <input type="checkbox"/> Less meat |
| <input type="checkbox"/> More meat | <input type="checkbox"/> Other _____ |

6. Are you happy with the changes you have noticed?

- a. Yes
- b. No

7. How difficult is it to provide your family with healthy foods, such as fruits and vegetables? (Circle one)

1 2 3 4 5
 Very Difficult Difficult Neutral Fairly Easy Very Easy

8. If you selected 1 or 2, what makes it difficult to provide healthy foods? (Select as many as apply)

- | | |
|--|--|
| <input type="checkbox"/> Time to prepare
<input type="checkbox"/> No grocery store close to me
<input type="checkbox"/> Transportation to get the groceries home
<input type="checkbox"/> Low variety at the store close to me
<input type="checkbox"/> Only a corner store is close to me (gas station, convenience store, etc) | <input type="checkbox"/> Cost
<input type="checkbox"/> My family doesn't like fruits and vegetables
<input type="checkbox"/> My family doesn't know how to prepare a lot of fruits and vegetables
<input type="checkbox"/> These foods are not a priority for my family
<input type="checkbox"/> Other _____ |
|--|--|

9. Do you or someone in your household, know how to prepare or cook all of the food you get from the food pantry?

- A. Yes
- B. No

The following questions ask you about common health concerns. Knowing more about the health concerns of families who use the pantry will help guide our selection of foods for the Pantry.

Has a doctor or other health care professional ever said that you or someone in your household:	Yes	No
10. Should lose weight?		
11. Has hypertension, also called high blood pressure?		
12. Has high blood cholesterol?		
13. Has heart disease, or cardiovascular disease?		
14. Has diabetes or sugar disease, including borderline or pre-diabetes?		

Please tell me any of these statements were often true, sometimes true, or never true for your household in the past 12 months. Chose one answer per statement.

	Often True	Sometimes True	Never True
15. We worried whether our food would run out before we got money to buy more.			
16. The food that we bought just didn't last and we didn't have money to get more.			
17. We couldn't afford to eat balanced meals.			

18. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food?

- A. Yes
- B. No

19. (If Yes, to Question 18) How often did this happen?

- G. Almost every month
- H. Some months but not every month
- I. Only 1 or 2 months?

	Yes	No
20. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?		
21. In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food?		
22. In the last 12 months, did you lose weight because there wasn't enough money for food?		
23. In the last 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?		

24. (If yes to question 23) How often did this happen?

- A. Almost every month
- G. Some months but not every month
- H. Only 1 or 2 months

Only answer questions 25-32 if there are children, ages 0-17, in your household.

Please tell me any of these statements were often true, sometimes true, or never true for your household in the past 12 months. Chose one answer per statement.

	Often True	Sometimes True	Never True
25. We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food.			
26. We couldn't feed our children a balanced meal, because we couldn't afford that.			
27. The children were not eating enough because we just couldn't afford enough food.			

	Yes	No
28. In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food?		
29. In the last 12 months, were the children ever hungry but you just couldn't afford more food?		
30. In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food?		

31. (If yes to question 30) How often did this happen?

- D. Almost every month
- E. Some months but not every month
- F. Only 1 or 2 months?

32. In the last 12 months, did any of the children ever not eat for a whole day because there wasn't enough money for food?

- B. Yes
- C. No

Appendix F: Pantry 2 Post-implementation Survey

Pantry 2 Survey

Thank you for taking the time to complete our survey, we appreciate your input.

1. Overall, how satisfied are you with the pantry? (Circle one)

1 2 3 4 5
Very Satisfied Satisfied Neutral Unsatisfied Very
Unsatisfied

2. What percentage of your monthly food comes from:

The Pantry 2's food Center?

10% 20% 40% 60% 80% 100%

The Grocery Store?

10% 20% 40% 60% 80% 100%

Other food pantries, community meal programs, or mobile food trucks?

10% 20% 40% 60% 80% 100%

Other sources? Examples, farmers markets, gardens, family/friends

10% 20% 40% 60% 80% 100%

3. Are you aware of the healthy food policy at Pantry 2?

- A. Yes
- B. No

4. In the past three months, have you noticed a change in the foods available at the pantry?

- A. Yes
- B. No

5. If you could change the selection of foods available at the pantry, what would you change? (Select as many as you want)

- | | |
|--|--|
| <input type="checkbox"/> More fresh fruits/vegetables | <input type="checkbox"/> Less Dairy (milk, butter, yogurt) |
| <input type="checkbox"/> More frozen fruits/vegetables | <input type="checkbox"/> Less eggs |
| <input type="checkbox"/> More dairy (milk, butter, yogurt) | <input type="checkbox"/> Less Whole grains |
| <input type="checkbox"/> More eggs | <input type="checkbox"/> Less doughnuts/cakes |
| <input type="checkbox"/> More whole grains | <input type="checkbox"/> Less ramen/canned pasta |
| <input type="checkbox"/> More donuts/cakes | <input type="checkbox"/> Less candy/pop |
| <input type="checkbox"/> More ramen/canned pasta | <input type="checkbox"/> Other_____ |
| <input type="checkbox"/> More candy/pop | <input type="checkbox"/> More meat |
| <input type="checkbox"/> Less fruits/vegetables | <input type="checkbox"/> Less meat |

