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The cost and availability of the Thrifty Food Plan in Southeast Louisiana

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THE COST AND AVAILABILITY OF THE THRIFTY FOOD PLAN
IN SOUTHEAST LOUISIANA

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Science

in

The School of Human Ecology

by
Blair Suzanne Buras
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TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	ii
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF ACRONYMS.....	vii
ABSTRACT	ix
CHAPTER	
1 INTRODUCTION.....	1
Statement of the Research Problem	1
Rationale for the Study.....	1
Objectives	2
Hypotheses	2
Limitations.....	3
Assumptions	3
2 REVIEW OF THE LITERATURE.....	4
Dietary Guidelines	4
Food Stamp Program	9
Food Plans	10
Diet Quality and Socioeconomic Status.....	13
Diet Quality and Regional Differences	14
Food Security.....	16
Food Stamp Program, Food Insecurity, and Obesity	17
Dietary Energy Density and Energy Cost	20
Food Prices in Low-income Areas.....	24
3 MATERIALS AND METHODS.....	26
Research Design	27
Sampling.....	27
Survey Form Design	28
Data Collection Procedure.....	29
Data Pre-analysis	29
Data Analysis.....	30
4 RESULTS.....	31
TFP Affordability.....	32
TFP Availability	34
Food Prices in Low-income and High-poverty Areas	36

5 DISCUSSION.....	38
Store Characteristics	38
Chain and Non-chains Stores	39
TFP Affordability.....	40
Cost of Food Categories.....	42
TFP Availability	44
Food Prices in Low-income and High-poverty Areas	46
Policy Recommendations.....	48
LITERATURE CITED	53
APPENDIX	
A TFP WEEK ONE AND TWO FOOD LISTS	66
B TELEPHONE SCRIPT FOR CONTACTING STORES.....	68
C ELIGIBLE STORES.....	69
D LETTER TO STORE MANAGERS.....	73
E POST CARD.....	74
F SURVEYED STORES.....	75
G DATA COLLECTION SHEET.....	76
VITA.....	81

LIST OF TABLES

1. Comparison of the 2000 and 2005 Dietary Guidelines for Americans	6
2. Number of participating and non-participating stores in each parish	31
3. Weekly costs and ratio of participating to non-participating chain stores	34
4. Cost and percent of total cost by food category.....	34
5. Number and percentage of items missing in each store	35
6. Frequently missing items.....	35
7. Cost for each store with ZIP code, median household income, and percentage of families below the poverty level	37

LIST OF FIGURES

1. Map of Louisiana indicating the sampling area	26
2. Map of participating and non-participating stores with parishes coded by level of median household income	32
3. The cost of the Thrifty Food Plan compared to food stamp benefits	33

LIST OF ACRONYMS

CDC = Centers for Disease Control and Prevention

CNPP = Center for Nutrition Policy and Promotion

CSFII = Continuing Survey of Food Intake by Individuals

CSFII = Continuing Survey of Food Intakes by Individuals

DGA = Dietary Guidelines for Americans

DGAC = Dietary Guidelines Advisory Committee

DHHS = Department of Health and Human Services

EBR = East Baton Rouge

EDNP = energy-dense, nutrient-poor

EFNEP = Expanded Food and Nutrition Education Program

FGP = Food Guide Pyramid

FNS = Food and Nutrition Service

FRISL = “Meeting the 2005 Dietary Guidelines for Americans: A ‘daunting challenge’
for food-stamp recipients in Southeast Louisiana” (the larger study)

FSNE = Food Stamp Nutrition Education

FSP = Food Stamp Program

kcal/g = kilocalories per gram

kcal = kilocalories

LMD = Lower Mississippi Delta

PSU = Pennsylvania State University

SES = socioeconomic status

TFP = Thrifty Food Plan

U.S. = United States

USDA = United States Department of Agriculture

% = percent

ABSTRACT

Low-income individuals in Southeast Louisiana consume poor quality diets and have high rates of nutrition-related health problems such as cardiovascular disease, type 2 diabetes mellitus, and obesity. The United States Department of Agriculture created the Thrifty Food Plan to help food stamp recipients consume a minimal cost, nutritious diet. It is unknown whether the food lists designed to support the Thrifty Food Plan are affordable and available to the food stamp reliant population in Southeast Louisiana. In 29 supermarkets and large grocery stores located in East Baton Rouge Parish and seven surrounding parishes, the cost and availability of two weekly food lists from the Thrifty Food Plan were determined. The average cost of the foods was $\$117.01 \pm 11.79$ (mean \pm standard deviation) for week one and $\$112.19 \pm 11.44$ for week two. These average costs were 54% and 47% more than the average food stamp benefits received, respectively. Only, 7 of the 29 stores (24%) carried all 86 items. The menu items most frequently missing were pearl barley, garbanzo beans, ground pork, zucchini, and ground turkey. The average cost of the food lists at the stores located in areas with lower median household incomes was $\$116.36 \pm 9.93$. The average cost at the stores located in areas with higher median household incomes was $\$113.67 \pm 12.38$. These average costs were not significantly different. Average costs were not significantly different between stores located in lower poverty areas and higher poverty areas and between chain and non-chain stores. The data show that the Thrifty Food Plan is not affordable to those households receiving the average food stamp allotment. Therefore, food stamp allotments should be increased. Further, the Thrifty Food Plan has not been revised since 1999 and does not meet current nutrition recommendations. The TFP should be updated to meet current dietary recommendations.

CHAPTER 1

INTRODUCTION

Statement of the Research Problem

The purpose of this study is to determine whether a food stamp reliant population in Southeast Louisiana can afford to follow the two week menus provided in Thrifty Food Plan (TFP) for a family of four. It will also be determined whether the foods of the TFP are available in the area. The cost of the TFP for stores in different ZIP codes will be compared to investigate whether food prices are higher in low-income areas.

Rationale for the Study

Low-income individuals in the southern region of the United States consume poor quality diets; as a result, high rates of nutrition-related health problems are common in the population.¹⁻⁸ Food-stamp recipients consume poor quality diets and are, on the average, obese.⁹⁻¹² Both poor diet quality and obesity can lead to an increased risk for nutrition-related diseases such as diabetes, cardiovascular disease, hypertension, and some types of cancer.¹³⁻¹⁵ The Food Stamp Program (FSP) was initiated by the United States (U.S.) federal government to assist low-income households in obtaining a more nutritious diet.^{16, 17} The FSP provides monthly allotments to qualifying participants to purchase specified food items at approved locations.¹⁸

The TFP, which provides the national standard for a nutritious diet at a minimal cost, is the basis for food stamp allotments. “Market baskets,” menus, recipes, and food lists are included to help individuals following the TFP stay within the allotment. “Market basket” is a term used to indicate a selection of food items in specific quantities that is used to evaluate the fluctuating cost of food. When last revised, the TFP market baskets reflected current dietary recommendations, actual consumption patterns, food composition data, and food prices.¹⁹ It has

been shown, however, that many of the food stamp recipients fail to follow the TFP.¹² The typical low-income family spends nearly 23% more than what is suggested by the TFP and consumes a diet that is nutritionally inadequate.^{19, 20} In this study, the cost and availability of the TFP food lists in Southeast Louisiana were calculated. It is currently not known whether the TFP is affordable to the food stamp reliant population in this region.

Objectives

The objectives of the present study are the following:

1. To determine the average cost of the two TFP food lists in a sample of supermarkets and grocery stores in Southeast Louisiana.
2. To determine if the average cost exceeds the maximum food stamp allotment received by low-income households.
3. To determine if the average cost exceeds the average food stamp allotment received by low-income households.
4. To determine the availability of the foods on the TFP food lists in Southeast Louisiana.
5. To determine if the cost of the TFP food lists is higher in low-income areas.

Hypotheses

The study has two hypotheses:

1. The cost of the TFP food lists in Southeast Louisiana will exceed both the maximum and average food stamp allotments received by food stamp recipients.
2. The food prices will be higher in low-income areas than in high-income areas.

Limitations

The following are limitations to the study:

1. Supermarkets and grocery stores located in East Baton Rouge Parish and surrounding parishes may not be representative of all food stores in Louisiana.
2. Stores were able to self-select whether they wanted to participate in the survey, thus only 36% of the eligible stores could be included.
3. Not all of the stores that were surveyed accepted food stamps, and therefore may not be representative of the stores in which food stamp recipients shop.
4. Food prices were taken only once and therefore do not reflect seasonal variation.
5. Methods used to account for missing food items may have influenced the total cost of the food lists in each store.
6. Recent data comparing income levels by ZIP code were not available; data from the United States 2000 Census were used.

Assumptions

Assumptions that are made in the design and implementation of the study are the following:

1. The sample size of stores ($n=29$) is adequate to reflect the average cost of TFP food items in Southeast Louisiana.
2. Surveying the stores only once is adequate to reflect the typical food prices.
3. All of the TFP foods will be available in the stores that are surveyed.

CHAPTER 2

REVIEW OF THE LITERATURE

Dietary Guidelines

The Dietary Guidelines for Americans (DGA), a cooperative publication by the United States Department of Agriculture (USDA) and the Department of Health and Human Services (DHHS), provide evidence-based recommendations to promote good health and decrease risk of chronic disease. The DGA collectively describe a healthy pattern of diet and physical activity for healthy Americans over the age of two years to follow. The DGA are used by the United States government as the basis for all nutrition policies, education, and information.^{21, 22}

Prior to the 1970's nutrient deficiency prevention was the primary goal of public health officials. In the late 1970's, when deficiencies were no longer a major concern, focus shifted to nutrient excess and imbalance in relation to chronic disease.²³ The first DGA were published in 1980. In 1985, a Dietary Guidelines Advisory Committee (DGAC) was created to ensure that people with various areas of expertise were involved in forming the guidelines. Congress passed a law (Public Law 101-445, Section 301) in 1990 that formally mandated that DGA be issued every five years, so that the guidelines would continue to reflect current research findings.²¹

A new three step process was use in preparing the 2005 DGA. Rather than making changes based solely on the 2000 DGA, the DGAC used an evidence-based approach to evaluate the literature. In the first step, committee members created an updated list of research questions that reflected current areas of interest. After investigating and evaluating the data, the committee compiled a report which presented findings, conclusions, and proposals concerning nutrition and health.^{21, 24} In the second phase, the committee's recommendations were submitted for a public comment period allowing for external commentary. Focus groups were used to gain insight into

the general public's interpretation and understanding of the DGA and to determine attitudes they had towards them. After the DHHS and USDA reviewed the DGAC report, it was presented by the DGCA to the Secretaries of DHHS and USDA for publication. The final step involved translating the DGA into useful messages for both public and professionals.²³⁻²⁵

The 13 member DGAC was appointed at the end of 2003 to write the 2005 DGA.²¹ Selection of committee members was done to ensure diversity of scientific expertise, race and ethnicity, and gender. Use of an advisory committee ensures that the guidelines represent a broad scientific background, minimizes political influences, and reduces public criticism.^{21, 26} The committee met five times to consider relevant issues, formulate conclusions, and agree on final recommendations.²⁴

The major differences in content of the 2005 DGA from previous editions include the following: acknowledgment that diets will vary by age, sex, and activity level; increased physical activity recommendations; inclusion of discretionary energy allowance; recommendations for special populations; and new specific intake amounts for fruits, vegetables, whole grains, and low fat dairy. Table 1 compares the 2000 and 2005 DGA.^{25, 27, 28}

In the 2005 DGA, fruit and vegetable recommendations are now made in cups instead of servings. Weekly vegetable intake is specified by type of vegetable for a 2,000 kilocalorie (kcal) diet as: 3 cups dark green vegetables, 2 cups orange vegetables, 3 cups legumes, 3 cups starchy vegetables, and 6.5 cups other vegetables. The importance of whole grains is emphasized with a specific number of products to consume per day. For the first time a recommendation for low trans-fat consumption is included. There is a specific guideline for “individuals with hypertension, blacks, and middle-aged and older adults” to keep their sodium intake below 1,500 milligrams per day.^{25, 28}

Table 1. Comparison of the 2000 and 2005 Dietary Guidelines of Americans		
	2000	2005
Fruits & Vegetables	Choose a variety of fruits and vegetables daily. (FGP: 2 to 4 servings of fruit and 3 to 5 servings of vegetables)	Consume enough fruits and vegetables while staying within energy needs. 2 cups of fruits and 2.5 cups of vegetables per day for a 2000-calorie diet
Grains	Choose a variety of grains daily, especially whole grains. (FGP: 6 to 11 servings of grains)	Consume 6 ounce-equivalents of grains per day, with 3 ounce-equivalents or more being whole grains
Dairy	(FGP: 2 to 3 cups of milk or equivalent)	Consume 3 cups per day of fat-free or low-fat milk or equivalent milk products
Fat	Choose a diet that is low in saturated fat and cholesterol and moderate in total fat.	Keep total fat intake between 20% to 35% of calories. Consume less than 10% of calories from saturated fats and less than 300 mg/day of cholesterol. Keep trans- fat consumption as low as possible
Sugar	Choose beverages and foods to moderate your intake of sugars.	Choose and prepare foods and beverages with little added sugars of caloric sweeteners
Salt	Choose and prepare food with less salt.	Consume less than 2300 mg of sodium per day and include potassium-rich foods

Another addition is the concept of discretionary calories. Discretionary calories are defined as the difference between total energy requirements and the energy consumed to meet recommended food intakes. The number of discretionary calories available to an individual depends on the nutrient content of the foods the individual consumes, the individual's total energy requirement, and the individual's level of physical activity. This new concept of the DGA shows the importance of increased physical activity and consumption of nutrient-dense foods.²¹

The DGAC literature review revealed several areas in which American diets were lacking: vitamins A, C, and E; potassium; calcium; magnesium and fiber. The recommendations of the new DGA reflect these findings.^{26, 29} Despite all of the positive modifications of the 2005 DGA, many feel the recommendations are overwhelming and are a “daunting challenge” to the public.^{12, 27}

The U.S. Government uses the DGA in its food assistance and nutrition education programs. The National School Lunch Program; the Special Supplemental Nutrition Program for Women, Infants, and Children; the Thrifty Food Plan; and Healthy People 2010 all use the DGA to make nutrition related recommendations. Without translation to a simplified and practical format, the message of the DGA might be lost to the general public.^{12, 25, 30, 31} Using focus groups and researching public opinion has helped to ensure that the guidelines are clear, relevant, and informative.^{32, 33} Over the years the DGA have taken on a more positive tone. Instead of focusing on which foods to avoid, they now reflect which types of foods to choose making the guidelines more acceptable and usable.³²

