

8-1-2012

IS IT REALLY MORE EXPENSIVE TO EAT HEALTHY FOODS? A CASE STUDY APPROACH

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IS IT REALLY MORE EXPENSIVE TO EAT HEALTHY FOODS? A CASE STUDY
APPROACH

by

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A Thesis
Submitted in Partial Fulfillment of the Requirements for the
Masters of Science Degree

Department of Food and Nutrition
in the Graduate School
Southern Illinois University Carbondale
August 2012

THESIS APPROVAL

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STUDY APPROACH

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Laura Hilliard

A Thesis Submitted in Partial
Fulfillment of the Requirements
for the Degree of
Masters of Science
in the field of Food and Nutrition

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December 1, 2011

AN ABSTRACT OF THE THESIS OF

Laura Hilliard, for the Masters of Science degree in Food and Nutrition, presented on December 1 2011, at Southern Illinois University Carbondale.

TITLE: IS IT REALLY MORE EXPENSIVE TO EAT HEALTHY FOODS? A CASE STUDY APPROACH

MAJOR PROFESSOR: Dr. Sara Long Roth

Many believe eating healthfully is too expensive and therefore opt for less expensive, lower quality foods. There are disputes between research groups and government as to whether nutrition policies should be adjusted. Federal programs have made strides in combating food insecurity through nutrition help and education programs, but many question if the amount of skills in food selection and preparation can compensate for limited incomes. Regardless, the low incomes' diets are inadequate to meet nutritional needs and people are suffering the consequences.

The purpose of this study was to determine the extent one can follow the USDA Food Guide Pyramid recommendations while only receiving SNAP benefits. Nine volunteers attempted to limit their food budget to \$4.50 a day while maintaining MyPyramid recommendations. This study was a qualitative case study conducted in Southern Illinois in the spring of 2011. This study was descriptive, and the investigator gathered and analyzed the data.

DEDICATION

I dedicate this thesis to my ridiculously amazing fiancé, Mike Luczkiw. I love how you went through the pain of being one of my thesis participants just to get to know me! That is real dedication, and I am forever thankful. It definitely worked out in our favor. You continually stuck by my side cheering me on through this process, tears and all. I could not ask for a better companion in life. I thank God for you daily!

ACKNOWLEDGMENTS

First and foremost, I would like to thank my participants. There is no way this project could have taken place without your help, dedication, and encouragement. Each of you went over and above my expectations. Thank you Gingo for the crazy idea to even start this huge project. Your love for knowledge spurs me on to continually grow and learn.

Also, thank you to my thesis committee. Thank you Dr. Long for supporting me and answering numerous thesis questions throughout the past two years. You allowed me to dig in to my interest. You reeled me in when it was needed yet you still let me make this thesis my own, and I appreciate that freedom. You are a great encourager. Thank you Dr. Null for always thinking outside the box and helping me take this thesis to the next level. I so appreciate your guidance. Thank Dr. Chwalisz for your patience and guidance through a qualitative research project. I can't begin to imagine what this project would have been like if you hadn't stepped in and guided me. It is an honor to work with such an intellectual group of women.

Last but not least, thank you to all of my family and friends who never stopped believing in me throughout this process. When I thought it couldn't be done- you all were right there cheering me along.

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CHAPTER 1

INTRODUCTION

Years ago in my community nutrition course my eyes were opened to the paradox of obesity and food insecurity. At first I was astonished and bewildered, but after considering the subject for some time it made complete sense to me. Obesity rates related to food insecurity have intrigued me ever since. Fast forward years down the road, my stepmother is asking me to create a meal plan following the Food Guide Pyramid and would cost her around \$3.15 a day. A recent newscast about food insecurity had sparked her interest. The broadcast claimed eating healthfully was not feasible on a tight budget and, therefore, the poor were increasingly becoming obese. The media concluded obesity as inevitable because the food insecure population has no knowledge of how to prepare a low-cost nutritious meal. After viewing the broadcast, she was also enticed by the irony of obesity rates among the food insecure. She now has a desire to show those living in food insecurity that it is possible to achieve a healthy and nutritious diet on an extremely low budget. Her idea seemed crazy, but it was exciting at the same time.

Soon after discussing this topic with others, I learned of a challenge from Feeding Illinois. During the Hunger Action Month in September (2010), the Feeding Illinois organization urged anyone and everyone to live on \$4.50 a day for seven days. The amount chosen signified the average daily Supplemental Nutrition Assistance Program (SNAP) benefit, formerly known as food stamps, for an individual in Illinois. Their hope was to cause empathy towards for who depend on SNAP benefits for their

source of nutrition. Feeding Illinois wanted the challenge to expose barriers to accessing high quality nutritious foods on SNAP benefits alone. Rules were as follows: spend no more than \$4.50 per day including beverages; don't use food already on hand unless you deduct the value from your weekly amount, salt and pepper don't count, but all other seasonings, cooking oils, condiments, snacks and drinks do; don't accept food from family, friends, coworkers, and others; try to include fresh produce and healthy protein each day; keep track of expenses, food choices, etc. and share your experiences on the Feeding Illinois blog (1).

An excerpt from "The Chicagoist" My Week on (Fake) Food Stamps - The Chicagoist Monday, October 4, 2010 at 9:42AM

Even though I only spent about \$25 on a week's groceries thanks to a couple coupons and the extremely low prices at Aldi, I had trouble following the challenge. I learned that yes, I can eat *something* on that amount. But no, I cannot eat a variety of flavorful good-for-you *food* on it. By Thursday, I had plowed through nearly a pound of peanut butter, was out of baby carrots, and was dreading eating yet another pretty nasty (but cheap!) apple. That was pretty much the extent of my fresh produce and healthy protein. I spent the rest of the week eating fake cheese foods, pasta, soup and chicken nuggets. In other words, I ate a lot of dextrose, carrageenan, locust bean gum and many other mystery food additives. In other words, thinking about what I ate makes me feel gross. What did I learn from this week? That eating this cheaply sucks? Well, yeah. But also I realized how limited your options are when you have so little money to spend. Eating on the cheap is not only nutrition-less, but flavorless. I accepted the free food offers not necessarily because I was hungry, but because I was craving some more flavor (2).

Similarly, the Poverty Diet Challenge in Moline, Illinois is in its second year. Their allotment is \$3.47 per day for food. Again, the community's goal is to have others experience how true hunger feels like many who rely on food stamps do all too often. Stacy Mitchell, Hy-Vee's registered dietitian, prepared a low-budget menu for those who participated in the challenge. Her menu fulfilled the USDA Food Guide Pyramid recommendations minus one or two vegetables. The menu did not include any prepared meals. "From my point of view as a dietitian, you can eat very healthy on a very small budget," she said, showing her menu as evidence. "It looks like quite a bit of food on paper. It's all about budgeting and planning." (3).

Statement of the Problem:

People believe eating healthfully costs too much money and therefore opt for less expensive and lower quality foods. There is a dispute between groups in research and government as to whether nutrition policies should be adjusted. Federal programs have made long strides in combating food insecurity through various nutrition help and education programs, but many still question if the amount of skills in food selection and preparation can compensate for limited incomes (4). Regardless, those on low incomes have diets that are inadequate to meet nutritional needs. This population is bound to suffer the health consequences.

Purpose of the Study:

The purpose of this study was to determine whether or not healthy eating has to be expensive. Results of this study should help determine what measures must be taken to follow the Food Guide Pyramid while maintaining a very limited budget.

Research Questions:

1. What challenges does the average person experience when following the Food Guide Pyramid on less than or equal to \$4.50 a day?
2. How can USDA's educational materials aid people living on an extremely low budget to eat a healthy diet as defined by the Food Guide Pyramid?
3. To what extent can the average person meet the Food Guide Pyramid recommendations while on a SNAP budgeted diet?

Research Design:

The purpose of this study was to determine the extent to which one can follow USDA Food Guide Pyramid recommendations while only receiving SNAP benefits. This study was a qualitative case study conducted in the Midwest region of America in the spring of 2011. This case study was descriptive, and the investigator gathered and analyzed the data.

Sample:

The population consisted of 10 free-living individuals. There were five males and five females. All subjects were able to shop for groceries on their own and prepare their own meals. Each person lives a different lifestyle with varying schedules and time constraints.

Data Collection Procedures:

Meetings and journaling took place during the study. At the first meeting participants were given educational materials from USDA provided on usda.gov (Appendix A) to guide them to budget their money and choose healthful foods. Subjects completed an online survey daily to help describe their experience. They also logged all of the food they ate in MyPyramid Tracker to demonstrate how closely they followed Food Guide Pyramid recommendations.

Significance of the Problem:

There are gaps in nutrition education programs, including government programs, for low-income populations. Large amounts of money are poured into keeping the hungry supplied with food, but not much action has been taken to give clear definitions of how to prepare nutritious, inexpensive foods. If more effort were given to educate the population dependent upon SNAP benefits, then a great sum of money would be saved in the long run (5).

Delimitations and Limitations:

Delimitations are as follows: in a case study there is a chance that results may or may not contain the researcher's bias. The researcher is the interpreter of the data, so this leaves the possibility that the researcher's bias could impact results. The researcher must work to not allow this to happen. Also, all subjects volunteered participate in this study. It takes a certain driven person to want to participate in this type of study. Therefore, they were motivated enough to accept this study as their own personal challenge. Most individuals do not have the ambition to want to be in an experiment such as this one.

There are also some limitations in this study. The subject pool consisted of educated individuals who have knowledge of the Food Guide Pyramid; therefore, results cannot be generalized to the low-income. The subject pool consisted of mostly Caucasians in their mid to late 20s. Those in their 20s had not had the same experience in the grocery store and cooking as many participating in SNAP. The subjects are not a perfect replica of the average SNAP participant.

The MyPyramid application on USDA's website did not provide all foods participants were eating as options on their website. Participants had to improvise and choose foods close to what they had eaten at times. Therefore, it was impossible to know absolutely how well they followed MyPyramid. It is also important to note that this study took place in the spring and early summer. For that reason, subjects were able to access produce at a lower price than other times of the year. Additionally, subjects had more time than usual to prepare meals.

Assumptions:

As the researcher, I assumed that it was possible to follow the Food Guide Pyramid off of \$4.50 for a food budget. I also believed, to be successful, the subjects would have to devote a lot more time and effort to preparing their food than they would like or were used to. I did not believe that all of the subjects will be successful, because I did not think that they would be willing to devote enough time to planning their meals. I assumed time constraints and food preparation skills would be the main sources of trouble for the participants, not the limited budget.

Abbreviations:

SNAP: an acronym used for Supplemental Nutrition Assistance Program

DRI: Dietary Reference Intake

RDA: Recommended Dietary Allowances

USDA: United States Department of Agriculture

Healthy Eating Index (HEI) is a measure of diet quality that assesses conformance to federal dietary guidance. USDA's primary use of the HEI is to monitor the diet quality of the U.S. population and the low-income subpopulation.

Dietary Guidelines: Guidelines set by the USDA to provide authoritative advice for people two years and older about how good dietary habits can promote health and reduce risk for major chronic diseases. They serve as the basis for Federal food and nutrition education programs.

Consumer Price Index for Urban Consumers (CPI-U): The Consumer Price Index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services. The CPI reflects spending patterns for each of two population groups: all urban consumers and urban wage earners and clerical workers. The all urban consumer group represents about 87 percent of the total U.S. population.

Summary:

Food insecurity leads to many health problems including obesity. Many people who experience food insecurity believe eating healthfully costs too much money. Their food selections are usually less expensive and lower in quality compared to the higher income population groups. Groups in research and in the government opinions differ in whether adjusting nutrition policies should occur. Federal programs are making headway in fighting against food insecurity, yet there is still a lot to be done in the way of nutrition education. The amount of food selection and preparation skill is a factor that not many have researched (4).

This study will help to shine light on the problems typical people face while trying to live healthfully off of SNAP allotments. There has not been much research done in this area. A case study will provide a foundation for others to find areas that need to be researched and built upon on this subject.

CHAPTER 2

LITERATURE REVIEW

Food Insecurity:

Food security is access by all people, at all times, to enough food to sustain an active and healthy life. At minimum, food security requires nutritionally adequate and safe foods readily availability of and assured ability to attain personally acceptable foods in a socially acceptable way. Food insecurity, on the other hand, is the limited or uncertain ability to acquire or consume personally acceptable foods in adequate quality or sufficient quantity in a socially acceptable way. Not knowing where one's next meal will come from also constitutes food insecurity (6).

Poverty is defined by two different federal measures: poverty threshold and poverty guidelines. These guidelines are adjusted annually to reflect changes in the consumer price index for urban consumers (CPI-U). Poverty thresholds are the income dollar amounts below which a family would be considered to be living in poverty. These thresholds are used in calculating poverty population statistics. The poverty threshold calculation is budgeted to where the amount of money allotted for food is considered to be just barely adequate. Poverty guidelines are a more simplified version of poverty thresholds, and are used for organizational purposes like determining eligibility of the Supplemental Nutrition Assistance Program (SNAP) (7). The Department of Health and Human Services releases poverty guidelines annually based on the previous year's poverty thresholds. Many federal assistance programs use official poverty guidelines to set eligibility standards to receive benefits. If an individual exceeds the standards, they

are automatically ineligible (8). Therefore, many needy individuals cannot benefit from these programs because they do not meet the complete criterion. Also, only 60% of those eligible to participate in SNAP choose to do so, and those who tend to make the effort to participate often are more likely to suffer from hunger (9).

The United States is the world's biggest food exporter and among the most prosperous nations. Still, food insecurity remains an issue. In 2009, 43.6 million U.S. citizens were classified as poor, which was a large increase from 39.8 million in 2008 and 37.3 million in 2007. The amount of people in poverty in 2009 is the largest number ever recorded in the 51 years poverty estimates have been proposed. Also, the poverty rate was the highest it has been since 1994 at 14.3 percent, a 1.1 percent, statistically significant, increase from 2008 (10).

Also in 2009 one in five children lived in poverty in the United States. Almost half of those children lived in extreme poverty (10). The number of families in poverty was 11.1 percent or 8.8 million. Nineteen million (6.3 percent) of Americans lived in extreme poverty, meaning their family's cash income was less than half of the poverty line. That equates to less than \$11,000 a year for a family of four (10).

Food insecurity tends to affect specific geographical, socioeconomic, and demographic groups more than others (11). The working poor are commonly subject to food insecurity. In 2005, 36 percent of emergency food pantry users had at least one adult working. Minimum wage is not enough to lift a family above the federal poverty threshold, and many minimum wage jobs do not provide fringe benefits to help with healthcare (12).

Households with children are two times more likely to experience food insecurity. In 2007, 15.8 percent of homes with children were considered to be food insecure at some point during the year. In about half of those households, just the adults were food insecure. Still, in 8.3 percent of households with children, at least one of the children was also food insecure at one period throughout the year. In 0.8 percent of households with children, one or more of the children went through the worst food-insecure condition measured by USDA, very low food security. In very low food security meals are irregular and food intake is below levels considered sufficient by caregivers. Single parents often experience higher food insecurity. Working to provide childcare while earning minimum wage is usually not sufficient (13).

Ethnic minorities are also subject to insecurity. A national disparity of hardship among racial and ethnic groups exist. African Americans and Hispanics are more likely to be insecure compared to Caucasians. In 2007, the poverty rate for White, non-Hispanics was 8.2 percent while it was 24.3 percent for African Americans and 20.6 percent for all Hispanics (14).

Low-income older adults often have medical expenses and special diets that are costly causing them to choose between rent, medication, and/or food. In 2007, 9.8 percent of adults above age 65 were categorized as poor in relation to poverty guidelines (15). Between years 2008 and 2009, the poverty rate for those above age 65 dropped from 9.7 percent to 8.9 percent (16). Still, hunger is an issue amongst the elderly population.

Inner city and rural dwellers often lack adequate transportation and have limited access to quality supermarkets (17). Farmers today don't have major control over products they produce, cost of their supplies, or profit from their commodities. Cost for seed, fertilizer, equipment, and loans have continued to increase while prices for crops have dropped. Ironically, food insecurity is not uncommon for farmers (18).

The homeless inevitably experience hunger. Lack of food, deficient diets, poor nutrition, and nutrition-related tribulations are common among the homeless (19). Low income groups are also more susceptible to food insecurity. Food insecurity can lead to physical, social, and mental health problems. Living with food insecurity leads children to poorer health. Additionally, it affects growth, cognitive development, academics, and physical and emotional health. Low-income populations tend to be at a higher risk for poor nutrition and are less likely to practice dietary behaviors associated with reduced risk of chronic diseases (4).

Obesity

Obesity has been declared an epidemic in America, while food insecurity has been labeled America's hidden crisis. Strangely enough it is not uncommon for these two phenomena to go hand-in-hand. There have been three main reasons recognized for this occurrence in research: the need to maximize caloric intake, the tradeoff between food quantity and quality, and overeating when food is available (20). A study examining food practices of women with children found low-income respondents to have significantly higher mean BMI scores compared to that of higher income respondents (21). Low-income households may try to stretch their food dollar by forfeiting nutritious

foods and opting for cheap, high calorie foods. Various studies have found that a common way to cope with food insecurity is to focus on quantity and not quality of foods. Households will usually change the quality of diets before changing quantity. This leads to a full feeling, but not nourishment. Research also indicates that continual ups and downs in food availability can lead people to eat larger amounts when food is available compared to what they normally would consume. Supplemental Nutrition Assistance Program users often experience this as their funds are only available at certain times of the month. Eventually, this cycle of overeating leads to weight gain (22).

Common Food Practices of Low-income Groups:

Studies have shown only 40% of Americans met the former 5-A-Day guidelines, and fewer than 10% appear to meet the 2005 Dietary Guidelines general and subgroup recommendations for fruits and vegetables (23). In 2000, Economic Research Service researchers Huang and Lin found typical household demand for dairy products, fruits, and vegetables hinge on food prices more so than other food categories (24). The National Health and Nutrition Examination Survey (NHANES) 2001-2002 data revealed people living in households with an annual income above \$25,000 consume on average 5.56 servings of fruit and vegetables a day, while those in households with an annual income less than \$25,000 consume about 5.04 servings a day. Those in higher income households also consume less starchy vegetables (1.28 vs 1.41 servings), more orange vegetables (0.2 vs 0.16 servings), and more dark-green vegetables (0.29 vs 0.16 servings) in comparison to the lower income households (23). Low-income mothers have been found to be significantly less likely to follow several low fat and low-cholesterol eating practices. They were also less likely to eat low fat luncheon meats,

use skim or 1-percent milk, and more likely to eat fried chicken. These mothers were significantly more likely to eat chips four or more times a week, and significantly less likely to remove skin from chicken (21).

In New Jersey, interviews were conducted with 51 nutrition educators from the New Jersey Expanded Food and Nutrition Education Program (EFNEP) and Food Stamp Nutrition Education Program (SNAP-Ed) regarding food management practices of their participants. Comments from the interviews indicated most meals were prepared with inexpensive foods and were often diluted when possible. Some of these dilutions are a large nutritional concern like the practice of diluting infant formula. Another common practice was adjusting rotten foods in order to consume them. For example, slime was washed off meats, mold was cut from breads, rotten parts of fruits and vegetables were removed, and insects were separated from cereals. Parents were likely to forfeit eating for children and significant others as well as teenagers for their younger siblings. Additionally, parents were prone to binge when food was available and encourage their children to do the same; this is a key predictor of obesity in low-income groups. Another common theme presented was the practice of buying expensive foods and eating out when food stamps and public assistance were first distributed. Nevertheless, by the end of the month when finances became tight, less expensive foods were purchased. Sometimes mothers were reported to give children large amounts empty calories (i.e. cheese puffs) to provide food for an entire day (25).

Barriers to Eating on a Budget:

Convenience Foods

Research by the Economic Research Service of USDA indicates that food eaten away from home accounts for less than half a serving of fruit and only one quarter of a serving of vegetables (most of which are French fries) each day. The Bureau of Labor Statistics' Consumer Expenditure Survey (CEX) links income to a household's entire food purchases, purchases of "food away from home" (carryout or dine-in restaurants), and food spent at grocery stores. The CEX reveals qualities like taste, convenience, enjoyment, and variety are all important to consumers. The 2004-05 CEX data show a wide variety in food eating patterns. For example, the lowest income group examined with incomes of about 50-75 percent of the poverty level (a four-person household with annual before-tax incomes between \$10,000 and \$14,999) spends 26 cents of a dollar on food away from home. Economic Research Service found foods eaten away from home are often higher in calories yet lower in nutrients than food eaten at home. This group also spent another 22 cents of a dollar on "other foods," a miscellaneous category including frozen prepared meals, snack foods, canned and packaged prepared foods, condiments and seasonings, sugars and other sweets, fats, oils, and non-alcoholic beverages. Meats rank next at 21 cents of a dollar, and then fruits and vegetables (frozen, fresh, canned, dried, or as juice) at 12 cents of a dollar. Cereals and bakery products were at 10 cents of a dollar, and dairy was the lowest at 9 cents of a dollar (26).

One study found food shelf and food store usage mainly increased the odds of purchasing “less healthy” food groups for low-income women. Shopping at discount grocery stores, such as Aldi, has been shown to double the odds that low-income women will buy convenience foods. Shopping at big box retail stores like Wal-mart is associated with a 49% decrease in vegetable purchases while doubling the likelihood the women will purchase sweet beverages/snacks. Shopping at neighborhood stores doubled the odds purchasing sweet beverages/snacks and non-whole grains. Presence of convenience type stores in Census tracts has been associated with increased prevalence of overweight, obesity, and hypertension among adults in that region (27).

Cooking Time:

Federal programs have made long strides in combating food insecurity through various nutrition help and education programs; however, many still question how much skill in food selection and preparation can compensate for limited incomes. There is not a large amount of literature on food preparation practices among low-income groups (4).

One study observed nutritional vulnerability of 153 women seeking some sort of charitable food assistance. They assessed the women through three separate 24-hour recalls to estimate extent of food preparation and its link to nutritional status. Results indicated there was a strong positive correlation between frequency of preparation from scratch and complexity of food preparation. Intricacy of at-home food preparation was greater amongst women in households without evident hunger. Frequency of preparation was also positively associated with intake of all food groups and a larger range of nutrients consumed. On average, food prepared from scratch also was

connected to an increase of one serving of fruit and vegetables per day, a half serving of grain products, and one-third serving of meat or meat alternatives. However, there was not a significant difference in foods prepared from scratch and severity of household insecurity (4).

Barriers to Eating Healthfully on a Budget:

Consumer research has revealed food cost as the single most important factor influencing household food purchasing choices (28). Furthermore, higher income groups are more likely to meet dietary recommendations (23). Fruit and vegetable consumption has been linked to socioeconomic status. Low income, low levels of education, low nutrition knowledge, living in poor neighborhoods, and low socioeconomic status have all shown to be predictors of low consumption of fruits and vegetables (27).

In 1892 a study was conducted where amount of energy and nutrients available were compared to price of the food item. The study found grains and sugars were cheaper than fresh produce. The same study was conducted over 100 years later to find the same results. Thus, foods consistent with dietary guidelines, such as fruits and vegetables, tend to have higher prices than grains, fats, and sugars; it has been this way for over a century (29).

Nutrient adequacy is positively associated with food price. Nutrient-rich foods are associated with higher food costs per 100g. (30). Cassady found an average family of four participating in SNAP that shops in a very-low-income neighborhood would have to allot 43% of their food stamp budget on fruits and vegetables to get the recommended

amount of the 2005 Dietary Guidelines. Households in the lowest two income quintiles would have to allocate 70% of their food-at-home budget to fruits and vegetables (23).

Experimental research provides evidence that lowering the cost of healthy foods or raising prices of less healthy foods can cause more healthy food purchases. However, most of these studies have taken place in highly controlled environments. There are few “real world” experiments. One true experiment in New Zealand had 1000 supermarkets decrease their healthful food prices by 12.5% and viewed the changes in purchases. The lowered prices led to a 10% increase in combined fruit and vegetable purchases (31).

The Supplemental Nutrition Assistance Program has been shown to increase food security in households. However, results from a number of studies have shown that not all who qualify for food assistance receive it. Kim and Mergoupis (1997) reviewed data from the U.S. Census Survey of Income and Program Participation that describe earnings, welfare participation, income, assets, and work behavior in regard to those who participate in SNAP. Their study found only one-third of those who qualified for SNAP benefits actually received them (32). Many factors can contribute to this such as a lack of awareness about SNAP among those qualified or lack of motivation to finish the application process (9).

Misconceptions of the Possibility of Eating Healthfully on a Budget:

The USDA used a quadratic program to create optimal dietary guides for different cost levels. Quadratic and linear programming systems are “mathematical approaches to optimize a linear or nonlinear function of decision variables, while respecting

numerous constraints." Linear programming is often used in aiding guidelines in developing countries (33). The program helps determine how dietary recommendations can be met while examining the relationship between dietary quality and cost of the diet (33).

A study in California developed a market basket for the 2005 Dietary Guidelines for fruits and vegetables. The objective of the study was to compare the 2005 Dietary Guidelines market basket to the Thrifty Food Plan market basket for a family of four. The study found the 2005 Dietary Guidelines market basket cost 4% less than the Thrifty Food Plan ($P < 0.001$) and was significantly less expensive in low-income areas at \$65 ($P < 0.005$) and also in bulk supermarkets at \$59 ($P < 0.05$). This happened despite the 2005 Guidelines raising the recommended amount fruits and vegetables intakes from 5 to 9 servings a day. These results provide evidence contrary to the belief that cost is a barrier to consuming MyPyramid recommendations for fruits and vegetables (23).

Price and nutrient adequacy scores are positively related; however, there is a wide variability in these scores. Specifically, fruits and vegetables are not correlated directly with food cost. Fruits and vegetables surpass many other foods when it comes to nutrients-per-calorie and nutrient-to-price ratios. Lean meats and low-fat dairy products share many of the same advantages (30). Another study looked at the connection between amounts spent on food and dietary quality using the Alternative Healthy Eating Index. Results verify that higher spending is linked to more healthful diets. Interestingly, differences in dietary quality were seen within each spending

quintile, so dietary improvements could occur without increased spending. They concluded that cost is not the main factor in dietary improvement (29).

Supplemental Nutrition Assistance Program:

Programs designed to enhance nutrition knowledge and improve food skills have been used as interventions for low-income groups as a large part of the public health battle against food insecurity in low-income groups for years (4). One of the best known government food assistance programs in the United States is the Supplemental Nutrition Assistance Program (SNAP) (32). SNAP helps to put food on the table for over 40 million people each month (34). In the 2005 fiscal year USDA spent \$51 billion on food assistance programs for the low-income population. Individuals participating in these programs must meet a means test requirement that compares their household's income to a poverty threshold (5).

