

THE IMPACT OF FRONT-OF-PACKAGE LABELING IN LOW
SOCIOECONOMIC AREAS

By

Allison Marco, RD

Submitted to the

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in Partial Fulfillment of

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In

Health Promotion Management

Chair:



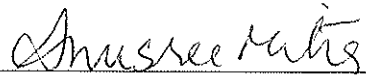
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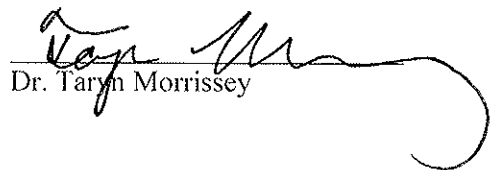
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Dr. Anastasia Snelling



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ABSTRACT

Front-of-package food labeling has become a growing marketing tool for food companies to encourage customers to purchase their products and to educate them through the use of symbols and health claims. The purpose of this research is to measure the effects, if any, of front-of-package food labeling on food preferences in a lower socioeconomic area of DC. One-hundred and ten residents shopping at two major grocery stores in Ward 7, one of the lowest-income areas of Washington, DC, were surveyed to better understand the factors that regularly influence their food choices. This study sheds light on the role of front-of-package labeling in environments where food preferences and access to foods may be limited. The majority of participants in this study stated that nutrition was the most important factor when making food choices compared to cost, convenience, and taste and also believed that front-of-package labeling plays a role in their food choices. These findings indicate that this population has intent to make healthy choices in the grocery store, and there are opportunities for nutrition education in low-income areas.

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CHAPTER 1

INTRODUCTION

Unhealthy eating and increased consumption of processed foods has become a growing issue in the nation and across the world over the past few decades. Over the years, processed and manufactured food products have become more abundant and accessible to the general public. With the large quantities of processed foods that are being produced, we are also seeing lower prices for these items, which has led to an even greater increase in their purchase and consumption (Cutler et al, 2003). At the same time, prices have increased for fruits and vegetables (Cutler et al, 2003). This shift has impacted food choices of individuals, which may be a contributing factor on the health of the nation.

There are many factors that contribute to poor health in our nation, one being that increased food consumption coupled with sedentary behavior has led to the steady rise in overweight among both children and adults across several different demographics. The rise in obesity and body mass index (BMI) has contributed to an increase of the rate of chronic disease in the nation. As overweight and obesity levels rise, so do the rates of diseases such as diabetes, cardiovascular disease, inflammatory diseases, and some forms of cancer (Mokdak et al, 2003). As the negative effects of obesity have risen, there has been a linear increase in chronic disease even for those at normal weights. The rate of diseases such as cancer and heart disease has risen for those with in-range BMIs between

18.5-24.9 who might otherwise seem “healthy” (Ruderman et al, 1998). This in turn has led to an increased cost in health care. As individuals become sick it can lead to an increase in absenteeism at work, decreased productivity, as well as an increase in company’s overall health care cost (Burton et al, 1999).

At the same time, in an effort to increase popularity and profit, manufacturers have increased production of their products, especially processed, which has had an impact on the diets of the people in our nation. Increased consumption of processed foods may be due to lower cost, convenience, time, taste, and an overall lack of education about healthful eating and food consumption in unhealthy environments (Dammann & Smith, 2009).

In an effort to improve the nutrition of our nation, several policies have been implemented throughout the country. One policy, the use of trans-fats, has been banned from some major cities, nutrition information must be displayed in several dining facilities, restaurants have started to introduce lighter items to their menus, and more “health” foods have become available in grocery stores (Colby et al, 2009). These laws were introduced to provide change in the nation, but the need for nutrition education was also recognized, and front-of-package labeling was then introduced by manufacturers to aid consumers in making healthier choices. What began as a way to help educate customers, soon became a way for manufacturers to capitalize on the desire for individuals to eat healthy foods.

Until recently, the nutrition label was the sole form of nutrient content information accessible to customers in the grocery store. Located on the side and

sometimes the back of food products, nutrition labels were voluntarily added to packages for many years, and in 1993 were made mandatory by the Nutrition Labeling and Education Act (DHHS, 2010). Nutrition labels were first introduced and regulated by the FDA, and then amended with the intention of informing customers of the nutritional information of food to help them make decisions more easily (DHHS, 2010).

To test the effect of the nutrition label on consumer knowledge and purchasing patterns, many organizations, including the International Food Information Council, have conducted studies that involved surveying customers on their understanding of the panel. Results from these studies have shown that consumers do in fact read the nutrition facts panel, but there is confusion in its meaning (Tuttle, 2008). More recently, front-of-package symbols were introduced as a way to indicate healthy aspects of a product that appears on the front of the package and used to quickly catch consumers' attention. At this time, health claims also became more popular in an attempt to help consumers understand the nutrition of products more easily. What began as a way to highlight healthy features of a product turned into a growing marketing tool for different companies. As competition among food producers and companies increased, health claims and food labels became a popular way for manufacturers to encourage customers to purchase their products. Beyond company and manufacturer symbols, grocery stores have now come up with their own criteria as to which products in their stores are deemed healthful or not (Carlson, 2010).

As several different claims and symbols have been introduced over the years, researchers have investigated their effect on individual purchasing patterns, and what

tactics work best for increasing sales. The previous studies that have been done were in average to high socio-economic communities with a mostly Caucasian sample (IFIC, 2011). Previous research provides information regarding the effects of food labeling in higher socio-economic areas of the country, yet little to no research has been done on areas of low socio-economic status.

Purpose

The purpose of this research is to measure the effects of front-of-package food labeling on food choices, as well as to determine the main factors of food preferences in a low socioeconomic area. If front-of-package labeling does not have a great influence on food choices, we aim to identify other factors that do influence food preferences of this population.

Research Questions

- 1) What are the determining factors for food preferences in a lower socioeconomic area?
- 2) If consumers are aware of front-of-package labeling, are they more likely to report that they will purchase those products?

Variables

Independent Variable

The independent variables for this research project are the front-of-package food labels and the following food factors: nutrition, taste, cost, and convenience.

Dependent Variable

The dependent variable for this research project is food choices.

Definition of Terms

Nutrition facts panel - The nutrition facts panel refers to the nutrient content and ingredient list located on the side panel of food products

Front-of-package Labeling- Health claims, symbols, and statements found only on the front of product packages.

Overweight- Refers to adults with a BMI between 25 and 29.9

Obesity- Refers to adults with a BMI of 30 or higher

Nutrition Symbols- Refers to the stamps and symbols that companies place on the front-of-package labels

Health Claims- Refers to phrases or sayings that companies place on the front-of-package labels. (ex. “May help lower cholesterol”, “Now help’s support your child’s immunity”, “a good source of fiber”, “0% trans fat”, or “All Natural”)

SNAP (Supplemental Nutrition Assistance Program)- Commonly known as the Food Stamp Program, SNAP is a government program that provides financial assistance to low or no-income individuals and families.

Assumptions

We assumed that during the survey, consumers responded honestly and to the best of their knowledge. It was assumed that the survey was reliable and easy to understand by the respondents.

Limitations

Though this study was conducted inside the two grocery stores, it was not performed as people were actually shopping, which may not give the most realistic view of how people use front-of-package labeling during food purchases. Additionally, this study was done within Ward 7, but was not compared to other wards to see if there is a comparable difference between the use of front-of-package labeling in areas of different income levels. Another limitation is brand loyalty. The chosen cereal product studied was not representative of all brands, and some participants may have provided bias responses due to their previous knowledge or brand preference.

Limitations among survey questions were noticed. When asking what food items were most often bought, or which were bought today, grains and canned foods were not options. The order in which the questions were asked may have also caused some bias in answers.

We also had a small sample size of 110 participants, which is somewhat unrepresentative of Ward 7 as a total population. This sample was limited to the inclusion of those who shop at large supermarkets, and not those who might solely rely on convenience or corner stores, or those that frequent fast food establishments or restaurants. Since respondents stopped to take the survey and knew it would take time to complete, this study may also have been limited to individuals that had more time, and were not hungry, which can affect food preferences and choices in the grocery store.