To improve public awareness of the guidelines, campaigns targeting specific groups are used. The National Cancer Institute’s 5-A-Day for Better Health Program is used to emphasize the importance of eating at least five servings of fruits and vegetables daily. VERB is a campaign sponsored by the Centers for Disease Control and Prevention (CDC) which promotes physical activity among the youth in America. Other programs are Small Step, funded by the U.S. DHHS and Milk Matters, funded by the National Institute of Child Health and Human Development.²⁵

The older Food Guide Pyramid (FGP), replaced by MyPyramid, is intended to make the DGA easier to follow.²⁵ MyPyramid and its web-site have several limitations, however,

including that height and weight are not considered for calculation of energy needs. In addition, many people do not have access to the Internet which makes obtaining the information more difficult.³⁴

The government has also issued a consumer brochure which translates the DGA into a usable and understandable format. However, little monies have been allocated for marketing the DGA and related campaigns to the general public. Programs that do provide education on the DGA, such as the Food Stamp Program, are aimed solely at its participants. A lack of publicity has resulted in limited awareness of the DGA.²⁷ In a study examining consumers' knowledge and understanding of the DGA, those who used the most media sources had the best understanding of the DGA recommendations. This shows the importance of television, newspapers, and magazines as sources of nutrition education.³¹ In the same study, only 1 out of 400 participants could name the DGA as the federal nutrition policy. Less than 2.5 recommendations per person were recalled by the participants and many misinterpreted the guidelines' meaning.³¹

Less than 12% of the U.S. population meets the DGA recommendations.³⁵ This may be the result of lack of awareness and misunderstanding of the guidelines; however, many other factors affect compliance. Two factors that hinder achieving the guidelines include sedentary lifestyles and diets high in energy-dense, nutrient-poor (EDNP) foods.²⁶ EDNP foods replace nutrient-dense foods in the diet preventing a person from eating the recommended number of servings from specific food groups^{26, 36}. Higher consumption of EDNP foods are inversely related to compliance with dietary guidelines.³⁶ Other reasons for inadequate dietary intake may include lower costs of EDNP foods, higher costs of fruits and vegetables, financial and time constraints, insufficient food purchasing and cooking skills, and lack of nutrition awareness and

knowledge.^{37, 38} Age, gender, taste preferences, cultural food beliefs, religious affiliation, and food intolerances also have a role in food selection.^{12, 32, 39}

Food Stamp Program

The FSP was initiated in 1961 to provide a “nutritional safety net” for low-income households, enabling them to obtain a more nutritious diet.^{16, 17, 40} It was later made permanent by the Food Stamp Act of 1964.⁴⁰ The FSP is one of 15 nutrition assistance programs administered by the Food and Nutrition Service (FNS) of the USDA. The mission of the FNS is to provide better access to healthful food and comprehensive nutrition education through its food assistance programs.¹⁶ The Food Stamp Program is the cornerstone of USDA's nutrition assistance¹⁶; it is the Nation’s largest food assistance program^{17, 18, 41, 42} accounting for 61% of all food assistance spending in 2005.¹⁸ During fiscal year 2005, the FSP served about 25 million people per month at a cost of \$31 billion for the year.¹⁸

The FSP provides monthly benefits to households who qualify for the program to purchase specified food items at approved locations.¹⁸ Members enrolled in the FSP collect their benefits through electronic debit cards which can only be used to purchase food items.^{16, 41, 42} The maximum amount a participant can receive is determined by the USDA’s TFP, which is the national standard for a nutritious diet at a minimal cost. Households with no countable income receive the maximum allotment which was \$506 per month in Fiscal Year 2004 for a household of four people.⁴³ However, few households receive the maximum benefit; most receive an allotment that is only 40% of the maximum.^{42, 44} Over fiscal year 2005, the average amount received by a household of four people was \$355 per month.⁴⁵

Fifty-one percent of Americans will participate in the FSP by the time they are 65 years of age. Those most likely to use the FSP include single parent families, the disabled, nonwhites,

individuals with less education, and the unemployed; these characteristics are associated with poverty as well.¹⁶ Only about half of the households that qualify for the FSP participate.^{44, 46} Reasons for non-participation include the following: perceived social stigma associated with receiving food stamps^{16, 47-49}, uncertainty of eligibility^{48, 49}, unawareness of the FSP¹⁶, and perceived difficulty of applying.⁴⁸ Another factor associated with participation is the country's economic condition. The number of food stamp recipients increases during periods of recession when the rate of unemployment is high; participation decreases during economic growth when the rate of unemployment is lower.^{18, 50, 51}

Food Plans

The USDA's Center for Nutrition Policy and Promotion (CNPP) has four food plans, the Low-Cost Plan, the Moderate-Cost Plan, the Liberal Plan, and the TFP.^{52, 53} The TFP is the basis for food stamp allotments; it provides a way for low-income households to follow the DGA at a minimal cost.^{12, 15, 20, 44, 53-55} The TFP has 12 market baskets of foods, each appropriate for one of twelve different age-gender groups.^{53, 55} By combining individual age-gender market baskets, a total household market basket can be calculated.¹⁹ Each basket's cost is calculated and updated monthly to reflect current food prices.^{20, 53}

Food plans were prepared by the USDA as early as 1894. The original food plan considered three criteria that are still currently used: nutrient requirements, food composition, and food prices. As advances in nutrition research were made and food consumption behaviors were altered, the plans were modified to reflect these changes. In 1975, the TFP replaced the Economy Food Plan which had been in existence since 1961. A new set of market baskets was created and for the first time a computer-optimization model was used. The TFP market baskets were again revised in 1983 and more recently in 1999. Use of outdated dietary

recommendations, food composition data, eating patterns, and price information were the reasons necessitating revisions.¹⁹ Currently the TFP is again outdated.⁴⁴

When the TFP was last revised in 1999, two main sources were used to update the market baskets: the USDA's 1989-91 Continuing Survey of Food Intakes by Individuals (CSFII) and the Food Price Database.^{19, 20, 53} The CSFII is representative of the food consumption patterns of households of all income levels, with an emphasis on lower income households. The foods consumed by those surveyed were divided into 44 food categories. The Food Price Database was created specifically for the revision and was based on national average food prices from various sources. Using a mathematical optimization model, an updated market basket was created for each age-gender group to provide food quantities that represent recommended dietary intakes, actual consumption patterns, food composition data, and food prices. Each model consisted of four data input sets and three constraints. The inputs, which related to the food categories of the CSFII, included: average consumption, average cost, nutrient profile, and average servings profile of a food category based on the FGP. The constraints included dietary standards (based on the 1989 Recommended Dietary Allowances, the 1995 DGA, and the National Research Council's Diet and Health report), serving size recommendations of the FGP, and the TFP maximum cost allotment.^{19, 53}

By using the optimization models, deviations from typical consumption patterns are minimized while providing new consumption patterns that meet current dietary recommendation and cost limitations.^{12, 20} Twelve TFP market baskets were generated, which provide specific quantities of each of the food categories. These amounts were converted into menus, recipes, and shopping lists to be used by the "TFP reference family". The reference family is a family of four: a man and woman age 20 to 50, one child age 6 to 8, and one child age 9 to 11.¹⁹

Pennsylvania State University (PSU) was contracted to develop two weeks of meal plans with recipes that met the cost and dietary constraints. The menus consisted of three meals and usually one snack per day. Convenience foods, such as canned broth, deli meats, and store-bought bread, were used when possible; however, many items on the TFP must be prepared from basic ingredients.^{19, 20, 54} This is typical of low-income households. To incorporate the DGA principles, the recipes were to be low in fat, sodium, and sugar and were to include plenty of fruits, vegetables, and whole grains.^{19, 54}

Recipes and menus were prepared in a PSU laboratory and tested for acceptability by a taste panel. Those recipes found to be acceptable were included in the final menus to be evaluated by eight local, food stamp households consisting of four members. Racial and ethnic diversity were considered in selection of the households. The households shopped for, prepared, and consumed the foods in one of the sample menus. They evaluated the menus and recipes for acceptability, ease of preparation, time involvement, familiarity of taste, understandability, and availability of the ingredients and cooking equipment needed. Any recipes found unacceptable were replaced or modified.^{19, 54}

Food stamp recipients do not follow the TFP and often consume a diet of poor nutritional quality. The typical low-income family spends nearly 23% more than what is allotted by the TFP and their diets still do not meet the DGA.^{19, 53} There are many possible reasons why food stamp recipients fail to follow the TFP. When testing the TFP recipes, PSU found that the low-income families lacked the basic cooking skills needed to prepare the meals. Many of the households did not normally follow recipes. Educating the food stamp recipients on how to prepare and manage meals could help them follow the TFP; to achieve this, the USDA published *Preparing Nutritious Meals at Minimal Cost* to be used by educators.¹⁹

Another reason why food stamp recipients fail to follow the TFP is that many of the menu items must be prepared from basic ingredients.⁴⁴ Low cost meals require a considerable amount of time to prepare. A person with a full-time job may not have enough time to prepare the TFP meals.^{56, 57} The TFP menus may not be appealing to those living in different regions of the country. The items on the food lists may not be available in particular regions; for example, Southern stores in low-income areas may stock cornbread but not bagels.²⁰ Regional cost variation could also make the TFP unaffordable. The TFP uses an average national cost to set food stamp allotments; areas with higher food costs would not be able to afford the plan.⁴⁴ Those living in low-income neighborhoods may have limited access to food with higher prices.²⁰

Compared with the previous market baskets, the 1999 TFP baskets include more fruits, milk products, and meat and meat alternatives, the same amount of vegetables, and fewer grains.¹⁹ However, neither the 2000 nor the 2005 DGA have been incorporated into the TFP. By substituting healthier items and adding more fruits, vegetables, and whole grains, the TFP could meet the current DGA. However, the cost of healthier menus exceeds the food stamp benefit allotments.^{15, 44} Items such as whole grain breads, other whole grains, low fat ground meats, and skinless poultry cost more than their less healthy equivalents.¹⁵

Diet Quality and Socioeconomic Status

Most Americans fail to comply with the DGA; low socioeconomic status (SES) individuals are even less likely to eat a diet following the DGA.^{15, 37, 58, 59} These low SES consumers are likely to have lower quality diets that are high in total and saturated fat^{5, 37, 58, 60, 61}, high in refined sugar^{37, 60}, low in vitamins and minerals^{5, 58, 60-62}, low in fiber^{5, 60}, and lacking in one or more food group.^{2, 5, 37, 58, 59, 62-65} Income and level of education, both measures of a person's SES, can all be used as indicators of diet quality. Diet improves with higher levels of

education and income.⁶⁶ Consumption of fewer servings of fruits and vegetables is common among low-income individuals and those who have less than a high school education.^{63, 64, 67-69}

Fruits and vegetables are two components lacking in the diets of low SES individuals. Among this population, only 23% and 42% meet the recommendations for fruits and vegetables, respectively.⁷⁰ On average, low-income individuals consume 1.4 total fruit servings per day and 3.1 total vegetable servings per day.⁶³ Dibsall et al. found that nearly 75% of low-income participants believed they ate healthily; however, only 18% consumed 5 or more servings of fruits and vegetables daily.⁷¹ SES also effects the type of fruits and vegetables consumed.⁶² Low-income households were found to consume fewer fruits and vegetables high in vitamin C, folate, and vitamin A. This may be contributed to the limited variety of produce typically consumed by the low-income population.⁶²

Also missing in the diets of low SES individuals are whole grains.^{37, 69} Whole grain intakes of low-income, less educated individuals were 40% less than the intakes of those with higher incomes and more education. Blacks were less likely to consume adequate amounts of whole grains.⁶⁹

Diet Quality and Regional Differences

Regional difference in diet quality exist.^{2, 5-8} The Lower Mississippi Delta (LMD) region, which is composed of counties and parishes of Arkansas, Louisiana, and Mississippi that border the Mississippi River, is a predominantly rural area with poverty rates above the national average.^{3-5, 7, 8, 72} Inadequate food and nutrient intakes are typical of this region; this finding is more prominent in black than white LMD residents.^{5, 6} Other characteristics of the LMD include low levels of education^{5, 8, 72}, low levels of income^{4, 8}, high rates of food insecurity⁷², and high rates of nutrition related chronic diseases.^{4, 5, 7, 8, 72}

The diets of individuals living in the LMD often lack adequate fruits and vegetables.^{2, 5-8} LMD adults consumed 20% fewer fruits and vegetables compared to the US adult population.⁵ The average consumption of fruits and vegetables in this region was 0.9 servings per day and 2.8 servings per day, respectively. Nationally, 1.5 fruit and 3.1 vegetable servings were eaten daily.⁶ Not only were intakes inadequate, the quality of the fruits and vegetables consumed was also less than optimal.⁶ The LMD residents have a tendency to consume a high percentage of vegetables as French fries and potato chips. This observation was especially true for blacks in the LMD.⁶

LMD individuals have poor adherence to the FGP⁵; this problem extends beyond inadequate intake of fruits and vegetables. Other nutritional concerns observed in the LMD population include high intakes of total fat^{5, 7, 8}, cholesterol⁵, fast food⁸, meat, discretionary fat, and added sugar.⁵ Low intakes of micronutrients, grains and cereals, and fiber are also common^{5, 7}. Vitamins lacking in the diets of LMD individuals include vitamins A, C, E, and the B vitamins. Calcium, magnesium, iron, potassium, phosphorus, zinc, and copper are the minerals found to be deficient in the diets of LMD individuals.⁵ Many of these deficiencies are more prevalent in blacks than in whites.