SNAP originates from the Food Stamp Plan which began in 1939 to lend a hand to impoverished families in the Depression era. In 1961, a pilot project tested the program and was authorized in 1964 to become the Food Stamp Program. In 1974, Congress required all states to offer food stamps to low-income households, and the program dramatically increased in size. The Food Stamp Act of 1977 made important changes in program regulations by cracking down on different eligibility requirements and administration. It also removed the necessity that food stamps must be bought by members. Previously, participants had to purchase the stamps, which put up a barrier to many possible participants (8). In October 2008 The Food Stamp program changed to SNAP to show that the program promotes healthy eating and nutrition. The new name

also displays that it is a modern program using Electron Benefit Transfer (EBT) cards instead of obsolete paper food stamp coupons. The program is still the same, and the name did not change the benefits (35). SNAP benefits are based on average national food prices (36).

Supplement Nutrition Assistance Program Gaps:

Studies of the SNAP indicate that the program has been successful in increasing food purchased and eaten by participants. Still, there is a very important component that needs to be addressed. With increasing concern in relation to the rise in obesity and diet-related diseases, many have started to focus on how the program can also increase the quality of participants' diets. There is a need to align food consumed with the Dietary Guidelines. There are questions as to whether increased allotments would influence recipients to purchase foods like fresh fruits and vegetables which are healthy but also potentially costly (26).

Participating in the SNAP program has been shown to have similar effects on food purchases as having a higher income (36). However, some nutrition promoters argue that SNAP benefits are not enough to provide foods necessary to make a nutritiously balanced diet. SNAP benefits are based on average national food prices; however, prices vary greatly across America. Participants living in higher priced areas have a lower purchasing power. This handicap could easily hinder a nutritious diet for many SNAP users (37). Also, only one-third of those who qualify for the SNAP program are actually taking advantage of its many benefits (32).

The program has been shown to promote food security, but whether or not the quality of diet among users has been affected is still being questioned. Fox and Cole found diets of SNAP participants do not follow guidelines laid out in MyPyramid. Intakes of saturated fats and sodium are higher and lower in fruits, vegetables and servings of milk. Concern about fruit and vegetable consumption expands across the entire U.S. population, but is especially a concern for those using SNAP. If recommended changes in dietary patterns were to take place in the 40 million people served by SNAP each month, a large decrease would be seen in medical cost (38).

The cash benefits of SNAP are not targeted towards specified foods. Participants are able to buy virtually all food for sale in participating grocery stores. Some major exceptions to this are hot prepared foods, alcoholic beverages, and foods that will be eaten in the store (26, 34). The Consumer Expenditure Survey shows food spending rises with income; nevertheless, most of that extra money is spent on food away from home or convenience foods from the grocery store. On top of that, higher income households do not meet recommendations for fruit and vegetables. Therefore, Frazao argues that increasing food stamp benefits may not be the means to increasing healthy purchases by SNAP users (26).

Allotments:

For households in the 48 contiguous states and District of Columbia to receive SNAP benefits, households must meet certain criterion including: employment, resources, income, deductions in income (such as required medical expenses or child support), elderly or disabled, and immigrant eligibility tests (39). Eligible households are

given a monthly allotment determined by the Thrifty Food Plan. Each household's SNAP allotment is equal to the maximum allotment for the household's size, which is less than 30 percent of the household's net income. If the household has no income, it receives the maximum allotment. Allotment levels are higher for Alaska, Hawaii, Guam, and the Virgin Islands due to higher food prices in those areas. In 2008, the average monthly benefit was about \$101 person (about \$ 3.26 per day) and about \$227 per household (8).

The American Recovery and Reinvestment Act (ARRA) of 2009 increased SNAP allotments by 13.6 percent to reflect the value of the June 2008 Thrifty Food Plan (TFP), and stated benefits could no longer be below that line. Allotments remained unchanged in 2010 and 2011. The maximum allotment is \$668 for a 4-person household in the 48 States and Washington DC. That calculates to about \$167 per person each month or \$5.39 each day. The ARRA has protected allotments from decreasing over the years (40). The current average SNAP benefit in the state of Illinois is \$4.50 a day or \$126 a month (1).

Thrifty Food Plan:

Since the 1920s, USDA has been formulating food plans to help consumers purchase healthful diets on varying budgets. In the 1960s, the Economic Food Plan was developed for the basis of Food Stamp allotments. This plan was revised and renamed in 1975 to the current Thrifty Food Plan (TFP) (5). The TFP is one of the Food Plans of the USDA. The Food Plans represent a healthful diet at four different cost levels. These plans also differ on specific foods and quantities provided. The plans assume all

snacks and meals are prepared at home. Food Plans are based on the 1997-2005 Dietary Reference Intakes, 2005 Dietary Guidelines for Americans, and 2005 MyPyramid food intake recommendations. All Food Plans are based on 2001-02 data and updated to present prices using the Consumer Price Index for specific food items for a family of four. If a family is larger, then the following adjustments are suggested: 1-person-add 20 percent; 2-person-add 10 percent; 3-person-add 5 percent; 7 or more-subtract 10 percent (41).

The TFP has been used as a standard for maximum food stamp benefits (37). Eligible households are supplied a monthly allotment of SNAP benefits based on the TFP (8). These benefits are updated annually. The TFP provides a healthful and minimal cost meal plan that shows how a nutritious diet may be achieved with limited resources (37). The plan consists of a market basket of foods set up to help guide SNAP participants in purchasing foods that meet Federal dietary guidelines on a tight budget. The TFP is based on the National Academy of Sciences' Recommended Dietary Allowances and food preferences of low-income households (8). The TFP was last updated in 2006 to base the plan on 2005 Dietary Guidelines and 2005 MyPyramid Food Guidance System. The plan was adjusted for a more realistic reflection of time constraints of food preparations for SNAP users. The TFP now allows for more prepared foods and fewer meals made from scratch (34).

Thrifty Food Plan Gaps:

Recently, studies in economics have noticed problems in defining poverty on the basis of money alone. Different levels of well-being can take place in households of

similar income depending on their available time. For instance, single parent households might have to account for childcare. The TFP is strongly based on raw food items that require significant preparation time. Raw ingredients over convenience foods are thought to be logical for SNAP users, because they often cost less; the TFP is by definition the lowest cost of the USDA food plans (5).

The USDA does not provide any idea of how long total food preparation should take. One study tested the amount of time necessary for food preparation based upon TFP recipes. All recipe times were summed and averaged for the two-week plan. The study found 16.1 hours would be necessary per week (or 2.3 hours a day) to cook the provided recipes. Moreover, non-recipe dishes like sandwiches or hash brown potatoes that the TFP suggests were not calculated into the total because their cooking times were not listed. Another aspect that could not be calculated was time required for clean up or shopping which also is time consuming. In reality it would take even longer than 2.3 hours a day to produce the TFP recipes and meals (5).

The TFP originates from an era when women were not common in the labor force. In 2002, 60% of women were in the labor force compared to 38% in 1960 (5). Today, 50% of U.S. jobs are held by women. 80% of women with college degrees are in the workforce; in 1963, only two-thirds of women with degrees were working outside the home (42). An empirical study found women, 18 to 65 years of age, are impacted by employment and the fast pace of our society when it concerns cooking time. Results showed unemployed women went from 10.9 hours of food prep per week in mid-1960s down to 7.9 hours in recent years and employed women dropped from 5.6 to 4.5 hours a week spent cooking. These estimates were based on the entire population.

Government policies, like Earned Income Tax Credit that increases the number of children covered under Medicaid have encouraged low-income women to work. Still, the government has not adjusted food safety nets, like SNAP, and assumes these women will stay home and prepare all foods from scratch. Studies focusing on women's labor force participation show a positive relation to consumption of food away from home. Moreover, an increase of value on women's time increases spending on food away from home. Time and money are a tradeoff for this group (5).

Healthy Eating Index:

The USDA Center for Nutrition Policy and Promotion developed the Healthy Eating Index (HEI) to measure how well Dietary Guidelines are followed. The USDA uses the HEI to monitor alterations in the nation's diet. One of USDA goals is to "improve the nation's nutrition and health" and one of the objectives under this goal is to "promote healthier eating habits and lifestyles." The key outcome of the objective is "eating habits more consistent with the *Dietary Guidelines for Americans*." The HEI is the tool that measures whether this goal is met or not (43).

The original HEI was released in 1995 and consisted of 10 components. Five sections assessed nutrient adequacy of the diet by using the five main food groups in the original Food Guide Pyramid. Four sections measured parts of the diet that should be eaten sparingly: total fat, saturated fat, cholesterol, and sodium. The last component measured variety of food choices (43).

Standards were set up for scoring each component based on recommendations from the Food Guide Pyramid and 11 separate energy requirements based on age and

gender. Each component is rated 0 to 10 making a total of 100 points possible. A score over 80 is considered “good,” 51-80 indicates “needs improvement,” and scores less than 51 are “poor” (43).

In 2005 adjustments were made to the HEI to adjust for changes in the Dietary Guidelines. The Center for Nutrition Policy and Promotion assembled a Working Group to revise the HEI. The group based the index on food patterns of the USDA’s food guidance system, MyPyramid, which quantifies recommendations of the 2005 Dietary Guidelines for Americans. The HEI-2005 can be used for a variety of purposes including nutrition education, population monitoring, epidemiologic research, economic research, evaluation of nutrition research, and other research. The HEI-2005 is used for MyPyramid Tracker as the Center’s dietary assessment and nutrition education tool (43).

MyPyramid Tracker is an online tool provided by USDA as an assessment tool for dietary and physical activity. It supplies information on diet quality, physical activity status, nutrition messages, and alternate links to physical activity and nutrient information. The Food Calories/Energy Balance feature automatically calculates energy balance by subtracting energy spent from calorie intake. MyPyramid Tracker is an easy way to translate the principles of the 2005 Dietary Guidelines for Americans (44).

Nutrition Education:

Low-income individuals have been shown to have lower nutritional literacy along with inferior diets. Gleason and colleagues used the 1994-96 CFII to find high-income adults were 10-20 percent more likely than low-income adults to answer specific

nutrition questions correctly (38). One study found low-income women with children less likely than higher income respondents to be aware of diet-disease relationships. The women were less likely to believe diet can make a large impact on the chance of obtaining diseases like cancer or heart disease. They were significantly less likely to have received education on the impacts of fiber, calcium, cholesterol, or being overweight on health problems. Low-income women were significantly less likely to correctly identify correct servings in relation to the food guide pyramid. These women were also less likely to use nutrition food labels when purchasing foods (21).

Research studies have identified that when consumers hear scientific information linked to diet and health, it causes them to modify their diets. Research has shown there is evidence of direct correlation between increased quality of health and level of education completed. Still, it is necessary for practitioners to realize there is not a perfect solution that works for all (45).

Traditionally, nutrition research and policies have focused towards individuals and not public health strategies. However, growing research shows dietary education targeted towards individuals does not have a large benefit and increases health inequalities (29).

Food stamp nutrition education began in 1981 when Congress amended the Food Stamp Act of 1977: "To encourage the purchase of nutritious foods, the Secretary is authorized to extend food and nutrition education to reach food stamp program participants, using the methods and techniques developed in the expanded food and nutrition and other programs" (46). The USDA Food and Nutrition Services provide

funds through its regional office to support the Food Stamp Nutrition Education Program. Federal regional offices then make contracts with individual states to educate food stamp recipients about nutrition (32). States have the option of providing this education. Instructors are encouraged to focus on certain topics like healthy food choices and physical activity, but they are relatively free in what they decide to teach. The US General Accounting Office (GAO) examined all USDA nutrition education programs and found food stamp nutrition education services had a wide range of methods from more extensive one-on-one counseling, to small group classes, to general marketing campaigns to provide nutrition messages to vast groups of people (45). Studies have not proved that providing nutrition education to SNAP participants will cause them to change their diets (38).

Food Guide Pyramid:

One of the original objectives of food guides was to help users decode dietary standards and recommendations into simple nutrition education tools that are useful to consumers. The USDA has pulled from a wide range of data sources to develop these guidelines including information on U.S. nutrition status, nutritional standards, food availability, food consumption practices, food composition, and food costs. The United States government issued the Food Guide Pyramid (FGP) to help Americans select foods that make up a healthy diet and meet nutritional standards. The guidelines were to help people eat a diet reasonable in energy and in foods often consumed in excess (33).

The Food Guide Pyramids include the five major nutrient food groups (fruit, vegetable, dairy, grain, and meat and bean) and their subgroups. Foods included in the groups were to be used without added sugars and in their lowest fat content possible. The first FGP was released to the public in 1992. Many have questioned the effectiveness of the first pyramid especially in regards to the obesity epidemic. The dietary reference intakes (DRI) were released in 1997 incorporating new nutrient intake recommendations for the public (33).

In 2005 MyPyramid was issued. MyPyramid emphasizes lower energy intake and the importance of physical activity. One study found the 2005 FGP functioned better to meet nutrient needs while staying within energy constraints in comparison to 1992 FGP (33). The Food Guide Pyramid is a critical component of the *Dietary Guidelines for Americans*, which is known as the cornerstone of Federal nutrition policy. The pyramid has been used in a wide range of locations as education for the public (47).

Summary:

From this literature review, the TFP is a plan that has allotted an appropriate amount of food money to live by the FGP. The TFP determines the amount that SNAP users are given for food money each month. There are many barriers to this plan being carried out by SNAP users. The TFP assumes all meals are made at home, and few working Americans take time to cook all meals at home. The TFP was developed at a time when women were often home to make meals, but that is no longer the case. Women are encouraged to work by programs like Medicaid. However, the TFP has not significantly changed the plan to account for this change. Research has found many

non-nutritious choices amongst SNAP users. These choices are leading to health problems like obesity, which in turn lead to many other health concerns.

This study looked into problems that might arise for someone living by the SNAP food budget. Qualitative case study research methods used in this study are described in Chapter 3. Research questions, research design, instrumentation, sample, data collection, and analysis of data are reviewed in chapter 3.

CHAPTER 3

METHODS

Introduction:

The purpose of this study was to determine the extent to which one can follow USDA Food Guide Pyramid recommendations while limiting food costs to equal SNAP benefits. This chapter describes methodological procedures used to conduct this study. Strategies for research design, study population and sampling procedures, data collection, data analysis, and protection of human subjects are detailed in this chapter.

Research questions of this study were:

1. What challenges does the average person experience when following the Food Guide Pyramid on less than or equal to \$4.50 a day?
2. How can USDA's educational materials aid people living on an extremely low budget to eat a healthy diet as defined by the Food Guide Pyramid?
3. To what extent can the average person meet the Food Guide Pyramid recommendations while on a SNAP budgeted diet?

Research Design:

This study was a qualitative case study conducted in the Midwest region of the United States in spring 2011. A case study design was chosen for the ability to shine light on an "instance of concern, issue, or hypothesis" (48). The case study was descriptive, and the investigator gathered and analyzed the data. Meetings and journaling took place during the study. At the first meeting, participants were given educational materials from the USDA's website (Appendix A) to guide them on how to

budget their money and choose healthful foods. The researcher also provided education via a PowerPoint presentation on budgeting, Food Guide Pyramid, and portion control guide (Appendix B). Rules (Appendix C) were also explained to participants in further detail, and participants could ask any additional questions before the study began.

Each individual was provided a “journal” example (Appendix D) at the first meeting. The journal was set up online using LimeSurvey which is an online survey tool. Subjects kept a daily journal throughout the month to provide insight to their experiences. The online journal/survey asked various questions to collect data regarding their experience. The journals were used to reflect participants’ feelings throughout the study, food consumed on a daily basis, and money spent on food throughout the month. Participants were welcome to provide additional comments. A survey was chosen to lessen the workload of participants. For most questions subjects could simply click a radio button or fill in their own “other” response. Much of this qualitative design was adapted from the work of Merriam (48).

Reliability and Credibility:

Accounting for validity and reliability takes place differently in qualitative work compared to quantitative work. Still, it is a very important matter in all research. Merriam suggested that regardless of the type of research study, validity and reliability can be tested through “careful attention to a study’s conceptualization and the way in which data were collected, analyzed, and interpreted, and the way in which findings are presented” (48). Kemmis (as cited in Merriam, 1998) stated that what makes qualitative studies scientific or trustworthy “is the researcher’s careful design of contexts of

production for phenomenon (experiments) and the processes of measurement, hypothesis-testing, inference and interpretation and the like. What makes case study work 'scientific' is the observer's critical presence in the context of occurrence of phenomena, observation, hypothesis-testing (by confirmation and disconfirmation), triangulation of participants' perceptions, interpretations and so on" (48).

Internal validity refers to how well research findings match reality. One assumption in qualitative research is that reality is multidimensional, and perspectives about it will not remain fixed forever. Therefore, assessing the isomorphism between data collected and "reality" from which it is resulting is inappropriate to measure validity. Merriam suggested six strategies to enhance internal validity in qualitative studies: triangulation, member checks, long-term observation, peer examination, participatory or collaborative modes of research, and researcher's biases (48).

The first strategy used in this study was triangulation. To have triangulation, multiple investigators, multiple sources of data, and outside coders are used to ascertain results were consistent. Participants' journals were compared with store prices, Food Guide Pyramid, and interviews to check consistencies in the results. To perform a member check, the researcher allowed final checks with participants to ensure categories chosen were appropriate for experiences they had. Participants had opportunity to provide final input about the study. Sources who were not involved in the study contributed to the coding process to account for accuracy in the data and results to aid in peer examination. Furthermore, participants in the study were welcomed to participate in all stages of the research to ensure collaborative modes of research.

The researcher is the main interpreter of the data, so it is important to consider researchers' biases while considering results of the study. The researcher's view of what is happening must not sway explanations of the conclusion. Therefore, the researcher's worldview, assumptions, and theoretical orientations were provided in the study. For example, I believe it is possible to maintain a healthful diet on a strict budget. Information like this was considered when analyzing results. Five of the six strategies suggested by Merriam were practiced, since long-term observation was not applicable for this particular study.

External validity regards how much results of a study can be generalized to the target population. This is done to determine if findings are worth transferring further to additional research. Yet, the goal of qualitative research is to provide a new description of one's experience with a phenomenon, not to generalize the findings to a population (48).

Reliability refers to the extent findings of the study can be duplicated. Results of qualitative studies typically do not reveal the same results because humans are not static. Instead, Merriam proposes qualitative research should be looked at in terms of stability or dependability. In other words, results should continue to make some sense based on similar studies (48). To promote dependability in this study, many steps were taken. The researcher's position was clearly identified, important information about participants was thoroughly described, and triangulation was used to promote accurate descriptions of data. Also, the researcher gave a detailed record of data collection, development of categories, and how decisions were made. The researcher was open and honest about what took place throughout the study.

Investigation has to be ethical in order to have validity and reliability in a qualitative study (48). The researcher conducts interviews where participants can possibly reveal more information than they would like to be known. To protect each individual's privacy, participants were allowed to view results prior to publication.

Participant's weight and percent body fat was measured using the C-300 Tanita body composition analyzer and scale. The Tanita is a bioelectrical impedance analysis machine (BIA). BIA machines have been shown to provide a reliable and valid way to measure body composition (49). Participants' weight, percent body fat, Body Mass Index, impedance, fat mass, fat free mass, and total body water were measured (50).

MyPyramid Tracker was used as an assessment tool for dietary and physical activity. It supplied information on participants' diet quality and physical activity status. The Food Calories/Energy Balance feature automatically calculated energy balance by subtracting energy spent from calorie intake. MyPyramid Tracker interpreted whether subjects were meeting principles of the 2005 Dietary Guidelines for Americans and, thus, the Food Guide Pyramid.

Juan and colleagues tested MyPyramid Tracker among a convenience sample of 185 undergraduate university students enrolled in health or nutrition classes. The testing included ease of navigation, content quality, and understandability. Students were given an open-ended questionnaire regarding their experience with the tool. Adjustments, like shortened explanations, were changed due to results. Since its release in April 2005, over 1 million have established accounts with MyPyramid Tracker (51). MyPyramid Tracker is based on the HEI-2005 which is a tool designed to assess

diet quality as described in the 2005 Dietary Guidelines and has a variety of potential uses. The HEI-2005 is the tool used by the USDA for population monitoring (43).

Study Population and Sampling Procedures:

The sample originally consisted of ten individuals: five males and five females. One male dropped from study due to outside constraints that would not be common for a SNAP user. All subjects were able to shop for groceries on their own and prepare their own meals. Each person lives a different lifestyle with varying schedules and time constraints. Some of the important details about each of the subjects are as follows:

- Jim Shorts: A single 22 year old male in his senior year at Southern Illinois University Carbondale (SIUC). He is 5'10", weighs 170 lbs, and MyPyramid projected him to require about 2,600 kilocalories daily according to his body and physical activity level. He lives with two other males in an apartment. He is a club athlete for SIUC. He works part-time as a landscaper.
- Willy Makeit: A single 23 year old male in his first year of graduate school at SIUC. He is 6'8", weighs 192 lbs, and MyPyramid projected him to require about 2,800 kilocalories daily according to his body and physical activity level. He works as a teaching assistant at the University. He is 6'8 and rides his bike for transportation.
- Brock O'Lee: A single 23 year old male beginning graduate school at SIUC. He is 5'9", weighs 176 lbs, and MyPyramid projected him to require about 3,000 kilocalories daily according to his body and physical activity level. He lives with

his girlfriend and plays a club sport for SIUC. He is a work out instructor, and he has an undergraduate degree in nutrition.

- Sue Zuki: A single 23 year old male who recently finished a graduate degree at SIUC. He is 5'9", weighs 177 lbs, and MyPyramid projected him to require about 2,600 kilocalories daily according to his body and physical activity level. He lives with one roommate in an apartment. He just started his first professional job.
- Pete Zah: A single 44 year old male. He is 5'9", weighs 195 lbs, and MyPyramid projected him to require about 2,600 kilocalories daily according to his body and physical activity level. He lives alone and has a long commute to SIUC where he is a nontraditional graduate student. He is a vegetarian who has recently dropped about 60 pounds to improve his health.
- Cookie Jarh: A single 26 year old woman who lives with one roommate. She is 5'2", weighs 143 lbs, and MyPyramid projected her to require about 2,000 kilocalories daily according to her body and physical activity level. She has a master's degree, but could not find a job as a full-time employee with her degree. She is in the process of moving a long distance away during this study. To save money she works part time as a substitute teacher and gymnastics instructor.
- Lynn Gwinney: A single 25 year old female who lives alone. She is 5'7", weighs 142 lbs, and MyPyramid projected her to require about 2,000 kilocalories daily according to her body and physical activity level. She just graduated from graduate school at SIUC and just found a full-time job. It is not what she calls a "high paying job."

- Millie Graham: A single 24 year old woman who lives with four other women. She is 5'0", weighs 110 lbs, and MyPyramid projected her to require about 1,800 kilocalories daily according to her body and physical activity level. She is a graduate student at SIUC and has paid her entire way through college. She usually holds around three jobs and rarely has free time.
- Mac A. Roni: A married 48 year old professional woman. She is 5'4", weighs 117 lbs, and MyPyramid projected her to require about 1,600 kilocalories daily according to her body and physical activity level. She manages a large number of people at her full-time job and is very busy. On top of her full-time job, she does after hours contractual work and has started a rental property business to help pay for retirement.
- Ileana Dover: A single 26 year old female who lives with one roommate in a rural area of Southern Illinois. She is 5'10", weighs 145 lbs, and MyPyramid projected her to require about 2,000 kilocalories daily according to her body and physical activity level. She is a dance choreographer and babysitter. She has recently started a gluten free diet, and is also trying to "go green" in the foods she eats.

To ensure confidentiality, subjects/participants were given a code name that did not connect with them in any way. The researcher checked with each participant and made sure he/she approved of his or her code name as well. The Human Subjects Committee at Southern Illinois University Carbondale approved this study (Appendix E). Incentives were used to enhance participation from week to week. Those who finished week one received a stainless steel bottle, a pen, a "More Matters" notepad, and a change holder

donated from a local dietitian. After week two, participants received a \$5.00 gift card to a local coffee shop. Week three participation was awarded with a \$7.00 gift card to a local movie theatre. Those who turned in their entire week's surveys by Monday morning each week were placed in a drawing for a \$99.00 gift card to Wal-Mart.

Procedure:

The goal for participants was to limit spending on food to \$4.50 a day for an entire month while abiding by each individual's MyPyramid. The process began with an initial meeting of participants with the researcher. Two separate meetings were held to fit participants' schedules. Five participants attended each meeting. The meeting took place just before the study began. Participants were allowed a time frame of a few days (five or two depending on which meeting participants attended) to start their diet. This allowed participants time to prepare for the study.

First, participants' weight and percent body fat were measured using the C-300 Tanita body composition analyzer and scale. Before the machine assessed each participant, participant's gender, body type, clothes weight (predicted as two pounds), height, and age were entered into the C-300 Tanita. The Tanita provides four different body type options: standard male, athletic male, standard female, and athletic female. A person is considered athletic if they engage in vigorous activity at least 10 hours a week and also has a resting heart rate of less than or equal to 60 beats per minute (35). Participants stepped on the scale without shoes, front of their feet on anterior electrodes and their heels on posterior electrodes. They stayed on the Tanita until their weight stabilized and BIA measurement was completed. The Tanita displayed weight and body

fat percentage on its screen and also printed out further results including: weight, height, BMI, impedance, percent body fat, fat mass, fat free mass, and total body water. To provide consistency and accuracy, subjects were asked to not eat or drink at least four hours prior to measurements being taken (50). The researcher provided breakfast after the Tanita machine was used. This same procedure took place at the final meeting. At the initial meeting, participants were provided a meal after their weight was taken. They were encouraged not to eat or drink a few hours prior to stepping on the Tanita. This was done to not disturb the readings regarding weight and water weight due to hydration status taken by the Tanita (50).

At the meeting written and oral directions were given to participants in full detail. Additional questions were addressed. Many directions were based on the SNAP Hunger Challenge Rules from Feeding Illinois. The rules were as follows:

- Spend just \$4.50 per day on food (including beverages) or \$139.50 for the entire month (31 days). This will be your food budget for one month. Your diet should follow the Food Guide Pyramid. Keep all receipts from the grocery store and turn them into the researcher.
- Do not use food you already have unless you deduct the value from your amount for the month. Salt and pepper do not count as an expense.
- Do not accept food from others unless you are at a gathering where food is given out to all who come. Food given out freely will not count against your budget; however, if you bring food to the gathering that food will count as an expense in your budget.
- Log the foods you eat in MyPyramid Tracker daily to demonstrate how you are complying with the Food Guide Pyramid. Note in the survey (journal) what guideline(s) is not being met and why.