CHAPTER 2

LITERATURE REVIEW

Overview

This chapter will provide background information on topics that are being analyzed throughout the research project and topics related to food choices. Topics include health disparities, obesity and overweight, the nutrition facts panel, front-of-package labeling and food choices both in the nation and in low-income areas, the food environment in low-income areas and information regarding the demographics of Ward 7.

Health Disparities

According to the National Institutes for Health, health disparities refer to the differences between groups of people. These differences may include racial and ethnic minorities, residents of rural areas, women, children, and the elderly, as well as persons with disabilities (US Department of HHS). In the 1980's, life expectancy for Caucasians had reached 74 years of age, which was 25 years older than those living at the beginning of the 20th century. However, for minorities such as African Americans, Hispanic Americans, American Indians, Asian Americans, and native Hawaiians, health disparities were apparent from shortened life expectancies compared to Caucasians. These disparities continue to affect minority races, and include higher rates of diabetes, cancer,

heart disease, stroke, substance abuse, infant mortality, and low birth weight (DHHS, 2010). The health disparities stem from a number of reasons that include both biological and environmental aspects, as well as inequities in monetary factors, education, and limited access to health care (DHHS, 2010).

According to the Centers for Disease Control and Prevention (CDC), in 2001, African Americans made up 13% of the US population. However, African Americans accounted for more than 50% of HIV infections, had a death rate for cancer that was 25.4% higher than Caucasians, were twice as likely to die from diabetes as Caucasians, and had deaths rate for heart disease and stroke that were 30.1% and 41.2% higher, respectively, than Caucasians (CDC, 2001). African Americans were also nearly 20% less likely to receive coverage for influenza vaccination and pneumococcal vaccination in older adults. The greater risk of disease has in turn led to a higher overall mortality rate than any other population group excluding American Indians and Alaskan Natives (Frist, 2005). These two groups also have double the infant mortality than that of Caucasians, which is cause for concern (Frist, 2005).

Research conducted by the Centers for Disease Control and many others found that African Americans in low-income areas are more likely to be obese than those of other ethnicities and those of higher socioeconomic status. This can be attributed to a mix of factors including social, biological, and cultural, including an abundance of fast-food establishments and fewer vendors that offer healthy foods in low-income areas (Kumanyika & Grier, 2006). This may also be due to living in an environment that is not conducive to physical activity and one that also has an abundance of energy-dense foods.

Additionally, it was found that minorities living in low-income areas were less likely to participate in regular physical activity, have less access to large-scale supermarkets, are less likely to breastfeed their infants, and are more satisfied with their bodies, which lessens their desire and effort to lose weight (Freedman, 2011). Research has also shown that lower socio-economic status areas have limited access to recreational facilities, which is inversely associated with obesity and overweight (Gordon- Larsen et al, 2006).

Even more concerning is the apparent lack of affordable and distinguished health care available to residents in low-income areas. Though policymakers may aim to provide health insurance and security for all people, there are large disparities in the care that is being received between low and high-income individuals. This may be due to constrained resources which effects the amount of time physicians can spend with patients, access to specialty care and issues with coordination of care (Reschovsky & O'Malley, 2008). Factors to be addressed in order to limit disparities in health care and overall health are socio-economic, racial, and ethnic minority status, as well as geographic location (Frist, 2005). In many cases, it is not the individual doctors, but the capabilities of hospitals in certain regions to aid in the health of its residents. Research has also found that quality of primary physician care differs among race, which can affect the type of medical attention that African Americans in certain areas receive over Caucasian individuals (Frist, 2005).

Today, there are many initiatives in place to research health disparities and design ways to eliminate or reduce them. These initiatives have been conducted by the Centers for Disease Control, Healthy People 2020, the National Institutes of Health, and more.

Legislation has also created plans to eliminate health disparities with The Closing the Health Care Gap Act of 2004, which focus on the five key areas of closing health disparities which includes: 1) Improving the quality of health care, 2) Expanding access to high-quality care, 3) strengthening national efforts and coordination 4) helping increase the diversity of health professionals and promoting more aggressive health professional education intended to reduce barriers to care and 5) improving research to identify sources of racial, ethnic, and geographic disparities and assess promising intervention strategies (Frist, 2005).

Despite these initiatives and propositions, it is estimated that in a few decades nearly half of the population will be minority, which may mean further health disparities if greater action is not taken (USDHHS). Limited access to healthy foods and recreational areas coupled with the limited access to quality health care is of great concern for individuals in low income areas across the country.

Obesity and Overweight

Over the past three decades, the rate of obesity and overweight in our nation has steadily increased among most population groups, and it remains on the rise (Wang et al, 2008). In the United States from 2007-2008, it was found that 34% of adults are obese, and another 34% of adults are overweight (Centers for Disease, 2008). This large proportion of individuals in our country who are overweight or obese is cause for great concern due to the damaging effects that it can have on one's body and the economic costs in our nation. Increasing levels of obesity have been linked to many life threatening

diseases, including diabetes, some forms of cancer, cardiovascular disease, and more (Mokdad et al, 2003).

Obesity and overweight have become more prevalent in our country due to multifaceted changes in our environment as a result of increased technology among others. A major factor in the increase of weight and BMI in the US is the increase in caloric intake that has occurred over the past few decades. This caloric increase has occurred from several noticeable avenues, including larger portions at restaurants, increased number of snacks consumed per day, and increase in fast food consumption. Increased caloric consumption has also occurred from more discrete areas such as increase of plate size, package size of variety of foods being offered (Wanksink, 2004). It has also been found that due to the mass production of processed foods, technology has allowed low prices of unhealthful foods that have ultimately led to a calorie increase (Cutler et al, 2003).

Rising obesity levels have also been attributed to the decline in physical activity in our nation. With the increase in technology, physical activity has greatly declined in both adults and adolescents. Data from 2005 indicated that 49.1% of US adults meet the CDC and American College of Sports Medicine physical activity recommendations of participating in at least 30 minutes of moderate physical activity on five days of each week, or a minimum of 20 minutes of vigorous activity on three days of each week (Haskell et al, 2007). Broken down by gender and nationality, this report found that men were closer to meeting the recommendation than women, and that overall those in the 18-24 year old age group were more active than older adults. White, non-Hispanics are more

likely to meet physical activity requirements, followed by other racial groups, African Americans being third at 44% active. Physical inactivity has been linked to cardiovascular disease, thromboembolic stroke, hypertension, diabetes, osteoporosis, obesity, certain cancers, anxiety, and depression (Haskell et al, 2007).

In an effort to reduce the rise in overweight and obesity, there have been several initiatives and actions taken to establish laws that can aid in weight loss and maintenance. These have included banning trans fat in large cities, requiring nutritional information at restaurants and fast food chains, campaigns such as Let's Move and NFL Play 60, as well as the introduction of front-of-package labeling.

Nutrition Facts Panel

The Nutrition Facts panel is a label that is required on most food items including prepared food such as breads, cereal, canned food, frozen food, snacks, desserts, and drinks, and is optional on fresh, raw produce, and fish. The USDA has mandated that the nutrition facts panel list the nutritional analysis of the products, while also listing the food ingredients beneath the label. The nutrition facts panel lists the serving size of the product, how many servings are available per container, and includes calories, calories from fat, total fat, saturated and trans fat, cholesterol, sodium, total carbohydrates made up of dietary fiber, and sugar, as well as protein. For fat, products are rounded to the nearest 0.5, or zero, so if a product contains .44g of trans fat, it can be listed as zero. Nutrition panels also list various vitamins and minerals. The required nutrients that are listed include Vitamin A, Vitamin C, Calcium, and Iron. The last section of the nutrition facts panel is the footnote section that lists the percent daily values based on a 2000 or

2500 calorie diet. Located right beneath the nutrition facts panel are the ingredients, which are listed in order of which ingredient is most abundant in the product.

