Description of Differences in Price and Quality of Foods at Full Service Supermarkets and Convenience Stores in Cleveland, Ohio

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Pledge

Abstract

In cities throughout the United States, there is limited access to healthy food options in inner-city neighborhoods. In these neighborhoods, there is a predominance of convenience stores that offer grocery items but limited healthy food choices. Supermarkets that offer healthy food choices are either non-existent in these communities, or there is not an easy way to get transportation to these stores. It is my goal through this study to determine if the type of store (full service supermarkets and convenience stores) influences the price and quality of typical groceries in the city of Cleveland. I visited 10 stores with a sample grocery list and recorded the price and various other measurements for 38 different grocery items. I also recorded various qualitative observations in each of these 10 stores. Grocery items tended to be more expensive in convenience stores than in full-service supermarkets. There was also a greater range in prices among items that were in full-service supermarkets than in convenience stores. Full-service supermarkets also seemed to have more organizational structure and offer a wider array of products to the consumer. My study illustrates the lack of affordable healthy food options for residents of inner city Cleveland.

Word Count: 196 Words

Introduction

My research question relies on the abundance of data that suggests that inner-city neighborhoods in major US cities have limited access to healthy foods (Pothukuchi, 2005). This is an important topic because food justice and food equality are major topics of discussion in United States cities. Those who argue for food equality argue that where you live, and your income, should not be factors that influence your ability to access healthy food. Access to healthy foods is vital for proper nutrition so that people can lead healthy lifestyles. For instance, a study determined that low-income neighborhoods usually lack full-service grocery stores that sell fresh produce, low-fat dairy products and other healthy food options (Beaulac et al., 2009; Larson et al., 2009). Instead, these communities rely on small convenience stores and corner stores that lack healthy foods (Larson et al., 2009). In addition, if there is access to healthy foods in lower income neighborhoods, it is often too expensive for families. They tend to opt for foods

with higher caloric value to try to stretch their food budgets (Drewnowski et al. 2010). The fresh produce that is available in low-income neighborhoods is also often of poorer quality, which discourages their appeal to buyers in these neighborhoods (Andreyeva et. al 2008). This makes logical sense because consumers will typically buy foods that will last longer and provide them with the most bang for their buck.

Additionally, it has been confirmed that inner-city neighborhoods have a greater abundance of fast food options (Larson et al. 2009). Families with lower income levels will often opt for these food options over healthy options because they are quick, cheap, and have a high caloric content. However, consistent fast food consumption has been associated with weight gain, obesity and unhealthy lifestyles. In one of the most comprehensive studies on the topic, it was found that residents that live in close proximity to full service grocery stores tend to have healthier diets and less risk of obesity (Larson et al., 2009).

In order to adequately understand the content of my research, it is important that there is an understanding of the difference between a convenience store and a full service supermarket. The Association for Convenience and Fuel retailing defines convenience stores as a small store that stocks a range of everyday items such as groceries, snack foods, candy, toiletries, soft drinks, tobacco products, and newspapers (NACS, 2013). On the other hand, a supermarket is defined as a large form of the traditional grocery store, is a self-service shop offering a wide variety of food and household products, organized into aisles (Galvez et al. 2014). Understanding the difference between these two types of store is vital in understanding the research performed in this study.

The availability of healthy food in Cleveland is a relevant topic in the city today. During February of this year, a large locally known grocery store called Heinen's was introduced in a

historic building in downtown Cleveland (Cho, 2015). As Cleveland continues to revamp itself as an up and coming city, an increasing number of people have been moving back to downtown Cleveland. Despite the revitalization of the city of Cleveland, food options have lagged behind the other progressive businesses and companies that have made this city their home. Joe Marinucci, President and chief executive of the Downtown Cleveland Alliance stated, "Having a company like Heinen's - with its reputation for customer service and the quality of its food -a grocery store of this caliber is going to be very significant for downtown Cleveland" (Cho, 2015). Many other residents echoed Marinucci's thoughts and look forward to having a full-service grocery store that they can utilize after work to pick up items for dinner. This recent event illustrates how my research relates to the timeliness of my research and also connects my ideas to greater themes in the city of Cleveland such as sustainability, urban living, and health.

Personal Motivation

As a child, I grow up in an area of Cleveland that was very close to the city. When I was about 16, I moved to a suburb of Cleveland 20 minutes outside of the city. After having experienced both of these types of neighborhoods, I noticed differences in my family's ability to access healthy foods. In fact, when I was younger I remember driving to the suburb that I currently live in just to go to the grocery store because there wasn't a full service supermarket near my house.