- Complete the online survey for each day of the month. This is your “journal” for the month where you will note your daily experience including expenses, preparation time, feelings, food choices, etc. Try to fill it out daily, if not, fill out multiple surveys at one time for the days missed.

Education (Appendix B) by the researcher on healthy eating on a budget was also presented at the initial meeting. The primary source of educational materials was obtained from USDA’s website for SNAP-Ed participants. This was done to see how effective provided materials are for the general public. Low-cost foods, budgeting, and Food Guide Pyramid were main topics addressed. The MyPyramid Tracker website provides a PowerPoint tutorial online which was viewed during the initial meeting. Again, questions were answered and participants were encouraged to speak up if they needed clarification.

The study began on Monday May 23, 2011. Participants were allowed to contact the researcher with questions throughout the month. Subjects submitted journals/surveys and provided feedback from MyPyramid Tracker to the researcher weekly. In doing so, the researcher could transcribe data during the study. Themes were identified throughout the process.

Data Analysis:

Case study research has its own “levels” of analysis compared to other types of qualitative research. There is “within-case” data analysis and “cross-case” analysis. The first level of analysis is a descriptive account where data narrowed and linked together. In the descriptive level the researcher considers what information is relevant, and

therefore, included in the results. The descriptive account summarizes the most basic levels of the study's outcomes (48).

The second level of analysis consisted of categorizing themes that capture recurring patterns through the case study. Deciding on categories is a highly intuitive process, but there is still high regard to make it systematic. Categories are guided by the purpose of the study, investigator's expertise, and participants' input pertaining to the meaning of their responses. Categories and subcategories were created by constant comparative method of analysis. The research continually compares interviews, field notes, and/or documents and links it with another incident in the same set of data or other sets. These comparisons lead to possible categories that are then compared against each other and in other instances. Units of data (potentially meaningful data) are literally sorted into groups that have something in common. Associations are constantly made within and between levels of conceptualizations until theories arise (48). Each time journals/surveys were collected; data were compared amongst participants. Any data deemed meaningful were noted and used to construct categories. The main task was to compare one piece of information with the next and look for recurring themes in the data.

Data were collected and analyzed throughout the entire study. Each time the researcher talked to a participant or collected journals, the researcher carefully read and interpreted data. Notes were taken as the journals/surveys were gathered. The written answers were cut into strips and labeled by the date and code name. As categories arose, folders were made for each specific repetitious category. For example, many participants had trouble with the budget and FGP while they were around their peers.

Therefore, social influences were categories that explained one of the main barriers in living on a tight food budget. This categorizing was done to keep up with the large amount of information gathered during the study. Units of information that did not match up to a particular category were placed in a miscellaneous file. The miscellaneous file was reviewed at the end and items were matched to an existing category, grouped to form a new category, or discarded. After the reading section was completed, the researcher went back to review written comments and group themes into categories, as they became known. This process was used throughout the study.

Categories were developed and named by the researcher, participants, and other outside sources. After the month was over, the researcher went back through each folder to make sure the themes made sense. To improve credibility, an outside source checked categories to make sure they were congruent. The aim was to develop categories that addressed the purpose of the research, were exhaustive, exclusive, sensitizing, and conceptually congruent (48).

Summary:

This chapter described the qualitative research methods used to examine challenges of living healthfully by the FGP on an average SNAP budget and how USDA's educational materials can help. Methods included strategies for research design, study population and sampling procedures, data collection, data analysis, and protection of human subjects. Chapter 4 will present findings of the case study findings.

CHAPTER 4

FINDINGS

Introduction:

The purpose of this study was to determine whether or not healthy eating has to be expensive. This study specifically used the average SNAP allotment for users in Illinois. Results of this study should help determine what measures must be taken to eat a healthy diet while limiting food costs to equal SNAP benefits. In this chapter, the challenges in living healthfully on the average SNAP benefit are described.

Demographics:

This study collected information from ten individuals: five males and five females (Table 1). Participants were recruited by word of mouth in classes and Facebook posts. Most participants were in their 20s, two were in their 40s. Four participants were attending graduate school during the study, two were working multiple part-time jobs, and three had careers. All participants had some kind of job, no longer lived with their parents, and were able to shop and cook on their own.

Table 1. Participants of the “Is It Really More Expensive to Eat Healthy Foods?”

Case Study

Fictitious Name	Age	Gender	Occupation	Education	Family Status
Jim Shorts	22	Male	Part-time Landscaper	BS (In Progress)	Single, lives with roommates
Willy Makeit	23	Male	Graduate Assistant	MS (In progress)	Single, lives with roommates
Brock O’Lee	23	Male	Work Out Instructor	BS	Single, lives with girlfriend
Sue Zuki	23	Male	Information Technology	MS	Single, one roommate
Pete Zah	44	Male	Graduate Student	MS (In process)	Single, lives alone
Cookie Jarh	26	Female	Gymnastics Instructor	MS	Single, lives with one roommate
Lynn Gwinney	25	Female	Social Worker	MS	Single, lives alone
Millie Graham	24	Female	Graduate Assistant	MS (In Process)	Single, lives with roommates
Mac A. Roni	48	Female	Physical Therapist and Rental Property Owner	BS	Married, empty nest
Ileane Dover	26	Female	Dance Choreographer and Babysitter	BS	Single, lives with one roommate

Descriptive Statistics of Sample:

Of the 10 participants, nine completed the study. One male, Jim Shorts, left for a family vacation during week three. The thesis committee and researcher came to the conclusion that study participants who could not follow study protocol would be excluded from the study. Participants were to complete their “journal” on LimeSurvey each day of the month. Subjects completed the survey throughout the month to provide insight to their experiences. Participants were welcome to provide additional comments. Of the 279 possible responses to the survey, 244 were completed. Seven surveys were discarded because they belonged to Jim Shorts. A total of 237 surveys were analyzed.

Descriptive Analysis of Research Questions:

Qualitative content analysis was used to analyze data in this study. Some results were also quantitative as far as how many were able to meet recommendations and/or the budget. Short answer questions from LimeSurvey were analyzed to classify reoccurring themes in the data. The fictitious name and date were used to identify who made each statement and when it was made.

Research Question 1: What challenges does the average person experience when following the Food Guide Pyramid on less than or equal to \$4.50 a day?

Participants reported descriptive accounts of positive and negative experiences each day and parts of life they felt they missed after the study began. They were also able to write extra comments about whatever they wished each day.

Social Pressures. Peers and social situations were reported to cause many participants to break their budget and diet. There were a few specific situations participants reported were challenging: group functions, specific peer pressure,

potlucks, and missing out on their social world.

- Comments regarding group functions:

- I did miss being able to eat freely around groups of people either because I am trying to stay within all the guidelines or because it's hard to estimate how much I am spending on food. (Cookie Jahr 5/25/2011)
- Does traveling or eating with people make this difficult? The answer to both is yes. (Cookie Jahr 5/26/2011)
- I began a four day trip today and it made healthy eating a little difficult because people around me were eating fun foods and eating out. (Cookie Jahr 5/26)
- Had a group party so I had to bring food, obviously I didn't work out staying in my budget. (Willy Makeit 6/17)
- I feel less stressed about trying to eat healthy when I have a little more control over my food choices and I am not eating and traveling with a large group of people. (Cookie Jahr 5/29)

- Specific peer pressure:

- I was bad today, sorry. I ate lunch at Chili's with a friend. So that was like 9 dollars... I'm really close to running out of money. (Willy Makeit 6/11)
- I met two old friends for lunch today and of course wasn't able to eat on \$4.50; I couldn't let the chance to see them pass and I wouldn't ever ask them to pay for my meal. (Pete Zah 6/17).
- I had lunch with a friend I haven't seen in a while, and we went to El Greco's... Gyros are awesome!! I notice I spend a lot of money going out

to lunch with friends. Not the best for my health or my bank account!

(Millie Graham 6/14)

- Jason wanted to talk while we ate at a restaurant and since I already agreed I couldn't say no. (Willy Makeit 6/18)
- I had a date and we agreed to meet at a bar and grill and I was hungry so I ordered. (Pete Zah 6/1)
- My girlfriend asked if we could go out to eat and I agreed. So I totally broke the diet and we went to a Chinese restaurant. (Brock O'Lee 6/5)
- I splurged and went out to eat with a friend to Chinese! (Cookie Jarh 6/7)

- Potlucks:

- I miss being able to make real quality dishes for group events...it is more difficult to stay inside the budget when you are making something that you are taking to a social event. (Cookie Jarh 5/30)
- We have a potluck in class tomorrow. I guess I won't participate. (Pete Zah 6/9)
- Sometimes it is harder because I want and need to contribute to group dinners and meals. (Cookie Jarh 6/12)
- I went to a DC party which I was required to bring drinks. Trying to be as cheap as possible I bought two 2-liters and still spent \$3. So when I am required to spend \$3 then it is hard to only eat \$1.50 the rest of the day. (Willy Makeit 5/27)
- Had a group party so I had to bring food, obviously I didn't work out staying in my budget. (Willy Makeit 6/17)

- It is more difficult to stay inside the budget when you are making something that you are taking to a social event. (Cookie Jarh 5/30)

- Missing social atmosphere:

- Eating at home and preparing my own food is more lonely but more frugal and healthy. (Pete Zah 6/12)
- I missed going to a friend's birthday party where I could have had eaten chocolate cake and ice cream. (Millie Graham 5/27)
- I didn't let the research derail my social life... If I was on a very very strict budget, and wasn't sure whether I would have enough money, I would probably miss this social life. That would be rough... (Sue Zuki 5/30)
- Today was Memorial Day and I did not eat at an event due to price of the meal... Today was negative due to social constraints. (Mac A. Roni 5/30)

Overeating when food is available. When participants were surrounded by free food, they reported being more likely to binge and eat large quantities of foods that were not as healthy.

- Today was great! I spent the day with my family for Father's Day and got to eat whatever I wanted at the party. But then I started drinking and later on in the night wanted nachos really badly and ended up breaking down and buying them. (Brock O'Lee 6/18)
- Today was a good day. I went to a family party and ate a lot of food that I didn't have to spend any money on and because it lasted all day and due to this diet, I ate a lot. I had way more snack food than I normally do. (Brock O'Lee 5/29)

- I was treated to free food, yet again, and it wasn't the healthiest, but I ate it because it was what worked for my schedule today. (Lynn Gwinney 6/5)
- I ate a butt load at DC. (Willy Makeit 5/24) [DC is a church event where food is brought potluck style]
- No one showed to the DC party so it was nice actually being able to eat as much as I wanted. I was like WOAHH when I saw how many calories I had eaten but then I smiled. (Willy Makeit 5/27)
- I did notice today that in group settings when food is being offered you have a great desire to eat it even if it is not healthy or they are not particularly food categories you need just because it's free and you are on a very strict budget. (Cookie Jahr 6/15)
- I had a friend's party this day and therefore was bad about watching what I eat. I would help myself to extra food but didn't pay attention to how much. (Lynn Gwinney 6/10)

Eating as a reward. Participants reported instances where they liked to reward themselves with food. Food they chose to celebrate with was not healthful.

- Today I decided to splurge. The reason for this is because I spent way under the amount I was allotted for last week, so I decided to treat myself today... but looking back on it now, it was not worth it because I hardly ate anything, let alone anything that was really tasty, yet I spent \$7.27! (Illeane Dover 5/30)
- Today was great... because I broke the diet. I couldn't take it. I had chicken and a pizza with my brother... at the time we rationalized it by

saying he was "throwing a party" ... but in reality it was just me and him ordering a pizza and some chicken. (Brock O'Lee 5/28)

- Today I ate out to celebrate my post op visit with the surgeon in St. Louis. Today was positive because I ate Cracker Barrel and love the food. I spent \$9.33 on food today. (Mac A. Roni 6/8)
- One thing I am noticing, food is a source of entertainment and reward to me. Since I do not have a lot of money to go out and spend on doing things, eating (cheaply that is) seemed to be a pretty standard pastime of mine. I have noticed that I have been working on more creative projects and finding low cost ways of entertaining myself. (Illeane Dover 5/31)

Inconvenience Issues. Many times when participants reported having good intentions to eat healthfully, something in their day would not go according to plan and they would break their diet and/or budget.

- I was away from home a lot today, as I have been for the last week. It is hard to be busy, eat on a budget and yet try to eat healthy. (Illeane Dover 6/15)
- I had to be out quite a bit today unexpectedly and didn't prepare food to bring with me. In one purchase, I was over budget. (Pete Zah 6/5)
- I was not in my home but at my parents' house caregiving. This makes it more difficult for me to get the foods I need at a good price. (Mac A. Roni 6/19)
- I was sick today with the flu. It fully set in and took my appetite with it. I purchased a cheeseburger out of desperation for some nourishment while

I was out. (Illeane Dover 6/3)

- My mother had surgery at Carbondale Hospital. I had to depend on the cafeteria for food. (Mac A. Roni 6/16)
- I am still frustrated because unexpected events cause me to buy food when I'm out even though I have plenty of food at home. (Pete Zah 6/6)
- I went to Holiday World so I ate a big breakfast and brought my lunch to save money. Somehow it was taken out of the cooler and it was nasty... So I had to pay at Wendy's which of course put me over. (Willy Makeit 5/30)
- Today was hard because we had tornadic weather- very stressful. I was therefore unable to go to the store to buy food. I was not over in unhealthy food- just under in what healthy food requirements. (Lynn Gwinney 5/25)
- Because of the storm it impacted what I could eat. Our power went out so we grilled which limits what can be cooked. (Willy Makeit 5/25)
- Convenience was the biggest barrier [over the entire month] when trying to do both [live by the FGP and SNAP budget]. Since I was never home a lot and when I left home wasn't really sure when I would be back it was hard to plan. (Cookie Jarh 6/22)

Time Barriers. Participants often complained they did not have adequate time to prepare healthful meals. If they were out of their homes and busy, they reported they usually did not succeed in meeting budget or MyPyramid recommendations.

- [Today was] negative, I had no time to prepare food or anything. Today was my worst day by far health wise. (Willy Makeit 6/20)

- My schedule made it difficult to bring healthy food along with me for the day. (Pete Zah 6/1)
- I worked at the Vine today so I had no time to cook anything. I couldn't spend money so I couldn't eat. (Willy Makeit 6/8)
- I have an afternoon class that runs 5 hours M-F and it requires some planning to be sure I have healthy food with me. I haven't been as successful as I would have liked... more of a timing issue than anything. (Pete Zah 6/2)
- I was super busy this day- didn't get time to eat. (Lynn Gwinney 6/18)
- I did notice that I was really busy today moving and didn't eat as much as usual so I felt like I had to eat quite a bit of food this evening trying to get all of my food in. (Cookie Jahr 6/6)

Planning Barriers. When participants did not take the time to plan their daily meals ahead of time, they reported eating out or missing a meal.

- I was very busy most of the day and didn't eat anything till about 3 pm. (Willy Makeit 5/26)
- Packing food for the day is difficult because I don't know what I will want later in the day. (Mac A. Roni 5/23)
- I had to travel and didn't get home until almost 10 pm. I did not take enough food with me for the day. (Mac A. Roni 5/24)
- It is hard to plan meals around life... I can't go straight to work or class and back home every day. (Pete Zah 6/7)
- I did better today- but still, I find it is hard to plan on what I'm eating- I have

so many other things going on. (Lynn Gwinney 6/14)

- I went to Holiday World today; ate breakfast before I left, packed a lunch, and was starving because of all the activity in the sun, so I got Wendy's for dinner. Sue me. (Millie Graham 5/30)
- I am having a hard time planning meals and eating the proper amounts of eat food. (Millie Graham 5/26)
- I was very busy today so I didn't have much time to plan things; I could tell my nutrients went down. (Willy Makeit 5/29)
- Today was our big dance recital at the studio I work at. I was there all day without a break! This is why meals were skipped. I cheated on my diet and ate Larry's cookies I received as a present from my dancers. It was worth it! (Illeane Dover 6/18)
- I had to drive home to eat today because I forgot to pack my lunch. (Mac A. Roni 6/22)
- I did not have a lot of time today for meal planning—I moved out of my house, and so I grabbed lunch at McDonald's- it's cheap and quick. And tasty. Mmmm. (Millie Graham 5/25)
- [In this study I learned] Stress causes people to stopping planning and being intentional about some things. One of those things I think is their eating patterns (times, types, amounts, costs, ect.). I learned that eating exactly by the food guide pyramid probably isn't practical for everyday use unless you have quite a bit of time to really plan ahead. I learned a lot about what foods are the best for your money. Planning, Planning, Planning is something you can not have enough

of when it comes to food budgets and food guides. (Cookie Jarh 6/22)

Budgeting Issue. The majority of participants reported struggling with budgeting. I had many calls regarding whether they were determining their food cost correctly. Many calculated their food incorrectly, and a few were completely baffled by the amount they spent at the end of the month. Some who thought they were under budget went way over budget. Participants also reported being very perplexed when attempting to calculate cost per serving.

- It's hard to eat enough while keeping the price down. (Willy Makeit 5/28)
- As I was figuring things out I realized I calculated my first two days wrong, I have NOT made under \$4.50 for Monday-Wednesday. I have realized that it is incredibly hard to eat that much food and keep it under \$4.50. (Willy Makeit 5/25)
- I added what I spent on food and it was \$5.75; I was not expecting it to add up that much! (Lynn Gwinney 5/23)
- I am still over budget even if I didn't count the eating out day. (Pete Zah 6/3)
- I'm almost out of money so that's not good. (Willy Makeit 6/11)
- Oh and I was out of money a LONG time ago. (Willy Makeit 6/17)
- I have already gone so far over budget at this point I'm just focusing on health. (Pete Zah 6/12)
- I just wanted a day to do what I wanted without cutting coupons or saving receipts...and so I took it. (Pete Zah 6/19)
- One aspect I hadn't anticipated was starting at any other time than 1st of

the month. As in real life, I was low on cash and was better able to maintain my monetary guidelines. When money was flowing again, I was more tempted to splurge, eat out and not utilize money- saving techniques with the same diligence as before. (Pete Zah 6/18)

- The end of the month is much harder than the beginning. (Cookie Jahr 6/4)
- I spent about 2 hours trying to figure out cost per portion and updating MyPyramid Tracker, etc. I miss sleep. Hoping this will get easier and quicker. (Millie Graham 5/24)
- This is more difficult than I expected; particularly determining proper portions and cost per portions. This is hard!! (Millie Graham 5/23)
- It's hard to calculate how much you spend per day... (Cookie Jahr 5/23)
- I have stopped calculating cost per serving... it's too time consuming. And maybe too mind-boggling... (Millie Graham 5/30)
- I am uncertain about calculating my expenses correctly (Pete Zah 5/28)

Lack of motivation. A reoccurring obstacle in planning, preparing, and budgeting was laziness. Participants reported they did not want or desire to make the effort to save money and eat healthfully. In their mind, the work was not worth the effort.

- Tired and hungry by the end. Got a Whopper Jr. cause it was quick and I was tired. (Millie Graham 6/18)
- It's amazing how quickly I forget to pay attention. It's almost as if eating whatever I want, whenever I want has become a habit- something that needs to be broken. (Lynn Gwinney 5/27)

- I missed the days when I didn't have to think at all about what I was eating except that it tasted good and filled me up. (Millie Graham 5/31)
- I'm really good, I think, at planning my breakfast and lunch. But when I get home from work for dinner, I'm just too tired that I almost don't care. (Lynn Gwinney 6/15)
- Who spends more than 4 hours cooking? What kind of life is that?? (Millie Graham 6/2)
- I realize I can't often wait to make food, so I go out and get fast food because it's convenient and satisfies my hunger. (Millie Graham 5/26)

Boredom with same foods. Almost every participant complained about how boring his or her food was throughout the month. Since not many of them reported having time to be creative cooks, meals were typically basic and repetitious. They reported not enjoying this, and by the end of the month they reported struggling to eat the same foods.

- I got tired of eating at my house... When I went and looked at the food I had in my house, it did not seem exciting enough, plus I am tired and lazy today. (Illeane Dover 5/31)
- I feel like I don't have enough food and I certainly have little variety. (Brock O'Lee 5/25)
- I was short on fruit because I didn't want to eat any and I'm tired of drinking juice. I just don't like fruit at all. (Mac A. Roni 6/21)
- I am getting tired of eating oatmeal and the same type of food because I bought them in bulk to save money. (Cookie Jahr 6/8)

- I am getting bored with my food selections. (Pete Zah 5/31)
- The food was kind of boring today. I have been eating mostly the same foods for 3 weeks. (Mac A. Roni 6/11)
- I am bored eating the same foods repeatedly (Pete Zah 6/16)
- I think [living on the SNAP budget and by the FGP] can be done, but after awhile, it does get boring. Perhaps it was more repetitive for me since I had to limit my diet so much due to my ailment. I had about two weeks of different food picked out, but after that time, I was bored. (Ileane Dover 6/22)

Hunger. The majority of participants reported being hungry at some point.

Participants who were not used to trying to eat healthfully often were hungry. Also, those with higher caloric needs reported struggling to feel satisfied on \$4.50 a day.

- I ate a lentil loaf, corn on the cob, and grapefruit for lunch and then was STARVING so I ordered fried rice. (Millie Graham 6/7)
- I felt very hungry today. I wanted to eat anything and everything that I was not allowed to. Today was hard. (Brock O'Lee 5/27)
- If I eat \$4.50 then I will still be hungry and if I eat till I'm full I spend over my limit. (Willy Makeit 5/25)
- Changing what I eat is the hardest part. Specifically, eating greens (lettuce, etc.) is such bologna. It does not satisfy. I was hungry the whole day that day (Moday), after which I almost quit this study, haha. I then decided to eat like always and just track the expenses. (Sue Zuki 5/23)
- Almost every day I'm hungry at the end of the night so I doubt I could keep doing this also I eat a lot of the same foods which blow. (Willy Makeit 6/4)

- I was left feeling hungry right before bed. (Illeane Dover 5/25)
- I was hungry when I went to bed and could tell I did not eat enough. The only day I was under in my money was because I didn't eat enough. (Willy Makeit 5/26)

Emotional Eating. When participants were under stress or any other extreme emotion, they reported being more prone to eat whatever they wished and forget about eating healthfully. Emotions often trumped willpowers.

- Had class from 8am to 5pm, and it was the ultimate boredom... aka I snacked the entire time to stay awake. (Millie Graham 6/13)
- I was having a BAD day--- Could have cared less about what I ate--- I guess this makes me an emotional eater. (Lynn Gwinney 6/19)
- I think due to stress that I have to move in 3 days I have somewhat lost my typical appetite. Okay... the stress is getting to my eating behaviors at this point I think. I feel so busy I forget to think about eating and what not. (Cookie Jahr 6/21)
- I was feeling down so I went and treated myself to fatty greasy foods. (Pete Zah 6/18)
- I have research due soon and I find myself snacking out of nervous energy. (Pete Zah 6/21)
- Today was not a good day at all- especially for food. If anything I just wanted to eat to make myself feel better. Bahhhh! (Lynn Gwinney 6/4)
- I learned that I choose foods by cravings more than planning ahead. There were days when I did not enjoy what I was eating, because

it just wasn't what I wanted to eat at that moment. (Mac A. Roni 6/22)

Portion Control. Eating correct portions was reported to be difficult. In other sections such as “overeating when food is available” it is also easy to see portion control is a difficult obstacle for participants.

- I had an event at church and this was hard to track my food for. There was also a lack of variety of wholesome foods. (Lynn Gwinney 5/24)
- I miss being carefree about the food I ate. Just trying to eat healthy and not worrying about specific proportions. (Cookie Jahr 5/28)
- I think it would feel extremely stressful and potentially too obsessive to make sure you are eating exact amounts every single day. (Cookie Jahr 5/31)

Missing unhealthy foods. The most commonly reported missed foods were calorie-dense foods. Twice someone complain about missing a more expensive healthy food like milk. Convenience and snack foods tend to be more expensive, and participants reported being willing to spend a little extra to satisfy cravings. It was almost as if they wanted these foods more just because they knew they shouldn't partake in them.

- I wanted a burger from Burger King. (Brock O'Lee 5/23)
- There was one point I wished I could afford ice cream in my diet. (Cookie Jahr 6/10)
- I really wanted to go eat some Buffalo Wings today... (Illeane Dover 5/24)
- I miss frozen dinners. They are quick and easy, but not very budget friendly. (Illeane Dover 5/28)

- I really wanted a glass of wine today... this made me pretty frustrated when I couldn't buy/drink it. (Lynn Gwinney 6/3)
- I keep thinking about how I am not eating food that I like. (Millie Graham 5/24)
- I could really use a fast food experience. I don't eat out very often as a matter of practice, but now being restricted is making it more tempting. (Pete Zah 5/31)

Trouble meeting FGP. Participants reported having a harder time meeting MyPyramid recommendations than anything else. Many asked me if they could just eat whatever they wanted and forget about the FGP, they reported thinking they could easily make the budget that way.

- I really am beginning to think eating by the pyramid is harder than if I just had to eat reasonably healthy on a budget. (Cookie Jahr 5/30)
- Yesterday I didn't eat enough grains so I ate more today but went over... the perfect balance is hard to find. (Cookie Jahr 5/24)
- I don't like fruit and struggle to eat it. (Mac A. Roni 5/24)
- This is a first! I did super well in veggies yet terrible in all other areas. Don't know what happened! (Lynn Gwinney 6/18)
- I can't eat properly. It's not been educational forced into my mind. (Millie Graham 5/27)
- Too bad I never make the stupid food guide recommendations. I keep wishing there was a third option: did you meet your recommendations? Yes No OF COURSE NOT. (Millie Graham 6/15)

- I have noticed that trying to eat enough of the right amount of food group each day is more difficult than I thought. Some days I will be way over or under in certain food groups and then swing in the complete opposite direction the next day. (Cooke Jahr 5/26)
- It's harder to eat enough food on this budget when I am active. (Cookie Jahr 6/1)
- Towards the end of the month it is getting harder and harder to eat the food guide pyramid on what is left on my budget. (Cookie Jahr 6/7)
- The absolute biggest challenge was trying to eat by the food guide pyramid... I never met the FGP each day but at the end of the month when I checked how close I might be if the days were averaged. I was pretty close to meeting the guidelines over the course of a month. The only exception to that being veggies which I ate a lot of in the beginning but the closer I got the end of the month the harder it was to buy veggies due to the budget. I also noticed it was hard to eat by the pyramid because when you are on such a tight budget you eat when there is an opportunity for free food in groups and, therefore, eat what is offered and available without being picky. You don't think I will not eat the piece of pizza because I should really go home and make some veggies. You think here is an opportunity to eat food that will not decrease my budget but will fill my stomach. Even though I am not a starving person and could have probably went without some of the food offered this was always the logical thought process that took place (Cookie Jarh 6/22).