Nutrition Facts	
Serving Size 1 Tsp. (6g)	
Servings about 60	
Amount / Serving	
Calories 15	Calories from Fat 0
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 125mg	5%
Total Carbohydrate 3g	1%
Dietary Fiber 0g	0%
Sugars 3g	
Protein 0g	
Vitamin A 0%	Vitamin C 0%
Calcium 0%	Iron 0%
*Percent Daily Values are based on a 2,000 calorie diet.	
REFRIGERATE AFTER OPENING	
INGREDIENTS: Sugar, Water, Naturally Brewed Soy Sauce (Water, Soybeans, Wheat, Salt), White Wine, Modified Food Starch, Vinegar, Salt, Caramel Color, Ginger, Garlic, Spices, Sodium Benzoate: Less than 1/10 of 1% as a preservative.	
CONTAINS ALLERGENS: Soy, Wheat.	

Figure 1. Nutrition Facts Panel

Before 1990, nutrition facts were voluntarily listed on foods, but it was not until 1993, under the Nutrition Labeling and Education Act, that nutrition labeling became mandatory for all foods. The nutrition facts panel was made mandatory in order to inform consumers of what they were eating (Tuttle, 2008). At this time, the food ingredient panel and serving sizes were standardized.

Though the nutrition facts panel was created to help consumers, research showed that many consumers were confused. The International Food Information Council's Food and Health Survey in 2007 found that two-thirds of consumers looked at the Nutrition Facts panel, but focus groups done by the IFIC found that most people were confused by the nutrition facts label and how to use them (Tuttle, 2008).

Front-of-package Labeling

Throughout the years, not only has the nutrition facts panel been added to try to aid customers in making choices, but front-of-the-package labeling and health claims as well. The use of health claims became a nation-wide debate over 100 years ago when in 1906 the Pure Food and Drug Act prohibited health claims of any kind to be displayed on food packages (DHHS, 2010). In 1912, Congress enacted the Sherley Amendment which prohibited labeling medicines with false statements and health claims that might deceive consumers, and in 1913 the Gould Amendment required the products be “plainly and conspicuously marked on the outside” when referring to weight and measure. Several years later, in 1924, in the *US vs. 95 Barrels Alleged Apple Cider Vinegar*, the Supreme Court ruled that the FDA “condemns every statement, design, or device on a product’s label that may mislead or deceive, even if technically true” (DHHS, 2009). Over the years, Congress and other government organizations passed various legislation requiring the fair use of labels on products to prevent misleading consumers. At the same time, nutrition facts panels and their usage were being debated until 1990 when nutrition facts became mandatory, and front-of-package health claims first became authorized. At this time, the health claims were limited to “low fat” and “light” (DHHS, 2010).

Though health claims were making their way onto the front of certain food products, nutrition *symbols* were also introduced a couple of years later to bridge the gap between the nutrition facts label and the consumer. The symbols were created in hopes of lessening the confusion of healthy products and to help individuals make better food choices (Tuttle, 2008). Over the years, symbols were introduced by food companies,

government agencies and grocery stores based on their own nutrition criteria. Company symbols have included PepsiCo Smart Spot and the Smart Choices Program used by Kraft, Kellogg's, General Mills and Unilever. Government agency symbols have included National Dairy Council's 3-A-Day, Whole Grain Council Stamps, and the American Heart Association Heart check. Grocery store symbols then started being introduced with Giant's Healthy Ideas, Hannaford's Rising Stars, and NuVal to name a few. Health claims also began making a bigger mark on company products with slogans such as "may help lower cholesterol", "Now Help's Support Your Child's Immunity", "a good source of fiber", "0% trans fat", or "All Natural" (Harris et al, 2011).

Since the introduction of the several different types of labels, much research has been done on the effects that front-of-package labeling has on individuals in regards to consumer food choices, how they process the information to make these food choices, and which type of labeling has been most effective. Based on research done by IFIC, it was found that front-of-package labeling was effective in helping consumers comprehend and easily understand nutrition information of certain products (International Food Information, 2011). This may be due to the simplicity of front-of-package labeling, and its ability to quickly and easily point out the food product's benefits. When comparing different types of labeling messages and symbols, consumers have also found that they prefer simplified front-of-package information that is concise and to the point (Grunert & Wills, 2007). Short health claims provide consumers with better understanding of the benefits of the product, and generate more positive inferences than long claims (Wansink, et al, 2004). Consumers prefer short messages so much that it was found that the Traffic

Light system used in Europe is most user-friendly among consumers. Compared to other, more in-depth, front-of-package labeling used overseas, 81% chose healthier foods when using the Traffic Light symbol, that simply gives foods a red for “stop”, a yellow for “be wary” and a green for “go”(Kelly, et al, 2009). To further increase the believability of claims to allow consumers to make healthful choices, research was done using both sides of the package for a health claim. It was found that by using a short health claim on the front of a product, and a longer one on the back, that the consumer believability of the health benefit of a certain product increased (Wansink, 2003).

Overall research has found that front-of-package labeling and symbols can improve the consumer intent to purchase healthy food choices, although more research and insight will have to be done on health claims selling their products without being false or misleading. Researchers also suggest that regulations should be stricter, while allowing more consistent labeling among products (Nestle & Ludwig, 2010).

Though some research has been done using front-of-package labeling, most research has been implemented on consumers in higher income areas such as university towns where there may be more sufficient access to grocery stores (Wansink, 2003). Many research projects may have been done in average income areas, but there has been little to no mention of research done in lower socio-economic areas where food choices may not be the same, and where price might play a larger role in purchases than health and front-of-package labeling.

Food Choices

Despite the efforts of the nutrition facts panel and front-of-package labeling, there are many other factors that can affect how individuals make food choices. Through research on food choices, it was found that several factors influence food choices that could lead to obesity again including cost and convenience, but additionally factoring in taste. Environment plays a large role on food choices and how much is being consumed, such as the large portions served in restaurants that may provide little satiation (Drewnowski & Darmon, 2005). In addition to the environmental and economical factors that may affect purchasing patterns, factors such as age and gender can as well.

Price also is an important determinant of food purchases. In a study done on price and food choices, prices of vending machine products were reduced and sales of foods were compared to before the price reduction. According to the research, price reductions of low-fat snack items resulted in a significant increase of sales. In the researcher's second study, they reduced the price of fresh fruit and baby carrots by 50% (French, 2003). When compared to the usual conditions when foods are sold at the normal price, the reductions resulted in a purchasing increase of four-fold for fresh fruit, and two-fold for baby carrots. This research was conducted across several ages and populations, showing that decreased prices of foods can influence food choices and purchases of healthful items (French, 2003).

Environment and availability can play a large role in food choices as well. Schools, businesses, medical centers, and other locations have an impact on types of foods purchased and consumed. Research has shown that one of the biggest factors in

food choices on campus is the availability of what is offered in cafeterias and on-campus dining facilities (Freedman & Rubinstein, 2010).

Research has found distinction in food choices among different genders and ages. For young adults and adolescents, cost and convenience were found to be primary reasons for purchasing certain foods (Holmberg et al, 2010). Health was sometimes considered by adolescents, but was not central in the ultimate food choice. Though nutrition panels were sometimes used, they were considered complex and were therefore not considered (Holmberg et al, 2010). In studies, older age groups were found to be more interested in healthy foods and those that were lower in calories (Westenhoefer, 2005). Those in the 50-70 year old age group were found to be more interested in weight control, health orientation and energy intake. Women have consistently been found to prefer healthier food options, leading to a higher consumption of fruits and vegetables and therefore dietary fiber, while having lower intakes of fat compared to men (Westenhoefer, 2005). These differences may be attributed to stronger health beliefs, higher levels of weight control and dieting among women leading to an increase of nutrition knowledge compared to men.

There are also notable changes in food choice and preference across age. As individuals age, taste perception and preference change due to the decline of olfactory and sensory specific functions which may decrease appetite and pleasantness of food. Other factors including lifestyle, income level, and disease state can influence preference as well (Westenhoefer, 2005). While older aged individuals have been found to be more concerned with foods that will aid in disease states, those of younger ages (18-30 years)

have been found to be more concerned with preparation and knowledge, price and time (Chambers et al, 2008). For women, motivation in food choices was based more on appearance rather than health benefits.