Food use patterns of the LMD differ from national patterns; they also vary between whites and blacks within the region. The major foods contributing to the energy intakes of LMD individuals are sweetened beverages, white bread, ground beef, and salty snacks. These foods account for more than 20% of the energy intake in this population. White bread and salty snacks are both major contributors to intakes of several macronutrients, vitamins, and minerals in the LMD population. White bread is the leading contributor to fiber, folate, and iron intakes of LMD blacks and whites; salty snacks are the major contributor to vitamin E and magnesium

intake, but only in LMD blacks. This indicates that good sources of these nutrients are lacking in the diets of LMD residents.⁷

Food Security

Food security occurs “when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life”.⁷³ This concept can be applied to households as well; in this case, food security exists when all individuals within households have access to adequate food. Food insecurity can exist with or without hunger. Hunger is defined as “the uneasy or painful sensation caused by a recurrent or involuntary lack of food”.⁷⁴ Food insecurity may progress sequentially as the problem worsens. Household food insecurity generally occurs first and is followed by a decrease in quality and quantity of the adult diet. The final, most severe stage is child hunger when the quantity of food eaten by children is compromised.⁷⁵

Most of the U.S. is food secure; however, a considerable number of households are food insecure and do not have adequate access to enough food.⁷⁶ During 2004, 11.9% of U.S. households (13.5 million households) were food insecure. Nearly a third of these households, 3.9% of all U.S. households, experienced food insecurity with hunger.⁷⁶ Healthy People 2010 lists as one of its objectives a decrease in the prevalence of food insecurity in the U.S. from 12 to 6% by the year 2010.⁷⁰

The frequency and duration of episodes of food insecurity and hunger have been studied. The majority of food insecure households experienced the problem as recurring; approximately two thirds were food insecure for three or more months during the year and one quarter for nearly the entire year. Of the households experiencing food insecurity with hunger, about 20% endured the condition for more than 14 days of the month.⁷⁷

The prevalence of food insecurity varies among household types; many have food insecurity rates higher than the national average of 11.9%.⁷⁶ One of the most significant determinants of food insecurity is income. Households with incomes below the poverty line are more likely to be food insecure^{66, 72, 74, 76, 78-80}; in 2004, the prevalence of food insecurity was 36.8% among households living in poverty.⁷⁶ Other groups with higher rates of food insecurity include the following: households with children that are headed by a single woman (33.0%), black households (23.7%), Hispanic households (21.7%), and households in the South (13.3%).⁷⁶ Food insecurity is also associated with households headed by individuals with low levels of education.^{66, 79, 80}

Food insecurity is associated with the consumption of a low quality diet. Adults from food insecure households had low intakes of milk and milk products; fruits and fruit juice; and vegetables.⁸¹ Women from food insecure households with hunger reported low intakes of fruits, vegetables, meat, and meat alternatives.⁸² As food security status worsened the consumption of fruits and vegetables decreased.⁷⁵ Rose and Oliveira found that adult women with food insecurity had intakes that were two thirds below the recommended daily allowance for energy, calcium, iron, vitamin E, magnesium, and zinc. Underreporting, which is common in dietary surveys, was a possible limitation to the study.⁸⁰

Food Stamp Program, Food Insecurity, and Obesity

Despite the efforts made by the FSP, food insecurity remains a problem in the U.S.^{16, 47} Food stamp participants are more likely to be food insecure than eligible non-participants.⁸³ In a sample of 245 food stamp dependent households with children, 66% were food insecure.⁴⁷ This may be attributed to the fact that food insecure individuals participate in the FSP.^{83, 84}

Food stamp recipients typically have poor quality diets; low intakes of vitamins and minerals and high intakes of energy⁸⁵ and total fat^{42, 85} are common. A typical diet also includes low levels of fruits, vegetables, and dairy^{42, 86} and high levels of meats and added sugars.⁴² Due to the existence of food insecurity and poor quality diets, it appears that the FSP is not providing the “nutrition safety net” that it is intended to.^{16, 47}

Recently there has been increasing concern that the FSP may be unintentionally leading to obesity.¹⁰ Both hunger and obesity can coexist in the same households and the same individuals.^{74, 87-90} The incidence of overweight or obesity is high among the food insecure population, especially for women.^{89, 91, 92} In a cross-sectional study, Townsend et al found that food insecurity was associated with being overweight for women but not for men. Among the female food stamp reliant population, the prevalence of being overweight increased as food insecurity increased from 48% for the food secure, to 54% for the mildly food insecure, and to 68% for the moderately food insecure.⁸⁹ Olson found in a group of 193 women that 37% of those living in mildly food insecure households were obese compared to 26% of those living in food secure households.⁹²

Unlike in the cross-sectional study by Townsend et al, Gibson used FSP participation data in a longitudinal study. Both current and long-term FSP participation were significantly associated with obesity in women. Compared to non-participants, current participation increased the probability of obesity by 9.1%; longterm participation (5 years) increased the probability of obesity by 20.5%. Gibson’s study did not incorporate data on food insecurity and therefore may overestimate the relationship between FSP participation and obesity.¹¹

The gender difference in the association between food insecurity and obesity may be explained by the fact that food insecure women often live in households with children whereas

food insecure men often live alone.⁸⁹ When food becomes scarce, mothers may restrict their own diet to protect their children from hunger. Once food becomes available, the mothers may be more likely to overeat.^{74, 87}

Although past research has shown that female food stamp recipients have higher rates of obesity than non-participants, the trend has recently lessened. Data from years 1999 to 2002 show that the difference in the rate of obesity has diminished. Eligible non-participants and women with higher incomes are becoming obese at higher rates than those who do participate in the FSP.¹⁷

FSP participation is known to be positively associated with obesity; however, nothing suggests that program participation causes obesity.⁹³ A possible explanation for the relationship between FSP participation and obesity is that participation may influence the quantity, quality, or timing of food consumption.¹¹ This explanation involves the monthly food stamp cycle.

The monthly food stamp cycle refers to the fact that FSP participants receive benefits monthly. A household receiving food stamps often has an eating pattern that reflects this cycle.¹⁷ The average daily food expenditure at home peaks within the first three days after benefits are received and then quickly returns to normal as time progresses.⁹⁴ Focus groups reveal that many FSP participants shop monthly when benefits are received without budgeting their allotments. As a result, they often run out of food before the end of the month.⁹⁵ In the first few weeks after benefits have been received, food may be adequate for a household.^{17, 89} During the time when food is available, individuals tend to overeat with the fear of future shortages.⁹⁵ As the end of the month approaches, food is less available and food intake may become inadequate in quantity and quality.^{17, 74, 89, 96}

The association of hunger and obesity could be explained by two different possibilities. One possibility is that there is a physiological adaptation to compensate for periodic food insufficiency.⁸⁸ The cyclical pattern of food deprivation followed by overeating is typical of binge eating which is associated with weight gain.^{17, 74, 87, 89} Obesity may be a physiological adaptation the body makes in response to episodic food insufficiency common among food stamp recipients.⁸⁸ The way that food stamps are distributed may promote the binge eating pattern in the time period following the receipt of benefits. Distribution of half the benefits every two weeks may be a better option.⁹⁰

A second possibility is that food choices are altered in response to periodic food deprivation.⁸⁸ Diet quality, often before quantity, is affected when food is scarce.⁷⁴ The diet of food stamp recipients becomes less varied at the end of the food stamp cycle.⁹⁶ Fresh fruits and vegetables are difficult to store and are expensive; therefore, during a food shortage less fruits and vegetables are consumed.⁹⁰ At the end of the food stamp cycle the average energy intake of food stamp recipients also decreases.^{90, 96} To prevent hunger a family may increase the fat content of meals.⁸⁸

Dietary Energy Density and Energy Cost

Over the last three decades a “nutrition transition” has taken place in the U.S. The typical diet has shifted from one that was based on more whole grains to one that is more varied and includes more refined grains, added fats, and added sugars.^{69, 97, 98} Foods that are high in fat, sugar, or starch are often classified as “energy dense”^{36, 67, 99}; however, this is not always true of energy dense foods.¹⁰⁰

Energy density refers to the amount of available dietary energy in a given weight of food often expressed in kilocalories per gram (kcal/g).¹⁰¹ Foods that are energy dense are dry and not

necessarily high in fat, sugar, or starch.¹⁰⁰ Water affects energy density more than any macronutrient¹⁰⁰ because it decreases energy density by providing weight to foods without contributing energy.¹⁰¹⁻¹⁰⁴ Foods that have a high water content are low energy-density foods. Fat, because of its high energy content, increases the energy density of a food more than carbohydrate or protein.¹⁰²⁻¹⁰⁴ High-fat foods are often high energy-dense foods.¹⁰¹ However, not all foods high in fat are energy dense; water can be added to lower the energy density.¹⁰²

Energy density is important in determining energy intake.¹⁰⁵ High intake of energy-dense foods can result in excessive energy consumption leading to weight gain^{99, 100, 102, 106}. There is also convincing evidence that consumption of energy-dense foods promotes obesity.^{97, 100} It is hypothesized that humans are not innately able to recognize high energy-dense foods; energy-dense foods may interfere with normal appetite regulation resulting in “passive overconsumption” of energy.^{66, 99, 100, 105} There is also question as to whether high energy-dense foods have less of an effect on satiety than do low energy-dense foods.¹⁰⁰

High energy-dense diets are associated with increased energy intakes.^{36, 67, 107-116} Humans may be accustomed to consuming a constant weight or volume of food regardless of energy density; therefore, consumption of high energy-dense foods may lead to an increased energy intake.^{107-109, 112} Lean and obese women consuming low energy-dense diets had a 20% lower daily energy intake than women consuming high energy-dense diets.¹¹³ Energy density influenced energy intake independent of the fat content of the diet. Women consuming both high and low energy-dense diets consumed a constant volume of food and had similar levels of hunger and fullness. This suggests that intake is influenced by the amount of food consumed more than by the amount of energy consumed.¹¹³

Energy density is not only related to dietary energy intake, it has also been shown to affect diet quality.¹¹¹ High energy-dense foods are typically nutrient-poor.¹¹⁷ As consumption of energy dense foods increases, the consumption of nutrient-dense foods decreases^{114, 115} suggesting that energy-dense foods are consumed at the expense of nutrient-dense foods.³⁶ The energy density of a diet is negatively related to the micronutrient^{36, 111, 114, 115} and fiber content.¹¹⁴ Dietary energy density is positively related to the percentage of energy from fat^{36, 111, 112} and saturated fat.¹¹² People consuming high energy-dense diets are less likely to consume foods from all food groups and less likely to comply with dietary guidelines.³⁶ Typically, a high energy-dense diet is low in fruits and vegetables^{67, 111, 112, 115} and high in grains, sweets, and fats.^{67, 111, 112}

Energy density is shown to be a positive predictor of overweight status.^{115, 116} In a cross-sectional study of Chinese adults, energy density was positively associated with overweight status. In comparison to the diets of normal weight participants, diets consumed by overweight participants had a higher energy density, a higher fat content, and a lower water content.¹¹⁶ Rolls et al showed that a decrease in dietary energy density was related with weight loss. A comparison was made between subjects consuming diets of equal energy but with snacks of different energy densities. After one year, the group consuming low energy-dense snacks had a significantly greater weight loss. This suggests that a low energy-dense diet may be an effective weight management strategy.¹¹⁸

Energy-dense foods provide energy at a low cost; therefore, high energy-dense diets are associated with lower costs of dietary energy.^{66, 67, 98, 101, 102, 117, 119-123} Refined grains, added sugars, and added fats are abundant in the food supply and inexpensive to purchase^{66, 98, 119, 124}.

Advances in technology have resulted in low costs of food production, transportation, and storage; this is especially true of foods with added sugars and fats.^{67, 120-122}

In an epidemiologic study, Andrieu et al showed that participants with the lowest energy costs had the highest energy intakes and the most energy-dense diets. The opposite was true for participants with the highest energy costs. It was determined that participants with the highest energy costs were paying 65% more than participants with the lowest energy costs to reduce their energy intake by 10%.¹²³

The relationship between energy density and energy cost may explain the link between SES and obesity.^{66, 67, 98, 101, 120} Low-income families select food based primarily on taste and cost.¹¹⁹ High energy-dense foods, which are both palatable and inexpensive energy sources, are common in the diets of low-income individuals.¹²⁰ A high energy intake may be the unintended result of an attempt to save money.¹²⁰

Not only are high energy-dense foods inexpensive energy sources, low energy-dense foods, such as fruits and vegetables, are expensive energy sources.^{98, 117, 119, 124} Studies involving diet optimization by linear programming have shown that introducing a cost constraint leads to poor diet quality.^{66, 101} Darmon et al found that reducing diet cost led to a diet with increased energy density and decreased nutrient density.^{125, 126} As the cost constraint was strengthened, diets included less fruits, vegetables, meat, fish, and cheese and more cereals, processed meat, milk, sweets, and added fats. The food pattern resulting from Darmon's study is similar to those of low-income households, suggesting that economic constraints faced by this population lead to consumption of unhealthy diets.¹²⁶

Food Prices in Low-income Areas

It is shown that low-income households have reduced access to food stores and may face higher food prices than higher income households.^{20, 127-129} Low-income households have limited access to larger, chain food stores and generally rely on smaller, independent food stores.^{41, 127, 128, 130} Studies have shown that food prices vary with store size.¹²⁹ Prices are often higher in smaller stores¹³¹ which may charge nearly 10% more than larger food stores.¹²⁹ Food prices are also known to vary with type of store; independent stores generally have higher prices in comparison to chain stores.^{20, 130, 132, 133}

Location is another factor that is associated with varying food prices.¹³⁴ Lower income rural and inner-city areas have disproportionate numbers of smaller, independent stores, which generally have higher prices.¹²⁹ Higher income suburban areas have more large, chain stores, which generally have lower prices.^{130, 134} Larger stores, because of their physical size, are able to offer more brands and sizes including store labels and economy brands.^{128-130, 134, 135} These stores have lower operating costs and higher sales which help to lower food prices.^{128, 134, 135}

Higher prices faced by low-income households may be due to their lack of access to lower priced food.^{128, 135} Low-income households have limited means of transportation and therefore may prefer to shop near their homes.^{41, 128} Less expensive, larger, chain stores are not commonly located in low-income areas.¹³⁰ As a result, the poor population may be forced to shop at small, independent stores located in the low-income areas.⁴¹

The prices faced by low-income households may only be slightly higher.^{129, 134} Additionally, low-income households may compensate for higher food costs with thrifty shopping practices.¹²⁹ Household food expenditure surveys show that this population spends less

on food than higher income households, indicating that low-income households may buy more economical foods.¹²⁹

CHAPTER 3

MATERIALS AND METHODS

The present study was a part of a larger study, “Meeting the 2005 Dietary Guidelines for Americans: A ‘daunting challenge’ for food-stamp recipients in Southeast Louisiana” (FRISL). The materials and methods of the study were based on those of the USDA’s Community Food Security Assessment Toolkit.¹³⁶ The sampling area included the following eight parishes: East Baton Rouge (EBR), East Feliciana, Livingston, Iberville, West Baton Rouge, Assumption, St. James, and Pointe Coupee (Figure 1).¹³⁷