Research Question 2: How can USDA's educational materials aid people living on an extremely low budget to eat a healthy diet as defined by the Food Guide Pyramid?

Participants completed their MyPyramid Tracker daily to help them analyze their diet. The tracker provided an easy and relevant way for them to see which food categories they were or were not meeting. It supplied information about participants' diet quality and physical activity status. The Food Calories/Energy Balance feature automatically calculated energy balance by subtracting energy spent from calorie intake. MyPyramid Tracker interpreted if subjects were meeting principles of the 2005 Dietary Guidelines (DG) for Americans and, thus, the Food Guide Pyramid. Participants could see how close they were to meeting the 2005 DGs each day. The site provides emoticons to quickly show participants whether they were meeting the each of the 2005 DG recommendations: meeting guidelines was represented by a smiley face, close to the recommendation by a stoic face, or far from meeting the recommendation by a sad face. The site also provides users ability to see how their nutrient intake scores compared to recommendations. Another tool is the ability to track their "Healthy Eating History." The site shows how the diet has progressed over a certain amount of time.

MyPyramid not very helpful. The amount of complaints received regarding the MyPyramid website was colossal. Every participant who attempted to use the MyPyramid website complained about it. The site did not provide many of the foods participants were eating. They did not trust the accuracy of the site, and protested that according to their calculations they met certain guidelines MyPyramid did not count. Participants reported they believed the site to be obsolete. The folders were reported as

being helpful by participants, but it is unknown how often participants went to the education notebook of USDA materials as a resource.

- I was also unable to be specific due to my pyramid website not having an exhaustive list. (Lynn Gwinney 5/24)
- How do you like the MyPyramid Tracker? So far I question the accuracy of it. (Cookie Jahr 6/4)
- The USDA food pyramid site does not have all the food that I eat so I was unable to put down exact food (Ex. Quaker rice cakes). (Lynn Gwinney 5/23)
- Q: Is MyPyramid Tracker effective? A: NO! It takes 80 years to load...still waiting for it to load... sometimes doesn't load at all, which makes this really difficult! (Millie Graham 5/25)
- Oh and MyPyramid SUCKS. They don't have ICE TEA. So I couldn't mark it down. (Willy Makeit 6/4)
- I disagree sometimes with the My Pyramid website. I will have met the guidelines on my worksheet but after entering the data it has me coming up short. (Mac A. Roni 6/4)
- My food pyramid tracker is terrible and doesn't know what a gyro is. (Willy Makeit 6/1)
- The "My Pyramid" by the USDA is awful. It is so difficult to use and half the food I eat is not in the database so I just have to make it up. (Illeane Dover 6/11)

Research Question 3: To what extent can the average person meet the Food Guide Pyramid recommendations while on a SNAP budgeted diet?

Participants reported the combination of tracking food cost and completing MyPyramid Tracker allowed them to realize if they were, in a sense, “successful” at meeting FGP recommendations while following a SNAP budget. Participants reported daily via LimeSurvey whether or not they met the budget, if they met MyPyramid recommendations, and what food categories were over or under for that day if they did not meet their MyPyramid recommendations.

About half of the participants reported meeting the SNAP budget of \$4.50 each day, and with the large amount of "Uncertain" responses and lack of surveys completed, it could have been over 50% of the days.

Table 2 and Figure 1 display results for "Were you able to maintain your budget today (\$4.50)?" Half of the responses were "Yes." Almost 30% were "Uncertain" about how much they spent that day and another 20% answered "No" they did not stay under budget that particular day demonstrating it was more likely participants were able to stay under budget than to go over budget. Also, some participants reported not going over budget for the entire month but rarely completed the daily LimeSurvey questions. Therefore, it is possible there would be even more responses of "Yes" if these participants had been more diligent.

Table 2. Participants’ ability to maintain a budget of \$4.50 on food each day

Were you able to maintain your budget today (\$4.50)?		
Answer	Count	Percentage
Yes, I spent at or less than \$4.50 on food today	119	50.21%
No, I spent over \$4.50 on food today	49	20.68%
Uncertain, I am unsure how much I spent on food today	69	29.11%

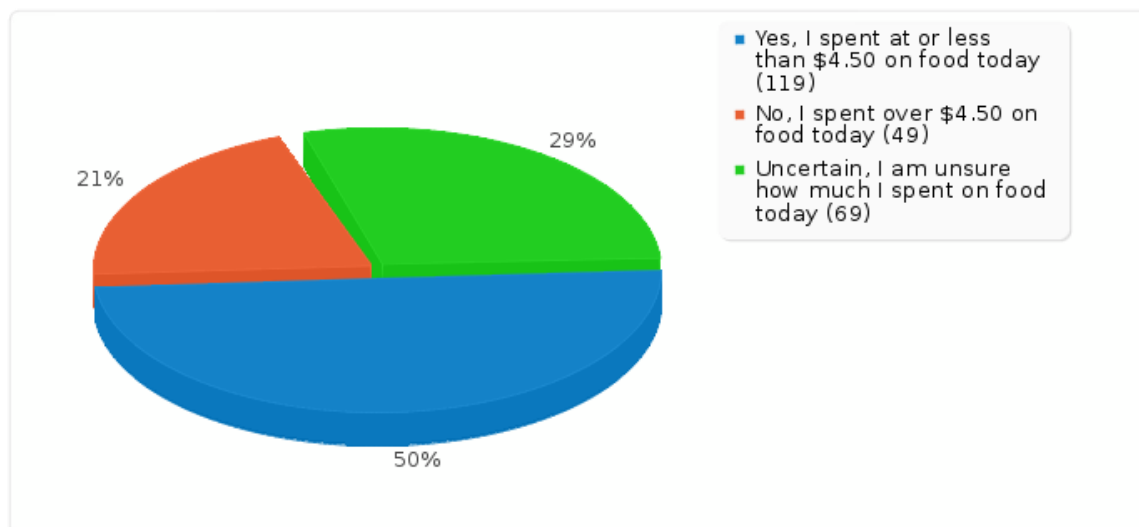


Figure 1. Participants' ability to maintain a budget of \$4.50 on food each day

It was more likely participants could meet their budget than it was for them to meet MyPyramid recommendations on a day-to-day basis. The table and chart below display survey results for "Were you able to maintain maintain the Food Guide Pyramid recommendations today?" Only 29 out of the 237 responses (12.24%) stated "Yes" FGP recommendations were met that day (Table 3). However, when asked which recommendations were under or over only 27 responded all MyPyramid recommendations were met for that day (Figure 2). Some participants explained after the study was over that they only noted they met all recommendations if they were exact on each recommendation. Others explained that if they were a small amount above or below the recommendation (Ex: 0.2 above or below), then they counted that they met that recommendation. So, it is hard to know exactly how well they followed the guidelines, but it is still clear it was a larger feat for participants to meet their MyPyramid recommendation than it was for them to meet their budget. There was not one participant who met all of their MyPyramid recommendations more than they did not meet their recommendations.

Table 3. Participants' Ability to Meet Their MyPyramid Recommendations Each Day

Were you able to maintain the Food Guide Pyramid recommendations today?		
Answer	Count	Percentage
Yes	29	12.24%
No	208	87.76%

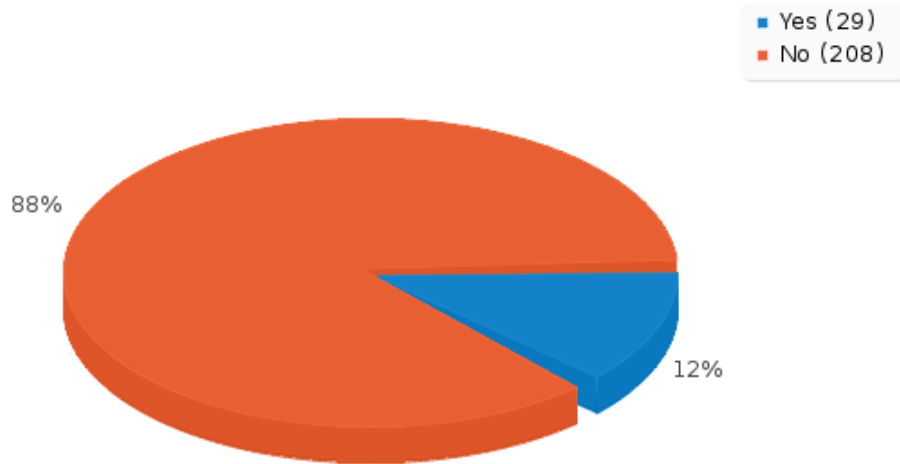
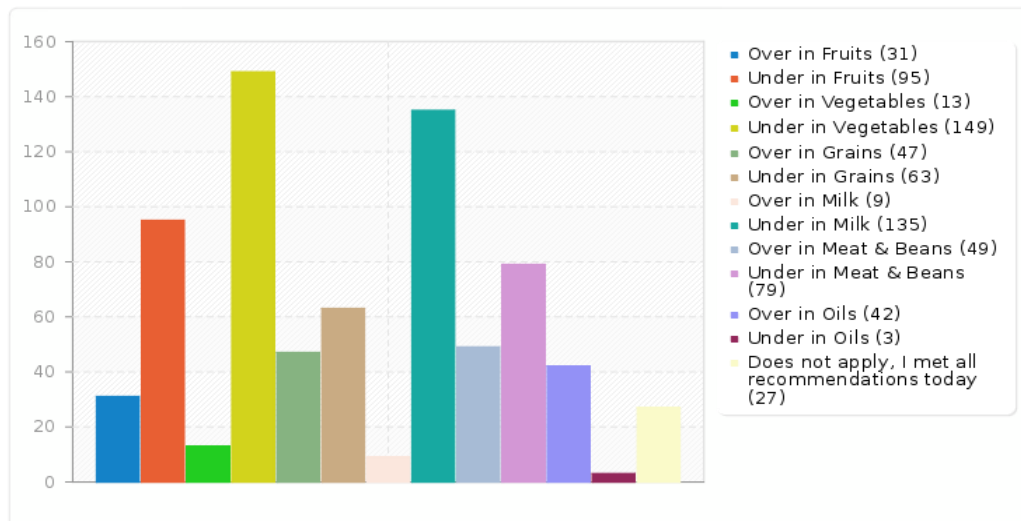
**Figure 2.** Participants' Ability to Meet Their MyPyramid Recommendations Each Day

Table 4 and Figure 3 below display results for "If you did not meet the Food Guide Pyramid recommendations, please indicate what categories you were over or under." The issue of being under in a certain food category was more common than being over in a food category. The most common food categories for participants to miss recommendations for were to be under in vegetables, milk, fruits, and meat and beans respectively. In every category, except for "Oils," it was more common for participants to be under MyPyramid recommendation as opposed to over their recommendation.

Table 4. Daily recording of MyPyramid recommendations not met

If you did not meet the Food Guide Pyramid recommendations, please indicate what categories you were over or under.		
Answer	Count	Percentage
Over in Fruits	31	13.08%
Under in Fruits	95	40.08%
Over in Vegetables	13	5.49%
Under in Vegetables	149	62.87%
Over in Grains	47	19.83%
Under in Grains	63	26.58%
Over in Milk	9	3.80%
Under in Milk	135	56.96%
Over in Meat & Beans	49	20.68%
Under in Meat & Beans	79	33.33%
Over in Oils	42	17.72%
Under in Oils	3	1.27%
Does not apply, I met all recommendations today	27	11.39%

**Figure 3.** Daily recording of MyPyramid recommendations not met

Five of the nine participants were able to maintain the SNAP budget (\$139.50) for the entire month. Figure 3 also displays how many days they reported meeting all MyPyramid recommendations against how many days they filled LimeSurvey. Three females and two males stayed within the budget. Over half of the time (51.7%) a participant met MyPyramid recommendations it was done by someone who maintained their budget the entire month.

Table 5. Participants Who Were or Were Not Able to Maintain the SNAP Budget for the Month and How Many Days Each Participant Was Able to Meet MyPyramid Recommendations

Participant:	Under \$139.50 for the Entire Month:	Total Number of Days Participant Met All MyPyramid Recommendations (of number of days their LimeSurvey was filled out)
Lynn Gwinney	No	0 of 31
Ileane Dover	Yes	1 of 25
Mac A. Roni	Yes	12 of 31
Cookie Jahr	Yes	0 of 31
Millie Graham	No	0 of 29
Sue Zuki	Yes	0 of 3
Brock O'Lee	Yes	2 of 31
Willy Makeit	No	4 of 31
Pete Zah	No	10 of 25

Health Status of Participants: There were not any extreme changes in participants' Tanita readings that would cause concern for participants' health. All participants except one lost fat mass, and all BMI scores decreased except for one

participant as well. It is also important to note that those who maintained the SNAP budget (Sue Zuki, Illeane Dover, Brock O'Lee, Mac A. Roni, and Cookie Jarh) did not lose a larger amount of weight when compared to those who did not maintain the budget. Illeane Dover lost more weight due to a illness that prevented her from eating as much one week during the study. Brock O'Lee required more calories than other participants, and he was able to maintain the SNAP budget without losing a large amount of weight. Still, others with high caloric needs, like Willy Makeit, had a hard time feeling satisfied with the amount of food they were able to consume while on the SNAP budget.

Table 6. Differences in Weight, Body Fat Percentage, Fat Mass, and Total Body Water from Beginning of the Month and the End of the Month

Code	Recommended	Weight	BMI	Fat	Total Body
Name	MyPyramid	Change	Change	Mass	Water (TBW)
	Caloric Intake	(lbs.)		Change	Change (lbs.)
	(kcal)			(lbs.)	
Lynn	2,000	+ 0.4	22.2 to 22.2	- 2.6	+ 2.2
Gwinney					
Illeane	2,000	- 6.6	20.9 to 20.0	- 4.0	- 2.0
Dover					
Mac A.	1,600	- 2.2	20.7 to 20.3	- 5.8	+ 2.6
Roni					

Table 6. Differences in Weight, Body Fat Percentage, Fat Mass, and Total Body Water from Beginning of the Month and the End of the Month (Continued)

Cookie	2,000	- 0.2	26.2 to 26.2	- 1.6	+ 1.0
Jarh					
Millie	1,800	- 0.8	21.6 to 21.4	- 2.8	+ 1.4
Graham					
Sue Zuki	2,600	- 0.8	26.1 to 26.0	- 2.2	+ 1.2
Brock	3,000	- 3.6	25.7 to 25.2	+ 0.8	- 3.2
O'Lee					
Willy	2,800	- 0.4	21.7 to 21.6	- 5.2	+ 3.6
Makeit					
Pete	2,600	+ 2.6	28.9 to 29.2	- 1.3	+ 3.2
Zah					

Summary

This chapter summarized findings from the study that examined the experience of nine individuals attempting to live on a SNAP food budget. Major findings from this study include: there are many barriers to eating healthfully on a SNAP budget, MyPyramid website was not considered helpful or functional amongst participants, and it was more common for participants to maintain their budget than it was for them to maintain MyPyramid recommendations. The main obstacles faced when trying to live on a SNAP diet were: social pressures, overeating when food is available, eating as a reward, inconvenience issues, time barriers, planning barriers, budgeting issues, lack of

motivation, boredom with the same foods, hunger, emotional eating, portion control, missing unhealthy foods, and trouble meeting FGP. A little over half of the time participants were about to maintain their food budget of \$4.50 a day. However, only about 12 percent of the times were they able to meet MyPyramid recommendations for that day. The most common food categories for participants to not meet recommendations were vegetables, milk, fruits, and meat and beans. In all categories but "Oils" it was more common for participants to be under their MyPyramid recommendation as opposed to over their recommendation. Five of the nine participants were able to maintain the hypothetical SNAP budget for the entire month.

A summary of study discussion, conclusions, and recommendations for further research are presented in Chapter 5.

CHAPTER 5

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Introduction:

The purpose of this study was to determine whether or not healthy eating has to be expensive. In this chapter, the researcher's interpretations of the results are described including: conclusions, discussion of findings, recommendations for further research, and implications of the study.

Summary:

Again, the purpose of this study was to determine whether or not healthy eating has to be expensive. Results of this study should help to determine what measures must be taken to eat a healthy diet as defined by the Food Guide Pyramid while limiting food costs to equal SNAP benefits. Research questions included:

1. What challenges does the average person experience when following the Food Guide Pyramid on less than or equal to \$4.50 a day?
2. How can USDA's educational materials aid people living on an extremely low budget to eat a healthy diet as defined by the Food Guide Pyramid?
3. To what extent can the average person meet the Food Guide Pyramid recommendations while on a SNAP budgeted diet?

This study was a qualitative case study conducted in the Midwest region of the United States in summer 2011. This case study was descriptive, and the investigator gathered and analyzed data. Meetings and journaling took place during the study. At the first meeting participants were given educational materials from USDA's educational materials provided on the USDA's website (Appendix A) to guide them on how to budget

their money and choose healthful foods. The researcher also provided education via a PowerPoint presentation on budgeting, the Food Guide Pyramid, and portion control (Appendix B). Rules (Appendix C) were also explained to participants in further detail, and participants could ask any additional questions before the study began.

Each individual was provided a “journal” example (Appendix D) at the first meeting. The journal was set up online on LimeSurvey. LimeSurvey is an online tool created to help set up surveys. Subjects kept a daily journal throughout the month to provide insight to their experiences. The online journal/survey asked various questions to collect data regarding their experience. The journals were used to reflect participants’ feelings throughout the study, food consumed on a daily basis, and money spent on food throughout the month. Participants were welcome to provide additional comments. Much of the qualitative design was adapted from the work of Merriam (48).

The participant’s weight and percent body fat was measured using the C-300 Tanita body composition analyzer and scale. The Tanita is a bioelectrical impedance analysis machine (BIA). BIA machines have been shown to provide a reliable and valid way to measure body composition (34). The Tanita calculated participants’: weight, percent body fat, Body Mass Index, impedance, fat mass, fat free mass and total body water (Appendix E) (50).

MyPyramid Tracker was used as an assessment tool for dietary and physical activity. It supplied information on participants’ diet quality and physical activity status. The Food Calories/Energy Balance feature automatically calculated energy balance by subtracting energy spent from calorie intake. MyPyramid Tracker interpreted whether

subjects were meeting the principles of the 2005 Dietary Guidelines for Americans and, thus, the Food Guide Pyramid (44).

Conclusions and Discussion of Findings:

Major findings from responses of participants were as follows:

1. There are numerous barriers to eating healthfully on a SNAP budget.
2. MyPyramid website was not considered helpful or functional.
3. It was easier for participants to maintain their budget than it was to maintain FGP recommendations.
4. The main obstacles faced when trying to live on SNAP financial budget were: social pressures, overeating when food is available, eating as a reward, inconvenience issues, time barriers, planning barriers, budgeting issues, lack of motivation, boredom with the same foods, hunger, emotional eating, portion control, missing unhealthy foods as a barrier, and trouble meeting FGP.
5. Participants were able to maintain their food budget of \$4.50 a day slightly over 50 percent (50.12%) of the time. However, they were able to meet MyPyramid recommendations for that day only 12 percent of the time.
6. Participants had the most difficult time meeting recommendations for vegetables, milk, fruits, and meat and beans.
7. Participants were under their MyPyramid recommendation for all categories except "oils".
8. All of the participants expect one lost fat mass, and all of their BMI scores lowered except for one participant as well. Those who maintained the SNAP budget did not lose a notable amount of weight when compared to those who did

not maintain the budget. Their weight loss was similar.

9. Five of the nine (56%) participants were able to maintain the SNAP budget for the entire month.

10. Over half of the time (51.7%) a participant met MyPyramid recommendations if it was done by someone who maintained their budget the entire month.

A few other important conclusions that arose during analysis of the study that should be discussed at this time: the differences seen between those who maintained the budget and those who did not, and how living on this budget affected participants.

Differences between those who maintained and those who did not maintain the budget. There were certain differences that surfaced between those who were successful in maintaining the SNAP budget and those who were not successful. More successful participants were more prone to strategize about how they would follow the diet. Less successful participants were seen to complain more throughout the study and to think of the diet as exceptionally difficult.

Strategies.

It was obvious when reviewing participants' comments that successful participants were more likely to strategize on how they would follow the SNAP budget. They often brought extra food along with them to social events, like going to the movie theatre with friends. This helped participants not give into temptation and break their diet or budget. They seemed to take this study as a fun challenge to figure out creative ways to thrive despite their circumstances. Some of the saving strategies seen were: using one's own deer meat, taking home leftover food from group gatherings, dividing restaurant meals into several meals, and sharing meals with friends. The most

successful participant at following the budget and FGP, Mac A. Roni, made a chart at the beginning of the month with her common foods listed out with their cost per portion. This let her see what combination of foods she could eat each day while maintaining the budget and diet at the same time. It took more work at the beginning, but she did not complain about budgeting issues like other participants.

- I will state though that it is really hard and does take a great deal of discipline to not spend money you don't have or plan appropriately. There were several times I would bring food with me when I left home because I simply knew I couldn't afford the convenience of eating out regularly on a tight budget. (Cookie Jarh 6/22)

Attitude.

Each participant's attitude towards the study seemed to greatly affect the outcome of his or her success. A positive attitude seemed to produce motivation and hope in participants. A negative attitude was more common among those whom were not successful. Self-control also correlated with attitude. This is not to say that those who were successful did not have moments of pain or that those who did not keep budget were always negative, this is more of an overall theme that arose while reviewing the data. Those who were very determined to be successful proved to be, and those who started off thinking this study would be extremely difficult had a harder time.

Positive Attitude of Successful Participants.

- I really wanted to go eat some Buffalo Wings today, but I could not let myself blow all that money on food. Instead, I went to Aldi's and bought the generic brand of frozen Buffalo Wings. They weren't as good as eating

out, but I splurged on Ranch Dressing and Celery to make up for it. (Ileane Dover 5/24)

- I was pleasantly surprised that it did not cost as much to feed myself for the day. (Ileane Dover 5/23)
- [Today was] Positive: I am starting to wonder if I had to do this for two months (month one being a trial and month two being the real deal) if I wouldn't get better at it. Eating on a small budget and the food guide pyramid at once is something that I have found takes a little bit of practice. (Cookie Jarh 5/31)
- But so far I find it very likely that one can eat healthy on the monthly budget. (Cookie Jarh 5/23)
- I had delicious tacos and a shake in the same day! One thing I am noticing, food is a source of entertainment and rewarding to me. Since I do not have a lot of money to go out and spend on doing things, eating (cheaply that is) seemed to be a pretty standard pastime of mine. I have noticed that I have been working on more creative projects and finding no cost ways of entertaining myself. (Ileane Dover 5/31)
- Overall, positive experiences. I think I'll be doing another nutritional challenge with my girlfriend after this one. (Sue Zuki 6/23)
- My grand total including eating out was \$124.14 I was successful because its possible and I wanted to meet the goal. (Mac A. Roni 6/22)
- Mainly I learned how hard it would be to try to do this all the time but realize it's plenty doable. Just like anything else it takes time and effort

and its mainly depends on how much effort you want to put into it. (Brock O'Lee 6/22)

- I only spent about \$130.00 for the entire month. I think that I was able to be successful because I had a plan and I stuck to it. I found that in order to stick to the criteria in this study, you must take time to prepare your meals and plan out grocery store visits. (Ileane Dover 6/22)
- It is reasonable [to live on \$ 4.50/day by the FGP]. I think it's also easier to eat healthy, rather than un-healthy. (Sue Zuki 6/22)
- I do think it is possible to eat healthfully on 4.50 a day. However, it is not typical. It is not easy. It is not convenient. But should free money make peoples' lives easy, typical, and convenient or should it be there help them survive until life changes? I do think it can be done...Regarding the Link.... It is free money so yes I think it is reasonable. I think this simply because I do not believe we should feel entitled to what is reasonable when we are at the mercy of others giving us free money. We should be grateful, appreciative, and we should do our best to make sure we are using that free money as wisely as possible. 4.50 a day would be representative of someone doing just that... being grateful, appreciative, and responsible with what has been offered to them freely. I realized this a lot when I was on this budget. When I would go to group gatherings where there was free food being offered I realized this sense of appreciation. I do think that is how such a system should be approached. I also think that most people (including myself) can use practical tools on money saving, budgeting,

meal planning, and food guides. However, until people want to put those things into action more education/tools will simply not be much of an aide to people. I do feel more motivated to do just that though! (Cookie Jarh 6/22)

- Yes it is absolutely reasonable to eat a healthy diet on \$4.50 a day. There are inexpensive healthy foods available at our local grocery stores; it just takes knowledge, time and planning to prepare these types of food. It is a lot cheaper to cook rice and bulk chicken than buy processed food and go through McDonald's drive thru window. I always thought it could be done so the study only confirmed that belief. I will admit that it was harder than I imagined and required life skills that may be a challenge for people living in poverty. It did change my bias that it would be easy, because it is not. (Mac A. Roni 6/22)

Attitudes of Unsuccessful Participants.

- I can't wait for this to be over, it's hard and lame. (Willy Makeit 6/15)
- I keep thinking about how I am not eating foods that I like. :((Millie Graham 5/24)
- I was having a BAD day---Could have cared less about what I ate (Lynn Gwinney 6/19)
- This is more difficult than I expected; particularly determining proper portions and cost per portions. This is hard!! (Millie Graham 5/23)
- I don't see how a reasonable person could live off that small amount of money to eat...healthy or unhealthy. It's not enough. (Pete Zah 6/19)

- I don't think I have ever eaten this good and I don't like it. I have to think all day about what I need to eat still and worry about my money. I hope to never do this again. It's a pain. (Willy Makeit 6/16)
- I ate the leftovers from yesterday and continued my pity party. (Pete Zah 6/19)
- I couldn't do this study for any longer. (Willy Makeit 6/17)
- Still having a rough time with this. I think about quitting a lot... (Millie Graham 6/3)
- Eating healthy and economical is a real challenge. (Pete Zah 5/31)
- This is a lot harder than I anticipated. (Pete Zah 6/4)
- I am annoyed. I thought this would be a breeze but I haven't had nearly as much success as I believed. (Pete Zah 6/5)
- I want to quit, it's really hard to concentrate on eating the pyramid and I couldn't do it year round. Also living on 4.50 is stressful as well. Just saying this blows. (Willy Makeit 6/9)
- [Living on this SNAP budget and by the FGP] can be done but with lots of planning and NO LIFE. I don't think any reasonable person would be able to continue this long term. (Pete Zah 6/22)
- No I don't think it is [possible to keep a SNAP budget and follow the FGP]. Because the majority of the population who is on 4.50 a day are those below the poverty level. This population does not think long term. They are fighting to make ends meet and think only about THAT day. Such as, can they put food on the table? Even if it isn't healthy. (Lynn Gwinney 6/22)

Each participants' overall success rate. It is helpful to look at an overall picture of each individual's success in this study. It does not look as if amount of recommended calories made a difference in whether they met their MyPyramid recommendations, budget, or if they experienced weight loss or weight gain. Mac A. Roni met MyPyramid recommendations the more than anyone else and was still under budget. Brock O'Lee required the most calories of all participants and stayed under budget.