Food Choices in Low Income Areas

Research conducted in low-income areas has found several factors that influence consumer food purchases. Many patrons in these areas rely on corner stores for their foods, which have limited healthful items, and low quality fruits and vegetables (Vallianatos et al, 2002). Prices in these areas are comparable to high-income areas, and corner stores are found to be more expensive than supermarkets, which can negatively affect the types of foods that consumers buy (Andreyeva et al, 2008). Due to these factors, along with many others, it has been found that urban areas with corner grocery stores are more likely to have higher levels of BMI (Gibson, 2011). Larger grocery stores in these areas have better foods with cheaper prices, but are often far from where residents live and hard for many in these urban areas to get to.

It has also been found that these corner stores have environments that are not conducive to buying healthful items. These stores are found to resemble gas stations, kiosks, and small corner stores, rather than large supermarkets. The corner stores have variable hours, sell unhealthful prepared foods, and have high language and cultural barriers (Gittelsohn & Sharma, 2009). Transportation to these areas can also be complex and have an effect on where residents can purchase foods, which then affects the types of foods that can be purchased by individuals. Using other forms of transportation may reduce the amount of food that individuals can purchase, since they have to carry their

items to farther locations. These findings suggest that the food environment available in low-income areas can greatly affect healthful food choices.

Food choices in low-income areas are largely based on cost and convenience as well as food preferences. Many individuals in these areas may rely on Supplemental Food Nutrition Program (SNAP) and Women, Infants and Children (WIC) to support their families, which leaves limited choices and concern of how much items cost. Residents in these areas tend to use strategies to stretch their food dollars such as using in-store specials, and food purchases based on price. Frequency of shopping is based on proximity to the grocery store and transportation to get to the area (Wiig and Smith, 2009).

Overweight and Obesity in Washington DC

Overweight and obesity is seen throughout the country, and is rising in Washington, DC, as well. Nearly half of the adults in Washington, DC (55%) are overweight and obese, while 35% of children and adolescents are at risk of or are overweight, and 18% of high school students are overweight (Obesity Action Plan, 2010). Non-Hispanic blacks as well as Hispanics/Latinos are more likely to be overweight or obese than non-Hispanic whites. Within Washington, DC, the majority of DC residents are African American (56%). Obesity also increases with lower socioeconomic status, and Washington DC districts that have low incomes and literacy levels are more likely to have higher levels of residents that are overweight and obese. (Obesity Action Plan, 2010). Washington, DC is divided into eight “wards.” Each ward

differs in demographics, income and literacy level, as well as grocery store availability, and levels of overweight and obesity.

Ward 7 is one of Washington DC's lowest income areas, with an average income of about \$55,000. In 2010 the population in Ward 7 was 71,068 individuals; about 4,000 less than DC's average population per ward. Ward 7 is 96% African American, 2.3% Hispanic and 1.4% non-Hispanic. It has a poverty rate of 26% and an unemployment rate of 19%. Compared to other wards, it has the highest crime rate, and obesity rate, and highest number of person's receiving food stamps (Urban Institute, 2011). Ward 7 holds 2 of DC's 43 large grocery stores, and 2 of the 26 farmer's markets located in the area, with the majority of food stores being corner market stores (Urban Institute, 2011).

Comparatively Ward 3, located in NW Washington DC has an average income of \$257,386 with an unemployment rate of 3.4%. It has the lowest rate of crime, has a low poverty rate, and has an obesity rate of 9.3% (The Urban Institute, 2011). Ward 3 is 5.6% African American and 78% white, and is home to 11 of DC's 43 large grocery stores (Food Research and Action Center).

Safeway Grocery Store

Ward 7 is home to two major grocery stores, located at opposite ends of the boundaries. The two stores are both large Safeway's that contain a variety of food choices with visible front-of-package labels. Based upon sale rates, Safeway is one of the largest food and drug retailers in the country (Safeway Foundation, 2011). They are a leader in customer satisfaction, focusing on the needs of their consumers and employees through equality and opportunity. Safeway also caters to minority groups through

different sales and offers. Safeway shows commitment to the areas that they serve through the Safeway Foundation that aids in hunger relief, education, health and human services, and people with disabilities. In 2010, Safeway donated up to \$130 million worth of food to local food banks to help serve the underserved, and since 2001, the Foundation has donated nearly \$160 million to breast and prostate cancer research (Safeway Foundation, 2011).

Safeway also offers several healthy eating products and labeling systems throughout the store to motivate individuals to buy items that are more healthful. Safeway's own healthy eating line is known as "Eating Right." This line of food products provides healthier food options to their customers while highlighting the health benefits with symbols and front-of-package labels. Safeway also aids in helping individuals make healthy food choices by providing a universal labeling system known as Simple Nutrition. This label is placed below food items from any manufacturer that Safeway acknowledges as a healthy option. The label points out healthy aspect of the products such as "whole grains", "good source of fiber", "good source of antioxidants", "sodium smart" and more. These healthful items are chosen based on Safeway's individual criteria for healthy foods.

Safeway also offers a "club card" that provides promotions and discounts on select foods items. These sales are noted with yellow, laminated signs that show how much the individual will save when buying the product. Safeway provides many opportunities for health and wellbeing, while at the same time making it easy for

individuals to buy foods at a lower cost. Safeway serves as an adequate source of quality food and a good venue for nutrition implementation.

Summary

The continued increase in obesity in the United States creates is of great concern for the health and wellbeing of our nation. Health disparities in low income areas prevent residents from having access to healthier foods, recreational facilities, and adequate health care for themselves and their families. Furthermore, factors such as cost and food preference can have an impact on the types of foods that individuals purchase when at the grocery store. Though the nutrition panel and food labeling have been introduced to help individuals make educated food choices, there is still confusion as to what it all means. This study will attempt to identify the most common factors that influence food choices, as well as the effect of front-of-package food labeling on food choices.

CHAPTER 3

METHODOLOGY

Overview

This chapter will describe the methods used in the research project to gather information regarding self-reported food preferences in the grocery stores located in Ward 7 in Washington, DC. This will include the subjects, data collection, the procedure, data analysis, and the survey used to evaluate the influence of front-of-package labeling information.

Subjects

Participants of this study included a sample of convenience of 55 customers from each of the two Safeway stores located in Ward 7, totaling 110 recruited participants. Customers were selected at random, as they entered into the grocery store and were invited to participate in an intercept survey. Customers were eligible to answer questions if they were 18 years or older and were able to speak English.

A table was set up in the entrance of each Safeway, and customers were invited to participate in the survey as they entered into the grocery store. Upon completion of the questions, the customers were given a \$5.00 coupon to Safeway as an incentive to participate in the study. The survey questions requested information about food choices and what factors influenced their decisions in the grocery store, as well as demographic factors including age, race, zip code, and number of people in their household.

Of the 110 shoppers participating in the survey, the majority of participants (77%) lived in Ward 7, frequented the supermarket at which the survey was conducted, and reported using the grocery store as the main store for their regular food shopping. Total demographic information is listed in Table 1.

Table 1

Demographics for Total Population

	Total Population (n=110)
% Living in Ward 7	77%
% African American	94%
% Male	34%
% Female	66%
% SNAP Recipients	45%
% Age 18-45 years	46%
% Age 46+ years	54%

Overall, the primary shopper (88%) and cook (81%) for the household responded to the survey. Participants also stated their method of transportation to the store and how much they were planning to spend during their grocery trip. Forty percent of participants were using their own or borrowed car, and 35% were using public transportation in the form of the bus or metro. Participants were most often spending up to \$40 (55%).

Data were broken down between SNAP recipients as well as between age groups of 18-45 years of age and 46+ years of age. (Table 2 and Table 3). Forty-five percent of individuals received SNAP, and 55% did not.