During the past two summers, I worked for a non-profit program called Green Corps through the Cleveland Botanical Gardens. Green Corps is a work study program for Cleveland area high school students. In this program, students work on urban learning farms in which they are involved in all facets of the farming process. Students don't only plant the crops and care for

them, but they also sell them at local farmers markets and all proceeds from these sales go back into the Green Corps program. In addition to these aspects, students in the program also receive weekly science lessons that are based on garden based curriculum to help them pass master scientific concepts that appear on the Ohio Graduation Test. They also receive minimum wage compensation for their work.

While working with this program as an intern on the learning farms, I noticed that many of the students did not have nutritious lunches. For many, a few bags of chips and a sugary beverage were all they consumed during the workday. As I drove around Cleveland I began to notice that there seemed to be a disproportionate number of convenience stores to full service supermarkets in Cleveland neighborhoods. I began to wonder if the reason why students opted for these types of foods was because they didn't have easy access to healthy foods from supermarkets in their neighborhoods. Examining the costs and quality of these foods through this project may lead me to a better understanding of this behavior. This first-hand experience with this topic is the motivation for me to do this study.

Project Purpose

The purpose of this study is to determine if the price and quality of grocery items varies based on if they are being sold in a convenience store or a full-service supermarket in the Cleveland area. By examining a combination of quantitative data and qualitative observations, I hope to draw conclusions about grocery items and their cost and quality at Cleveland area grocery stores.

Literature Review

Literature has been published on many aspects of the issue surrounding access to healthy food and supermarkets in urban areas. In fact, a recent study found that wealthy census tracts

have twice as many supermarkets in their neighborhoods as poor census tracts (Treuhaft, Karpyn 2010). This indicates a discrepancy in access to healthy foods based solely on income levels. As Paula Ilochi illustrates in her research, this discrepancy is not just affecting the individual, but it creates societal trends that seem to affect minorities and inner-city residents at higher rates than wealthier populations that live in the suburbs (Ilochi, 2011). Walkability to supermarkets and other healthy food outlets was also found to be a factor on whether or not individuals consume healthy foods. Those who are able to walk to these food outlets were found to consume more healthy fruits and vegetables than those who were farther away from supermarkets and grocery stores (Rundle, 2008). Instead of walking far distances to grocery stores, many inner-city residents shop at their local corner store. These corner stores often do not have any healthy options including fruits and vegetables. A study on these corner stores illustrated that the majority of these stores had no fruits or vegetables and very few healthy snack choices (Laska et. al. 2009). Without any healthy options, residents are forced to eat foods that are unhealthy which creates some startling trends when it comes to the health of these residents.

Besides the discrepancy in access to healthy foods, residents of cities tend to have more health complications than those who live in the suburbs because of their ability to access healthy food options. Some of these trends include health problems such as obesity, diabetes and heart disease. These diseases are more prevalent in inner city areas that have limited access to supermarkets (Ilochi, 2011). This is seen especially in Detroit, a city similar to Cleveland in many regards, where inner-city adults have obesity rates of 70% and children at 40% (Garry, 2011). This same result was echoed in East Harlem, New York (Hayes 2000). A study found that convenience stores and fast food restaurants contributed to higher Body Mass Index percentages in this neighborhood than in other higher income areas of the city (Galvez, Hong et. al, 2009).

High Body Mass Index (BMI) is associated strongly with the diseases previously discussed such as obesity and heart disease. In a similar study done by Galvez, it was found that 100 percent of the poorer census blocks in East Harlem did not have access to grocery stores or supermarkets (Galvez, Morland, et al., 2007). This study also found that there were distinct differences in access to grocery stores and supermarkets among different ethnic populations (Galvez, Morland, et al., 2007). Another study found that there is a higher prevalence of fast food restaurants and energy dense foods in inner-city neighborhoods (Larson, Story, Nelson,. 2009). This has implications for differences in diet, obesity rates, and a variety of other factors among different ethnic groups.