Table 7. Process Evaluation Matrix. Each Participants Overall Experience.

Participant	Caloric Needs, Intake, and Weight Changes	MyPyramid Success Rate	Budget Success Rate
Lynn Gwinney	Recommended 2,000 kcal daily and gained 0.4 lbs	She never met all of her MyPyramid recommendations. She was most likely to be under in vegetables, milk, and meats. She only went over in a category (grains) once.	Lynn went over budget for the entire month. Eight times she spent less than \$4.50 a day, four times she spent over the budget, and nineteen times she was unsure how much she spent.

Table 7. Process Evaluation Matrix. Each Participants Overall Experience.

(Continued)

Illeane	Recommended	She met all of her	Illeane was under
Dover	2,000 kcal daily	MyPyramid	budget for the entire
	and lost 6.6 lbs.	recommendations one	month. She spent less
	She became	time. She was more	than \$4.50 twenty
	sick during the	likely to be under in food	times and went over
	study, which	categories than over,	budget five times.
	decreased her	she was under in milk,	
	food intake.	grains, and vegetables	
		the most.	
Mac A.	Recommended	She met all of her	Mac was under budget
Roni	1,600 kcal daily	MyPyramid	for the entire month.
	and lost 2.2 lbs	recommendations 12	She spent less than
		times. She was more	\$4.50 twenty-six times
		likely to be under in her	and went over budget
		recommendations. She	five times.
		was under in fruits the	
		most.	

Table 7. Process Evaluation Matrix. Each Participants Overall Experience.

(Continued)

Cookie Jarh	Recommended 2,000 kcal daily and lost 0.2 lbs	She never met all of her MyPyramid recommendations. She was fairly even in the times she went over or under recommendations. She was most likely to be under in milk.	Cookie was just under budget for the entire month. She spent less than \$4.50 four times, one time she went over budget, and she was uncertain 26 times. She didn't calculate her food cost each day, but looked at the month as a whole.
Millie Graham	Recommended 1,800 kcal daily and lost 0.8 lbs	She never met all of her MyPyramid recommendations. She was much more likely to be under in recommendations. She rarely met vegetable, milk, or fruit recommendations.	Millie went over budget for the entire month. She spent less than \$4.50 seven times and was unsure how much she spent twenty-two times.

Table 7. Process Evaluation Matrix. Each Participants Overall Experience.

(Continued)

Sue Zuki	Recommended 2,600 kcal daily and lost 0.8 lbs	He only filled out LimeSurvey three times. He never met all of his MyPyramid recommendations. He was most likely to be over in milk and under in vegetables.	Sue was under budget for the entire month.
Brock O'Lee	Recommended 3,000 kcal daily (the highest of all participants) and lost 3.6 lbs	He met all of his MyPyramid recommendations two times. He was most likely to be under in vegetables, under in milk, and over in grains.	Brock was under budget for the entire month. He spent less than \$4.50 twenty- three times and spent over budget eight times.
Willy Makeit	Recommended 2,800 kcal daily and lost 0.4 lbs	He met all MyPyramid recommendations four times, and was most likely to be under in milk, vegetables, and fruits.	Willy went over budget for the entire month. He spent less than \$4.50 fifteen times and spent over budget sixteen times.

Table 7. Process Evaluation Matrix. Each Participants Overall Experience.

(Continued)

Pete Zah	Recommended 2,600 kcal daily and gained 2.6 lbs	He met all of his MyPyramid recommendations ten times. He was most likely to be under in fruits and vegetables. He was most likely to be over in oils.	Pete went over budget for the entire month. He spent less than \$4.50 fourteen times, nine times he spent over budget, and two times he was unsure how much he spent that day.
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Discussion of Findings

Success rate of participants in this study really came down to motivation and self-control. All participants thought they could manage to eat by the FGP on \$4.50 a day, but those who did not lose heart are the ones who finished the SNAP budget challenge.

One interesting and possibly most significant component in the results of this study was seeing it was harder for participants to follow MyPyramid than to maintain a SNAP budget. This is interesting because many research studies focus more on the food dollar and how it affects someone's diet rather than ability to actually put a healthful meal together. This commonality amongst the participants could be because of a general lack of education in how to eat nutritiously. Hy-Vee's registered dietitian prepared a low-budget menu for those who participated in a challenge similar to this

study. Her menu met USDA Food Guide Pyramid recommendations minus one or two vegetables. Her menu did not include any prepared meals (3). This particular experiment allowed participants an additional dollar each day compared to Hy-Vee's challenge. Many participants complained about how hard the study was because they simply did not know where to begin in creating a cheap healthful meal. If there were to be more education in how to plan a less expensive yet healthy meal, the results may have been different.

Participants who planned their meals, and ate mostly from home were more successful in maintaining the FGP and budget. This makes sense because foods eaten away from home are often higher in calories, yet lower in nutrients (26). Just like McLaughlin found while examining the at-home food preparation activity among low-income women, frequency of preparation was positively associated with intake of all food groups and a larger range of nutrients consumed (4). Participants who were willing to put in time and effort of planning their meals were more likely to be successful. Others, who gave into eating out or buying convenience foods, were likely to not succeed at keeping their SNAP budget or a healthful diet. Again, over half of the time a participant met MyPyramid recommendations it was done by someone who maintained their budget the entire month. This proves that the reason certain participants were successful in keeping their budget was not because they were not meeting MyPyramid recommendations. The participants who were successful at meeting the SNAP budget were actually more likely to meet MyPyramid recommendations.

The CEX survey found the lowest income group spent almost half of their food dollar away from home and on miscellaneous products like prepared meals, snack

foods, and condiments. The rest of their food dollar went to meat, then fruits and vegetables, then to cereals, and last to dairy (26). This was also seen with participants of this study. The less successful often gave into eating convenience foods with their friends instead of preparing their own cheaper and more healthful meals from home. Dairy was also the main food group participants were not likely to meet recommendations for on a daily basis. Fruit and vegetable consumption has also been linked to socioeconomic status (27). Towards the end of the month, as participants had less money, many of their diets lacked in fruits and vegetables.

Cassady found an average family of four participating in SNAP and shopped in a very-low-income neighborhood would have to allot 43% of their food stamp budget on fruits and vegetables to get the recommended amount of the 2005 Dietary Guidelines. Households in the lowest two income quintiles would have to allocate 70% of their food-at-home budget to fruits and vegetables (23). Research has also shown price and nutrient adequacy scores are positively related; however, there is a wide inconsistency in these scores. Specifically, fruits and vegetables are not correlated directly with food cost. Fruits and vegetables surpass many other foods when it comes to nutrients-per-calorie and nutrient-to-price ratios, and lean meats and low-fat dairy products share many of the same advantages (30). Participants in the study who adequately prepared their food were able to meet recommendations. However, they also complained of eating the same “mundane” foods repeatedly. It is possible to meet recommendations, but if the food is appetizing is still in question. Furthermore, the CEX reveals qualities like taste, convenience, enjoyment, and variety are all important to consumers (26). So it is unlikely many SNAP users would be willing to eat the same foods day after day.

Successful participants were able to maintain a diet of little variety for a month, but if it were to continue, then it is likely that they would want more selection of foods.

Similar to “The Chicagoist” blogger who participated in the Feeding Illinois 2010 SNAP Hunger Challenge (2), participants had to make many sacrifices to their normal diet in order to complete this study. They had trouble incorporating variety into their daily menu. By the end of the study, participants were literally yelling with excitement that they were done with the study. For a week or a month, living on the SNAP budget is doable, but long-term might be another story. New strategies need to take place in programs like SNAP-Ed to work on specific challenges for SNAP users. This would benefit the users and the United States in many ways.

If we are to increase SNAP benefits it should be towards certain foods only. The cash benefits of SNAP are not targeted towards specified foods. Participants are able to buy virtually all food for sale in participating grocery stores (26, 34). Food spending rises with income; nevertheless, most of that extra money is spent on food away from home or convenience foods from the grocery store. Increasing food stamp benefits may not be the means to increasing healthy purchases by SNAP users (26).

The Thrifty Food Plan provides a healthful and minimal cost meal plan that shows how a nutritious diet may be achieved with limited resources (37). The TFP bases the foods on the cheapest made-from-scratch items. However, time to prepare meals is not taken into consideration. Lack of time for planning preparation was a main barrier for participants. Most participants argued that they did not have enough time to prepare foods from scratch like is needed to maintain the SNAP diet. This is not surprising seeing one study found to prepare food recipes suggested by the TFP it

would require on average 16.1 hours a week (or 2.3 hours a day) not including the time to shop (5). More convenience foods may need to be incorporated into the TFP.

In this study, there were not any extreme changes in participants' Tanita readings that would be of concern for participants' health. All participants expect one lost fat mass, and all BMI scores decreased except for one participant. Therefore, living on the SNAP budget helped participants' health status. This reiterates that living a more healthful lifestyle will benefit SNAP participants. A large portion of SNAP users would benefit to lose some weight (21), so encouraging participants to live by the FGP would be highly beneficial to SNAP users. There is not a large concern about eating enough food; it is more about eating the right foods (22).

Demographics amongst participants may have played a role in their ability to carry out the SNAP budget. There are quotes from participants that seem important to include. Different challenges arose for each participant depending upon their upbringing, amount of calories needed, or other factors.

For example, Millie stated in LimeSurvey and to the researcher that she has never thought about planning for food in advance. This is a common occurrence in SNAP participants (22). Low-income populations have been shown to have lower nutritional literacy along with inferior diets (38). This theme is reflected in Millie's life.

- I learned eating out and not budgeting from my parents (we lived at or below the federal poverty line). I spend money on food that is quick and cheap and don't compare to groceries, which tend to be cheaper. I think it's because grocery shopping is a larger chunk of money than one quick \$4.00 meal at McDonald's plus it takes longer to do. (Millie Graham 6/6)

Mac A. Roni brought up a great point that she had a large advantage over most of the participants due to her experience in shopping and budgeting. Most participants were in their early to mid-20s. Therefore, they have not had many years of experience in shopping and cooking for themselves. Mclaughlin found a strong positive correlation between amount of food preparation and intake of various nutrients (4). Mac A. Roni was successful planning her food schedule and preparing food for the day in advance. This was a large part of her success.

- I have no idea how the other participants did on the study. I know most of them were young people in their early 20s. This group is at more of a disadvantage to succeed at this study in my opinion. Two main reasons:
 1. They have a very different social life than adults in their 30's to 50's. With so many events to attend, a lot more opportunity for eating out I am sure it was difficult.
 2. They have not spent a significant amount of time grocery shopping and preparing meals for a family. I have almost 30 years of shopping and cooking for a family that have taught me ways to eat healthy and cheap. Even given a list of these tactics, it must be harder for a 20 something year old to incorporate these skills that I have learned over a lifetime. (Mac A. Roni 6/22)

Pete Zah fell into a very common pattern many SNAP users do, splurging money on food at the beginning of the month and then not having enough money for food by the end of the month. This is a large part of what contributes to obesity amongst SNAP users. The SNAP-Ed educators in New Jersey saw this same model in their SNAP participants (25). Getting paid in a large bulk of money seems to affect spending. Low-

income households often try to stretch their food dollar by forfeiting more healthful foods for higher calorie foods that are less nutritious. This leads to a full feeling, but not nourishment (22).

- One aspect I hadn't anticipated was starting the study at any other time than 1st of the month. As in real life, I was low on cash and was better able to maintain my monetary guidelines. When money was flowing again, I was more tempted to splurge, eat out and not utilize money-saving techniques with the same diligence as before. (Pete Zah 6/18)

Another important aspect is caloric needs of individuals. Willie Makeit is 6'7. He requires more calories than an average person. The Thrifty Food Plan does not calculate the amount of calories needed for an individual like Willie (23). It assumes participants do not need that many calories. It is possible that many enrolled in SNAP could have similar needs as Willie. In this case, it is very hard to live by the SNAP budget.

- I wasn't successful because I had to eat so much everyday. It was hard to reach the amount of calories I needed every day. I appreciate what people on food stamps have to go through more because of this. \$4.50 isn't near enough to eat off everyday, but if it is used to help out then it is enough. But you can't survive on just food stamps alone. (Willie Makeit 6/22)

Recommendations:

1. Conduct additional research on more diverse populations including low-income populations, the elderly, and minority populations. This would help determine barriers amongst a variety of SNAP users.

2. Pursue further barriers of preparing healthy meals on a tight budget. Target whether the main barrier is nutrition education or lack of motivation.
3. Perform quantitative research amongst SNAP users to determine what they believe are the main barriers in following MyPyramid. Follow with qualitative studies to dive deeper into why they believe these are their main barriers. This would reveal whether it is a motivational barrier, monetary barrier, educational barrier, or all three.
4. Test educational methods that may be helpful for SNAP-Ed. Wide ranges of methods are currently seen in various SNAP-Ed locations, and studies do not show providing nutrition education to SNAP participants will cause them to change their diets. Conduct studies to test what type of educational methods are most effective in SNAP-Ed. Some areas to focus on should be: increasing motivation and positive attitudes about incorporating a healthy diet, how to follow MyPyramid, how to budget a healthy diet, strategies to live healthfully on a SNAP budget, meal planning, ways to cook cheaply and creatively, and how to incorporate food categories that are lacking among low-comes like milk, vegetables, fruit, and meat and beans.

Implications:

If recommended changes in dietary patterns were to take place in the 40 million people served by SNAP each month, a large decrease would be seen in medical cost (38). For this to happen, preventative health methods need to be implemented. Various chronic diseases can be avoided by a proper diet and exercise.

Many question as to whether increased allotments would increase SNAP recipients to purchase healthful foods like fruits and vegetables that tend to cost more (26). This study revealed it was more common for participants to maintain their budget than it was for them to maintain MyPyramid. This leads me to believe that it will for some, but probably not for most. Education is the main component missing. There is great need for SNAP users to be nutritionally educated. Low-income levels have been shown to have a lower nutritional literacy level (38). The average level of education of participants in this study is higher than a typical SNAP participant; in fact, many of the participants had their master's degree. They also received some nutritional education prior to the starting the study. How can we expect SNAP users to maintain a healthful diet on a strict budget if many in this study could not? Research studies have identified that when consumers hear scientific information linked to diet and health, it causes them to modify their diets (45). SNAP-Ed is a program that is full of potential; it just needs refinement to be utilized in a more efficient way.

Summary:

This study was conducted with free-living adults who had resources in addition to the SNAP budget restrictions. What do those living in poverty have to fall back on? Food pantries? Soup kitchens? These are vital concerns when considering the food insecure. More effort should be taken to help food insecure populations to ensure that they will be able to eat a healthful diet so they can attain healthy lives.

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APPENDICES

APPENDIX A

USDA Education Materials



MyPyramid

STEPS TO A HEALTHIER YOU

Based on the information you provided, this is your daily recommended amount from each food group.

GRAINS 6 ounces	VEGETABLES 2 1/2 cups	FRUITS 2 cups	MILK 3 cups	MEAT & BEANS 5 1/2 ounces
Make half your grains whole Aim for at least 3 ounces of whole grains a day	Vary your veggies Aim for these amounts each week : Dark green veggies = 3 cups Orange veggies = 2 cups Dry beans & peas = 3 cups Starchy veggies = 3 cups Other veggies = 6 1/2 cups	Focus on fruits Eat a variety of fruit Go easy on fruit juices	Get your calcium-rich foods Go low-fat or fat-free when you choose milk, yogurt, or cheese	Go lean with protein foods Choose low-fat or lean meats and poultry Vary your protein routine—choose more fish, beans, peas, nuts, and seeds
Find your balance between food and physical activity Be physically active for at least 30 minutes most days of the week.		Know your limits on fats, sugars, and sodium Your allowance for oils is 6 teaspoons a day . Limit extras—solid fats and sugars—to 265 calories a day .		
Your results are based on a 2000 calorie pattern.		Name: _____		

This calorie level is only an estimate of your needs. Monitor your body weight to see if you need to adjust your calorie intake.

MyPyramid Worksheet

Check how you did today and set a goal to aim for tomorrow

Write in Your Choices for Today	Food Group	Tip	Goal Based on a 2000 calorie pattern.	List each food choice in its food group*	Estimate Your Total
_____	GRAINS	Make at least half your grains whole grains	6 ounce equivalents (1 ounce equivalent is about 1 slice bread, 1 cup dry cereal, or ½ cup cooked rice, pasta, or cereal)	_____	_____ ounce equivalents
_____	VEGETABLES	Try to have vegetables from several subgroups each day	2 ½ cups Subgroups: Dark Green, Orange, Starchy, Dry Beans and Peas, Other Veggies	_____	_____ cups
_____	FRUITS	Make most choices fruit, not juice	2 cups	_____	_____ cups
_____	MILK	Choose fat-free or low fat most often	3 cups (1 ½ ounces cheese = 1 cup milk)	_____	_____ cups
_____	MEAT & BEANS	Choose lean meat and poultry. Vary your choices—more fish, beans, peas, nuts, and seeds	5 ½ ounce equivalents (1 ounce equivalent is 1 ounce meat, poultry, or fish, 1 egg, 1 T. peanut butter, ½ ounce nuts, or ¼ cup dry beans)	_____	_____ ounce equivalents
_____	PHYSICAL ACTIVITY	Build more physical activity into your daily routine at home and work.	At least 30 minutes of moderate to vigorous activity a day, 10 minutes or more at a time.	_____	_____ minutes

How did you do today? Great So-So Not so Great

My food goal for tomorrow is: _____

My activity goal for tomorrow is: _____

*Some foods don't fit into any group. These "extras" may be mainly fat or sugar—limit your intake of these.

Shopping for Health *and* Budget

Here are ways to shop and save money while purchasing healthy choices that are good for you and your family.

Bread

- **HEALTH:** Always buy 100% whole grain.
- **BANK:** Stock up and freeze when items go on sale

Canned Goods

- **HEALTH:** Try to choose items that say no-added-salt or reduced sodium.
- **BANK:** Store brands, when on sale, are the best value - stock up when you see them!

Cereal

- **HEALTH:** Oatmeal is one of the healthiest choices because it is a whole grain and has no added salt, fat or sugar (ditto for shredded wheat).
- **BANK:** Stock up when items are on sale.
- **BANK:** Even though grits are not a whole grain, they are economical and low in calorie density.

Pasta

- **HEALTH:** Rice is a very inexpensive option that is also low in calorie density when cooked. Of course brown is best but white is not such a bad option either if that is all your family will eat.
- **BANK:** Look for sales on store brands and stock up when prices are good.

Produce

- **HEALTH:** MyPyramid calls for most people to eat about 4.5 cups of fruits and veggies each day.
- **BANK:** Farmer's markets and local stands often have the best prices.
- **BANK:** Watch local papers for grocery stores



to offer sales on produce - you can get some great deals.

- **BANK:** Use items in season to get the best value and for a little change of pace each season.
- **BANK:** Don't buy too much unless you plan to use it before it spoils. An exception might be if you plan to cook and freeze soups or other dishes.

Protein

- **HEALTH:** Choose lean, cook lean and use portion control.
- **BANK:** One word helps here - sale!
- **BANK:** Use smaller quantities
- **BANK, HEALTH:** Of course the cheapest protein item is also the healthiest and highest in fiber - beans
- **BANK, HEALTH:** If you don't have a lot of time use lentils
- **BANK, HEALTH:** If you do have some time, consider cooking and freezing larger batches of dried beans

Beware of these pitfalls

- Expensive items include soda, chips, cereals, cookies, crackers and convenience meals. These are also calorie dense. Try to limit these treats to just one per week - don't need to fill the cart with them.
- Shopping without a list
- Shopping when hungry
- Shopping with other family members

Quick 5 Checklist to Save:

- ___ Look for store brands
- ___ On sale - good - stock up!
- ___ Compare unit pricing
- ___ Stick to your list
- ___ Use less meat, soda, cookies, crackers, chips, deli, bakery and convenience items

30
WAYS in
30
DAYS

to Stretch
Your Fruit &
Vegetable Budget



National Fruits & Veggies—More Matters® Month • September

- 1** Calculate an appropriate Healthy Food Budget for your family, based on USDA's Low Cost Food Plan. This easy-to-use calculator, offered by Iowa State University Extension, helps to create a budget for what is a reasonable amount to spend to feed your family healthy meals. (www.extension.iastate.edu/foodsavings/fooddollar/).
- 2** Cook enough for several meals and freeze leftovers. Place enough food for 1-2 meals in each container.
- 3** Create a meal plan for the week that uses similar fruits and vegetables, prepared in different ways. Make the most out of the produce that you buy.
- 4** Buy fruits and vegetables in season at farmers' markets or at your local grocery store.
- 5** Grow your own vegetables. Invest a little in seeds, and get a lot of vegetables in return. Try indoor pots or greenhouse growing for the cooler months. Visit www.cdc.gov/Features/GrowingVegetables/ for more information.
- 6** Mix it yourself. 100% juice from frozen concentrate is often less expensive per serving than pre-bottled juice.
- 7** Minimize waste, by buying only the amounts your family will eat.
- 8** Learn basic food math. Taking the time to make a food budget before grocery trips can make food buying decisions easier. Simple food math can help you decide if the watermelon or the bunch of grapes is a better buy.
- 9** Enjoy the comforts of home more often. Eating at restaurants can increase the amount you spend on food. Include fruits and vegetables in quick, simple meals that you prepare at home. Visit http://recipefinder.nal.usda.gov/index.php?mode=pick_search&theme=?&cost_serving_num=&cost_recipe_num=&submit=Search for more information.
- 10** Be creative! To get the most out of your purchase, enjoy your fruits and vegetables in different ways. For example, you can use fruits for dessert. Try baking apples or poaching pears with some cinnamon. Visit <http://apps.nccd.cdc.gov/dnaparecipe/RecipeSearch.aspx> and www.fruitsandveggiesmorematters.org/?page_id=10 for more information.



National Fruits & Veggies—More Matters® Month • September

- 11** Homemade soup is a healthy and tasty way to use vegetables. Make a big batch and freeze leftovers in small lunch-size containers.
- 12** Look for sales and deals on fruits & vegetables at the grocery store or through coupons.
- 13** Cut your fruits and vegetables at home. Pre-cut produce can cost much more than whole fruits and vegetables.
- 14** Don't shop hungry. Eat a healthy snack, such as an apple, before going to the grocery store so that you stick to your budget and avoid spending money set aside for fruit and vegetables on less healthy temptations.
- 15** Maximize your time and money. Cut coupons for foods, such as fruits and vegetables, only on your grocery list.
- 16** Canned fruits and vegetables will last a long time and can be a healthy addition to a variety of meals. Choose canned vegetables that have no added salt and fruit that is canned in 100% fruit juice.
- 17** Frozen fruit and vegetables store well in the freezer until you're ready to add them to a meal.
- 18** Pick your own at local farms. Late summer and early fall is a great time to pick your own fruits and vegetables. This can be a fun and less expensive way to buy in bulk and freeze, can, or dry for later.
- 19** Dried fruit lasts for a long time, but can be expensive. Buy in bulk with friends and share the cost.
- 20** Store-brands can be a great budget choice for many forms of fruits and vegetables.
- 21** WIC (Women, Infants, and Children) and Senior Farmers Market coupons can be used by WIC participants and older adults to purchase locally-grown, delicious fruits and vegetables.
- 22** When trying new fruits and vegetables, buy in small amounts. Taste test before you change your grocery list.
- 23** Keep it simple. Buy dried beans, peas, and lentils in their raw or uncooked form instead of the processed and packaged versions which cost more.
- 24** Avoid buying single servings. Purchasing many small packages of produce is often more expensive than buying in larger amounts.
- 25** Shop at discount grocery stores for good deals on fruits and vegetables, especially canned items.
- 26** Shop at large grocery stores instead of small convenience stores when possible. There is more choice and the produce is often less expensive at larger stores.
- 27** To make many fresh fruits and vegetables last longer, store them in the refrigerator or freezer soon after getting home from your shopping trip. Many cookbooks offer specific freezing instructions.
- 28** Clearly label your foods in the freezer and refrigerator with the contents and date to stay within a safe time frame.
- 29** Get creative with your leftover fruits and vegetables. Make salsa from your tomatoes and smoothies from your fruits! Visit www.fruitsandveggiesmatter.gov to learn how.
- 30** Buy frozen fruits and vegetables in large bags to stretch your budget (e.g., green beans and blueberries). Avoid those with added sugar, salt, or sauce.

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101+

Ways to Save Food Dollars

Plan

1. Take time to plan your meals and make a grocery list. This usually takes less time than the time spent going back to the store for a forgotten item.

2. Keep paper and pencil in the kitchen to list foods you need.

3. Check kitchen cabinets and refrigerator when making your grocery list.

4. Before going to the grocery store, plan a weekly menu of favorite dishes using healthy foods.

5. Plan some meals without meat. Use dried beans, eggs, or peanut butter as a main dish.

6. Read the weekly food section and check the Sunday newspaper to see what is on sale.

7. Plan your meals to use seasonal foods such as oranges in the winter and peaches in the summer.

8. Finish your grocery list before going shopping. The best memory does not substitute for a well-planned list.

9. Use a grocery list to help manage your stress. For example, do you really like to strain your coffee through a paper towel when you are out of filters?

Shop

10. Shop only once a week. The more trips to the store, the more money you spend. It is hard to purchase only a few items on any trip to the grocery store.

11. Keep in mind that items from convenience stores often cost more.

12. Pick the grocery store with the best prices for foods you buy.

13. Think of mileage. Shopping at many stores may not be worth the extra time and gasoline cost.

14. Check out dollar stores. Canned fruit and snack crackers can be purchased here cheaply.

15. Find a local farmers' market. Fruits and vegetables tend to be fresher and cheaper.

16. Purchase foods at low-cost stores such as food cooperatives or warehouse food stores.

17. Look for grocery stores that offer extra savings on "Seniors Day."

18. Find stores with super food sales during special times such as "Friday and Saturday Blow-out Sales" or "10 Items for \$10."