Table 2

SNAP recipients vs. non-SNAP recipients

	SNAP (45%)	Non-SNAP (55%)
% Ward 7 Residents	78%	77%
% 18-45 years of age	56%	39%
% 46+ years of age	44%	61%
% Male	32%	35%
% Female	68%	65%
% African American	92%	95%

Table 3

18-45 years of age vs. 46+ years of age

	18-45 years (46%)	46+ years (54%)
% Ward 7 Residents	78%	77%
% SNAP recipients	56%	37%
% Non-SNAP recipients	44%	63%
% Male	32%	35%
% Female	68%	65%
% African American	94%	93%

The younger age group was more likely to use public transportation (40%) or get a ride than use their own car (36%). They were more likely to be SNAP recipients (56%) and have a greater number of individuals in their household (76%). The older age group was more likely to use their own car or a borrowed car to get to the grocery store (44%), were less likely to be SNAP recipients (37%), and have fewer individuals in their households (53%).

Design

This was a non-experimental descriptive research study that attempted to identify the impact of front-of-package food labeling on reported food preferences in this population. This study also attempted to determine which factors most greatly influence choices from the following choices: taste, cost, convenience, and nutrition.

Procedure

Prior to Data Collection

This study received approval from the American University Institutional Review Board (IRB) and under Exemption Category 2: research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior. It received exemption due to the noninvasive nature of the study and the minimal risk associated with performing our research. The following steps were taken in the process toward being granted this exemption:

1. On June 2nd 2011, the IRB exemption Form was submitted to the AU Institutional Review Board (IRB). A copy of our survey was also submitted to the AU IRB at this time.
2. On June 9th 2011, the AU IRB determined that the proposed research met the criteria for exemption.

Upon gaining approval from AU's IRB, we also met the requirements from Safeway to conduct research in their stores. The following steps were taken in the process toward being approved by the Safeway stores:

1. On June 3rd, 2011, a letter to Safeway Public Affairs was sent regarding the nature of our research and asking for permission to survey.
2. On June 26th 2011, Safeway's Application for Charitable or Political Activities On Safeway Premises was submitted.
3. On July 6th 2011, Safeway granted permission for us to survey in their two Safeway locations.

Data

Survey

The primary instrument for gathering participant data was the "Food Choices Survey." This survey was specifically created for the study in order to identify the impact of front-of-package labeling on consumer beliefs and food choices. This survey served to gather pertinent information regarding demographics of consumers in Ward 7, and what factors influence their food choices (Appendix A).

The survey consisted of 29 questions. The first 6 questions were in regards to general shopping and included questions about where and how often participants shop, who in the family does the cooking, whether or not the participants enjoy grocery shopping, and which grocery stores they most often frequent. This section consisted of 5 forced choice questions and 1 open-ended question.

The following 5 questions included information regarding general food choices. The questions asked which foods the participants buy most frequently when shopping at the grocery store, and which foods they were planning to buy on the day they were surveyed. When asking the questions regarding foods being purchased, participants were given an index card with the choices and examples of what each item represents. Questions in this section included consumer understanding of nutrition and whether nutrition guidance plays a role in their food purchases. Participants were also asked to rank which factor is most important to them when purchasing foods when given the choices of taste, convenience, cost and nutrition. This section consisted of 2 forced choice questions, 2 open ended questions, and 1 ranking question.

The following 9 questions were about front-of-package labeling and how the consumers perceived the claims and symbols on the surveyed item. Questions addressed which aspect on the front of the package was found to be most interesting, and whether certain designs or logos would influence them to purchase the product. This section also asked how much the front of the package regularly influences their food choices, the interpretation of the symbols and claims on the product, and whether or not the

participants believe what the claim is stating. These questions included a mix of closed ended, open-ended and likert scale responses.

The remaining 9 questions were in regards to the respondents' demographic information. Information that was gathered included gender, age, ethnicity, zip code, amount of money being spent at Safeway, SNAP inclusion, and methods of transportation. The demographic section consists of 8 forced choice questions and 1 open ended question.

Food Product Used

In order to gather a representative of opinions on different symbols and health claims, one food item was chosen that contains both symbols and health claims as part of our research. The food item chosen was Honey Nut Cheerios, as the product is well known and provides information to consumers as well as a catchy slogan and popular icon. Preliminary research included visiting the Safeway stores to acknowledge which items were available for purchase, and which most often carry slogans and health claims to influence customer choices. From this, we discovered that Honey Nut Cheerios would be an all inclusive product to use to gather information.

Data Collection

Data were collected by the lead researcher at the two Safeway stores in Ward 7. Data were collected during four afternoons of two separate weeks, and each week included two weekdays and one weekend. The stores were visited between 11:00-3:00pm and 3:00-7:00pm on weekdays, and 10:00-3:00pm on weekends. Each visit lasted between 2-4 hours. The lead researcher stood at the table with the surveys, located in the

entry to the Safeway store where the product was displayed on the table. Consumers were approached as they entered the store and invited to participate in the survey, which lasted about ten minutes per person. At the end of the survey, the participant was given a \$5.00 Safeway gift card.

Data Analysis

The analysis of this research project presents both qualitative and quantitative analyses of the effects of front-of-package labeling on purchases made by individuals in low-income areas. Information gathered from the individuals surveyed were analyzed to identify what factors influence consumers' food purchases and the impact, if any, that front-of-package food labeling has on food choices.

Descriptive statistics were from the consumer survey. The number and percentage of responses for each survey question, and its respective components were determined by running frequency distributions on each variable. Results from the survey were used to answer the three research questions regarding 1) what factors influence reported food preferences for this population and 2) consumers' awareness of front-of-package labeling, and if these labels influence consumers to purchase the product.

To get a better understanding of this population, results were broken down dichotomously between participants who participate in the SNAP program and those that did not. The samples were also broken down by age, between those that are 18-45 years of age, and those that are 46 years of age and older.

To answer the first research question, we ranked what influences consumers to purchase products based on taste, convenience, cost and nutrition. To determine how the

population ranked these factors, we conducted a Friedman and Wilcoxin test between each factor, which showed both how it was ranked and the significance between each of the factors. These tests were then run on each of the separate groups as mentioned above. A t-test was run between these separate groups to identify significant differences across income levels and age.

To address the second research question, a chi square test was run to indicate the significance of front-of-package labeling on the population. Chi square was performed between participants who were SNAP recipients and those that were not, and then again on participants aged 18-45 and those that were 46 years or older.

CHAPTER 4

DISCUSSION

Overview

This chapter reviews the results of the data analysis in association with the two research questions of the study. A review of the research hypotheses, findings of the study, and possible explanation for the results will also be discussed.

Results

Factors that Influence food choices

The primary research question of the study was to identify the factors that vary with food preferences in a lower-socioeconomic area. Data were analyzed across the entire population and broken down by subgroups including participants receiving SNAP recipients and non-SNAP recipients as well as respondents ages 18-45 years and 45 years and above. For the total population and across each subgroup, nutrition was ranked as most important, and convenience least. Taste and cost had no significant difference when tested among the total population and by subgroup ($p > .05$). For the total population the factors were ranked as follows.

1. Nutrition
2. Taste
3. Cost

4. Convenience

Table 4

Total Population Ranks

	Mean Rank
Taste	2.40
Convenience	3.25
Cost	2.43
Nutrition	1.93

When analyzing the data by subgroups using the Wilcoxin test, order of importance was different when compared to the entire sample. For the entire sample, the rank was nutrition, taste, cost, convenience with no significant difference between taste and cost.

A t-test was run on each factor between the subgroups when broken down by SNAP and age. Nutrition, cost, convenience, and taste was compared between SNAP recipients (n=50) and non-SNAP recipients (n=60), and then again between the two age groups. No significance was found ($p > .05$) as seen in Table 5.

Table 5

Standard deviation between food choice factors among SNAP vs. non-SNAP recipients

	FS/WIC	N	Mean	Std. Deviation	Std. Error Mean
TASTE	YESFS	50	2.54	1.054	.149
	NOFS	60	2.28	.865	.112
CONVENIENCE	YESFS	50	3.24	.981	.139
	NOFS	60	3.25	1.052	.136
COST	YESFS	50	2.40	1.069	.151
	NOFS	60	2.45	1.171	.151
NUTRITION	YESFS	50	1.82	.919	.130
	NOFS	60	2.02	1.000	.129

When divided by SNAP and non-SNAP recipients, order of importance was ranked as follows: nutrition, cost, convenience, taste.