Economic Implications

There are also many economic problems associated with inner-city residents having to leave their neighborhoods to buy healthy foods. Despite Americas advanced agricultural system and abundant food supply, cities across the United States lack access to affordable healthy food. Instead, smaller convenience stores have limited supplies of these foods and they are often too expensive for residents to afford (Nayga, Weinberg 1999). For example, in Detroit, it is estimated that approximately 200 million dollars is spent by inner-city residents on grocery expenses outside of their neighborhoods (Garry, 2011). This can create a problem because the money spent is not being put back into the community, but into suburbs that are outside of city limits. Economically, this creates advantages to these suburban businesses while the communities in which these residents live see none of the benefits. It is also ironic that when there is healthy food in inner-city areas, it is often higher priced and of worse quality than the same food that is sold in supermarkets in the suburbs (Walker, Keane, Burke,.2010). This makes it even more obvious why lower income residents choose unhealthy food options. It doesn't

make sense to pay more for a healthy food option that is of poor quality-especially in financially struggling households. However, one study disputes this claim that food in inner-city neighborhoods is more expensive than in suburban neighborhoods. In this case, a detailed study was performed in New York City and it found that there was no statistical difference between the prices of food in inner-city regions as compared to neighboring suburbs. Despite this case, there seems to be a greater abundance of literature that supports that healthy food options are more expensive in low-income and inner city neighborhoods.

One study that I encountered attempted to address these high prices by introducing farmers markets to inner-city regions (Kristian, Gilliland, 2009). After a farmers market was introduced to provide competition for the local supermarket, prices of healthy fruits and vegetables at the local supermarket decreased by 12 percent over three years (Flachs 2010). This introduces a possible solution to both problems; access to higher quality produce and lower prices for healthy foods. Perhaps the most important question to ask is why supermarkets are not attracted or located in urban areas. Trying to attract supermarkets and grocery stores to these areas may be the most useful way to tackle this problem. However, because of higher property tax rates within city limits, many grocers stay away from cities and opt for less expensive properties located outside of city limits in the suburbs. Another study examined 32 inner city communities in which they successfully advocated and achieved getting a full service supermarket into a low income community (Pothukuchi, 2005). It was found in this study that successful implementation of grocery stores in these communities had a few defining characteristics. These characteristics include political leadership, competent public agency participation, and partnerships with non-profit organizations (Pothukuchi, 2005). Studies like

these give hope and advice for neighborhoods and communities to advocate for full service grocery stores in their communities.

Some studies have even examined personal accounts about what it is like to live in a location without access to food. Personal accounts seemed to echo a lot of what was found in the quantitative research. For instance, a personal account of a man who lives in a food desert in Britain stated, "It's a lot easier when you get it all in one shop and you don't have to get a bag full of stuff and then go around to other shops" (Whelan et. al. 2002). This illustrates that not only is there a lack of grocery stores in urban areas, but also that individual prefer large, full-service supermarkets so that they can purchase all of their grocery's in a single location. As previously noted, this can be difficult in urban areas because grocery stores are either non-existent or very difficult to access. Another study found that one of the reasons that inner-city residents choose not to shop at these full-service grocers is because many of them lack the proper transportation to purchase groceries in bulk (Caraher et. al. 1998). Many of the inner-city residents in this neighborhood relied on public transportation to get to the grocery store and did not have personal automobiles. The citizens expressed that it is difficult for them to transport large amounts of groceries on a public bus with many other occupants. Additionally, it would be hard to carry all of the groceries in their two hands as opposed to transporting them in a trunk of a car. However, in one study in the United Kingdom, personal accounts dispute the idea that affordability and accessibility are the major factors for why consumers in low-income areas do not eat more fruits and vegetables. In this study, only 7 percent of low income participants experienced difficulty in visiting a supermarket at least once per week (Dibsdall et. al. 2002). Additionally only 5 percent of the people felt that they had a difficult time eating healthy despite

only 18 percent of the population reaching the recommended serving of fruits and vegetables on a daily basis (Dibsdall et. al. 2002). This invites the question of what other variables are contributing to a lack of healthy food consumption in inner-city neighborhoods besides income and proximity to grocery stores.

Urban gardens have also been introduced as a way to combat the lack of healthy food items sold in convenience stores. In a study that has significant relevance to my topic: urban gardens in the greater Cleveland area were examined for the environmental, economic and social impact. Those who lived closer in proximity to community gardens were more likely to utilize them and grow their own fruits and vegetables (Flachs, 2010). Additionally, the residents near these gardens felt more connected to their community because a multitude of community members worked on a single community garden (Flachs, 2010). Lastly, many of those residents who worked or lived near the gardens said that the proximity to this healthy food source changed their opinions about healthy foods and eating habits (Flachs, 2010).