19. Know when to stick to the shopping list. The only time to go off the list is when you can get a good buy such as store sales and double coupon offers.

20. Know when not to use the list. Take the farmers' market approach with fruits and vegetables. Buy what is fresh, cheap, and in season. Adjust your menu to fit these finds.

21. Don't go down every aisle when you shop.

22. Do not shop when you are hungry because you will buy extra food. Better yet, have a small snack before shopping so you won't buy a candy bar at checkout.

23. Shop without your children. Unwanted items can creep into the cart with too many "helping hands." Take turns with a friend for child care.



24. Shop early when the store is not crowded. You will get through the store faster and spend less.

25. Shop when you are not in a hurry. Take the time to compare the price of similar foods and purchase the cheapest. For example, which is cheaper, fruit cocktail or pears? Would it be cheaper to buy an item fresh, frozen, or dried?

26. Bring only the cash you have budgeted to the store. Decide how much you can spend weekly. Bring only that amount with you so you will not be tempted to spend more money.

27. Avoid buying sample foods. Some stores offer "try something new" samples to get you to buy the food. If the food is not on your list, do not buy it. Think about it for a future list when you can use the food in your menus.

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Buy

28. Upon entering the grocery store, check store flyer for sale items and stock up!

29. In place of national brands, buy store brands when the taste and quality suit your needs. Compare brands!

30. Compare the unit price of food items. The cost per ounce or per pound helps find the best value.

31. Check the unit price of different size containers of the same food. The largest container is not always the cheapest.

32. Buy items by-the-case to save a lot of money. Make sure you have storage space for the food items.

33. When buying large amounts of food, split the food and cost with a friend. You both will save money.

34. When available, buy bulk foods for about 2 weeks at a time.

35. Avoid buying large amounts of foods that will go bad quickly. Spoiled food is a waste of money.

36. Buy family packs of meats, cheese, poultry, and luncheon meats. Divide into servings, freeze, and use as needed.

37. Buy foods in season to save money. When fruits and vegetables ripen, grocery stores are flooded with these low-cost fruits and vegetables. You will find something year-round that is in season, which makes it affordable.

38. Smaller-sized fruits and vegetables may be cheaper than larger ones.

39. Instead of buying canned fruits and vegetables in large pieces, buy these foods canned in smaller pieces. For example, pineapple chunks and diced tomatoes usually cost less than pineapple rings and whole tomatoes.

40. For best buys of healthy foods, stock up on fruit juices, milk, grits, peanut butter cookies, and popcorn for snacks. Avoid junk foods.

41. Avoid buying single servings of such foods as snack crackers, vegetable juice, and ice cream.

42. Avoid buying foods packaged together, such as cheese and crackers, meat and cheese trays, and frozen garlic cheese bread, when you can buy the items separately for less.

43. When shopping for food, buy nonfood items only if you have extra money for them.

44. Check *sell by* and *use by* dates to be sure you buy fresh foods.

Use Coupons Carefully

45. Be careful when using coupons.

46. If you can save 25 or 50 cents off the price of something you already use, go for it.

47. To use coupons, you usually have to go to a common supermarket, so watch your prices carefully.

48. You can usually buy a food item cheaper at a discount store than you can buy it with a coupon at a big supermarket.

49. If you use a coupon to buy an item you do not need and would not have bought otherwise, you will be spending money you could have spent somewhere else.

50. In the store, use point-of-purchase coupons if the food item fits into your meal plan.

51. Take advantage of manufacturer's rebates by mailing in coupons.

52. Bottom line? Use coupons when they will help you save, but do not become a coupon junkie.

Track

53. Know the regular prices of items you usually buy. A sale will then be easy to spot.

54. Make a cheat sheet so you will know what you usually pay for an item that you use a lot.

55. Remember the trick is to buy on the markdowns. You don't have to change your habits. Just buy when items are at low cost.

56. Sometimes, *buy one, get one free* is not a lot cheaper because the cost of the first item is too much.

57. Make sure all purchases are rung up correctly.

58. Use itemized food receipts when checking out to help track food costs.

59. Divide grocery bill into food and nonfood items to get the cost of food. To make it easy, separate food items and nonfood items when checking out.

60. Compare prices of nonfood items at the grocery store with the same item at a discount store.

Choose Bargains

61. Give those grocery shelves the once-over. Grocery stores put items they most want to sell on the shelves between knee- and shoulder-height. The highest markup items are the ones about chest level. These are easy to grab and toss in the cart.

62. Stick to the edges. In general, the healthier, less processed foods are at the edges of the grocery store. These foods - fruits and vegetables, dairy and meat - are healthy and also go further in the kitchen.

63. Check the clearance section of the grocery store for items such as soap, cereal, and household products. These items may be piled in shopping carts throughout the store. Only buy if you know it is a good deal. Do not buy cans with dents.

64. Shop when the store opens to find the marked down meats. You must come early because the meats get snapped up quickly. Either cook the meat and eat it the same day or freeze it for later use.

65. Shop for meats carefully. Bones and fat on meat cost a lot of money. It is hard to compare prices of meats with bones and extra fat.

66. Use leftover meats for sandwiches instead of buying packaged sandwich meats.

67. Buy day-old bread from the quick sale table or, if available, a bakery outlet. Toast or freeze it for good eating.

68. Buy plain breads and cereals. They are usually better buys than fancy breads and cereals.

69. Buy regular rice. It is usually a better buy than quick cooking rice or fancy rice blends.

70. Quick cooking oatmeal and grits are less expensive and almost as fast as the single serving instant cereals.

71. Buy a head of lettuce and wash it instead of buying lettuce in a bag.

72. Look over all fresh fruits and vegetables. If you are paying full price, make sure all perishable foods are in top shape.

73. Ignore the checkout display. This is the store's last attempt to take your money. Consider checking out magazines at the library. If you ate a snack before shopping, you will be able to resist buying a candy bar.

Keep Food Safe

74. In the grocery store, shop for cold items last. These are frozen vegetables, meats, dairy products, and salad bar ingredients.

75. Try to get cold foods packed together in a bag when checking out. To make it easy, place all meats together, all frozen foods together, and all dairy foods together. When these foods are sacked together, they are easy to spot when you get home.

76. Lessen the time foods are in the car. Keep perishables out of direct sunlight or out of a hot trunk.

77. Put foods away quickly when you get home. Find grocery sacks with the cold items that need to be refrigerated first.

78. Examine bags of potatoes, onions, and fruits. Throw out bad ones. Store potatoes and onions in a cool, dry place. Store fruits and other vegetables in the refrigerator.

79. Go through kitchen cabinets regularly to make sure canned and packaged foods are used before expiration dates.

Prepare at Home

80. Make large amounts of recipes that freeze well such as spaghetti sauce, chili, and soups. Label and freeze them for later use.

81. Recycle the roast! Purchase a large roast on sale. Cook and eat some of it the first night. Freeze the rest for later.

82. Cook a whole chicken and use for more than one meal.

83. Stretch ground meat with bread crumbs, oatmeal, or tomato sauce.

84. Bake more than one item while the oven is hot. You can cook the main dish, dessert, vegetables, quick breads, or other foods at the same time if they are to be cooked at the same temperature.

85. Do not leave food in the oven overnight. Cooked foods, such as meats, could make you very sick when left at room temperature for more than 2 hours.

86. For drinking, use nutritious, low-cost instant nonfat dry milk. Thoroughly chill it before drinking for better taste.

87. For cooking, use dry milk in place of the more expensive regular milk. Store the box of powdered milk in a large baggie in the freezer. Keep a measuring cup in the plastic bag to make mixing easy.

88. To make milk go twice as far, mix an equal part of instant nonfat dry milk made by the directions with an equal amount of regular milk.

89. Make your own mixes for biscuits, pancakes, and other prepared foods. Already prepared mixes sometimes cost a lot more than homemade mixes.

90. If you are unable to eat ripe bananas right away, use them in muffins. Or freeze the entire banana in the peel for later use. A frozen banana turns black and looks gross but it is safe.

91. Make extra pancakes. Wrap separately, freeze, and reheat in a toaster or microwave.

92. Save bread ends and crusts. Toast them when baking something else. Crush to make bread crumbs; store in the freezer.

93. Make desserts from scratch. They are usually cheaper than store-bought ones.

94. Make iced tea from scratch. Premade iced tea in jugs is expensive; iced tea in bottles is even more expensive.

95. Use a toaster oven, if you have one, when only a small amount is to be baked.

96. Use an electric skillet, if you have one, to "bake" a chicken or roast or to make spaghetti sauce. It is easy to drain the fat from meat—just tilt the skillet slightly.

97. Choose home-popped popcorn for a snack. It is less expensive than microwave popcorn and much cheaper than chips. Hint: Use an electric skillet for popping. Store leftover popcorn in an airtight plastic bag.

98. Make tasty salads using leftover vegetables, fruit, meat, or cereal.

99. Keep a "soup container" in the freezer. Add all vegetable liquids as well as leftover meats and vegetables to create a delicious soup or stew for next to nothing.

100. Make casseroles to use leftovers and to offer new foods to your family.

101. Make foods from scratch (homemade). It can be cheaper (and healthier) than store-bought, convenience items.

102. Make sure convenience foods are good buys. Some good buys are canned vegetables and frozen juice. Others, such as ready-made pudding, may cost a lot more.

Be Creative

- 103.** Grow your own fruits and vegetables.
- 104.** Grow herbs in a flowerpot or in a windowsill container.
- 105.** Pick fruits and vegetables at U-pick farms.
- 106.** Can or freeze fruits and vegetables in the summer when they are plentiful. Use them in the winter.

Be Smart

- 107.** Waste less. Use all food before it spoils.
- 108.** Store foods correctly. Poor storage can cause dried out, stale, or molded food.
- 109.** Plan for using leftovers.
- 110.** Take your lunch to work instead of buying it.
- 111.** Avoid vending machines. Pack similar items at home in small bags and bring drinks bought by the case.
- 112.** Put together a snack bag of easy-to-eat items to enjoy in the car or at games.
- 113.** Plan snacks for kids. Carrot sticks are cheaper than candy bars.
- 114.** Entertain with potucks or inexpensive buffets, such as lasagna and salads.

Eating Out

- 115.** Limit eating out. Regardless of the fast food advertisements, it does cost a lot of money.
- 116.** To save gas money, park the car and walk inside to order. You get a little exercise too!
- 117.** Do not upgrade or super size your order. You are only super sizing your bill and your waistline.

118. When ordering, think smaller. It is not a value meal if you are paying for more than you want.

119. Do not load up on side dishes. Share the fries and you will save money and calories too.

120. Order ice water. It is usually free. To make it tastier, order it with lemon.

121. Eat dessert at home. Dessert is one of the most marked-up items on the menu.

122. If eating in, order the smallest size beverage or even a kid size cup. Most fast food places offer free refills.

123. Look between the buns. The patties are usually very small and the vegetables look limp. Your homemade burgers will look better and, even with the vegetables, be cheaper.

124. Cooking extra and freezing the remainder at home is just as convenient as going to the drive-through.

125. Do not forget your pet. The Styrofoam containers that burgers and entrees are packed in make excellent pet dishes. Just wipe out and take home. Cut the top and bottom apart for two dishes—one for the cat and one for the dog. Toss them out when the edges get worn.

If you are eligible, find help.

126. Apply for an Electronic Benefits Transfer (EBT) card through the local Food Stamp Program. Food stamps help single people and families with little or no income to buy food. Look in the U.S. Government pages of the phone book. You can find a listing for food stamps under Social Services Department or Human Services Department.

127. Enroll in the Women, Infants, and Children (WIC) program for supplemental foods for pregnant and breastfeeding mothers and children to 5 years old.

128. Enroll children in the free or reduced meal plan at school. All public schools offer this plan at lunch, and some schools also serve breakfast.

129. Enroll preschool children in a Head Start program.

130. Enroll children in a summer lunch program through the Summer Food Service Program.

131. Visit a local food bank or community food distribution center.

132. Take advantage of soup kitchens.

133. Use meals-on-wheels programs and nutrition centers for weekday lunches.

134. Take free courses in food selection and preparation provided by experts with the Alabama Cooperative Extension System. Also visit your local Extension office for more information on ways to save money. Look under your county section of the phone book for local offices.

135. Make arrangements with a neighbor who fishes for any extras.

136. Call any meat processor during hunting season to see if they have any donated wild game such as venison.

137. Find a neighbor who has a garden and is willing to share or trade.

Sources:
www.frugalliving.about.com
www.lancaster.upd.edu
www.stretcher.com
www.bankrate.com



HE-757

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The Nutrition Education Program is sponsored by the Alabama Cooperative Extension System and the Food Stamp Program. These institutions are equal opportunity providers and employers. Food stamps help people with little or no income buy food. To find out more, contact a county Food Stamp office or a county Extension office. This material was funded by these agencies.

For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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7136, Reprinted May 2008, HE-757

Portion Sizes and School-Age Children

Serving Sizes Are in Your Hand

A fist or cupped hand = 1 cup



1 serving = $\frac{1}{2}$ cup cereal, cooked pasta or rice
 or 1 cup of raw, leafy green vegetables
 or $\frac{1}{2}$ cup of cooked or raw, chopped
 vegetables or fruit

A thumb = 1 oz. of cheese

Consuming low-fat cheese is a good way to help you meet the required servings from the milk, yogurt and cheese group. $1\frac{1}{2}$ - 2 oz. of low-fat cheese counts as 1 of the 2-3 daily recommended servings.



Handful = 1-2 oz. of snack food



Snacking can add up. Remember: 1 handful equals 1 oz. of nuts and small candies. For chips and pretzels, 2 handfuls equals 1 oz.

Because hand sizes vary, compare your fist size to an actual measuring cup.



Palm = 3 oz. of meat

Two servings, or 6 oz., of lean meat (poultry, fish, shellfish, beef) should be a part of a daily diet. Measure the right amount with your palm. One palm size portion equals 3 oz., or one serving.

Thumb tip = 1 teaspoon

Keep high-fat foods, such as peanut butter and mayonnaise, at a minimum by measuring the serving with your thumb. One teaspoon is equal to the end of your thumb, from the knuckle up. Three teaspoons equals 1 tablespoon.















1 tennis ball = 1 serving of fruit

Healthy diets include 2-4 servings of fruit a day.

SERVING SIZE CARD:

Cut out and fold on the dotted line. Laminate for longtime use.

<p>1 Serving Looks Like . . .</p> <p>GRAIN PRODUCTS</p> <p>1 cup of cereal flakes = fist </p> <p>1 pancake = compact disc </p> <p>$\frac{1}{2}$ cup of cooked rice, pasta, or potato = $\frac{1}{2}$ baseball </p> <p>1 slice of bread = cassette tape </p> <p>1 piece of combread = bar of soap </p>	<p>1 Serving Looks Like . . .</p> <p>VEGETABLES AND FRUIT</p> <p>1 cup of salad greens = baseball </p> <p>1 baked potato = fist </p> <p>1 med. fruit = baseball</p> <p>$\frac{1}{2}$ cup of fresh fruit = $\frac{1}{2}$ baseball </p> <p>$\frac{1}{4}$ cup of raisins = large egg </p>
<p>1 Serving Looks Like . . .</p> <p>DAIRY AND CHEESE</p> <p>$1\frac{1}{2}$ oz. cheese = 4 stacked dice or 2 cheese slices </p> <p>$\frac{1}{2}$ cup of ice cream = $\frac{1}{2}$ baseball </p> <p>FATS</p> <p>1 tsp. margarine or spreads = 1 dice </p>	<p>1 Serving Looks Like . . .</p> <p>MEAT AND ALTERNATIVES</p> <p>3 oz. meat, fish, and poultry = deck of cards </p> <p>3 oz. grilled/baked fish = checkbook </p> <p>2 Tbsp. peanut butter = ping pong ball </p>

Great Resources:

Thrifty Food Plan Cookbook

<http://www.cnpp.usda.gov/Publications/FoodPlans/MiscPubs/FoodPlansRecipeBook.pdf>

Recipe Finder

<http://recipefinder.nal.usda.gov/>

Resources for SNAP Partners and Educators

The SNAP-Ed Connection is an online resource center, which contains a wealth of information on healthy eating, using your food dollar wisely, and over 100 low cost recipes. Visit SNAP-Ed Connection at:

<http://snap.nal.usda.gov>

Tips: Best Buys for Cost and Nutrition

Breads and Grains

- Look for bargains on day old bread. It costs less but is still nutritious.
- Buy regular rice, oatmeal and grits instead of instant to save on money, sugar and calories.

Vegetables and Salad

- Buy large bags of frozen vegetables. Seal tightly in the freezer between uses.
- Avoid pre-bagged salad mixes. They are usually more expensive and spoil faster.

Fruits

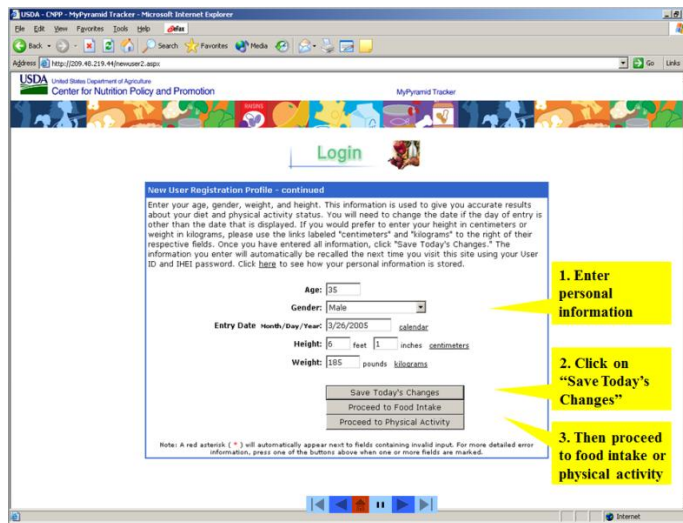
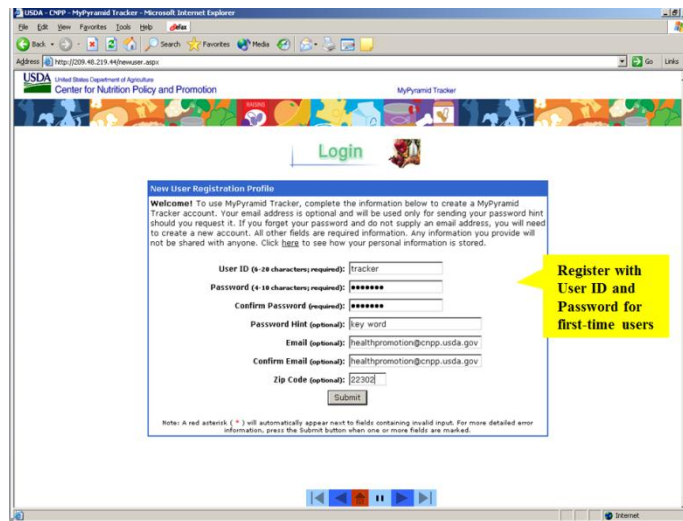
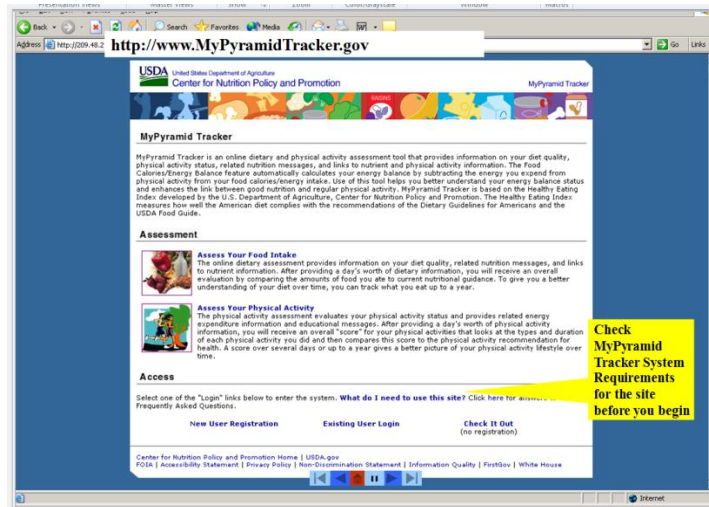
- Buy fresh fruits in season, when they generally cost less.
- Frozen and canned fruits are a smart choice all year round.

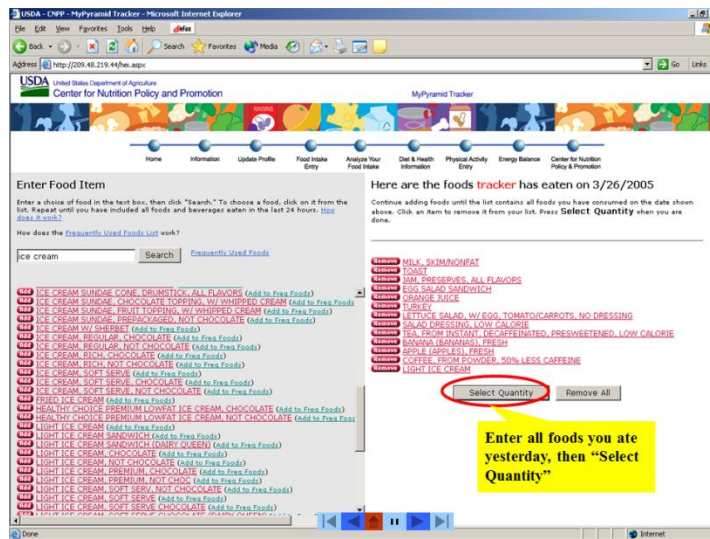
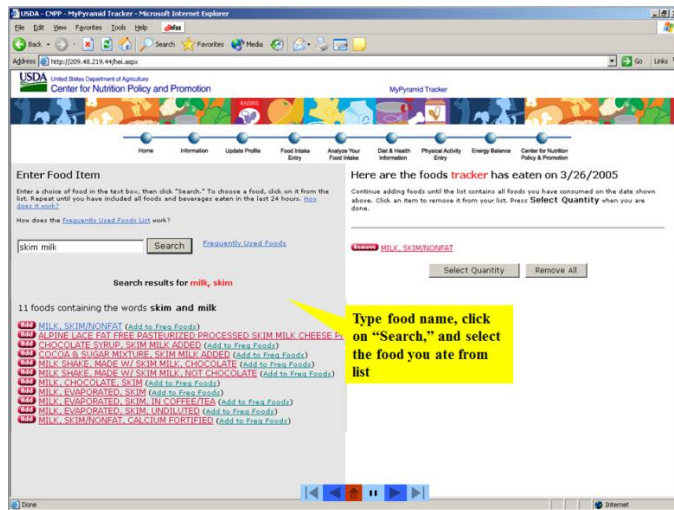
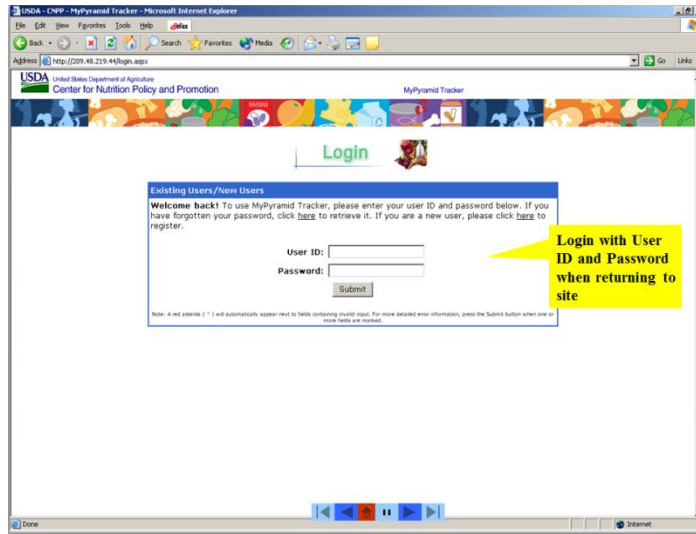
Low-Fat Milk Products

- Buy fresh, low-fat milk in the largest size that can be used before spoiling. Larger containers cost less than smaller sizes.
- Ultra-pasteurized milk has a longer expiration date and won't spoil as fast.

Meat and Beans

- Chuck or bottom round roast is cheaper than sirloin.
- Dried beans and peas are a good source of protein and fiber. They last a long time without spoiling.
- Look for specials at the meat counter. Buy meat on sale for big savings.
- Buy meat in large bulk packages to save money. Freeze portions you might not use right away to prevent spoiling.





USDA - CNPP - MyPyramid Tracker - Microsoft Internet Explorer

Address: http://209.48.219.44/ntake.aspx

Here is the food displayed for tracker on 3/26/2005

Select your serving sizes and specify how many servings you consumed for each. When you are done, click **Save & Analyze** to save your food entry information and to analyze your food intake. If you want to make more than one day's food entry, click **Return to Login** to save a day's food entry information and make another day's food entry. For a record of today's food entry, click **Print Food Record** prior to saving food entry. To return to initial values, click **Reset Values**. To add or remove food items, click **Enter Foods**.

Foods Consumed	Select Serving Size	Number of Servings (Enter a number 0-9.1-5)
MILK, SKIM/NONFAT	1 cup	1.5
TOAST	1 regular slice	2
JAM, PRESERVES, ALL FLAVORS	1 individual packet	1
EGG SALAD SANDWICH	1 sandwich	1
ORANGE JUICE	1 cup	2
TURKEY	1 thick slice (approx 3 x 2 x 3/8)	1
LETTUCE SALAD, W/ EGG, TOMATO/CARROTS, NO DRESSING	1 cup	2
SALAD DRESSING, LOW CALORIE	1 tablespoon	2
TEA, FROM INSTANT, DECAFFEINATED, PRESWEETENED, LOW CALORIE	1 mug (8 fl oz)	2
BANANA (BANANAS), FRESH	1 medium (7 to 7-7/8 long)	1
APPLE (APPLES), FRESH	1 medium (2-3/4 dia) (approx 3 per lb)	1.5
COFFEE, FROM POWDER, 50% LESS CAFFEINE	1 mug (8 fl oz)	1
LIGHT ICE CREAM	1 cup	0.5

Buttons: Save & Analyze, Enter Foods, Reset Values, Print Food Record

Annotations:

- 1. Choose Serving Size
- 2. Enter number of servings for each food (whole or fractional)
- 3. Click on "Save & Analyze"

USDA - CNPP - MyPyramid Tracker - Microsoft Internet Explorer

Address: http://www.mypyramidtracker.gov/analyzeohes.aspx

Center for Nutrition Policy and Promotion

Analyze Your Food Intake

MyPyramid Tracker is based upon the recommendations of the Dietary Guidelines for Americans, 2005. Your food group and nutrient recommendations are goals for the entire day, not one meal. Your analysis will be based on the nutrient content of the foods you enter for one day and does not include the nutrients from dietary supplements. Dietary supplement information is provided below.