Data was compared between participants that were 18-45 (n=50) years of age and those that were 46+ (n=60) years of age. Again, there was no significance ($p > .05$) as seen in Table 6.

Table 6

Standard deviation between food choice factors among age ranges

	AGE	N	Mean	Std. Deviation	Std. Error Mean
TASTE	18-45	50	2.42	1.012	.143
	46+	60	2.38	.922	.119
CONVENIENCE	18-45	50	3.26	1.026	.145
	46+	60	3.23	1.015	.131
COST	18-45	50	2.46	1.054	.149
	46+	60	2.40	1.182	.153
NUTRITION	18-45	50	1.86	.948	.134
	46+	60	1.98	.983	.127

Order of importance by age subgroups was ranked as follows: Nutrition, cost, convenience, taste.

Overall nutrition remained the most important for the total population, as well as the subgroups of age or SNAP recipient. Taste and cost were closely scored as the second and third factors, with no significant difference between these two factors. Convenience was least important to the total sample, but became third most important when divided by subgroups.

Front-of-package Influence on Food Choices

The second hypothesis pertains to the question: If consumers are aware of front-of-package labeling, are they more likely to report that they will purchase those products?

To analyze this question, we used data from the survey question asking how much front-of-package labeling influences their self-reported food choices (Figure 1).

In general, how much does front-of-package labeling influence your food choices?				
Not at all	Rarely	Neutral	Somewhat	Very much
1	2	3	4	5
14%	13%	20%	24%	30%

Figure 2. Total Population

A chi-square test was run among subgroups to gain an understanding of whether age or income may influence front-of-package use. Chi-square was run between individuals who are SNAP recipients, and those who are not. Results showed no significance between the two groups ($p > .05$) as seen in Table 7.

Table 7

Chi-Square Test between SNAP and non-SNAP recipients

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.797 ^a	4	.215
Likelihood Ratio	5.867	4	.209
Linear-by-Linear Association	.641	1	.423
N of Valid Cases	110		

Chi-Square Test between SNAP and non-SNAP recipients

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.797 ^a	4	.215
Likelihood Ratio	5.867	4	.209
Linear-by-Linear Association	.641	1	.423
N of Valid Cases	110		

When comparing this question among age groups, there was a significant difference as shown in Table 8 (Chi square = .031, $p=.05$). This difference is seen between the response to choice 5 of this question, stating that Front-of-package food labeling influences the shopper “very much.” Forty percent of the older age group said that it was very influential, compared to 18% for the younger age group.

Table 8

Chi-Square Tests between age groups

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.625 ^a	4	.031
Likelihood Ratio	10.898	4	.028
Linear-by-Linear Association	.440	1	.507
N of Valid Cases	110		

Chi-Square Test between SNAP and non-SNAP recipients

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.797 ^a	4	.215
Likelihood Ratio	5.867	4	.209
Linear-by-Linear Association	.641	1	.423
N of Valid Cases	110		

When asked what on the front-of-the package would make them want to purchase the item, those in the 18-45 year age range most often chose the honey flavor (29%), while those 46 years or older chose the nutrition symbol or claim (40%). Significant differences were found between the two age groups when asked how much front-of-package labeling influences their food choices. Forty percent of the older age group stated that the front of the package influences their choices very much, while only 18% of the younger population found that they had a great influence. The younger population was more likely to report that front-of-package labeling influenced their food choices *somewhat* (36%), indicating that age and lower socio-economic status influences food preferences

The majority of questions related to the front-of-package symbols and appearance of the Honey Nut Cheerios. When analyzing the total population and when broken down by SNAP participation, participants stated that they most often noticed the nutrition claim or symbol as seen in Figure 2.

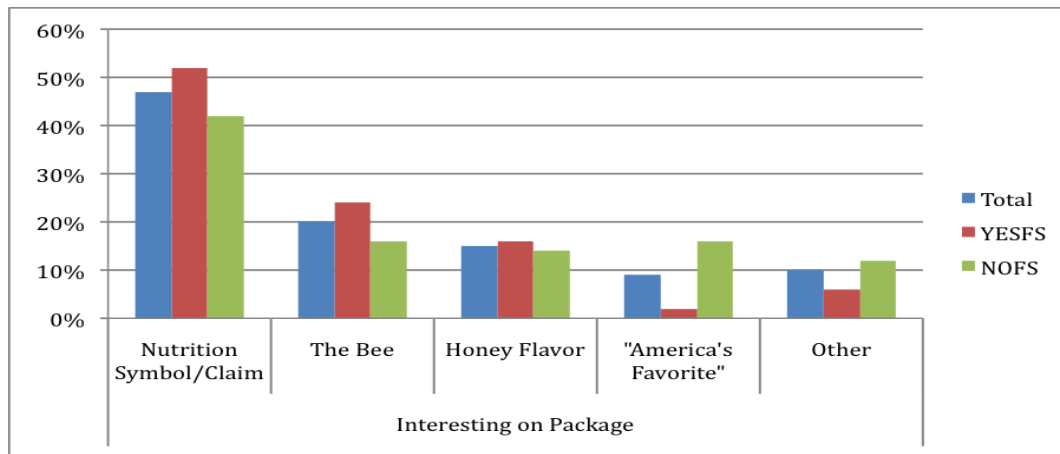


Figure 3. Interesting Aspect of Package

When asking what the main reason for purchasing cheerios would be, again nutrition was most important (Figure 3).

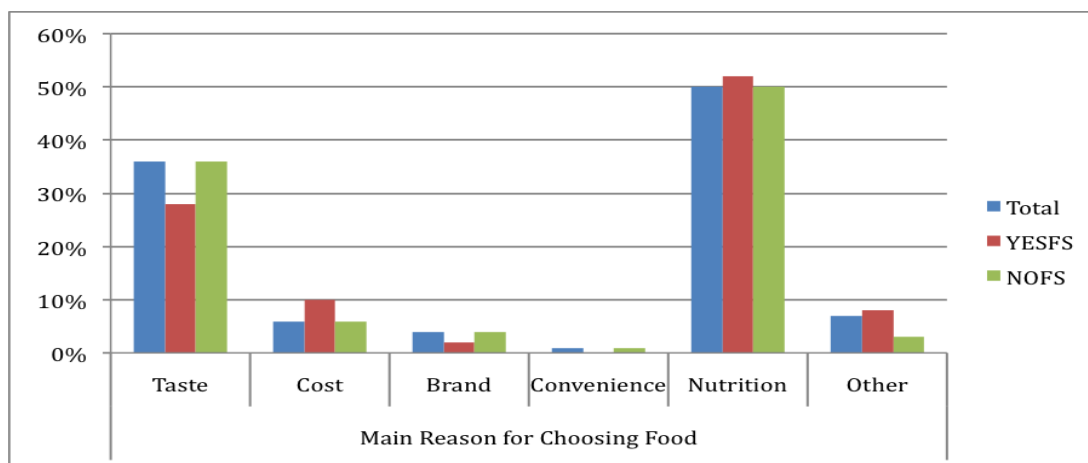


Figure 4. Main Reason for Choosing Food Item

Participants were shown the front of the food package and were asked to identify the one item on the front of the package that would make them want to purchase the food product. Again the main factor was the nutrition symbols and claims (33%), followed closely by the image of the bee (24%) as shown in Figure 4.