6. Are you happy with the changes you have noticed?

- A. Yes
- B. No

7. How difficult is it to provide your family with healthy foods, such as fruits and vegetables? (Circle one)

- | | | | | |
|----------------|-----------|---------|-------------|-----------|
| 1 | 2 | 3 | 4 | 5 |
| Very Difficult | Difficult | Neutral | Fairly Easy | Very Easy |

8. If you selected 1 or 2, what makes it difficult to provide healthy foods? (Select as many as apply)

- | | |
|--|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> Time to prepare <input type="checkbox"/> No grocery store close to me <input type="checkbox"/> Transportation to get the groceries home <input type="checkbox"/> Low variety at the store close to me <input type="checkbox"/> Only a corner store is close to me (gas station, convenience store, etc) | <ul style="list-style-type: none"> <input type="checkbox"/> Cost <input type="checkbox"/> My family doesn't like fruits and vegetables <input type="checkbox"/> My family doesn't know how to prepare a lot of fruits and vegetables <input type="checkbox"/> These foods are not a priority for my family <input type="checkbox"/> Other _____ |
|--|--|

9. Do you or someone in your household, know how to prepare or cook all of the food you get from the food pantry?

- A. Yes
- B. No

The following questions ask you about common health concerns. Knowing more about the health concerns of families who use the pantry will help guide our selection of foods for the Pantry.

Has a doctor or other health care professional ever said that you or someone in your household:	Yes	No
10. Should lose weight?		
11. Has hypertension, also called high blood pressure?		
12. Has high blood cholesterol?		
13. Has heart disease, or cardiovascular disease?		
14. Has diabetes or sugar disease, including borderline or pre-diabetes?		

Please tell me any of these statements were often true, sometimes true, or never true for your household in the past 12 months. Chose one answer per statement.

	Often True	Sometimes True	Never True
15. We worried whether our food would run out before we got money to buy more.			
16. The food that we bought just didn't last and we didn't have money to get more.			
17. We couldn't afford to eat balanced meals.			

18. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food?

- A. Yes
- B. No

19. (If Yes, to Question 18) How often did this happen?

- A. Almost every month
- B. Some months but not every month
- C. Only 1 or 2 months?

	Yes	No
20. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?		
21. In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food?		
22. In the last 12 months, did you lose weight because there wasn't enough money for food?		
23. In the last 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?		

24. (If yes to question 23) How often did this happen?

- A. Almost every month
- B. Some months but not every month
- C. Only 1 or 2 months

Only answer questions 25-32 if there are children, ages 0-17, in your household.

Please tell me any of these statements were often true, sometimes true, or never true for your household in the past 12 months. Chose one answer per statement.

	Often True	Sometimes True	Never True
25. We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food.			
26. We couldn't feed our children a balanced meal, because we couldn't afford that.			
27. The children were not eating enough because we just couldn't afford enough food.			

	Yes	No
28. In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food?		
29. In the last 12 months, were the children ever hungry but you just couldn't afford more food?		
30. In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food?		

31. (If yes to question 30) How often did this happen?

- A. Almost every month
- B. Some months but not every month
- C. Only 1 or 2 months?

32. In the last 12 months, did any of the children ever not eat for a whole day because there wasn't enough money for food?

- A. Yes
- B. No

Appendix G: Food Pantry Checklist

Pantry Checklist

Thank you so much for your help collecting this information! Please fill out one form per client or family. Please record if the client chooses one of the items listed. Place a number on the line showing how many of each item they chose. Some of the categories are very broad; please count the amount that fit in the category. Please also list the number individuals in the family.

 1 Melon or One Melon

 Household Size

 Total number whole grain items. Examples: breads, rice, pasta

 Total number of low fat dairy items, excluding milk. Examples: Cheese, yogurt

Fruit

 Dried berries
 Canned Fruit
 Apples Red/Green
 Pineapple
 Berries _____
 Bananas
 Melon _____
 100% Fruit juice

Vegetables

 100% Vegetable Juice
 Canned vegetables
 Low sodium canned vegetables
 Potatoes brown/red
 Lettuce head/bagged
 Tomatoes regular/cherry
 Pepper red/yellow/green
 Carrots
 Mushroom
 Squash
 Zucchini
 Cucumber
 Corn

Frozen

 Vegetables
 Fruit

Milk

 Fat Free
 Low-fat (1%)
 2%
 Whole or Vit. D
 Almond milk
 Lactose free milk
 Bottled Water