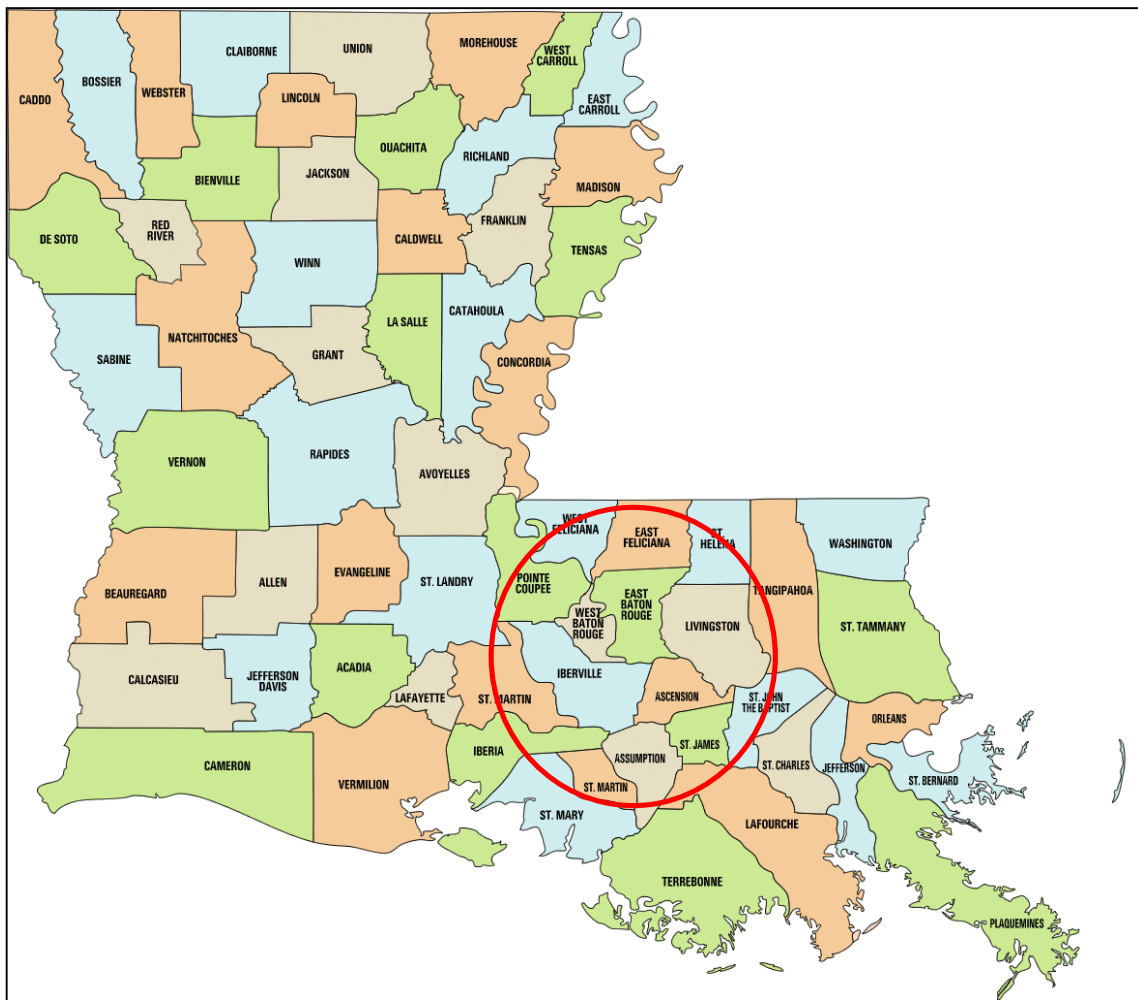


Figure 1. Map of Louisiana indicating the sampling area

Research Design

The design of the study was a cross-sectional survey of the cost and availability of two food lists from the TFP at supermarkets and large grocery stores located in the sampling area (Appendix A). The data were collected in January 2006; therefore, the January 2006 weekly cost of the TFP market basket, determined by the USDA, was used to specify the maximum food stamp allotment received by the family.¹³⁸

Sampling

Sampling for the present study was done in conjunction with FRISL. All of the supermarkets and large grocery stores within the parishes of interest were located via the Real Pages website.¹³⁹ The *Grocer* listings for each of the appropriate phone books were printed; the printed information provided the store names, phone numbers, and addresses. A list of potential stores with telephone numbers and addresses was created. Three criteria that needed to be met in order for a store to be considered eligible were that the store (a) was a full service grocery store; that is, it sold a wide variety of all foods; (b) had more than 10 employees; and (c) was not a specialty store. Each store was initially contacted by telephone to determine its eligibility for the study. A telephone script was used to ensure consistency (Appendix B). Of the stores initially contacted by telephone, 81 met the three criteria; a new list of the 81 eligible stores was created (Appendix C). The 81 stores that met the three criteria were asked to provide the name of the store manager for future contact by letter.

A letter requesting permission to survey the store was sent to each store manager (Appendix D). The format of the letter was based on guidelines in the Community Food Security Assessment Toolkit.¹³⁶ The letter explained the purpose of the study and made the following assurances to the managers: (a) that the store name, policies, and prices would not be

publicized, and (b) that the information collected from individual stores would be combined with that of other stores or presented without individual identifiers. A self-addressed, stamped postcard was included with the letter to the manager. The managers were requested to return the postcard indicating whether permission to survey the store was granted (Appendix E). After a two week period, the store managers that had not returned the postcard were again contacted by telephone. The researchers explained the purpose of the study, gave assurances, and requested permission to survey the store.

Of the 81 eligible stores, 29 stores were included in the final study (Appendix F). Reasons for exclusion of the stores included (a) that the manager did not grant permission, (b) that the store, once observed by the researchers, failed to meet the initial criteria, or (c) that the manager did not return the postcard and was never able to be re-contacted.

The week before the survey, the store managers were contacted by telephone to arrange for a convenient date and time for the surveyors to conduct the survey. Arrangements were made for the surveyor and manager to meet briefly before data collection began.

Survey Form Design

The data collection sheet designed for the collection of the food price and food availability data was based on the instrument included in the Community Food Security Assessment Toolkit.¹³⁶ The data collection sheet listed all of the foods of the two TFP food lists. For each food item the unit of measure listed in the TFP was indicated; for example, milk was measured in gallons and eggs were measured by the dozen. A suggested package size was included. With specific measurement units and package sizes surveyors were able to price similar items, therefore avoiding unnecessary price differences. Columns were provided to record the total price, price per unit, and any comments on product availability.

Data Collection Procedure

Eight surveyors were trained the week before the survey began to ensure that the data were observed and recorded consistently. The data collection period was a two-week time frame from January 9, 2006 to January 22, 2006; the limited time frame was used to minimize the effect of systemic food price changes that could occur over a longer time frame. During the two-week period, surveyors collected price and availability data for the foods included in the TFP food lists. The data were recorded on the data collection sheets provided to each surveyor (Appendix G). Price data were recorded as cents per unit of measure.

If an item was not available in the specified package size, the next closest size was recorded. Bulk items were not included. If an item was not available at all, “N/A” was recorded in the price column. The surveyors were instructed to record the least expensive food item in the package size specified. To ensure that the least expensive item was selected, surveyors considered sale prices and generic brand prices.

Data Pre-analysis

Before analyzing the data, a spreadsheet was created with columns designating the stores that were surveyed and rows designating the food items that were priced. The price per unit of each food item was recorded for the respective store. The prices of the items were converted to cents per ounce; some foods were recorded as cents per item, such as hamburger buns and eggs. If an item was not available at a particular store, a blank cell was left in the appropriate row. An average price per unit was calculated for each food item across all stores. The average price per unit was subsequently used as the price for missing food items.

Data Analysis

The average price per unit of each food item was used to determine the affordability of the TFP in the stores surveyed. First, the amounts of food included in the TFP food lists were converted into ounces. The converted amounts were multiplied by the average price per unit for each food item to get a total cost for each food item. To calculate the average cost of the TFP food lists in all of the stores, the calculated total costs for all food items were totaled. The sum was compared to the USDA-determined weekly cost of the TFP market basket in January 2006. Food availability was examined by the following calculations: (a) the number of items missing in each store, (b) the average number of items missing in all stores, (c) the percentage of items missing in each store, and (d) the number of stores missing particular items.

The median household income and percent of families below the poverty level by ZIP Code were obtained from the 2000 Census data. Each store was assigned a median household income level and poverty percentage based on the ZIP Code in which it was located. Stores were classified into low- and high-income groups depending on whether their median household income was above and below \$33,870, the average median household income in the eight parishes in which the stores were located. Stores were classified into low- and high-poverty groups depending whether their percentage of families below the poverty level was above or below 15%. An independent t-test was used to determine whether the average cost of the TFP was significantly different in stores in low- and high-income areas and in low- and high-poverty areas. The same test was used to determine the cost difference between chain and non-chain stores. Data are presented as mean \pm standard deviation.

CHAPTER 4

RESULTS

Of the 81 eligible stores, 29 stores (36%) participated in the survey. The participating stores were located in 8 different parishes (Table 2; Figure 2). The majority were located in EBR Parish. Two parishes, Ascension and West Feliciana, only had non-participating stores and therefore were not included in the pricing.

Table 2. Number of participating and non-participating stores in each parish			
Map Code	Parish	Participating Stores	Non-Participating Stores
A	Ascension	0	5
B	Assumption	3	0
C	East Baton Rouge	15	31
D	East Feliciana	1	0
E	Iberville	1	4
F	Livingston	4	4
G	Pointe Coupee	2	2
H	St. James	1	1
I	West Baton Rouge	2	3
J	West Feliciana	0	2

Figure 2 shows the location of all eligible stores, both participating and non-participating. In that figure, each parish is classified by its average median income. Most of the eligible stores were concentrated in EBR Parish; as the distance from EBR Parish increased, there were fewer stores and even less that met the eligibility criteria. The eligible stores were also more concentrated in parishes with higher median incomes; 68 of the stores were in parishes where the average median income was more than \$34,232 and 13 of the stores were located in parishes where the average median income was less than \$32,582.

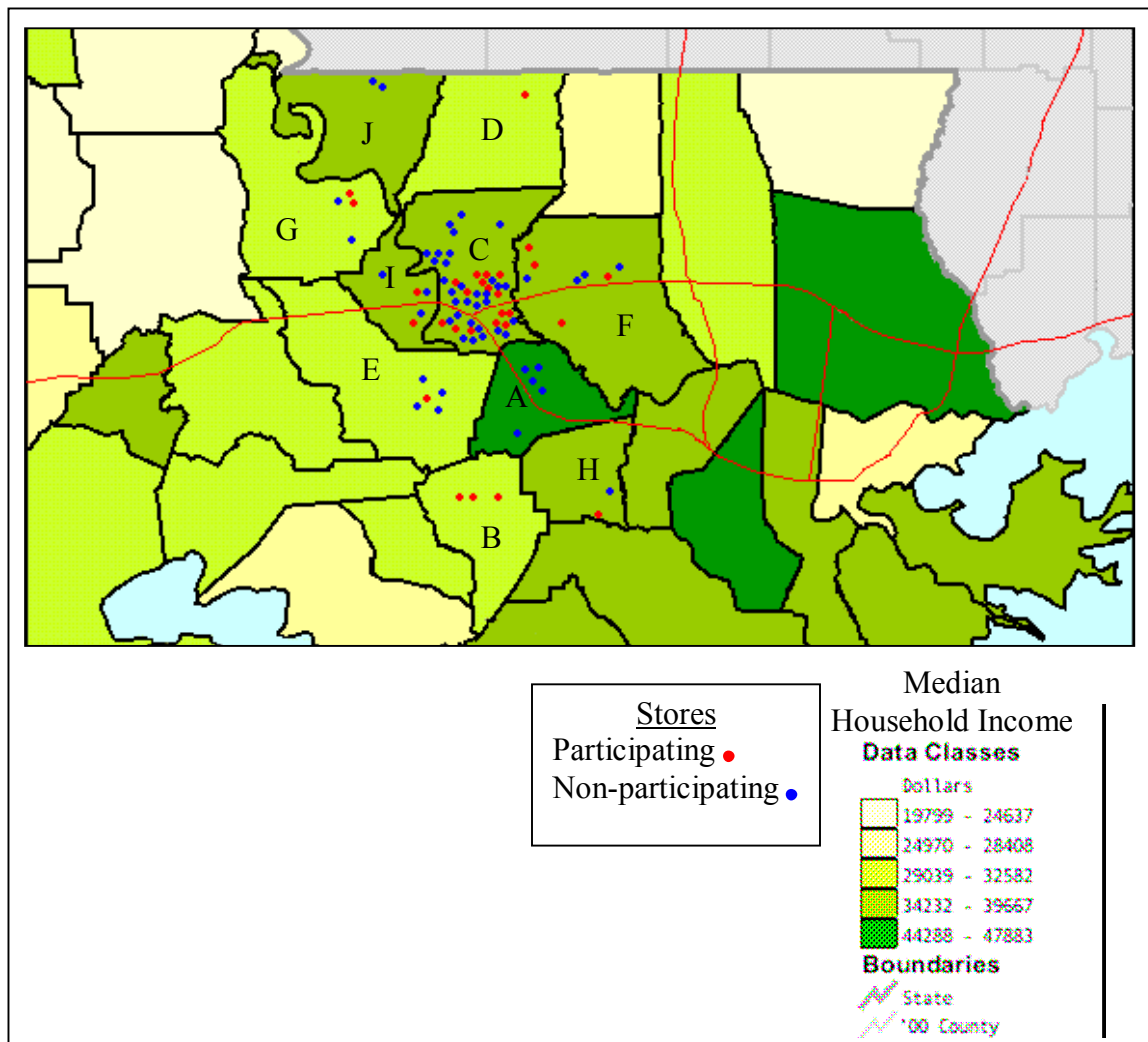


Figure 2. Map of participating and non-participating stores with parishes coded by level of median household income

TFP Affordability

The average cost of the TFP for week one at the 29 food stores was $\$117.01 \pm 11.79$ (mean \pm standard deviation) per week. The average cost of the TFP for week two was $\$112.19 \pm 11.44$ per week. Figure 3 compares these averages to the maximum¹³⁸ and average⁴⁵ weekly benefits received by a family of four. The average costs of the TFP food list for weeks one and two were 54% and 47% more than the average food stamp benefits received, respectively.

The cost of the TFP at individual stores exceeded the maximum benefits of \$120.30 per week. For week one, 11 stores (37.9%) and week two, 6 stores (20.7%) exceeded the maximum benefits. All stores for both weeks exceeded the average benefits of \$76.10 per week. The range of the TFP cost was \$93.69 to \$149.18 for week one and \$89.72 to \$138.04 for week two.