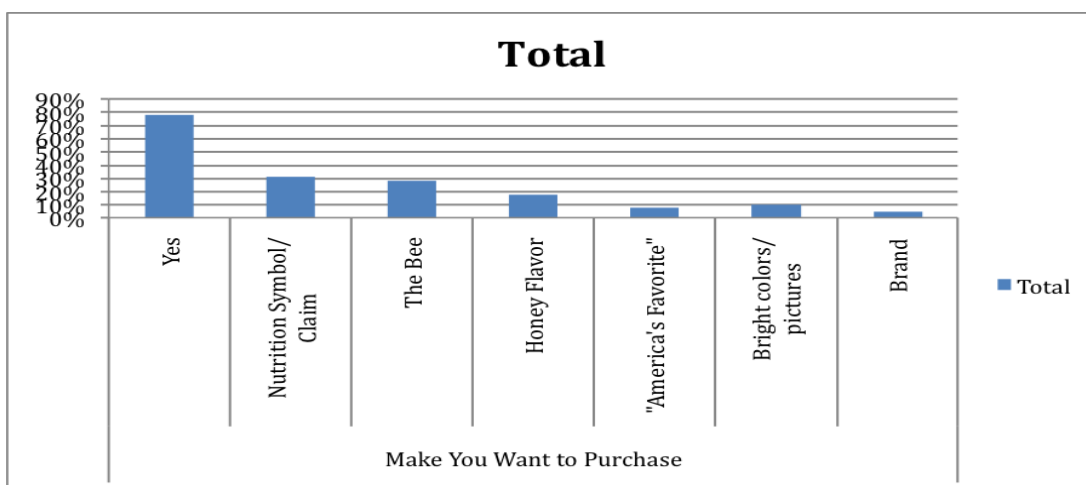


Figure 5. Aspects that Influence Product Purchase

Seventy-five percent of the participants answered that they had seen the nutrition symbol before (Figure 5) and the majority (65%) stated that it would influence them to purchase the product. When asked to decipher the meaning of the symbol, answers varied.



Figure 6. Nutrition Highlights Symbol

The health claim being used was the “Can Help lower cholesterol” icon located on the front of the Cheerios package. Ninety-three percent of the population was able to state that the claim meant one of the following: Heart health, lower cholesterol, or healthy and nutritious. Four percent said it was “only a claim.” Responses to whether or not they believe the claim are shown in Figure 6.

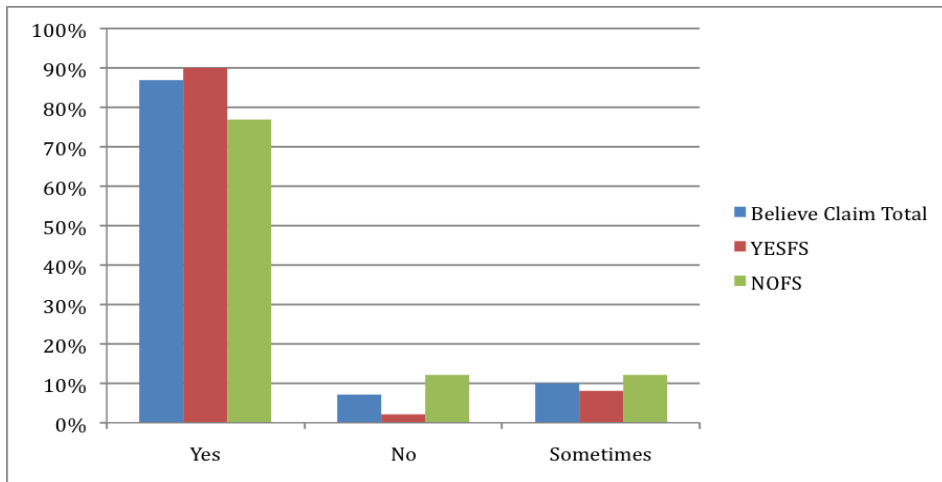


Figure 7. Belief of Health Claim Message

When broken down into SNAP and non-SNAP recipients, responses were similar, and there was no significant difference between factors that influenced choices, and the influence of front-of-package labeling. Those people receiving SNAP s were more likely to say that nutrition influenced their choices, but less often said that the front of the package greatly influenced their decisions. The majority stated that front-of-package influenced them either “neutral” (24%) or “somewhat” (26%).

Participants that do not receive SNAP s were in the older age group (61%). They more often said that the front of the package was very influential in their food choices.

Discussion

The two research questions of this study were to identify which factors are most important in making food decisions in low-income areas and to identify whether or not front-of-package labeling impacts participant reported food purchases.

Prior research has looked at various factors that may influence food choices in populations. These factors range from social, environmental and cultural as well as

gender, age, mood, hunger level and more. For this research project, we focused on four sub-factors including: nutrition, taste, cost, and convenience to determine which factor is most important to this specific population. Prior research on this topic has been performed in predominantly Caucasian areas with a higher socioeconomic range (IFIC, 2011). Prior research has also showed that between taste, cost, convenience and nutrition, taste was ranked highest followed by cost, nutrition and then convenience (Glanz et al, 1998).

Overall, Washington DC's average income is roughly \$115,000 (Urban Institute, 2011). Based on the Ward 7 average income level (\$55,000), we chose factors that we believed may have an impact on this population group. Overall, nutrition proved to be the most important factor for this population, with taste being second, followed by cost and convenience. The researcher hypothesized that cost would be the main factor for food purchases based on previous research stating several barriers to choosing healthy foods in low-income areas. These barriers include food deserts, lack of access to healthy foods and large grocery stores, low-income levels, and high food prices in corner stores (Flournoy, 2006). This study found that despite these barriers, this population has the intent of making healthy choices for themselves and their families.

Although nutrition was ranked highest among the total sample and by the subgroups, we are unaware of whether participants answered the questions based on what the socially-desirable answer may be, or whether their responses are indeed accurate and would predict their actual food choices, purchases and consumption. Though the respondents stated that nutrition is a factor in their food choices, we cannot know with

certainty if intent to purchase healthy food options happens when they are doing their actual grocery shopping. Research has found that in low-income areas, social desirability has had an effect on self-reported food intake, which may have influenced the respondents (Hebert et al, 2008).

Taste proved to be a close second for food preferences throughout the total sample, as other research has found, which can greatly influence individuals as they are doing their grocery shopping. Various articles from the Grocery Manufacturers Association point out instances in which taste has been the predominant factor in food purchasing (GMA, 2011). Prior research done by Glanz et al also found that taste and cost were the most important factors of food choices based on their nationwide sample (Glanz, 1998). Opposing research, which is consistent with our findings, has found that though taste is a determinant, it may not be the most important factor (Clark, 1998). Clark's paper highlighted other determinants including price, availability, culture, attitudes, beliefs, hunger and more, all which affect food choice and food intake.

From this study, we were able to identify that although cost and taste are important factors in food preferences, the population, including the subgroups, is interested in nutrition and choosing healthy products. Although this study did not collect data of foods that were actually purchased by this sample, there is intent and interest in making healthy choices. Based on the Transtheoretical Model of Behavior change (Prochaska, Redding and Evers, 2008), these results show that individuals of this sample may be in the contemplation or preparation stage of behavior change when making healthy food choices. They are interested in the health of themselves and their families

and are considering these choices. To move from contemplation/preparation to action, there may be a need for nutrition education in this sample, with opportunities present in grocery stores.

To answer our second research question, we found that the majority of the population is influenced by front-of-package labeling when making food purchases, as 54% of the participants responded “somewhat” or “very much” when asked how much front-of-package advertising influences food choices. There was no significant difference between subgroups and the factors that influenced their food preferences, though there was a significant difference found between age and how important front-of-package labeling is to individuals. When broken down by age, we found that those aged 46+ years were more likely to be influenced by front-of-package labeling, than those in the 18-45 year age group. This resonates with previous research finding that younger populations are less likely to purchase foods due to the health of an item (Holmberg et al, 2010) and that older generations are more health conscious (Westenhoefer, 2005). The difference in influence between the two age groups may be due to increased desire to shop healthfully due to ailments, caring for their families or knowledge about healthy eating.

From the survey we found from their varying responses, that the participants were confused by what the nutrition symbol meant. When asked to discuss what the symbol meant to them, answers varied greatly among participants. Responses ranged from “good nutrition” to “quick and convenient” to “ingredient breakdown.” When asked to decipher the heart health claim, the answers were more often the same and fit into the categories of

either “heart health” or “good for overall health and nutrition.” As previous research has found, these results appear to indicate that simpler and more universal symbols placed on the front-of-package are more often understood (Wansink, et al, 2004).