Select the following to analyze your dietary intake:

- Meeting 2005 Dietary Guidelines (DG)**
 - You will see:
 - Your recommended food groups and nutrient intakes within your energy needs
 - Your intakes of basic food groups compared with the Dietary Guidelines for Americans, 2005 recommendations
 - Calculate DG Comparison
- Nutrient Intakes**
 - You will see:
 - Your nutrient intake scores
 - Recommended intake information
 - Calculate Nutrient Intakes from Food

Annotation: Select an option to analyze your food intake

USDA - CNPP - MyPyramid Tracker - Microsoft Internet Explorer

Address: http://209.48.219.44/dg.aspx?hmc

The 2005 Dietary Guidelines (DG) Recommendations for tracker on 3/26/2005

Click directly on the emoticon (face) for more detailed dietary information.

Dietary Guidelines Recommendations	Emoticon	Number of cup/oz. Equ. Eaten	Number of cup/oz. Equ. Recommended
Grain		4.2 oz equivalent	9 oz equivalent
Vegetable		2.1 cup equivalent	3.5 cup equivalent
Fruit		5.9 cup equivalent	2 cup equivalent
Milk		1.7 cup equivalent	3 cup equivalent
Meat		2.2 oz equivalent	6.5 oz equivalent

Dietary Guidelines Recommendations	Emoticon	Amount Eaten	Recommendation or Goal
Total Fat		29.7% of total calories	20% to 35%
Saturated Fat		2.1% of total calories	less than 10%
Cholesterol		483 mg	less than 300 mg
Sodium		1714 mg	less than 2300 mg
Oils and discretionary calories (Solid fats, added sugars, and alcohol)		+	+

* Calculations for oils and discretionary calories from foods are under revision.

More information about the Dietary Guidelines for Americans 2005 (To view this document you need Adobe Acrobat Reader)

Buttons: Back, MyPyramid Recommendation, Calculate History

Annotation: Compare your results to dietary recommendations

The 2005 Dietary Guidelines (DG) Recommendations for tracker on 3/26/2005

Click directly on the Emoticon (face) to learn more about the food group.

Dietary Guidelines Recommendations	Emoticon
Grain	😊
Vegetable	😊
Fruit	😊
Milk	😊
Meat	😊
Dietary Guidelines Recommendations	Emoticon
Total Fat	😊
Saturated Fat	😊
Cholesterol	😊
Sodium	😊
Oils and discretionary calories (solid fats, added sugars, and alcohol)	😊

* Calculations for oils and discretionary calories from foods are under revision.

[More information about the Dietary Guidelines for Americans 2005](#)
(Go [here](#) for the document you need: [Adults](#), [Children](#), [Seniors](#))

Back MyPyramid Recommendation Calculate History

For more information, click on an "Emoticon"

Analyze Your Food Intake

MyPyramid Tracker is based upon the recommendations of the Dietary Guidelines for Americans, 2005. Your food group and nutrient recommendations are goals for the entire day, not one meal. Your analysis will be based on the nutrient content of the foods you enter for one day and does not include the nutrients from dietary supplements. Dietary supplement information is provided below.

Select the following to analyze your dietary intake:

Meeting 2005 Dietary Guidelines (DG) >
You will see:

- Your recommended food groups and nutrient intakes within your energy needs
- Your intakes of basic food groups compared with the Dietary Guidelines for Americans, 2005 recommendations

[Calculate DG Comparison](#)

Nutrient Intakes >
You will see:

- Your nutrient intake scores
- Recommended intake information

[Calculate Nutrient Intakes from Foods](#)

Check your nutrient intake

Nutrient Intakes For tracker on 3/26/2005

A nutrient recommendation is a target or goal for intake of a nutrient. Your requirement for a particular nutrient is unique to you, but it is likely to be lower than the recommended number. If your intake is at or above this number, then it is probably adequate. If your intake is below this number, that does not necessarily mean an inadequate intake. If today's intake is typically what you eat, and your intake for a nutrient is at or above the recommendation, it is likely that your intake of that nutrient is adequate. To better assess your usual nutrient intake, you should report foods eaten for two or more days and review your nutrient intake over time. Click here if you want to see your nutrient profile with technical assessment information.

Nutrient	Your Intake	Recommendation or Acceptable Range
Food Energy/Total Calories (kcal)	1564	20-22
Protein (gm)	58	56
Carbohydrate (gm)	224	130
Total Fiber (gm)	14	38
Total Fat (gm)	52	34.8 - 60.8
Saturated Fat (gm)	12	< 17.4
Monounsaturated Fat (gm)	15	**
Polysaturated Fat (gm)	19	**
Linoleic (omega 6) (gm)	16.7	17
Alpha Linolenic (omega 3) (gm)	2.2	1.6
Cholesterol (mg)	569	< 300
Vitamin A (mcg RAE)	734.8	900
Vitamin C (mg)	227.7	90
Vitamin E (mg a-TE)	5.3	15
Thiamin (mg)		1.2

Compare your results to nutrient recommendations

This screenshot shows the main navigation menu of the MyPyramid Tracker website. The menu items are:

- Nutrient Intakes**: You will see:
 - Your nutrient intake scores
 - Recommended intake information
 - [Calculate Nutrient Intakes from Foods](#)
- MyPyramid Recommendation**: You will see:
 - MyPyramid recommendation for you based on your energy level
 - Comparison between your intake and the MyPyramid recommendation
 - [Calculate MyPyramid Stats](#)
- Nutrient Information for Dietary Supplements**:
 - For Nutrient Information on Dietary Supplements, click [here](#).
- Healthy Eating History**: You will see:
 - The Healthy Eating Index is currently under revision. This section will be updated in late Summer or early Fall 2005. Click [here](#) for more information.
 - Graphs of HEI and component scores over time ([under revision](#))
 - MyPyramid recommendation over time
 - Graphs of nutrient intakes over time
 - Text with average HEI scores ([under revision](#)), MyPyramid recommendation, nutrient intakes and nutrient recommendation met for days entered
 - [Calculate Healthy Eating History](#)

A yellow callout box points to the 'Calculate Healthy Eating History' link with the text: "Track your intake over time".

This screenshot displays the 'Healthy Eating History' section of the website. It features a line graph titled 'GRAM intake History for tracker'. The graph shows 'Your Score' (blue line) and a 'Trendline' (green dashed line) over time from 3/12/2005 to 4/2/2005. The y-axis represents the average oz equivalent, ranging from 0 to 3.1. A yellow callout box points to the graph with the text: "Track intake from 1 day to 1 year".

Below the graph is a table for data entry:

Date	oz equivalent
3/17/2005	0 oz equivalent
	2.7 oz equivalent

On the left side, there are links for 'Total HEI Score: Under Revision', 'MyPyramid Recommendation Components' (Grain, Vegetable, Fruit, Milk, Meat and Beans), and 'Nutrient Intakes' (Food Energy, Protein, Carbohydrate, Total Fiber, Saturated Fat, Monounsaturated Fat, Polyunsaturated Fat, Linoleic Acid, Alpha Linolenic Acid).

This screenshot shows the 'Physical Activity Tool' entry page. A yellow callout box on the left says: "Select an option (standard or condensed) to enter your physical activities". The page title is 'Physical Activity Tool' and the sub-header is 'Physical Activity Entry'.

The text on the page reads: "Please choose ONE of the following options for entering your physical activities for the day:"

Standard option: This option provides the most accurate assessment of your energy expenditure, and directly links to your Estimated Energy Requirement and Energy Balance Status. It requires that you enter all physical activities you performed for the past 24 hours. You should enter all activities you did to include personal hygiene, house or yard work, transportation, employment, and leisure. The total duration of these activities should add up to 1440 minutes. If the total duration is less than 1440 minutes, you will be prompted to add more activities or to check the duration of activities you have already entered. For activities you do often, you can create a stored list by using the "Frequently Performed Activities" list. Once you enter all activities, you will be prompted to enter the duration for each activity entered, and then to save the information for analysis.

Condensed option: This option allows you to bypass the standard option for physical activity entry. It is recommended for people with few leisure-time activities or for people who are not regular physical active. Based on the age, gender, weight and height information in your personal profile, an estimated Basal Energy Expenditure (BEE) is calculated and adjusted to include routine activities (i.e. personal hygiene, housework, light yard work, computer use and driving a car) of estimated duration. If you did not perform any additional leisure-time physical activity, you can directly analyze your results. In this case, your Estimated Energy Requirement (EER) is likely to be the same or similar to your Basal Energy Expenditure (BEE) adjusted for routine activities. If you performed one or more leisure-time physical activities, you will need to enter these activities using the physical activity entry page. You will be prompted to enter the duration for each activity entered, and then to save information for analysis. Results will account for the adjusted BEE, and any additional physical activity you performed and entered into the program. However, with or without additional leisure-time physical activity, the assessment of Estimated Energy Requirement (EER) using the condensed physical activity entry option may not be accurate.

Enter Activity Type
 Choose an activity from the dropdown menu or type a search term. Click [help](#) for details.
 How does the [Frequently Performed Activities List \(FPA\)](#) work?
 Activity Type: [Selection Tips](#)
 -- Enter Search Term -- [Frequently Performed Activities](#)

Activity Description:
 AEROBIC, GENERAL
 AEROBIC, HIGH IMPACT
 AEROBIC, LOW IMPACT
 AEROBIC, STEP, WITH 10 -12 INCH STEP

Daily Activities performed by tracker on 3/26/2005
 Continue adding activities until the list contains all activities performed on the date shown above. Click an item to remove it from your list. Press **Select Duration** when you are done.

- SHOWERING, TOWELING OFF (STANDING)
- SITTING - WRITING, DESK WORK, TYPING
- SLEEPING
- EATING (SITTING)
- TYPING, ELECTRIC, MANUAL OR COMPUTER
- GARDENING, GENERAL
- WALKING FOR PLEASURE
- LOADING/UNLOADING A CAR
- AUTOMOBILE OR LIGHT TRUCK (NOT A SEMI) DRIVING
- CARRYING GROCERIES UPSTAIRS
- FOOD SHOPPING WITH OR WITHOUT A GROCERY CART
- CLEANING, LIGHT (DUSTING, TAKING OUT TRASH)
- COOKING/FOOD PREPARATION - WALKING
- MOPPING
- WALK/ RUN, PLAYING WITH ANIMALS, MODERATE, ACTIVE

If you select "Standard option," enter all yesterday's activities and "Select Duration"

Here are the activities displayed for tracker on 3/26/2005

Select your duration for each activity. When you are done, click **Save & Analyze** to save your activity entry information and to analyze your exercise. If you want to make a list of your daily activities for another day, click **Return to Login** to save a date and entry information; then make another day's entry. For a record of today's food entry, click **Print Activity Record** prior to saving food entry. To return to initial values, click **Reset Values**. To add or remove activity items, click **Enter Activities**.

Activities Performed	Select Duration (in minutes)
SHOWERING, TOWELING OFF (STANDING)	30
SITTING - WRITING, DESK WORK, TYPING	480
SLEEPING	195
EATING (SITTING)	60
TYPING, ELECTRIC, MANUAL OR COMPUTER	180
GARDENING, GENERAL	120
WALKING FOR PLEASURE	60
LOADING/UNLOADING A CAR	30
AUTOMOBILE OR LIGHT TRUCK (NOT A SEMI) DRIVING	30
CARRYING GROCERIES UPSTAIRS	10
FOOD SHOPPING WITH OR WITHOUT A GROCERY CART	60
CLEANING, LIGHT (DUSTING, TAKING OUT TRASH)	30
COOKING/FOOD PREPARATION - WALKING	110
MOPPING	35
WALK/ RUN, PLAYING WITH ANIMALS, MODERATE, ACTIVE	30

Total: 1440 minutes

[Print Activity Record](#)

Enter duration for each activity

Physical Activity Tool
Physical Activity Entry

Please choose **ONE** of the following options for entering your physical activities for the day:

Standard option: This option provides the **most accurate** assessment of your energy expenditure, and directly links to your Estimated Energy Requirement and Energy Balance Status. **It requires that you enter all physical activities you performed for the past 24 hours.** You should enter all activities you did to include personal hygiene, house or yard work, transportation, employment, and leisure. The total duration of these activities should add up to 1440 minutes. If the total duration is less than 1440 minutes, you will be prompted to add more activities or to check the duration of activities you have already entered. For activities you do often, you can create a stored list by using the "Frequently Performed Activities" list. Once you enter all activities, you will be prompted to enter the duration for each activity entered, and then to save the information for analysis.

Condensed option: This option allows you to bypass the standard option for physical activity entry. It is recommended for people with few leisure-time activities or for people who are not regularly physical active. Based on the age, gender, weight and height information in your personal profile, an estimated Basal Energy Expenditure (BEE) is calculated and adjusted to include routine activities (i.e. personal hygiene, housework, light yard work, computer use and driving a car) of estimated duration. If you did not perform any leisure-time physical activity, you can directly analyze your results. In this case, your Estimated Energy Requirement (EER) is likely to be the same or similar to your BEE. If you performed one or more leisure-time physical activities, you will need to enter these activities using the "Physical Activity Entry" page. You will be prompted to enter the duration for each activity entered, and then to save information for analysis. Results will account for the BEE, and any additional physical activity you performed and entered into the program. However, with or without additional leisure-time physical activity, the assessment of Estimated Energy Requirement (EER) using the condensed physical activity entry option may not be accurate.

For easier activity entry, choose the condensed option

USDA - CNPP - MyPyramid Tracker - Microsoft Internet Explorer

Address: http://209.48.219.44/pat.aspx?base=

MyPyramid Tracker

Home Information Update Profile Physical Activity Entry Analyze Physical Activities Physical Activity Information Food Intake Entry Energy Balance Center for Nutrition Policy & Promotion

Enter Activity Type
Choose an activity from the dropdown menu or type a search term. Click [here](#) for details.
How does the [Expanded Performed Activities List \(EPAL\)](#) work?

Activity Type:
 -- All Activities -- Select [Selection Title](#)
 -- Enter Search Term -- Search [Previously Performed Activities](#)

Activity Description:
 -- Please select activity type or type a search term --
 Add Activity Add to FPA

Daily Activities performed by **tracker** on 3/25/2005
 Continue adding activities until the list contains all activities performed on the date shown above. Click on item to remove it from your list. Press **Select Duration** when you are done.

AEROBIC, HIGH IMPACT
 Select Duration Remove All

Add only activities in addition to normal routine and enter duration for each

USDA - CNPP - MyPyramid Tracker - Microsoft Internet Explorer

Address: http://209.48.219.44/pat/report.aspx

MyPyramid Tracker

Home Information Update Profile Physical Activity Entry Analyze Physical Activities Physical Activity Information Food Intake Entry Energy Balance Center for Nutrition Policy & Promotion

Analyze Your Physical Activity

Select from the following to analyze your Physical Activity:

Physical Activity Analysis
 You will see:
 • Your Physical Activity Results to include activity type, description, category, and intensity for each activity
 • Your Physical Activity Score (0-100)
 • Your Total Calories Expended
[Calculate your Physical Activity Score](#)

Physical Activity History
 You will see:
 • Graphs of Physical Activity scores and Total Calories Expended over time
 • Average Physical Activity scores and Total Calories Expended
[Calculate Physical Activity History](#)

Select an option to analyze your physical activities

USDA - CNPP - MyPyramid Tracker - Microsoft Internet Explorer

Address: http://209.48.219.44/pat/report.aspx

MyPyramid Tracker

Home Information Update Profile Physical Activity Entry Analyze Physical Activities Physical Activity Information Food Intake Entry Energy Balance Center for Nutrition Policy & Promotion

Physical Activity Results for **tracker on 3/25/2005**

You chose the condensed physical activity entry option and added one or more physical activities. These activities have been analyzed, but your physical activity assessment results may not be completely accurate.

Activity Type	Activity Description	Activity Category	MCEs	Intensity Classification	Duration in Minutes	Calories Expended
DANCING	AEROBIC, HIGH IMPACT	LEISURE	7	VIGOROUS	40	677

* No score is allocated for activities of light intensity. See the [Activity Help](#) document for more information.

Result Summary
 Click directly on the numbers or use in the table for more detailed physical activity information.

Credited Minutes	60
Total Calories Expended from Physical Activity	622
Physical Activity Score (Out of 100)	100
Physical Activity Assessment	Good

[Back](#) [Calculate Physical Activity History](#)

View your physical activity assessment

USDA - CNPP - MyPyramid Tracker - Microsoft Internet Explorer

Physical Activity Tool

Physical Activity Score: Good

Even though you have been active, it may be advisable for you to see your physician or health care provider for a medical evaluation before changing any exercise routine.

Good job! You are performing the recommended amount of daily moderate physical activity to ensure important health benefits. If you are doing only moderate activity, you might want to try including more vigorous activity as part of your workout routine. This will increase your level of physical fitness and challenge your physical strength.

Congratulations! If you are already doing vigorous activity or a mixture of moderate and vigorous activities, you improve your physical fitness level by increasing endurance or strength when you do such activities.

If you are not including muscular strength and flexibility exercises as part of your workout routine 2 to 3 days per week, you should make this a fitness goal. Such activities will help develop your physical fitness level or increasing strength or balance and flexibility, depending on the activity you choose. Remember that a number of occupational and household activities of vigorous intensity can count towards your scores. Such activities include heavy carpentry, construction work, and scrubbing floors. Click [here](#) for a list of occupational activities. Click [here](#) for a list of household activities.*

If you are interested in increasing your fitness level, aim for aerobic and muscle fitness workouts with the following characteristics:**

- Aerobic activities 3-5 days per week for 20-60 minutes that
 - Increase heart rate and calories burned
 - Cause sweating and increase breathing, such as [brisk walking](#), [jogging](#), [bicycling](#), [water aerobics](#), [aerobic dance](#) or [step](#), or [aqua aerobics](#).
 - Use 300-400 calories (kcal) per session
 - Include a warm-up and cool-down with slow breathing and stretching
 - Click [here](#) for an aerobic exercise routine.
- Muscular strength exercises 2-3 days per week for 20-60 minutes that include
 - Separate exercises for each of the major muscle groups to include upper and lower body (b) include bicep curl, tricep press, squats, lunges, push-ups) Click [here](#) for some examples of exercises.
 - Perform one set of 8-12 repetitions for each muscle group
 - Evaluate full range of motion
 - Use proper technique

on 3/25/2005

**not one or more physical activities.
 not results may not be completely accurate.**

Duration in Minutes	Calories Expended
60	677

For more information, click on a link

USDA - CNPP - MyPyramid Tracker - Microsoft Internet Explorer

Physical Activity History

Select a link below to graph your physical activity history in the right panel:

[Total Physical Activity Score](#)
[Total Calories Expended](#)

Physical Activity History

TOTAL ACTIVITY SCORE History for tracker

View History for: 1 day | 1 week | 1 month | 3 months | 6 months | 1 year

Average PA Score: 100

Date	PA Score
3/26/2005	100
3/26/2006	100

USDA - CNPP - MyPyramid Tracker - Microsoft Internet Explorer

Energy Balance Summary for tracker on 3/26/2005

Energy balance is the state in which food energy from the intake of food is equal to the energy or calories expended through physical activity. Energy balance is important to successful weight management. When you take in more food energy than your body needs, you will gain weight. This is a positive energy balance. When you expend more energy or calories than you take in, you will lose weight. This is a negative energy balance. To maintain your energy balance you need to ensure that your Total Food Energy Intake is equal to the Estimated Energy Requirement (EER) calculated for you in the summary table below. The EER is based on your age, gender, weight, and height reported in your personal profile and physical activity level calculated from your physical activity entry. Along with providing you important information about your energy balance status, this table also compares your food energy intake and calories expended from physical activity to the EER.

Caloric Intake and Expenditure Summary

Click directly on the numbers in the table for more detailed information.

Total Food Energy Intake	3347	Estimated Energy Requirement (EER)	3222
Percent of Calorie Intake from Estimated Energy Requirement	104%	Percent of Calories Expended from Physical Activity	18%

Your reported food energy intake is higher than your Estimated Energy Requirement for the day. An increase of 100 to 200 calories per day over time may result in some gradual weight gain.
** If you consume 100 calories more a day than you need, you could gain about 10 pounds per year. At 200 calories more a day, this will double the weight gained to 20 pounds per year.

View Nutrient Intake Results | View Physical Activity History | View Energy Balance History


The End

Go to [MyPyramid Tracker](#) Now!



APPENDIX B

Researcher's PowerPoint




Is It Really More Expensive to Eat Healthy Foods?
 A Case Study Approach
 Presented by: Laura Hilliard

Paradox of Food Insecurity and Obesity

What is it?

- Lack of money can contribute to both hunger and obesity.
- Partly due to the economics of buying food




WHERE DOES THE FLAB ORIGINATE?

- 3 main reasons recognized in research:
 - Need to maximize caloric intake
 - Trade off between food quantity and quality
 - Overeating when food is available

+ **DOES HEALTHY EATING
HAVE TO BE EXPENSIVE?**

No! No!
No! **No!** No!
No! No! No!



+ **YOUR MISSION**



Spend just **\$4.50** per day on food (including beverages) or **\$139.50** for the entire month (31 days).

This will be your food budget for one month. Your diet should follow the Food Guide Pyramid.

Keep all receipts from the grocery store and turn them into the researcher.

+ YOUR MISSION

Do not use food you already have unless you deduct the value from your amount for the month.

Salt and Pepper do not count as an expense.



+ YOUR MISSION



Do not accept food from others unless you are at a gathering where food is given out to all who come.

Food given out freely will not count against your budget; however, if you bring food to the gathering that food will count as an expense in your budget.

+ YOUR MISSION

Log the foods you eat in MyPyramid Tracker daily to demonstrate how you are complying with the Food Guide Pyramid.

Note in the survey (journal) what guideline(s) is not being met and why.



+ YOUR MISSION



Complete the online survey for each day of the month. This is your "journal" for the month where you will note your daily experience including expenses, feelings, food choices, etc.

Try to fill it out daily, if not, fill out multiple surveys at one time for the days missed.

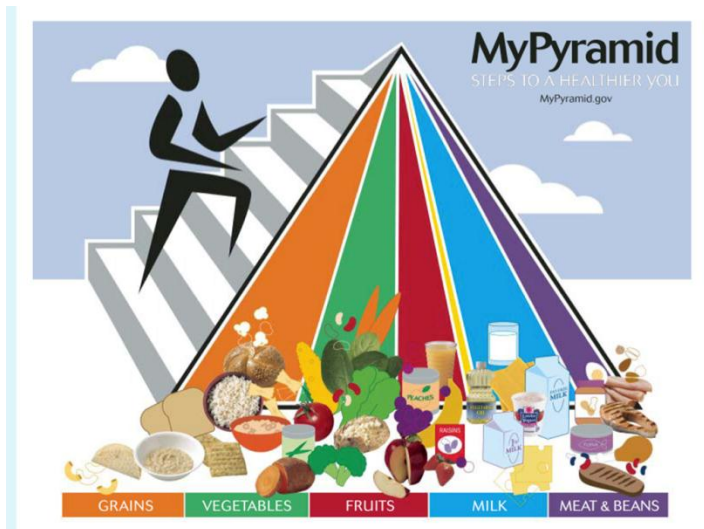
+ Battle Your Buck

■ Weapons for WAR:

- Bite Into the Right Foods
- Food Labels Don't Tell Fables
- Steer Clear of Portion Distortion



Bite Into the Right Foods



GRAINS <i>Make half your grains whole</i>	VEGETABLES <i>Vary your veggies</i>	FRUITS <i>Focus on fruits</i>	MILK <i>Get your calcium-rich foods</i>	MEAT & BEANS <i>Go lean with protein</i>
<p>Eat at least 3 oz. of whole-grain cereals, breads, crackers, rice, or pasta every day</p> <p>1 oz. is about 1 slice of bread, about 1 cup of breakfast cereal, or 1/2 cup of cooked rice, cereal, or pasta</p>	<p>Eat more dark-green veggies like broccoli, spinach, and other dark leafy greens</p> <p>Eat more orange vegetables like carrots and sweetpotatoes</p> <p>Eat more dry beans and peas like pinto beans, kidney beans, and lentils</p>	<p>Eat a variety of fruit</p> <p>Choose fresh, frozen, canned, or dried fruit</p> <p>Go easy on fruit juices</p>	<p>Go low-fat or fat-free when you choose milk, yogurt, and other milk products</p> <p>If you don't or can't consume milk, choose lactose-free products or other calcium sources such as fortified foods and beverages</p>	<p>Choose low-fat or lean meats and poultry</p> <p>Bake it, broil it, or grill it</p> <p>Vary your protein routine — choose more fish, beans, peas, nuts, and seeds</p>
<p>For a 2,000-calorie diet, you need the amounts below from each food group. To find the amounts that are right for you, go to MyPyramid.gov.</p>				
<p>Eat 6 oz. every day</p>	<p>Eat 2 1/2 cups every day</p>	<p>Eat 2 cups every day</p>	<p>Get 3 cups every day: <small>for kids aged 2 to 8, it's 2</small></p>	<p>Eat 5 1/2 oz. every day</p>
<p>Find your balance between food and physical activity</p> <ul style="list-style-type: none"> Be sure to stay within your daily calorie needs. Be physically active for at least 30 minutes most days of the week. About 60 minutes a day of physical activity may be needed to prevent weight gain. For sustaining weight loss, at least 60 to 90 minutes a day of physical activity may be required. Children and teenagers should be physically active for 60 minutes every day, or most days. 		<p>Know the limits on fats, sugars, and salt (sodium)</p> <ul style="list-style-type: none"> Make most of your fat sources from fish, nuts, and vegetable oils. Limit solid fats like butter, margarine, shortening, and lard, as well as foods that contain these. Check the Nutrition Facts label to keep saturated fats, trans fats, and sodium low. Choose food and beverages low in added sugars. Added sugars contribute calories with few, if any, nutrients. 		