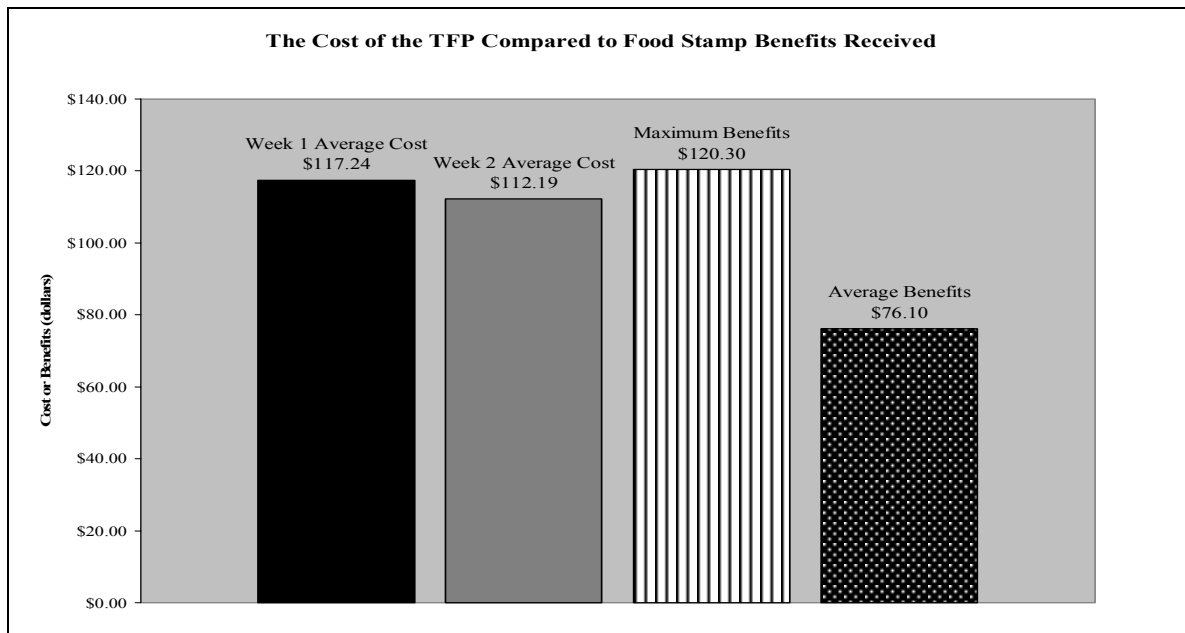


Figure 3. The cost of the Thrifty Food Plan compared to food stamp benefits

Four national food store chains were included in the survey (Table 3). Of the 81 potential stores, 32 were part of a national chain and 49 were part of a local chain or were an independent food store. Seven of the participating stores and 25 of the non-participating stores were part of a national chain. As can be seen in Table 3, costs varied among stores of the same chain and among stores of different chains.

The average cost of the TFP in the seven chain stores was $\$113.38 \pm 11.38$. The average cost in the 22 non-chain stores was $\$114.98 \pm 11.76$. The average costs were not significantly different between chain and non-chain stores.

Table 3. Weekly costs and ratio of participating to nonparticipating chain stores				
Chain	Store	Week one Total Cost (\$)	Week two Total Cost (\$)	Ratio of participating:non- participating stores
A	20	93.69	89.72	1:8
B	4	117.07	108.85	3:6
	1	130.79	122.27	
	22	124.13	115.31	
C	7	119.27	116.36	1:8
D	3	124.68	112.29	2:3
	5	108.45	104.37	

Table 4 shows the cost of each food category for weeks one and two. The highest costs for the TFP were for fruits and vegetables followed by meat and meat alternates. Fats and oils contributed the least to the TFP cost, followed by sugars and sweets.

Table 4. Cost and percent of total cost by food category				
Food Category	Week one	Total cost for week one (%)	Week two	Total cost for week two (%)
Fruits and Vegetables	\$41.66	35.6%	\$43.31	38.6%
Meat and Meat Alternates	\$38.30	32.7%	\$35.65	31.8%
Bread, Cereals, and Other Grains	\$16.61	14.2%	\$14.12	12.6%
Dairy	\$14.07	12.0%	\$13.04	11.6%
Sugars and Sweets	\$3.64	3.1%	\$3.66	3.3%
Fats and Oils	\$2.94	2.5%	\$2.42	2.2%

TFP Availability

Only, 7 of the 29 stores (24%) carried all 86 items. Seven stores were missing 1 or 2 items. Only 2 stores were missing 10 or more items. The average number of items missing in all stores was 3.68 (Table 5).

Table 5. Number and percentage of items missing in each store						
Store	Number of Items Missing	Items Missing (%)		Store	Number of Items Missing	Items Missing (%)
13	13	15.12%		25	2	2.33%
11	11	12.79%		28	2	2.33%
23	9	10.47%		9	2	2.33%
5	9	10.47%		7	1	1.16%
6	8	9.30%		29	1	1.16%
16	8	9.30%		15	1	1.16%
24	7	8.14%		4	1	1.16%
3	7	8.14%		1	0	0.00%
10	6	6.98%		20	0	0.00%
17	5	5.81%		21	0	0.00%
12	5	5.81%		27	0	0.00%
8	4	4.65%		14	0	0.00%
26	4	4.65%		22	0	0.00%
2	3	3.49%		18	0	0.00%
19	3	3.49%				

The food items most frequently missing were pearl barley, garbanzo beans, ground pork, zucchini, ground turkey, English muffins, bagels, turkey breasts, and turkey ham (Table 6).

Eighteen stores were missing pearl barley; 13 stores were missing garbanzo beans; 9 stores were missing zucchini and ground turkey; 8 stores were missing English muffins; and 7 stores were missing bagels and turkey breasts.

Table 6. Frequently missing items			
Item	Stores missing a particular item (%)	Item	Stores missing a particular item (%)
Barley, pearl	62.07%	Turkey ham	13.79%
Beans, garbanzo, canned	44.83%	Melon	10.34%
Pork, ground	31.03%	Beans, northern, canned	10.34%
Zucchini	27.59%	Bread, whole wheat	10.34%
Turkey, ground	27.59%	French Bread	10.34%
English muffins	24.14%	Molasses	10.34%
Bagels, plain, enriched	20.69%	Carrots, whole	6.90%
Turkey breast	20.69%	Lemon drink	6.90%

Food Prices in Low-income and High-poverty Areas

Table 7 shows the ZIP code, associated median household income, percentage of families below the poverty level, and total costs for weeks one and two for each of the stores. Ten of the participating stores were located in low-income ZIP codes (median household income below \$33,870). Nineteen of the participating stores were located in high-income ZIP codes (median household income above \$33,870). The average cost of the TFP at the 10 stores located in ZIP codes with median household incomes below \$33,870 was $\$116.36 \pm 9.93$. The average cost in the 19 stores located in ZIP codes with median household incomes above \$33,870 was $\$113.67 \pm 12.38$. Average costs were not significantly different between low- and high-income areas.

Eleven of the participating stores were located in high-poverty areas (15% or more of families below the poverty level). Eighteen of the participating stores were located in low-poverty areas (less than 15% of families below the poverty level). The average cost of the TFP at the 11 stores located in high-poverty ZIP codes was $\$115.11 \pm 10.29$. The average cost in the 18 stores located in low-poverty ZIP codes was $\$114.28 \pm 12.44$. Average costs were not significantly different between low- and high-poverty areas.

Table 7. Cost for each store with ZIP code, median household income, and percentage of families below the poverty level					
Store	ZIP	Median HH Income (\$)	Families Below the Poverty Level (%)	Week one Total Cost (\$)	Week two Total Cost (\$)
1	70820	19067	17.6	130.79	122.27
2	70805	21203	31.6	108.68	101.85
3	70805	21203	31.6	124.68	112.29
4	70805	21203	31.6	117.07	108.85
5	70760	24623	25.3	108.45	104.37
6	70760	24623	25.3	120.90	124.10
7	70806	29616	18.0	119.27	116.36
8	70806	29616	18.0	136.14	134.85
9	70764	30393	18.4	105.22	104.74
10	70722	30487	19.3	117.88	108.44
11	70090	33886	17.4	105.13	100.18
12	70339	34923	14.1	113.49	109.99
13	70339	34923	14.1	123.70	117.69
14	70767	36351	14.3	115.05	111.51
15	70710	38528	11.4	110.83	109.39
16	70754	38720	8.7	116.13	114.64
17	70726	40754	8.2	120.53	115.64
18	70815	41277	10.0	104.13	95.77
19	70816	42220	6.1	108.73	108.29
20	70816	42220	6.1	93.69	89.72
21	70816	42220	6.1	146.18	138.04
22	70816	42220	6.1	124.13	115.31
23	70706	45250	7.3	107.72	104.34
24	70706	45250	7.3	120.84	113.21
25	70808	47791	4.9	129.29	123.91
26	70393	50208	8.1	101.82	98.81
27	70739	52925	3.4	139.25	134.01
28	70810	55734	6.3	113.70	113.34
29	70817	66979	1.3	109.75	101.50

CHAPTER 5

DISCUSSION

Store Characteristics

In the study only 36%, of the managers of eligible stores chose to participate; they were able to self-select whether they wanted to participate. Food stamp acceptance was not one of the eligibility criteria. Food prices and availability in the stores that did not agree to participate or those that did not accept food stamps may be different from those of the stores that did. Stores may have selected to not participate because they believed their prices to be higher than other stores; this may have caused the average cost in this study to be lower than the actual average cost in the surveyed area. A higher rate of participation could have provided a more representative picture of the cost and availability of the TFP. Participation may have been increased if the study had been initially explained to each store manager by phone or in person instead of by letter. Letters may have been overlooked or thrown away by the managers. A more thorough and personal explanation may have been more convincing. Non-participation by large chains with corporate management outside the immediate area may be unavoidable; these stores may have policies against research at their stores.

Approximately half of the participating stores were in EBR Parish, the most populated parish included in the study. Participation of more stores in less populated parishes, such as Pointe Coupee, West Feliciana, East Feliciana, and Assumption, would give a better idea of the food prices and availability people living in these areas have. The fact that no stores in Ascension Parish participated is also important because in the parishes surrounding EBR Parish, Ascension Parish has the highest median income (\$44,288 compared with the next highest

\$39,667 in West Feliciana Parish).¹⁴⁰ Prices in Ascension Parish may be different from those of other parishes.

The sample of 29 stores may not have been representative of the actual cost and availability of the TFP in Southeast Louisiana. Although the participation rate seems low, other regional food pricing studies surveyed a similar or fewer numbers of stores. Neault et al only included nine stores in a survey of the Boston area.⁴⁴ A survey of the Washington, D.C. area by Andrews et al included 34 stores; 27 of these were chain stores.²⁰ Jetter et al surveyed 25 stores in Sacramento and Los Angeles; 18 of these stores were chains.¹⁵ Regional food pricing surveys in other countries are similar. In Australia, two separate studies included 15 and 53 stores.^{133, 141} The small sample size of the present study, therefore, appears to be adequate in comparison to other regional assessments; however, these stores may not be representative of the survey area.

Food is less available in smaller stores^{15, 20, 44, 127}; therefore, the present study only investigated TFP cost and availability in supermarkets and large grocery stores. Many low-income households lack transportation and must shop in small grocery stores and convenience stores near their homes. Therefore, the findings of this study may not reflect the food cost and availability in stores where food stamp recipients actually shop.

Chain and Non-Chain Stores

Only seven of the participating stores (24%) were part of a national chain. In some cases, when an individual store that was part of a chain was contacted the store manager agreed to participate. However, for chains A and C, the local manager was unable to make the decision of whether the store could participate; in those cases, the store headquarters was contacted. Both declined to participate; therefore chains A and C were under represented in the survey.

In our study prices were not significantly different between chain and non-chain stores. However, chain stores tend to have lower prices than non-chain stores.¹³⁰ Chung et al used a modified version of the TFP that included 45 food items to compare food prices and availability in 55 stores in Minneapolis and St. Paul, Minnesota. In that study, the average cost of the market basket for chain stores was \$16.62 less than for non-chain stores. Prices were especially lower for grains, such as flour, pasta, corn flakes, white rice, and oatmeal.¹³⁰ Chain stores typically purchase in large quantities so they pay low wholesale costs and are able to charge less¹⁴²; this may be especially true for these nonperishable items. The same study also found that food availability was higher in chain stores in comparison to non-chain stores; chain stores were often twice as likely to carry certain foods as were non-chain stores.

The findings of Chung et al suggest that the inclusion of more chain stores would have resulted in a lower TFP average cost and increased availability of food items. However, in the present study the chain stores did not always have the lowest prices. Further, prices at stores within the same chain varied greatly. The TFP average costs at chains B and D varied by more than \$10 and \$15, respectively. This variation is surprising; chains often publish weekly advertisements with price specials for particular items. Therefore more of the prices within a chain were expected to be the same. Of the four national chains, costs were lowest in Chain A; if more stores from this chain had participated, the TFP average price may have been lower.

TFP Affordability

It was hypothesized that the costs of the TFP in Southeast Louisiana would exceed both the maximum and average food stamp allotment received by food stamp participants. The average cost of the TFP for weeks one and two at the 29 food stores was \$117.01 and \$112.19, respectively. These costs both fall below the maximum food stamp allotment by \$3.29 and

\$8.11, respectively. However, this is only the average cost of the TFP and several individual stores exceeded the maximum allotment. For week one, nearly 40% of the stores exceeded the maximum cost. The average food stamp allotment does not adequately cover the average cost of the TFP. A household receiving the average allotment would need \$40.91 more for week one and \$36.09 more for week two. Households with sources of income receive less than the maximum benefits. However, incomes are often meager, and even in combination with the food stamp allotment may not be enough to cover the cost of food. Poor budgeting and menu planning may also contribute to their inability to purchase food. This could lead to food insecurity or a poor quality diet if inexpensive, energy dense foods are purchased. Moderately food insecure individuals are more likely than food secure individuals to have heart disease, diabetes, and high blood pressure; these conditions are often managed partly by dietary modification.⁷⁸ This is of concern considering these individuals cannot afford to consume a non-therapeutic diet. To help offset some of the cost for food, households may participate in other food assistance programs such as the Child and Adult Care Food Program, the National School Lunch Program, and the School Breakfast Program.¹⁸ Food may also be obtained from food banks, food pantries, and soup kitchens.⁴⁸

In the present study, a household receiving the average food stamp allotment, without additional resources, could not purchase the TFP foods at any of the 29 stores. Other studies have found varying results. Andrews et al found the TFP to be affordable in Washington, DC; however, the determined TFP cost was only compared to the maximum food stamp allotment.²⁰ That study priced the TFP week two food list in chain and non-chain supermarkets and discount food stores and found the cost to be \$3.19 less than the maximum benefit. In our study, the week two food list cost nearly \$5 more than the week one food list. If week one had been priced by

Andrews et al, the results may have shown that the TFP was not affordable. Also if that study had not priced discount stores, the TFP may not have been affordable to those receiving the maximum benefits. The average cost in the discount stores was \$85.86; this is much less than the average costs in chain and non-chain supermarkets, which were \$100.54 and \$103.30, respectively.²⁰

In Boston, the average cost of the TFP was \$6.32 higher than the maximum food stamp allotment. Food prices were collected twice, once each in May and August, in small, medium, and large grocery stores. Even though prices were collected twice, both months were during the summer.⁴⁴ This may not have accounted for seasonal variation. Morris et al also found the cost of the TFP to be higher than the maximum food stamp allotment in a selection of counties in 12 states throughout the U.S. However, that study only considered food stores in poor, rural areas where small, independent stores are common. Smaller stores and non-chain stores typically have higher prices than larger supermarkets, so it is not surprising that the TFP was found to be unaffordable in the rural areas.¹²⁷

Two factors should be considered that may have resulted in an underestimated average TFP cost. Methods used to account for missing food items may have underestimated the average cost of the TFP if the stores missing the items had a price higher than the average price for an item. Also, the condiments and spices included in the TFP were not priced based on the assumption that many households would already have these items. However, if these items were purchased, low-income households would face higher total costs than indicated by this study.