References

- Akobundu, U. O., Cohen, N. L., Laus, M. J., Schulte, M. J., & Soussloff, M. N. (2004). Vitamins A and C, calcium, fruit, and dairy products are limited in food pantries. *Journal of the American Dietetic Association, 104*(5), 811-813.
- America's Second Harvest. (2001). *Hunger in America 2001, National Report, Final Report*. America's Second Harvest, Chicago, IL.
- Bell, M., Wilbur, L., & Smith, C. (1998). Nutritional status of persons using a local emergency food system program in middle America. *Journal of the American Dietetic Association, 98*(9), 1031-1033.
- Bhattarai, G. R., P. A. Duffy, and J. Raymond. (2005). Use of Food Pantries and Food Stamps in Low-Income Households in the United States. *Journal of Consumer Affairs 39*(2) 276-98.
- Bickel, Gary, et al.(2000). Guide to measuring household food security, revised 2000. *Department of Agriculture Food and Nutrition Service. USDA.gov* (Visited November 1. 2015)
- Bureau of Labor Statistics, U.S. Department of Labor, *The Economics Daily*, Average prices for food items, June 2013 on the Internet at http://www.bls.gov/opub/ted/2013/ted_20130812.htm (visited *January 07, 2015*).
- Daponte, B. O., Lewis, G. H., Sanders, S., & Taylor, L. (1998). Food pantry use among low-income households in Allegheny County, Pennsylvania. *Journal of Nutrition Education, 30*(1), 50-57.
- Dinour, L. M., D. Bergen, and M. C. Yeh. (2007). The Food Insecurity-Obesity Paradox: A Review of the Literature and the Role Food Stamps May Play. *Journal of the American Dietetic Association 107*(11) 1952-61.
- Coleman-Jensen, Alisha, Christian Gregory, and Matthew Rabbitt. Definitions of Food Security. USDA. <http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security.aspx> (visited November 1, 2015).
- Coleman-Jensen, Alisha, Christian Gregory, and Anita Singh. Household Food Security in the United States in 2013, ERR-173, U.S. Department of Agriculture, Economic Research Service, September 2014.
- Choose My Plate. USDA. <http://www.choosemyplate.gov/about.html> (Visited January 07,2015).
- Epi Info Version 2.0. Centers for Disease Control and Prevention (CDC). Available at <http://www.cdc.gov/epiinfo/about.htm>.
- Greger, J. L., Maly, A., Jensen, N., Kuhn, J., Monson, K., & Stocks, A. (2002). Food pantries can provide nutritionally adequate food packets but need help to become effective referral units

for public assistance programs. *Journal of the American Dietetic Association*, 102(8), 1126-1128.

Greger, J. L., & Maly, A. M. (2001). Chronic use of food pantries is associated with food insecurity in Wisconsin. *FASEB Journal*, 15(5), A984-A984.

Hoisington, A., Shultz, J. A., & Butkus, S. (2002). Coping strategies and nutrition education needs among food pantry users. *Journal of Nutrition Education and Behavior*, 34(6), 326-333.

Kempson, K., Keenan, D. P., Sadani, P. S., & Adler, A. (2003). Maintaining food sufficiency: Coping strategies identified by limited-resource individuals versus nutrition educators. *Journal of Nutrition Education and Behavior*, 35(4), 179-188.

Kendall, A., Olson, C.M., Frongillo EA Jr. Relationship of hunger and food insecurity to food availability and consumption. *Journal of American Dietetic Association*. 96(10) 1019-1024.

Leung, C. W., Epel, E. S., Ritchie, L. D., Crawford, P. B., & Laraia, B. A. (2014). Food Insecurity Is Inversely Associated with Diet Quality of Lower-Income Adults. *Journal of the Academy of Nutrition and Dietetics*, 114(12), 1943-U1329.

Ogden, C., Yanovski, S.Z., Carroll, M.D., Flegal, K.M. (2007). The Epidemiology of Obesity. *Gastroenterology*, 132(6), 2087-2102.

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

The Open Door Healthy Food Donation Policy. Accessed on the internet at www.theopendoorpantry.org (January 07, 2015)

Robaina, K. A., & Martin, K. S. (2013). Food Insecurity, Poor Diet Quality, and Obesity among Food Pantry Participants in Hartford, CT. *Journal of Nutrition Education and Behavior*, 45(2), 159-164.

Scheier, L. M. (2005). What Is the Hunger-Obesity Paradox? *Journal of the American Dietetic Association*, 105(6), 883-+.

Slack, T., and C. A. Myers. "The Great Recession and the Changing Geography of Food Stamp Receipt." *Population Research and Policy Review*, 33(1), 63-79.

Stuff, J. E., Casey, P. H., Szeto, K. L., Gossett, J. M., Robbins, J. M., Simpson, P. M., et al. (2004). Household food insecurity is associated with adult health status. *Journal of Nutrition*, 134(9), 2330-2335.

Tanumihardjo, Sherry A., et al. (2007). Poverty, Obesity, and Malnutrition: An International Perspective Recognizing the Paradox. *Journal of the American Dietetic Association*, 107(11), 1966-72.

Wienfield, N, Et. al. Hunger in America National report 2015. *National Report, Final Report.*
America's Second Harvest, Chicago, IL

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