U.S. Department of Agriculture
Center for Nutrition Policy and Promotion
April 2005
CNP-15



+ BITE INTO THE RIGHT FOODS

■ Breads & Grains

- Whole Grains
 - Fiber, Iron, B vitamins
- Refined Grains
 - Look for Enriched

■ Saving Point:

- Bread bargains (ex: day old)
- Buy regular over instant
- Try whole grains



+ **BITE INTO THE RIGHT FOODS**

■ **Best Bargains:**

- Oatmeal
 - ~ \$0.15/serving
- Brown Rice
 - ~\$0.19/serving
- Whole Grain Pasta
 - ~\$0.45/serving



+ **BITE INTO THE RIGHT FOODS**

■ **Vegetables**

- Reduce risk for certain diseases
- No cholesterol
- Low Calorie
- Contain:
 - Fiber, Folate, Vitamin A, Vitamin E, Vitamin C, & Potassium

■ **Saving Point:**

- Try frozen
- Small amounts from salad bar



+ **Bite Into the Right Foods**

■ **Best Bargains:**

- Carrots ~\$0.23/serving
- Frozen Spinach ~\$0.50/serving



- Canned Tomatoes ~\$0.28/serving
- Sweet Potatoes ~\$0.37/serving
- Broccoli ~\$0.63/serving

+ BITE INTO THE RIGHT FOODS

■ Fruits

- Protect against certain diseases
- Contain: potassium, fiber, Vitamin C, and folate
- Low in fat, sodium, and calories
- No cholesterol

■ Saving Point:

- Buy in season
- Canned in 100% juice



+ BITE INTO THE RIGHT FOODS

■ Best Bargains:

- Apples
 - ~\$0.68/each
- Bananas
 - ~\$0.35/each
- Oranges
 - ~\$0.41/each
- Frozen
 - ~\$0.75-1.50/serving
- Canned
 - ~\$0.20/serving



+ BITE INTO THE RIGHT FOODS



■ Meat & Poultry

- Protein-builds up your body
- B Vitamins , Vitamin E, Iron, Zinc, & Magnesium
- Buy lean & vary your choices

■ Saving Point:

- Look for specials
- Chuck & Round Roast
 - Less \$ and fat!
- Buy the whole chicken

+ BITE INTO THE RIGHT FOODS



■ Best Bargains:

- Canned Salmon
 - ~\$0.59/serving
- Canned Tuna
 - ~\$0.79/serving
- Chicken Breast
 - ~\$0.87/serving
- Eggs
 - ~\$0.17/serving

+ BITE INTO THE RIGHT FOODS



■ Meat Substitutes

- Fiber
- Vitamins & Minerals
- Vegetable & Meat Groups

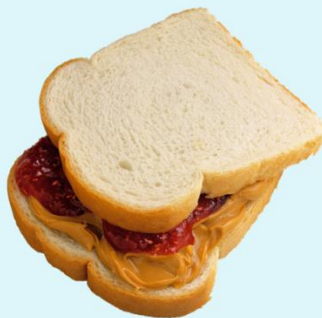
■ Save \$

- Cost less than meat
- Lower in fat
- Long shelf life

■ Saving Point:

- Dried beans & peas
- Bulk when available

+ BITE INTO THE RIGHT FOODS



■ Best Bargains:

- Peanut Butter
 - ~\$0.20/serving
- Dried Lentils
 - ~0.20/serving
- Canned Beans
 - ~0.28/serving

+ BITE INTO THE RIGHT FOODS

- **Milk & Dairy**
 - Build & maintain bone mass
 - Contains: Calcium, Potassium, & Vitamin D
 - Fat-free or lowfat
- **Saving Point:**
 - Try nonfat dry milk
 - Gallon or ½ gallon over quart



+ BITE INTO THE RIGHT FOODS

- **Best Bargain:**
 - Gallon Skim Milk
 - ~\$.19/serving
 - Light Yogurt
 - ~\$.20/serving



+ Try Generic & Store Brand Foods

- **Tasty for Your Tummy and Good for Your Money**
 - Almost Always Cost Less
 - Usually Taste the Same
 - Often Use the Same Ingredients
 - Make Sure to Check Labels





Food Labels Don't Tell Fables

Nutrition Facts		
Serving Size 1 cup (228g)		Start here
Servings Per Container 2		Check calories
Amount Per Serving		Quick guide to % DV
Calories 250	Calories from Fat 110	5% or less is low
	% Daily Value*	20% or more is high
Total Fat 12g	18%	Limit these
Saturated Fat 3g	15%	
Trans Fat 3g		
Cholesterol 30mg	10%	Get enough of these
Sodium 470mg	20%	
Potassium 700mg	20%	
Total Carbohydrate 31g	10%	Footnote
Dietary Fiber 0g	0%	
Sugars 5g		
Protein 5g		
Vitamin A	4%	
Vitamin C	2%	
Calcium	20%	
Iron	4%	

	Calories: 2,000	2,500
Total Fat	Less than 65g	65g
Sat Fat	Less than 20g	25g
Cholesterol	Less than 300mg	300mg
Sodium	Less than 2,400mg	2,400mg
Total Carbohydrate	300g	375g
Dietary Fiber	25g	30g

What is a Food Label?

Nutritional facts label lists the percentages supplied of what is required in one day of human nutrients based of the average 2000 calorie a day diet.

+ Nutrient Dense vs Empty Calories

Nutrient Dense

Skim Milk	
Serving Size 8 fl oz (240mL)	
Servings Per Container 2	
Amount Per Serving	
Calories 80	Calories from Fat 0
	% Daily Value*
Total Fat 0g	0%
Saturated Fat 0g	0%
Cholesterol less than 5mg	1%
Sodium 130mg	5%
Total Carbohydrate 12g	4%
Dietary Fiber 0g	0%
Sugars 11g	
Protein 8g	
Vitamin A 8%	Vitamin C 4%
Calcium 30%	Iron 0% + Vitamin D 25%

	Calories: 2,000	2,500
Total Fat	Less than 65g	65g
Sat Fat	Less than 20g	25g
Cholesterol	Less than 300mg	300mg
Sodium	Less than 2,400mg	2,400mg
Total Carbohydrate	300g	375g
Dietary Fiber	25g	30g

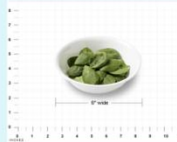
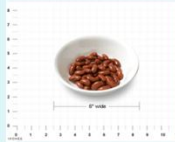
Empty Calories

Nutrition Facts	
Serving Size 1 can (12 fl oz)	
Servings Per Container 1	
Amount Per Serving	
Calories 140	Calories from Fat 0
	% Daily Value*
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 60mg	2%
Total Carbohydrate 39g	13%
Dietary Fiber 0g	0%
Sugars 39g	
Protein 0g	
Vitamin A 0%	Vitamin C 0%
Calcium 0%	Iron 0%

+ Steer Clear of Portion Distortion

Vegetables- 2.5 cups daily for 2000 kcal diet

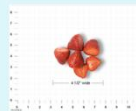
1 serving = 1 cup, or 2 cups for leafy greens



+ Steer Clear of Portion Distortion

Fruits- 2 cups daily for a 2000 kcal diet

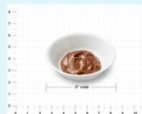
1 serving = 1 cup fruit or 100% fruit juice
(1/2 cup dried)



+ Steer Clear of Portion Distortion

Dairy- 3 cups daily for 2000 kcal diet

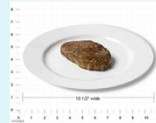
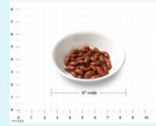
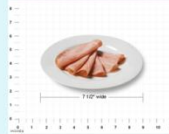
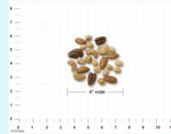
1 serving = 1 cup milk or yogurt, 1 1/2 oz natural cheese, 2 oz of processed cheese



+ Steer Clear of Portion Distortion

Meat & Beans- 5.5 oz daily

1 serving= 1 oz meat, ¼ cup beans, 1 egg,
1 Tbsp peanut butter, or ½ oz nuts



+ To Steer Clear of Portion Distortion



Your Hands Can Come in Handy!

+ Practice Makes Perfect

Hand Symbol	Equivalent	Foods	Calories
	Fist 1 cup	Rice, pasta Fruit Veggies	200 75 40
	Palm 3 ounces	Meat Fish Poultry	160 160 160
	Handful 1 ounce	Nuts Raisins	170 85
	2 Handfuls 1 ounce	Chips Popcorn Pretzels	150 120 100
	Thumb 1 ounce	Peanut butter Hard cheese	170 100
	Thumb tip 1 teaspoon	Cooking oil Mayonnaise, butter Sugar	40 35 15

+

Portion Plate

The Divided Plate
 Not only does the divided plate concept help manage portion size, it also helps you to eat a healthy variety of foods.

Protein <small>2 1/2 ounces</small> meat, beans, tofu	Starch <small>3 ounces</small> bread, pasta, rice
Vegetable <small>1/2 cup</small> for example: green beans, peas, carrots, broccoli	Vegetable <small>1/2 cup</small> for example: green salad, cauliflower, spinach

protein **Starch**
Vegetable **Vegetable**

Portion Plate

Can YOU build a meal?

+

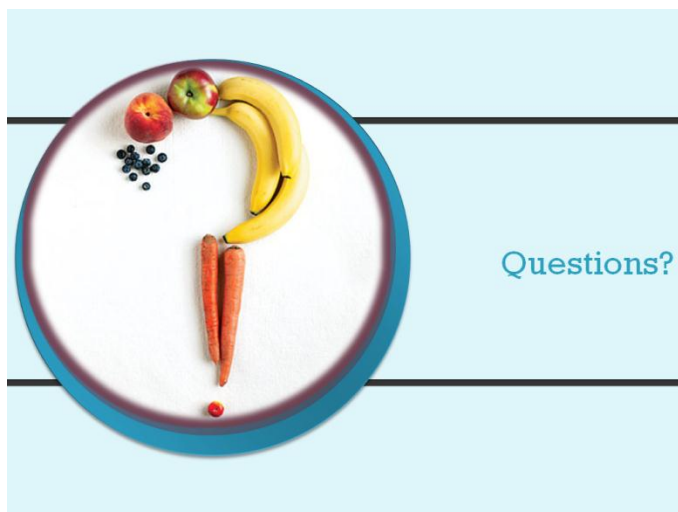
Battle Your Buck

Weapons for WAR:

- Bite Into the Right Foods
- Food Labels Don't Tell Fables
- Steer Clear of Portion Distortion

+ Incentives

- Week 1: Free Common Grounds
- Week 2: Movie Tickets
- Week 3: Stainless Steel Water Bottles
- Week 4: iTunes Money
- TOTAL: Most prompt person will receive \$50 gift card to Kroger



APPENDIX C

RULES

Your Mission, Should You Choose to Accept It

- ④ Spend just \$4.50 per day on food (including beverages) or \$139.50 for the entire month (31 days). This will be your food budget for one month. Your diet should follow the Food Guide Pyramid. Keep all receipts from the grocery store and turn them into the researcher.

- ④ Do not use food you already have unless you deduct the value from your amount for the month. Salt and Pepper do not count as an expense.

- ④ Do not accept food from others unless you are at a gathering where food is given out to all who come. Food given out freely will not count against your budget; however, if you bring food to the gathering that food will count as an expense in your budget.

- ④ Log the foods you eat in MyPyramid Tracker daily to demonstrate how you are complying with the Food Guide Pyramid. Note in the survey (journal) what guideline(s) is not being met and why.

- ④ Complete the online survey for each day of the month. This is your "journal" for the month where you will note your daily experience including expenses, feelings, food choices, etc. Try to fill it out daily, if not, fill out multiple surveys at one time for the days missed.

APPENDIX D

LimeSurvey/Journal

Healthy Eating Journal

This is to serve as your "Journal" during your time as a participant in my thesis: "Is It Really More Expensive to Eat Healthy Foods? A Case Study Approach."

Please try to complete this each day. If you don't have daily access to the internet, just complete it when you can. This survey should only take a few minutes.

Hello participants!

Please complete all questions that apply to you for the day. They don't have to be long explanations, just let me know how you feel and what your experience has been like thus far.

Thank you!
Laura

There are 12 questions in this survey.

A note on privacy

This survey is anonymous.

The record kept of your survey responses does not contain any identifying information about you unless a specific question in the survey has asked for this. If you have responded to a survey that used an identifying token to allow you to access the survey, you can rest assured that the identifying token is not kept with your responses. It is managed in a separate database, and will only be updated to indicate that you have (or haven't) completed this survey. There is no way of matching identification tokens with survey responses in this survey.

[\[Exit and clear survey\]](#)

This survey is not currently active. You will not be able to save your responses.

Healthy Eating Journal

This is to serve as your "Journal" during your time as a participant in my thesis: "Is It Really More Expensive to Eat Healthy Foods? A Case Study Approach."

Please try to complete this each day. If you don't have daily access to the internet, just complete it when you can. This survey should only take a few minutes.
Hello participants!

Please complete all questions that apply to you for the day. They don't have to be long explanations, just let me know how you feel and what your experience has been like thus far.

Thank you!
Laura

There are 12 questions in this survey

Journal Questions

Please answer the questions that apply to you today:

1 [Name]What is your code name? *

Please choose **only one** of the following:

- Mac A. Roni
- Brock O'Lee
- Jim Shorts
- Willy Makeit
- Pete Zah
- Lynn Gwinney
- Ileana Dover
- Millie Graham
- Sue Zuki
- Cookie Jahr

Please indicate who you are so information does not get mixed up

2 [13]What is this journal entry's date? (specifically the day this journal information applies to)

Ex: 05/21/2011 *

Please write your answer here:

3 [1] Were you able to maintain your budget today (\$4.15)? *Please choose **only one** of the following:

- Yes, I spent at or less than \$4.15 on food today
- No, I spent over \$4.15 on food today
- Uncertain, I am unsure how much I spent on food today

4 [2] Were you able to maintain the Food Guide Pyramid recommendations today? *Please choose **only one** of the following:

- Yes
- No

Base this answer off of what MyPyramid says about your food intake today.

5 [3] If you did not meet the Food Guide Pyramid recommendations, please indicate what categories you were over or under. *Please choose **all that apply**:

- Over in Fruits
- Under in Fruits
- Over in Vegetables
- Under in Vegetables
- Over in Grains
- Under in Grains
- Over in Milk
- Under in Milk
- Over in Meat & Beans
- Under in Meat & Beans
- Over in Oils
- Under in Oils
- Does not apply, I met all recommendations today

You can click on all that apply. Base your answers off of what MyPyramid says about your food intake today.

6 [4] How much time did you devote to making meals today?Please choose **only one** of the following:

- Less than 30 minutes
- 30 minutes - 1 hour
- 1-2 hours
- 2-3 hours
- 3-4 hours
- More than 4 hours

Give your best estimated time that includes all preparations and cooking

7 [5] What ways (if any) did you strategically save money today? *Please choose **all that apply**:

- Coupon use
- Batch cooking (cooking in large quantities to use left overs)
- Bulk purchasing
- Planning meals in advance
- Using a grocery list
- Buying generic brands
- Using the weekly store circular
- Stocking up on sale items
- Going to multiple grocery stores to get the best deals
- I did not use any strategies to save money today
- Other:

If you saved money in a different way than listed, please indicate how in the "other" space.

8 [6] How did you feel after your meals? *

Please choose all that apply and provide a comment:

<input type="checkbox"/> Hungry	<input type="text"/>
<input type="checkbox"/> Satisfied	<input type="text"/>
<input type="checkbox"/> Full	<input type="text"/>
Other:	<input type="text"/>

Feel free to comment about how full or hungry you felt after each meal

9 [7] Is there anything that you particularly missed today? (social life, certain food, etc.)

Please write your answer here:

Please indicate what you miss about your answer

10 [8] Please explain your experiences today (positive and/or negative): *

Please write your answer here:

Be as brief or as detailed as you like here. This section is for you to open up about your general experience in relation to this study today.

11 [10] Is there any thing I haven't asked you that you would like to comment on today?

Please write your answer here:

12 [9] Did you run out of food and/or money at the end of the month?

Please indicate in the space provided a brief explanation of how much you were over or under the budget of \$139.50 and why you were successful or unsuccessful.

Please choose **only one** of the following:

- Yes
- No
- Does not apply yet

Make a comment on your choice here:

You only need to answer this question at the end of the month.

APPENDIX E

Consent Form

CONSENT FORM

Dear Participant,

My name is Laura Hilliard. I am a graduate student at Southern Illinois University-Carbondale in Food and Nutrition. I am asking you to participate in my research study. The purpose of this study is to determine the extent to which one can adhere to the USDA Food Guide Pyramid recommendations while only receiving Supplemental Nutrition Assistance Program's benefits. The results of this study should help to determine what measures must be taken to abide by the Food Guide Pyramid while maintaining a budget allotted by the Federal government for SNAP participants.

Participation is voluntary. If you choose to participate in the study, it will require your participation for an entire month. During this time you will be asked to:

- Spend just \$4.50 per day on food (including beverages) or \$139.50 for the entire month (31 days). This will be your food budget for one month. Keep all receipts from the grocery store and turn them into the researcher.
- Do not use food you already have unless you deduct the value from your amount for the month. Salt and Pepper do not count as an expense.
- Do not accept food from others unless you are at a gathering where food is given out to all who come. Food given out freely will not count against your budget; however, if you bring food to the gathering that food will count as an expense in your budget.
- Log the foods you eat in MyPyramid Tracker daily to demonstrate how you are complying with the 2005 Dietary Guidelines. Note in the survey (journal) what guideline(s) is not being met and why.
- Complete the online survey for each day of the month. This is your "journal" for the month where you will note your daily experience including expenses, feelings, food choices, etc. Try to fill it out daily, if not, fill out multiple surveys at one time for the days missed.

All your responses will be kept confidential within reasonable limits. Only those directly involved with this project will have access to the data.

If you have any questions about the study, please contact me at 618-889-9548 or by email at laura_lou08@yahoo.com

Thank you in advance for taking the time to assist me in this research!

Sincerely,

Laura Hilliard

Participant's Agreement:

I am aware that my participation in this study is voluntary. I agree to participate in this activity and know that my responses will be viewed by the thesis committee. I understand the intent and purpose of this research. If, for any reason, at any time, I wish to stop participation in the study, I may do so without having to give an explanation.

I have been offered a copy of this consent form that I may keep for my own reference.

I have read the above form and, with the understanding that I can withdraw at any time and for whatever reason, I consent to participate in this consent to participate in this thesis project.

Participant Signature and Date

This project has been reviewed and approved by the SIUC Human Subjects Committee. Questions concerning your rights as a participant in this research may be addressed to the Committee Chairperson, Office of Research Development and Administration, SIUC, Carbondale, IL 62901-4709. Phone (618) 453-4533. E-mail: siuhsc@siu.edu

APPENDIX F

Tanita Readings

Mac #1

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	FEMALE
AGE	48
HEIGHT	5ft 3.0in
WEIGHT	117.0lb
BMI	20.7
FAT%	23.5%
BMR	5171 kJ 1236kcal
IMPEDANCE	554 Ω
FAT MASS	27.4lb
FFM	89.6lb
TBW	65.6lb
DESIRABLE RANGE	
FAT%	23-34%
FAT MASS	26.8-46.2lb

Mac #2

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	FEMALE
AGE	48
HEIGHT	5ft 3.0in
WEIGHT	114.8lb
BMI	20.3
FAT%	18.9%
BMR	5131 kJ 1226kcal
IMPEDANCE	493 Ω
FAT MASS	21.6lb
FFM	93.2lb
TBW	68.2lb
DESIRABLE RANGE	
FAT%	23-34%
FAT MASS	27.8-48.0lb

Ileana #1

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	FEMALE
AGE	26
HEIGHT	5ft 10.0in
WEIGHT	145.8lb
BMI	20.9
FAT%	29.8%
BMR	6264 kJ 1497kcal
IMPEDANCE	605 Ω
FAT MASS	43.4lb
FFM	102.4lb
TBW	75.0lb
DESIRABLE RANGE	
FAT%	21-33%
FAT MASS	27.2-50.4lb

Ileana #2

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	FEMALE
AGE	26
HEIGHT	5ft 10.0in
WEIGHT	139.2lb
BMI	20.0
FAT%	28.3%
BMR	6144 kJ 1468kcal
IMPEDANCE	630 Ω
FAT MASS	39.4lb
FFM	99.8lb
TBW	73.0lb
DESIRABLE RANGE	
FAT%	21-33%
FAT MASS	26.6-49.2lb

Lynn #1TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	FEMALE
AGE	25
HEIGHT	5ft 7.0in
WEIGHT	141.6lb
BMI	22.2
FAT%	30.1%
BMR	6148 kJ 1470kcal
IMPEDANCE	603 Ω
FAT MASS	42.6lb
FFM	99.0lb
TBW	72.4lb
DESIRABLE RANGE	
FAT%	21-33%
FAT MASS	26.4-48.8lb

Lynn #2TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	FEMALE
AGE	25
HEIGHT	5ft 7.0in
WEIGHT	142.0lb
BMI	22.2
FAT%	28.1%
BMR	6156 kJ 1471kcal
IMPEDANCE	551 Ω
FAT MASS	40.0lb
FFM	102.0lb
TBW	74.6lb
DESIRABLE RANGE	
FAT%	21-33%
FAT MASS	27.2-50.2lb

Willy #1TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	MALE
AGE	23
HEIGHT	6ft 7.0in
WEIGHT	192.4lb
BMI	21.7
FAT%	12.0%
BMR	8864 kJ 2119kcal
IMPEDANCE	498 Ω
FAT MASS	23.0lb
FFM	169.4lb
TBW	124.0lb
DESIRABLE RANGE	
FAT%	8-20%
FAT MASS	14.8-42.4lb

Willy #2TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	MALE
AGE	23
HEIGHT	6ft 7.0in
WEIGHT	192.0lb
BMI	21.6
FAT%	9.3%
BMR	8854 kJ 2116kcal
IMPEDANCE	415 Ω
FAT MASS	17.8lb
FFM	174.2lb
TBW	127.6lb
DESIRABLE RANGE	
FAT%	8-20%
FAT MASS	15.2-43.6lb

Brock #1

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	MALE
AGE	23
HEIGHT	5ft 9.5in
WEIGHT	176.4lb
BMI	25.7
FAT%	15.1%
BMR	7941 kJ
	1898kcal
IMPEDANCE	402 Ω
FAT MASS	26.6lb
FFM	149.8lb
TBW	109.6lb
DESIRABLE RANGE	
FAT%	8-20%
FAT MASS	13.0-37.4lb

Brock #2

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	MALE
AGE	23
HEIGHT	5ft 9.5in
WEIGHT	172.8lb
BMI	25.2
FAT%	15.9%
BMR	7846 kJ
	1875kcal
IMPEDANCE	439 Ω
FAT MASS	27.4lb
FFM	145.4lb
TBW	106.4lb
DESIRABLE RANGE	
FAT%	8-20%
FAT MASS	12.6-36.4lb

Sue #1

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	MALE
AGE	23
HEIGHT	5ft 9.0in
WEIGHT	176.8lb
BMI	26.1
FAT%	14.9%
BMR	7925 kJ
	1894kcal
IMPEDANCE	386 Ω
FAT MASS	26.4lb
FFM	150.4lb
TBW	110.0lb
DESIRABLE RANGE	
FAT%	8-20%
FAT MASS	13.0-37.6lb

Sue #2

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	MALE
AGE	23
HEIGHT	5ft 10.0in
WEIGHT	176.0lb
BMI	25.3
FAT%	13.7%
BMR	7957 kJ
	1902kcal
IMPEDANCE	388 Ω
FAT MASS	24.2lb
FFM	151.8lb
TBW	111.2lb
DESIRABLE RANGE	
FAT%	8-20%
FAT MASS	13.2-38.0lb

Millie #1

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	FEMALE
AGE	24
HEIGHT	5ft 0.0in
WEIGHT	110.6lb
BMI	21.6
FAT%	20.3%
BMR	5466 kJ
	1306kcal
IMPEDANCE	583 Ω
FAT MASS	22.4lb
FFM	88.2lb
TBW	64.6lb
DESIRABLE RANGE	
FAT%	21-33%
FAT MASS	23.4-43.4lb

Millie #2

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	FEMALE
AGE	24
HEIGHT	5ft 1.0in
WEIGHT	109.8lb
BMI	20.7
FAT%	17.8%
BMR	5471 kJ
	1308kcal
IMPEDANCE	558 Ω
FAT MASS	19.6lb
FFM	90.2lb
TBW	66.0lb
DESIRABLE RANGE	
FAT%	21-33%
FAT MASS	24.0-44.4lb

Cookie #1

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	FEMALE
AGE	26
HEIGHT	5ft 2.5in
WEIGHT	143.4lb
BMI	25.8
FAT%	28.6%
BMR	6074 kJ
	1452kcal
IMPEDANCE	477 Ω
FAT MASS	41.0lb
FFM	102.4lb
TBW	75.0lb
DESIRABLE RANGE	
FAT%	21-33%
FAT MASS	27.2-50.4lb

Cookie #2

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	FEMALE
AGE	26
HEIGHT	5ft 2.0in
WEIGHT	143.2lb
BMI	26.2
FAT%	27.5%
BMR	6060 kJ
	1448kcal
IMPEDANCE	452 Ω
FAT MASS	39.4lb
FFM	103.8lb
TBW	76.0lb
DESIRABLE RANGE	
FAT%	21-33%
FAT MASS	27.6-51.2lb

Pete #1

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	MALE
AGE	44
HEIGHT	5ft 9.0in
WEIGHT	195.4lb
BMI	28.9
FAT%	24.8%
BMR	7818 kJ
	1869kcal
IMPEDANCE	435 Ω
FAT MASS	48.4lb
FFM	147.0lb
TBW	107.6lb
DESIRABLE RANGE	
FAT%	11-22%
FAT MASS	18.2-41.4lb

Pete #2

TANITA
BODY COMPOSITION
ANALYZER
TBF-300A

BODY TYPE	STANDARD
GENDER	MALE
AGE	44
HEIGHT	5ft 9.0in
WEIGHT	198.0lb
BMI	29.2
FAT%	23.5%
BMR	7886 kJ
	1885kcal
IMPEDANCE	405 Ω
FAT MASS	46.6lb
FFM	151.4lb
TBW	110.8lb
DESIRABLE RANGE	
FAT%	11-22%
FAT MASS	18.8-42.8lb

VITA

Graduate School
Southern Illinois University

Laura E. Hilliard

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John A. Logan College
Associate of Art, December 2007

Southern Illinois University Carbondale
Bachelor of Science in Human Nutrition and Dietetics May 2010

Thesis Paper Title:

IS IT REALLY MORE EXPENSIVE TO EAT HEALTHY FOODS? A CASE STUDY
APPROACH

Major Professor: Dr. Sara Long Roth