Cost of Food Categories

The highest costs of the TFP food lists were for fruits and vegetables and the lowest costs were for fats, oils, sugars, and sweets. Andrews et al had similar findings.²⁰ That study found

fruits and vegetables to account for 37.4% of the total TFP food list cost and fats, oils, sugars, and sweets to account for 8.0% of the total TFP food list cost. That the fruits and vegetables accounted for the largest portion of the total cost is not surprising. Fruit and vegetable expenditures are shown to be the main contributor in making a healthy diet more costly. Cade et al found that groups consuming healthier diets spent nearly 50% of their food budget on fruits and vegetables, whereas groups consuming less healthy diets spent only 29%.¹⁴³ When the relation of diet quality and cost was studied, Drewnowski et al found that higher fruit and vegetable consumption was associated with higher diet costs.¹²⁴

The high costs of fruits and vegetables may make it difficult for low-income individuals to consume the 2005 DGA recommended number of servings. Overtime, a diet lacking fruits and vegetables is thought to increase the risk of developing several chronic diseases such as heart disease, several types of cancer¹⁴⁴, and type 2 diabetes mellitus.¹⁴⁵ Fruit and vegetable intake is lowest among the low-income population.⁶³ Therefore, it is not surprising that low-income individuals have such high rates of chronic diseases.^{5, 72}

It is also not surprising that fats, oils, sugars, and sweets accounted for the smallest portion of the TFP total cost. The TFP only includes small amounts of these items in comparison to other food categories, which could lead to a low cost. The low cost may also be that these foods are inherently cheaper. Fats, oils, sugars, and sweets are all energy-dense foods because of their large numbers of kilocalories per gram.¹⁰¹ Consumption of energy-dense foods is shown to be associated with lower diet costs. Energy-dense foods are cheap sources of energy; they are very inexpensive to produce, easy to transport and store, and have a long shelf-life. In contrast, low energy-density foods, such as fruits and vegetables, are generally expensive sources of energy.¹²² The consumption of an energy-dense diet is associated with weight gain and possibly

obesity.¹⁰⁰ If low-income individuals are only able to afford inexpensive, energy-dense foods, obesity and the associated health problems may result.

In linear programming studies, as diet cost is minimized the energy-density of the diet is increased. Strengthening cost constraints leads to a diet with a high percentage of energy from cereals, fats, and sweets and a low percentage of energy from fruits and vegetables.^{125, 126} It is not surprising that low-income households, which face similar economic constraints, consume low cost, energy-dense diets. This may indicate that the TFP cost constraint needs to be lessened in order for it to conform to the 2005 DGA.

TFP Availability

It was assumed that the TFP foods would be available in Southeast Louisiana. Supermarkets and large grocery stores typically have a wide variety of products; therefore, many of the food items could be purchased by food stamp participants in the area. However, several TFP foods were not available. Other studies have found TFP food items to be unavailable in other areas of the country. Andrews et al found that ground pork, fudgesicles, and yolk-free egg noodles were not commonly available in the Washington, D.C. area.²⁰ The reason these items were missing may be due to regional and ethnic variations in eating habits and taste preferences. In that study, items were less frequently missing in the chain supermarkets (1.0 item) than in the discount food stores (18.3 items) and the independent supermarkets (7.7 items). This suggests that availability is limited in small and independent stores in comparison to chain supermarkets.

In a study of rural areas across the U.S., supermarkets were found to have a wide selection of all foods, while small and medium stores did not. All of the stores were authorized to accept food stamps; therefore, the store must stock and sell a sufficient variety of staple foods in all four categories (breads/cereals, dairy products, fruits/vegetables, and meat/poultry/fish).¹⁴⁶

Of 82 small and medium stores surveyed, 23% did not have any fresh vegetables, 33% did not have any fresh fruit, and 31% did not have any fresh meat. Of the stores that did carry fresh items, most only carried a few different types that were of poor quality. The most commonly carried vegetables were onions and potatoes; the most commonly carried fruits were bananas, apples, oranges, and grapefruit.¹²⁷ Low-income individuals living in rural areas and lacking transportation may have no other choice but to shop at stores such as these. The lack of vegetables, fruits, and meats would make the TFP impossible to follow and lead to a poor quality diet, low in many vitamins and minerals and lacking in variety.

Neault et al found items to be mostly unavailable in small and medium stores in the Boston area. On average, small stores were missing 15.5 items, medium stores 3.8 items, and large stores 1.1 items. That study did not specify which items were missing.⁴⁴ Individuals with access to smaller stores will have difficulty finding the food items to follow the TFP.

In our study, food prices were taken only once because of time constraints. The TFP cost and availability determined does not reflect seasonal variation, but only that in winter. Therefore, it is unclear whether missing items are always unavailable. Zucchini may have been unavailable because the prices were collected in winter. The prices of many fruits and vegetables vary by season. In the peak growing season, the costs can be lower than in non-peak times.¹⁴⁷ If the survey had been conducted during different seasons, the results may have been different; the determined TFP cost would have been higher during non-peak times when prices are higher and lower in the peak season. Pearl barley and garbanzo beans are not commonly eaten in Louisiana; as a result, stores may elect not to carry these items. Ground beef, which was available in all stores, may be preferred over ground pork and ground turkey in Louisiana. Stores may choose not to carry these types of meat if customers do not purchase them.

Without being able to purchase the missing items, those following the TFP may not be able to make several of the recipes included in the TFP. For example, ground turkey is used in four different recipes: pizza meat loaf, turkey cabbage casserole, turkey chili, and turkey patties.¹⁴⁸ In each of these recipes, lean ground beef could be substituted; however, the TFP does not make suggestions for ingredient substitutions. By including ingredient substitutions for instances when foods are unavailable or undesirable, either due to regional variation or seasonal variation, it could be more practical and easier to follow the menu suggestions.

Food Prices in Low-income and High-poverty Areas

Recent data listing median household income levels and percentage of families below the poverty level by ZIP code were not available and therefore data from the United States 2000 Census were used. These data were determined before both Hurricanes Katrina and Rita and do not reflect the post-hurricane population shifts that occurred in Louisiana. Therefore, the areas surveyed may have higher or lower median household incomes, depending on the damage caused to that area by the storm or population movement into or out of these parishes.

It was hypothesized that the food prices would be higher in lower-income areas than in higher-income areas. The average cost of the TFP at stores located in lower-income areas was not significantly different from that of the stores located in higher-income areas. Therefore, the hypothesis was rejected. In addition, the average cost of the TFP at stores located in high-poverty areas was not significantly different from that of the stores located in low-poverty areas.

There are three main reasons low-income households may face higher food prices: (1) low-income households typically shop less often in large supermarkets where prices are often lower, (2) low-income households typically do not live in suburban areas where prices are often lower, and (3) supermarkets in low-income areas may charge higher prices than supermarkets in

high-income areas.¹²⁹ The present study considered only the third reason. Despite the contention that the poor pay more for food^{128, 129, 149}, the results of the present study do not support this idea. This may be because the areas that were surveyed were not very poor in relation to other areas of the state. Only one store was located in a ZIP code with a median household income below \$20,474, the 2005 poverty threshold for a family of four (including two children under the age of 18).¹⁴⁰ By including areas with lower median household incomes, more information on the prices low-income households face could be attained.

Other studies have also found that the cost of the TFP is not different in low-income areas.^{15, 20, 44} Jetter et al, in a survey of 25 stores in Los Angeles and Sacramento, found that the cost of the TFP in very low-income (\$17,000-\$27,000) and low-income (\$29,000-34,000) neighborhoods was similar to the cost in medium-income (\$42,000-\$46,000) and high-income (\$57,000-\$64,000) neighborhoods.¹⁵ Andrews et al found that the weekly cost of the TFP in high poverty areas of Washington, DC was similar to the cost in low poverty areas (\$98.92 vs. \$98.26, respectively). In that study, 19 ZIP code areas were classified by the percentage of the population in poverty. A high poverty area was defined as one with more than 15% of the population in poverty. Twenty-one of the 36 stores were classified as being in a high poverty area; however, five of the six discount stores were also in a high poverty area.²⁰ If prices from the discount stores were omitted, the weekly cost of the TFP in high poverty areas would have been higher.

In a review of studies investigating price differences in low-income and high-income areas, Kaufman et al found that there was little evidence that supermarkets in low-income areas charge higher prices than supermarkets in high-income areas.¹²⁹ It is suggested instead that store size and store location (central city, suburban, and rural) have more of an effect on food prices.

Smaller stores have been shown to have higher prices than larger supermarkets.¹²⁸ Based on this, low-income households may face higher food prices because they generally live in areas where fewer large food stores are located.^{129, 150} With limited access to the more competitive prices of supermarkets and large grocery stores, the low-income population may be forced to rely on smaller stores.^{41, 132}

Other factors such as availability of transportation may prevent food stamp recipients from being able to access affordable food.²⁰ Lack of transportation was provided as a reason for not being able to acquire adequate food by a study of focus groups of low-income individuals. The participants pointed out that organizations were available to deliver food to the elderly and disabled, but not to mothers with young children without vehicles. Reasons for not using public transportation when available included the limited schedule during times when they were able to shop, such as nights and weekends.⁹⁵

Low-income households are less likely to travel far from home to shop for food if they do not have access to a vehicle or cannot afford public transportation. Transportation costs are not factored in when food stamp allotments are determined¹²⁸; as a result it may not be affordable for food stamp recipients to travel to supermarkets. They may be forced to shop in small grocery stores and convenience stores near their homes.^{41, 141} Diet quality will be affected if low-income individuals are only able to shop in stores where food is less available. It is shown that as access to supermarkets increases, fruit consumption does as well. Those living within a mile from a supermarket consumed more fruit than individuals living further than five miles.⁵⁹

Policy Recommendations

The most important policy recommendation is the revision of the TFP. One of the principal problems of the TFP is that it has not been revised since 1999. The TFP claims to be

the national standard for a nutritious diet at a minimal cost; however, the TFP is outdated and meets neither the 2000 nor the 2005 DGA. It is important that the TFP makes current dietary knowledge and recommendations available to all citizens in the U.S. The 2005 DGA recommends an increased number of servings of fruits, vegetables, low-fat dairy, and whole grains compared to the 2000 DGA.²⁵ The 2005 DGA also include recommendations for specific population groups; it is recommended that those with hypertension, blacks, and middle-aged and older adults to keep their sodium intake below 1,500 milligrams per day.²⁵ The TFP does not include adequate amounts of these foods and does not include modifications for those who should follow a low sodium diet.

Adding more fruits, vegetables, low-fat dairy, and whole grains to the TFP would lead to a higher cost in comparison to the TFP in its current form.^{15,44} Neault et al modified the TFP by substituting healthier items for less healthy ones. For example, substitutions were made with brown rice instead of white, whole wheat flour instead of white, fresh fruit and yogurt instead of high-fat snacks, and canola oil instead of vegetable oil. It was found that the monthly cost of the healthier version of the TFP cost \$645.20 per month, over \$100 more per month than the cost of the USDA TFP, which cost \$524.26 per month.⁴⁴ Even though this version of the TFP was healthier it still may not be appealing. A better way to modify the TFP would be to completely revise it with new menus, recipes, and food lists.

In the present study, that the fruits and vegetables accounted for the largest portion of the total cost is of concern. Because of the increased recommended numbers of servings of fruits and vegetables and the specific recommendations for a variety of vegetables (3 cups dark green vegetables, 2 cups orange vegetables, 3 cups legumes, 3 cups starchy vegetables, and 6.5 cups

other vegetables per week for a reference 2,000-calorie intake)²⁵, food stamp recipients will find it even more costly to meet the DGA.

A second problem with the food lists and menus provided in the TFP is that they do not allow for regional variations in the cost of living, cost of food, availability of food, or preferences of food. The TFP does not consider variation in cost of other necessities such as housing, utilities, transportation, and health care.⁴⁴ These necessities may be more expensive in some areas of the country; if low-income households received an adequate allotment of food stamps, they would have more money to spend on these costs. National average costs of foods are used to determine the total cost of the TFP; areas with food costs higher than the national average will not be able to afford the TFP. As shown in the present study and other studies, food items included in the TFP are not available in all regions of the country.^{20, 44}

Low-income households following the TFP are expected to adapt to new eating habits, cooking practices, and food preferences. The TFP may be considered unpalatable, especially in comparison to the highly palatable, energy-dense foods commonly consumed by the low-income population. The TFP menus are bland, monotonous, and lacking in variety. Inexpensive ingredients, such as potatoes, rice, and beans, and uninspired recipes, such as saucy beef pasta and baked cod with cheese, result in meals that may be undesirable to many. The TFP menus and recipes were evaluated by only eight families in Pennsylvania may explain their lack of general appeal.¹⁹ More than eight families should be involved in the approval any national meal plan. To ensure regional acceptability, TFP menus and recipes should be developed for a broader range of races and ethnicities and tested by a larger number of families in more areas of the country. The menus and recipes should reflect regional variations in taste and food availability; seasonal variations in food availability should also be considered.

A third problem is that the TFP is not used by many food stamp recipients. If food stamp recipients are unaware of the TFP then it serves no purpose other than to specify the levels of food stamp benefits. Food stamp recipients need to be better educated about the TFP. Food Stamp Nutrition Education (FSNE) and the Expanded Food and Nutrition Education Program (EFNEP) are the only 2 USDA programs devoted to nutrition education for low-income individuals.¹⁵¹ However, education expenditure per food stamp recipient is minimal.¹¹ FSNE funding is only 1% of the total annual FSP budget.¹⁵¹ These programs have the potential to inform food stamp recipients about the TFP and the benefits it can provide; they can work to develop regionally acceptable recipes and menus and can educate food stamp recipients on allotment budgeting and menu planning. Participation in the EFNEP can lead to better shopping practices which can result in increased savings when purchasing food.¹⁵² Participation in the program was associated with food stamp recipients who planned meals ahead of time, compared prices when shopping, reported fewer food shortages, and consumed better quality diets.¹⁵² If more food stamp recipients participated in nutrition education programs, and these programs emphasized the value of the TFP, then the TFP may be more effective in helping low-income individuals purchase and consume minimal cost nutritious meals.