The results of this survey indicated that 97% of the sample believed the health claim just because it was on the product. Many of the customers surveyed felt that manufacturers would not put the claim on the box if it was not true. The sample was found to have intent to shop well, and they tended to believe the symbol or claim due to the advertising. These results also indicated that since the sample has trust in manufacturers, regardless of what the claim means, they believed that if the symbol was on the box, it was a healthy item. This population looks at front-of-package labeling and believes that if a symbol is on a package it must mean that the item is healthy for you. This raises concern over the types of advertisements and manufacturer claims that are making their way to the grocery store.

Confusion over the nutrition symbol along with the intent to practice good eating habits shows that educational tools may benefit this population. The population appears to look for nutrition guidance and has intent to eat well for their personal ailments and for their families, but food choices may be made without them having prior education regarding healthy choices. These findings show that manufacturers and grocery stores may have the potential to use front-of-package labeling to help make people make healthier choices.

As recently recommended by the Institute of Medicine, using a universal claim or symbol that is concise and easy to understand can impact a shopper’s recognition with a

healthy product ("Front-of-package nutrition rating," 2011). Using Honey Nut Cheerios allowed the customer to be familiar with the nutrition information since it was a well-known product with claims that are advertised for its heart health. Using public icons and proven messages can greatly influence the decisions made by this population group. Knowing what the symbol means could also influence purchases, if the symbol is noticed.

This study used Honey Nut Cheerios as the researched product, since the packaging included both health claims and symbols, as well as interesting design. The respondents agreed that Honey Nut Cheerios was a healthy product due to its health claims, and participants recognized various aspects of the package that indicated something health-related. This raises the question of whether products bearing more claims may be more influential than products that display less, and whether using Honey Nut Cheerios may have influenced the participant's belief in the health of the product. The amount of front-of-package claims and symbols displayed on a product may also influence a consumer's belief in a health product, showing further opportunity for education about claims and the labeling system.

Obesity and overweight is of concern in low-income areas, but there is opportunity to help lower socioeconomic individuals choose and consume healthier foods. The Safeway stores in Ward 7 offer a large variety of healthful items in a welcoming environment. Corner stores and fast-food outlets are abundant in this area, but during the survey, participants stated that they shopped mostly at Safeway, Giant, or other supermarkets, with no mention of corner stores. Safeway and other large grocery

stores in low-income areas can serve as educational resources and provide opportunity for healthful foods choices for these populations.

Summary

This study adds to our limited understanding about the effects of front-of-package labeling among residents in low-income areas, and can inform the health education strategies that may be best suited for this population. Regardless of income status, selecting nutritious foods appears to be an important factor to shoppers. The barriers may be in education, as well as believing that an item is healthy merely because of a nutrition symbol on the front-of-the package. Based on these results, we can see that efforts made from manufacturers and within the grocery store can aid in education and healthy eating practices in low-income areas. The next steps of this project should include working with Safeway to see what items individuals are actually purchasing. This will give us a better understanding on what the population consumes, and which foods are most often purchased.

CHAPTER 5

SUMMARY AND RECOMMENDATIONS

The purpose of this study was to measure the effects, if any, of front-of-package food labeling on reported food preferences in a lower socioeconomic area of DC. One-hundred and ten Safeway customers participated in our survey discussing their purchasing patterns and which factors most greatly influences their food choices. Participants ranked which factors are most important to them when making food choices, and determined how much the front of the package influences their purchases. There were two research questions that we aimed to answer through the study:

- 1) What are the determining factors for selecting food products in a lower-socioeconomic area?
- 2) If consumers are aware of front-of-package labeling, are they more likely to purchase those products?

We hypothesized that cost or taste would be the most important factor in food preferences, but this hypothesis was not supported by the results of the survey. It was also hypothesized that if consumers were aware of front-of-package labeling, they would be more likely to purchase those products. The study indicated that overall, front-of-package labeling influences self-reported food preferences and has an impact on shoppers in this area.

Overall, the study indicated that nutrition is an important factor in purchasing patterns, regardless of age or income level. Front-of-package labeling also has an

influence on individuals when making food choices. Because of these results, it appears that individuals in this low income area of DC have interest in eating healthfully and choosing nutritious items for themselves and their families.

Recommendations

Based on the results of this study, there are several recommendations that can be made for future studies that may be done to examine factors that influence food choices, as well as how front-of-package labeling and marketing can impact customers.

- Future studies can work with the supermarkets to gather information regarding actual food purchases in the grocery store. Gathering these data will give a better understanding of intent of buying healthy products compared to what is actually being purchased.
- Future studies can compare the results from Ward 7 to another ward in Washington, DC. This will help us get a better understanding of how food choices and front-of-package labeling might compare among different income levels and demographics.
- Future studies can use a wider variety of brands and products to assess labeling. This will help reduce bias from brand preference and loyalty.
- Future studies can use products with a varying amount of health claims to determine whether the amount of claims on a product might influence choice and believability.

Results from this study can be built upon to determine how marketing and front-of-package labeling can impact consumer eating habits. Finding that nutrition is important to

these individuals also allows opportunities to do further research on nutrition beliefs in low income areas, in order to work towards creating nutrition education opportunities in low income areas.

APPENDIX A

Front-of-package Questionnaire

Topic Area	Question
General Shopping	Are you the primary grocery shopper for your home?
1.	a. Yes b. No. c. If no, who is? _____
2.	How often do you go grocery shopping per week? a. Less than once a week b. 1-2 times c. 3-4 times d. 5 or more
3.	Is this the store where you buy most of the food that you prepare and eat at home? a. Yes b. No
4.	If not, what other stores do you purchase food from?
5.	Do you enjoy grocery shopping? a. Yes b. No c. Neither enjoy nor dislike
6.	Who does the majority of cooking in your household? a. Me b. Spouse/partner c. Parents/grandparents d. Child(ren) e. Roommate f. Other _____
General Food	Please select the foods you buy most often at Safeway: (will be available on index card) a. Dairy (milk, yogurt, cheese) b. Frozen meals (pizzas, meatballs, frozen dinners)

13.	If you were to choose this food, what would be the main reason for doing so? a. Taste b. Cost c. Convenience d. Brand e. Other: _____										
14.	Is there anything on the front of this package that would make you want to purchase this item? a. Yes b. No If yes, please specify:										
15.	In general, how much does front-of-package labeling influence your food choices? <table border="0"> <tr> <td>Not at all</td> <td>Rarely</td> <td>Neutral</td> <td>Somewhat</td> <td>Very much</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>	Not at all	Rarely	Neutral	Somewhat	Very much	1	2	3	4	5
Not at all	Rarely	Neutral	Somewhat	Very much							
1	2	3	4	5							
16.	Have you seen this symbol before? a. yes b. no										
17.	(Show nutrition symbol) What does this symbol mean to you?										
18.	Would it influence you to buy this product? a. yes b. no c. maybe If no, why?										
19.	(Show health claim) What does this health claim mean to you?										

20.	Do you believe what the claim is stating? a. yes b. no c. sometimes
Demographics	What is your zip code?
21.	
22.	How did you get here? a. My own car b. Borrowed/rented car c. Bus d. Taxi e. Walk f. Other
23.	How long did it take you to travel here? a. Less than 10 minutes b. 10-20 minutes c. 20-30 minutes d. 40 minutes or more
24.	How much do you plan to spend at Safeway on food today?
25.	If you feel comfortable sharing this information, could you tell us if you are using SNAP or WIC to help pay for food? a. Yes b. No If yes, which one do you use?
26.	Please select your age range: a. 18-25 b. 26-35 c. 36-45 d. 46-55 e. 55+
27.	Please select your gender: a. Male b. Female
	Please select your ethnicity: a. White/Caucasian

28.	b. African American c. Hispanic/Latino d. Asian e. Pacific Islander f. Native American g. Mixed race h. Other i. Prefer not to answer
29.	How many people live in your household? a. 1-2 b. 3-4 c. 5+

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