All of these problems will not be solved by simply revising the TFP. The average household receives only 40% of the maximum food stamp benefits⁴⁴ and cannot afford to follow the TFP on food stamps alone. Therefore, the FSP needs to first consider increasing food stamp allotments especially for those living in areas of the country where the cost of food and other living expenses are above the national average. The cost of transportation should also be considered for individuals living in areas without supermarkets and grocery stores. In the future, if the TFP is revised to include the 2005 DGA, the food stamp allotments again would be

expected to increase due to the increased amounts of fruits, vegetables, whole grains, and low-fat dairy that would need to be incorporated.

The results of the present study may not be generalizable to all areas of the state, and therefore, similar studies should be conducted in other parts of Louisiana. The parishes included in the study did not have very low median incomes in comparison to other parishes in the state. Surveying stores in poorer parishes would show the cost and availability of food in these areas. Collecting more information about each food store and about the area in which it is located would also provide beneficial information. For example, knowing more about the population of each ZIP code in which stores were located could be used to investigate the relationship between prices and rural or urban areas. Information about each store's size and gross annual sales could also be compared to the food prices. Racial and ethnic distributions of each ZIP code in which a store was located could be compared to the food prices.

The next stage of research may also involve analyzing the distance typically traveled by low-income shoppers and comparing this to the actual distances that must be traveled to reach affordable food. Low-income individuals who do not have access to transportation and cannot afford public transportation may not be able to access affordable food even if it is available. A comparison between the level of food store access and the diets of low-income individuals could demonstrate the effect that food store access has on their ability to follow the TFP.

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APPENDIX A

TFP WEEK ONE AND TWO FOOD LISTS

FOOD LIST		
Week 1: Food for a Family of Four ¹		
Fruits and Vegetables		
Fresh²:		
Apples	(6 small) 1 lb 8 oz	
Bananas	(11 medium) 2 lb 12 oz	
Melon	1 lb	
Oranges	(26 small) 5 lb 7 oz	
Cabbage	4 oz	
Carrots	1 lb 4 oz	
Celery	3 oz	
Green pepper	3 oz	
Lettuce, leaf	4 oz	
Onions	2 lb 8 oz	
Potatoes	11 lb 14 oz	
Zucchini	7 oz	
Canned:		
Applesauce	2 oz	
Peaches	1 lb 10 oz	
Pears	13 oz	
Green beans	12 oz	
Spinach	10 oz	
Tomato paste	6 oz	
Tomato sauce	1 lb 1 oz	
Tomato soup	10.5 oz	
Frozen:		
Orange juice, concentrate	8 12-oz cans	
Green beans	5 oz	
Peas	5 oz	
Breads, Cereals, and Other Grain Products		
Bagels, plain, enriched	(8) 1 lb	
Bread crumbs	2 oz	
Bread, white, enriched	2.2 lb	
English muffins	8	
French bread, enriched	8 oz	
Hamburger buns, enriched	8	
Crackers, snack, low salt	4 oz	
Oatmeal, quick, rolled oats	3 oz	
Ready-to-eat cereal (flakes)	6 oz	
Barley, pearl	4 oz	
Flour, enriched	1 lb 8 oz	
Macaroni, enriched	1 lb 11 oz	
Noodles, enriched	2 lb 3 oz	
Rice, enriched	2 lb, 5 oz	
Milk and Cheese		
Evaporated milk	16 fl oz	
Milk, 1% lowfat	2½ gal	
Milk, whole	3 qt	
Cheddar cheese	8 oz	
Meat and Meat Alternates		
Beef chuck roast	2.5 lb	
Beef, ground, lean	2.4 lb	
Chicken, fryer	1.5 lb	
Fish		
Breaded portions, frozen	1 lb	
Cod, frozen	1 lb	
Tuna fish, chunk-style, water-pack	12 oz	
Turkey breast	2 lb 4 oz	
Turkey, ground	2 lb	
Turkey ham (deli)	11 oz	
Beans, kidney, canned	1 lb 11 oz	
Beans, lima, dry	6 oz	
Beans, northern, canned	9 oz	
Beans, garbanzo (chickpeas), canned	10 oz	
Eggs, large	16	
Fats and Oils		
Margarine, stick	7 oz	
Shortening	2 oz	
Salad dressing, mayonnaise-type	1 lb	
Vegetable oil	9 fl oz	
Sugars and Sweets		
Sugar, brown	2 oz	
Sugar, granulated	1 lb	
Chocolate pudding, instant	3 oz	
Lemonade (ready-to-drink)	1 gal	
Other Food Items³		
Baking powder		
Baking soda		
Beef bouillon cubes		
Black pepper, red pepper		
Catsup		
Chicken bouillon cubes		
Chili powder		
Cinnamon		
Cornstarch		
Cumin		
Dry mustard		
Gelatin, unflavored		
Lemon juice, bottled		
Onion powder		
Oregano		
Paprika		
Parsley flakes		
Salt		
Soy sauce		
Sweet pickle relish		
Vanilla		
Vinegar		

FOOD LIST

Week 2: Food for a Family of Four¹

Fruits and Vegetables		Meat and Meat Alternates	
Fresh²:		Beef, ground, lean	3 lb 15 oz
Apples	(5 small) 1 lb 4 oz	Chicken, fryer	1 lb 13 oz
Bananas	(11 medium) 2 lb 12 oz	Chicken, thighs	2 lb 12 oz
Grapes	1 lb 8 oz	Fish (flounder, cod), frozen	2 lb
Melon	1 lb	Tuna fish, chunk-style, water-pack	12 oz
Oranges	(22 small) 4 lb 12 oz	Pork, ground	1 lb 7 oz
Carrots	1 lb	Turkey, ground	1 lb
Celery	5 oz	Turkey ham	11 oz
Green pepper	4 oz	Beans, garbanzo (chickpeas), canned	15 oz
Lettuce, leaf	9 oz	Beans, kidney, canned	15 oz
Onions	1 lb 4 oz	Beans, vegetarian, canned	1 lb 9 oz
Potatoes	10 lb 8 oz	Eggs, large	17
Tomatoes	6 oz		
Canned:		Fats and Oils	
Oranges, mandarin	13 oz	Margarine, stick	15 oz
Peaches, canned, light-syrup	1 lb 10 oz	Shortening	4 oz
Mushrooms, canned	4 oz	Salad dressing, mayonnaise-type	6 fl oz
Spaghetti sauce	26 oz	Vegetable oil	9 fl oz
Tomato sauce	8 oz		
Frozen:		Sugars and Sweets	
Orange juice, concentrate	7 12-oz cans	Sugar, brown	1 oz
Broccoli	6 oz	Sugar, powdered	3 oz
French fries	11 oz	Sugar, granulated	9 oz
Green beans	1 lb 7 oz	Jelly	8 oz
Peas	15 oz	Molasses	1 fl oz
		Pancake syrup	2 oz
		Chocolate chips, semi-sweet	2 oz
		Fruit drink	1 gal
		Fudgesicles, ice milk	4
Breads, Cereals, and Other Grain Products		Other Food Items³	
Bagels, plain, enriched	(4) 8 oz	Baking powder	
Bread crumbs	3 oz	Baking soda	
Bread, French	4 oz	Black pepper	
Bread, white, enriched	2 lb	Catsup	
Bread, whole-wheat	1 lb	Chicken broth, reduced sodium	
Hamburger buns, enriched	8	Chili powder	
Rolls, dinner, enriched	4	Cinnamon	
Ready-to-eat cereal		Chocolate drink mix, powdered	
Corn flakes	1 oz	Cumin	
Toasted oats	10 oz	Dried onion	
Flour, enriched	1 lb 7 oz	Garlic powder	
Macaroni, enriched	1 lb 5 oz	Gelatin, unflavored	
Noodles, enriched	1 lb 2 oz	Italian herb seasoning	
Popcorn, microwave, unpopped	3 oz	Lemon juice, bottled	
Rice, enriched	3 lb 2 oz	Oregano	
Spaghetti, enriched	11 oz	Paprika	
Milk and Cheese		Salt	
Evaporated milk	4 oz	Soy sauce, reduced sodium	
Milk, 1% lowfat	9 qt	Vanilla	
Milk, whole	4 qt		
Cheese, cheddar	2 oz		
Cheese, cottage	7 oz		
Cheese, mozzarella	1 oz		

APPENDIX B

TELEPHONE SCRIPT FOR CONTACTING STORES

*If a store is *italicized*, we only need the name of the store director:

“I am a student at LSU calling about research that the LSU Ag Center will be conducting. May I please have the name of your store director so that we can send a letter explaining our research?”

*If a store is not italicized, we need to know if it meets our criteria:

“I am a student at LSU calling about research that the LSU Ag Center will be conducting. May I have a few minutes of your time to ask you a few questions about your store?”

- 1) Is this a full-service grocery store? (i.e.: do you carry a variety of fruits, vegetables, meats, canned goods, etc)
- 2) Do you have more than 10 employees?
- 3) Is this a specialty store?

IF YES, ASK: May I have the name of your store director so that we can send them a letter explaining our research?

***ALWAYS THANK THEM FOR THEIR TIME!**

APPENDIX C
ELIGIBLE STORES

Store	Address	City	Zip	Phone #
Albertson's	14500 Plank Rd.	Baker	70714	225-774-4234
Albertson's	2950 College Dr.	Baton Rouge	70808	225-924-6091
Albertson's	8950 Greenwell Springs Rd.	Baton Rouge	70814	225-201-1510
Albertson's	7515 Perkins Rd.	Baton Rouge	70808	225-769-6103
Albertson's	15128 Airline Hwy	Baton Rouge	70817	225-751-2808
Albertson's	9990 Bluebonnet Blvd	Baton Rouge	70810	225-768-7775
Albertson's	15232 George O'Neal Rd	Baton Rouge	70817	225-753-0700
Albertson's	4857 Government St.	Baton Rouge	70806	225-216-7226
Albertson's	11321 Florida Blvd	Baton Rouge	70815	225-275-8116
Benedetto's Market	6651 Hwy 1 S	Brusly	70710	225-749-7309
Bet-R-Store Inc	2812 Kalurah St	Baton Rouge	70808	225-343-2361
Bocage Market	7675 Jefferson Hwy	Baton Rouge	70809	225-927-2051
Bodin's Supermarket	2566 Hwy 20	Vacherie	70090	225-265-4891
Butcher Boy Grocery	58315 Fort St	Plaquemine	70764	225-687-4547
Calandro's Supermarket	4142 Government St.	Baton Rouge	70806	225-383-7815
Calandro's Supermarket	12732 Perkins Rd.	Baton Rouge	70810	225-767-6659
Chedotal's A G Grocery	3260 Hwy 70	Pierre Part	70339	985-252-6321
Feliciana Super-Valu	243 Jackson Rd	St. Francisville	70775	225-635-9817
Hi Nabor Supermarket	5383 Jones Creek Rd	Baton Rouge	70817	225-751-3380
Hi Nabor Supermarket	3446 Drusilla Ln	Baton Rouge	70809	225-927-5450
Hi Nabor Supermarket	7201 Winbourne Ave	Baton Rouge	70805	225-357-1448
Hubben's Supermarket	560 N Alexander Ave	Port Allen	70767	225-344-0574
Indian Mound Grocery	16935 Liberty Rd	Greenwell Springs	70739	225-261-9328

Jones Market	29700 Frost Rd	Livingston	70754	225-686-3291
Langlois' Grocery	419 E Main St.	New Roads	70760	225-638-6340
Leblanc's Pay-Less Food Store	40017 Hwy 42	Prairieville	70769	225-622-4041
Leblanc's Pay-Less Food Store	58440 Belleview Rd	Plaquemine	70764	225-685-0422
Live Oak Supermarket	33135 Hwy 16	Denham Springs	70706	225-665-5743
Live Oaks Supermarket Inc	35015 Old Hwy 16	Denham Springs	70706	225-664-5511
Matherne's Supermarket	7580 Bluebonnet Blvd	Baton Rouge	70810	225-819-0430
Matherne's Supermarket	7355 Highland Rd	Baton Rouge	70808	225-767-0074
Melancon's Country Store	12029 La Hwy 416	Lakeland	70752	225-627-6758
Midway Grocery	416 Railroad Av	Donaldsonville	70346	225-473-8239
Morales Grocery	947 E Main St.	Brusly	70719	225-749-2139
Parker Supermarket	20009 Walker South Rd.	Denham Springs	70726	225-698-6368
Pay-Less Supermarket	260 Hwy 70 Spur	Plattenville	70393	985-369-3200
Pay-Less Supermarket	1402 N Burnside Av	Gonzales	70737	225-647-3684
Persick's Food Center	62910 BelleView Rd	Plaquemine	70764	225-659-2669
Pierre Part Store LLC	3241 Hwy 70	Pierre Part	70339	985-252-6261
Piggly Wiggly	510 Olinde St.	New Roads	70760	225-618-1300
Piggly Wiggly	5932 Airline Hwy	Baton Rouge	70805	225-355-0025
Piggly Wiggly	5151 Plank Rd.	Baton Rouge	70805	225-356-4301
Piggly Wiggly	3873 Choctaw Dr.	Baton Rouge	70805	225-355-0197
Piggly Wiggly	8180 Plank Rd.	Baton Rouge	70811	225-355-5034
Port Allen Supermarket	220 N Alexander Ave	Port Allen	70767	225-344-4145
Primus Grocery	1375 Rosenwald Rd.	Baton Rouge	70807	225-774-7354
Reeves Supermarket	10770 N Harrell's Ferry Rd.	Baton Rouge	70816	225-925-5371
Rouse Supermarket Inc	32845 Bowie St.	White Castle	70788	225-545-2267
Sav A Center	14485 Greenwell Springs Rd.	Greenwell Springs	70739	225-261-1095

Sav A Center	4530 S Sherwood Forest Blvd	Baton Rouge	70816	225-292-9805
Save-A-Lot	5186 Evangeline St.	Baton Rouge	70805	225-356-9646
Save-A-Lot	5907 Florida Blvd	Baton Rouge	70806	225-218-0772
Schexnayder Inc	13660 Hwy 643	Vacherie	70090	225-265-7717
Section Road AG Supermarket	11030 Section Rd	Erwinville	70729	225-627-4442
Sewells Community Grocery	469 Elmer Ave	Baton Rouge	70807	225-774-7336
Sky's Grocery & Market	35086 Weiss Rd	Livingston	70754	225-686-1512
St. Francisville Market	7135 Hwy 61	St. Francisville	70775	225-635-3497
Super Saver Food Center	11321 Florida Blvd	Baton Rouge	70815	225-275-8116
Super Saver Food Center	8950 Greenwell Springs Rd.	Baton Rouge	70814	225-201-1425
Supertarget	6885 Siegen Lane	Baton Rouge	70809	225-293-0984
Supertarget	2001 Millerville Rd.	Baton Rouge	70816	225-272-4275
Trabona's IGA	9201 Hwy 67	Clinton	70722	225-683-8287
Valentine & Thomas Neighborhood Grocery	2215 73rd Ave	Baton Rouge	70807	225-355-8642
Wal-Mart	9350 Cortana Pl.	Baton Rouge	70801	225-923-3400
Wal-Mart	2171 Oneal Ln	Baton Rouge	70816	225-751-3505
Wal-Mart	10606 N Mall Dr.	Baton Rouge	70809	225-291-8104
Wal-Mart Denham Springs	904 S RANGE AV	Denham Springs	70726	225-665-0270
Wal-Mart full service grocery	308 N AIRLINE HWY	Gonzales	70737	225-647-8950
Wal-Mart Supercenter Zachary	5901 MAIN ST	Zachary	70791	225-654-0313
Wal-Mart full service grocery	28270 WALKER SOUTH	Walker	70785	225-667-2335
Wal-Mart	3132 College Drive	Baton Rouge	70808	225-952-9022
Wal-Mart supercenter	14507 PLANK RD	Baker	70714	225-774-2050
Winn Dixie	420 Hospital Rd.	New Roads	70760	225-638-5130
Winn Dixie	17682 Airline Hwy	Prairieville	70769	225-677-9701
Winn Dixie	58045 BelleView Rd Plaquemine	Plaquemine	70764	225-685-1080

Winn-Dixie	28145 Walker South Rd	Walker	70785	225-791-2221
Winn-Dixie	5555 Burbank Dr.	Baton Rouge	70820	225-757-0501
Winn-Dixie	13002 Coursey Blvd	Baton Rouge	70816	225-756-7102
Winn-Dixie	8601 Siegen Ln	Baton Rouge	70810	225-766-8400
Winn-Dixie	6800 Greenwell Springs Rd	Baton Rouge	70805	225-216-1217
Winn-Dixie	13555 Old Hammond Hwy	Baton Rouge	70816	225-273-4499

APPENDIX D

LETTER TO STORE MANAGERS

October 13, 2005

[Recipient's address]

Dear _____,

I am a graduate student at LSU, and we are conducting research to determine whether low-income, food stamp participants in southeast Louisiana have sufficient resources to afford a diet that meets the 2005 Dietary Guidelines for Americans. We will create a market basket of 100-200 foods, for example, fruits, vegetables, meats, and canned goods, which we hope to price in your store and others in this region during the second and third weeks of January (January 9-22). Our goal is to collect enough data during this time to determine average food prices in the region. We will use these data to determine the lowest cost market baskets that meet the 2005 Dietary Guidelines. This will help us determine if food stamp benefits are sufficient for participants to afford a healthy diet and meet the 2005 Dietary Guidelines.

The purpose of this letter is to request permission to conduct a pricing survey in your store. All information will be kept confidential; meaning the name of your store will not be identified. Information gathered from individual stores will either be stripped of individual modifiers or combined with that from many other stores and presented in statistical form only.

If you agree to allow us to survey your store, please reply by checking the appropriate box on the postcard provided, and dropping it in the mail. Thank you for your time.

Sincerely,

Laura Stewart
LSU, Graduate Student

APPENDIX E

POST CARD

Laura Stewart
Louisiana State University
Knapp Hall, Room 287
Baton Rouge, LA 70803

Store Name: _____

____ Yes, I grant the LSU AgCenter permission to
conduct a price study in this store.

____ No, I do not grant permission.

Signature: _____

Comments: _____

APPENDIX F

SURVEYED STORES

<u>Store</u>	<u>Address</u>	<u>City</u>	<u>Zip</u>	<u>Phone #</u>
Albertson's	4857 Government St.	Baton Rouge	70806	225-216-7226
Benedetto's Market	6651 Hwy 1 S	Brusly	70710	225-749-7309
Bodin's Supermarket	2566 Hwy 20	Vacherie	70090	225-265-4891
Calandro's Supermarket	4142 Government St.	Baton Rouge	70806	225-383-7815
Chedotal's A G Grocery	3260 Hwy 70	Pierre Part	70339	985-252-6321
Hi Nabor Supermarket	7201 Winbourne Ave	Baton Rouge	70805	225-357-1448
Hi Nabor Supermarket	5383 Jones Creek Rd	Baton Rouge	70817	225-751-3380
Hubben's Supermarket	560 N Alexander Ave	Port Allen	70767	225-344-0574
Jones Market	29700 Frost Rd	Livingston	70754	225-686-3291
Langlois' Grocery	419 E Main St.	New Roads	70760	225-638-6340
Leblanc's Pay-Less Food Store	58440 Belleview Rd	Plaquemine	70764	225-685-0422
Live Oak Supermarket	33135 Hwy 16	Denham Springs	70706	225-665-5743
Live Oaks Supermarket Inc	35015 Old Hwy 16	Denham Springs	70706	225-664-5511
Matherne's Supermarket	7580 Bluebonnet Blvd	Baton Rouge	70810	225-819-0430
Matherne's Supermarket	7355 Highland Rd	Baton Rouge	70808	225-767-0074
Parker Supermarket	20009 Walker South Rd.	Denham Springs	70726	225-698-6368
Pay-Less Supermarket	260 Hwy 70 Spur	Plattenville	70393	985-369-3200
Pierre Part Store LLC	3241 Hwy 70	Pierre Part	70339	985-252-6261
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Piggly Wiggly	510 Olinde St.	New Roads	70760	225-618-1300
Reeves Supermarket	10770 N Harrell's Ferry Rd.	Baton Rouge	70816	225-925-5371
Sav A Center	4530 S Sherwood Forest Blvd	Baton Rouge	70816	225-292-9805
Sav A Center	14485 Greenwell Springs Rd.	Greenwell Springs	70739	225-261-1095
Super Saver Food Center	11321 Florida Blvd	Baton Rouge	70815	225-275-8116
Trabona's IGA	9201 Hwy 67	Clinton	70722	225-683-8287
Wal-Mart	2171 Oneal Ln	Baton Rouge	70816	225-751-3505
Winn-Dixie	5555 Burbank Dr.	Baton Rouge	70820	225-757-0501
Winn-Dixie	13002 Coursey Blvd	Baton Rouge	70816	225-756-7102
Winn-Dixie	6800 Greenwell Springs Rd	Baton Rouge	70805	225-216-1217

APPENDIX G

DATA COLLECTION SHEET

<u>Item</u>	<u>Criteria</u>	<u>Price</u>	<u>Price per unit</u> (oz, lb, gal, etc.)	<u>Comments:</u>
Fruits and Vegetables				
Fresh:				
Apples	3lb Bag, 2.5 in diameter			
Bananas				
Grapes, red or white seedless				
Lemons	Loose			
Melon	Cantaloupe			
Oranges, naval	loose, baseball sized			
Cabbage	Head			
Carrots, whole	2lb bag			
Cauliflower	Head			
Celery	bag, not hearts			
Collard greens	Loose			
Bell pepper, green	Individual			
Bell pepper, red	Individual			
Bell pepper, yellow	Individual			
Garlic	Loose			
Lettuce, iceberg	Head			
Lettuce, romaine	Head			
Onions, green	Bunch			
Onions, red	Individual			
Onions, yellow	individual, medium			
Potatoes, baking	Individual			
Potatoes, red	5lb bag			
Squash, yellow	Individual			
Tomatoes	loose, cheapest available, specify type			
Zucchini	Individual			
Canned:				
Applesauce, unsweetened	3lb 2oz jar			
Fruit cocktail, lite syup	15 oz can			
Oranges, mandarin	11 oz can, lite syrup			
<u>Item</u>	<u>Criteria</u>	<u>Price</u>	<u>Price per unit</u> (oz, lb, gal, etc.)	<u>Comments:</u>
Peaches, lite syrup	1lb 13oz can			
Pears, lite syrup	1lb 13oz can			
Pineapple, chunk, lite syrup	1lb 4oz can			

Raisins	15oz container, next closest size if n/a			
Corn, whole kernel	15.25 oz can			
Green beans, cut	14.5 oz can			
Mushrooms, stems and pieces	4oz			
Spinach	14 oz can			
Tomato paste	12 oz can			
Tomato sauce	15 oz can			
Tomatoes, diced	14.5 oz can			
Tomatoes, stewed	14.5 oz can			
Beans, baked, canned	28 oz			
Beans, black, canned	15.5 oz			
Beans, kidney, canned	15.5 oz			
Beans, lima, dry	large, 16 oz bag			
Beans, northern, canned	15.5 oz; other white bean if n/a			
Beans, garbanzo (chickpeas), canned	15 oz			
Beans, vegetarian (Navy Beans)	15.5 oz; other vegetarian bean if n/a			
Peas, Blackeyed	15.5 oz			
Tomato soup	10.75 oz can			
Cream of mushroom soup, reduced fat	10.75 oz can			
Frozen:				
Orange juice, concentrate	12 oz, cheapest			
Broccoli, chopped	16oz			
Green beans, cut	16 oz			
<u>Item</u>	<u>Criteria</u>	<u>Price</u>	<u>Price per unit</u> (oz, lb, gal, etc.)	<u>Comments:</u>
Okra, cut	16oz			
Peas	16 oz			
Spinach, chopped	16oz			
French Fries	2 lb bag, plain			
Frozen Hash Browns	32 oz bag			
Fish, breaded portions, frozen	specify # of portions			
Ice cream, vanilla	1/2 gallon			
Fudgesicles, ice milk				

Bread, cereals, and other grains				
specify number of slices of bread or # of bagels/english muffins/tortillas				
Bagels, plain, enriched	check bread and dairy sections			
Bread crumbs	15 oz			
Bread, white, enriched	specify # of slices and oz's			
Bread, whole wheat	cheapest, whole wheat flour			
English muffins	check bread and dairy sections			
French Bread	1 lb			
Hamburger buns, enriched				
Rolls, dinner, enriched	12 brown and serve, bakery			
Tortillas, whole wheat	package of 10			
Barley, pearl				
Crackers, graham	14 oz box			
Crackers, whole wheat	4 sleeve, whole wheat if available			
Grits	2lb bag, or equivalent boxes			
Oatmeal, old fashioned	42oz tub			
specify serving size and # of servings per box				
Ready-to-eat cereal (corn flakes)	18 oz box			
Ready-to-eat cereal (toasted oats)	2lb bag			
<u>Item</u>	<u>Criteria</u>	<u>Price</u>	<u>Price per unit</u> (oz, lb, gal, etc.)	<u>Comments:</u>
Ready-to-eat cereal (raisin bran)	2lb bag			
Macaroni, enriched	16 oz			
Noodles, yolk-free, enriched	12 oz			
Pasta, fettuccini	12 oz			
Pasta, spaghetti, enriched	16 oz			
Pasta, whole wheat, ziti or penne	12 oz			
Spaghetti sauce	26.5 oz can			
Popcorn, stovetop, unpopped	2 lb bag			
Popcorn, microwave, unpopped	6 pk, butter flavor			
Rice, brown	28oz			
Rice, white, enriched	5 lb bag, long grain			
Dairy				
Margarine, tub, 40% lite spread	48oz			
Margarine, stick	16 oz (4 sticks)			
Milk, 1% lowfat	1 gallon			

Milk, whole	1 gallon			
Eggs, large	1 dozen			
Cheese, cheddar	8 oz block			
Cheese, cottage	24 oz container			
Cheese, mozzarella	8oz block			
Cheese, neufchatel (light cream cheese)	8oz block, 1/3 less fat			
Cheese, processed (velveeta-type)	2lb block			
Orange juice	1 gallon jug (128oz each)			
Yogurt, lowfat	8oz or 6 oz; cheapest			
Meat and Meat Alternates				
Bacon, turkey	12oz			
Beef, chuck roast, boneless	3lb			
Item	Criteria	Price	Price per unit (oz, lb, gal, etc.)	Comments:
Beef, stew meat	closest to 2lb,beef chuck			
Beef, ground, 15% fat	closest to 2.5 lb			
Chicken, fryer	whole, only record price/lb			
Chicken, leg quarters	10lb bag (or closest size)			
Chicken, thighs	only record price per pound			
Pork, chops	2.5-3.5lb, thin cut, economy chops			
Pork, ground				
Sausage, smoke turkey	link, 14 oz			
Tuna, chunk-style, water packed, canned	6oz			
Turkey breast	3 lb; only record price/lb			
Turkey, ground	record price per pound, 15% fat			
Turkey ham	2-3lb whole, unsliced (plain ham if n/a)			
Baking				
Baking powder	10oz			
Baking soda	1lb box			
Cooking spray, canola	6oz			
Cornstarch	16oz box			
Chocolate chips, semi-sweet	12 oz bag			
Chocolate pudding, instant, sugar-free	3oz box			
Cornbread, mix	8.5oz box (jiffy or cheaper)			
Flour, enriched	5lb bag all purpose (gold medal)			
Jello, strawberry, sugar-free	3oz box			
Jello, cherry sugar-free	3oz box			

Shortening	42 oz			
Oil, canola	48oz			
Oil, vegetable	48 oz			
Sugar, light brown	16oz box			
Sugar, granulated	5lb bag			
Sugar, powdered	32 oz box			
<u>Item</u>	<u>Criteria</u>	<u>Price</u>	<u>Price per unit</u> (oz, lb, gal, etc.)	<u>Comments:</u>
Other Food Items				
Chocolate drink mix, powdered	30 oz			
Coffee, instant	8 oz jar			
Evaporated Milk	20 oz can			
Tea bags	100 count plain			
Fruit drink	1 gallon jug			
Lemon drink	1 gallon jug			
Jam, strawberry or grape	32oz			
Molasses	smallest available			
Pancake syrup, lite	24oz			
Peanut butter, creamy	40oz			
Ketchup	24oz			
Mayonnaise, reduced fat	32oz			
Mustard, yellow	32oz			
Pickle relish	smallest and cheapest			
Salad dressing, Italian, fat-free	16oz			
Salad dressing, ranch, fat-free	16oz			
Soy sauce, reduced sodium	10oz (Kikkoman)			

VITA

Blair Suzanne Buras was born on March 23, 1981, to parents Buddy and Sherrie Buras. She graduated from Covington High School in May of 1999, and then went on to attend Louisiana State University. She graduated *summa cum laude* with a Bachelor of Science in dietetics in the spring of 2005. In the fall of 2005, Blair began a graduate program in human nutrition and food at Louisiana State University. Over the past three years, she has worked as a dance teacher in the Baton Rouge community. She plans to graduate in December 2006 with a Master of Science in human nutrition and food. She will enter an internship program in January 2007. Once she completes an internship program, she will take the exam to be a Registered Dietitian.