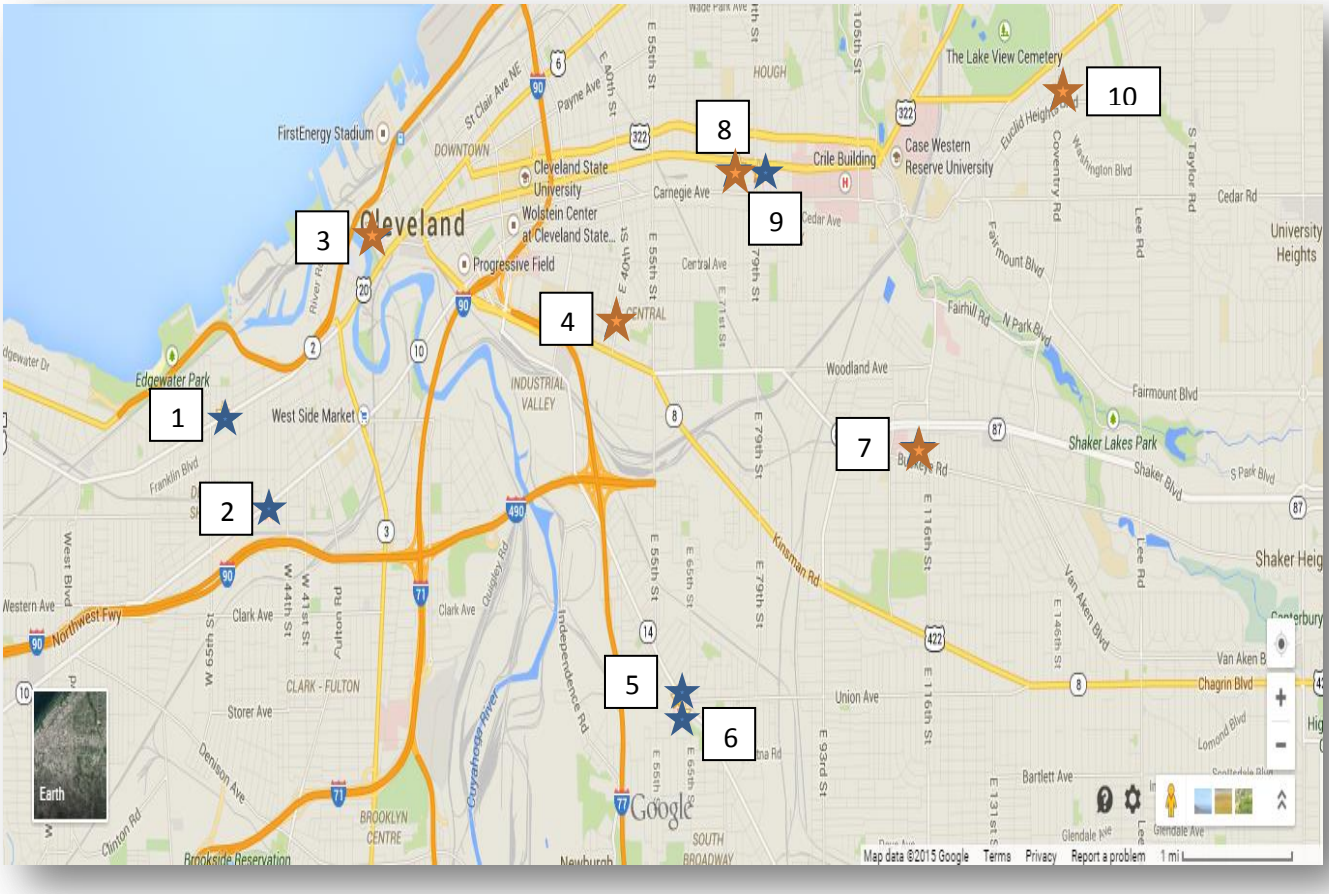
Limited access to full-service grocery stores poses many challenges to urban dwelling citizens. Some of these challenges include health complications, more expensive grocery items, displacement of wealth to the suburbs, and a smaller variety of healthy food options. Through my study, I hope to shed light on the underlying reason for these challenges.

Methods

Given the abundance of literature on this subject, I feel comfortable implementing methods that resonate with some of the previous studies on this topic. I will take a multi-faceted approach to best understand the differences in price and quality of typical grocery items that are sold in both convenience stores and full-service supermarkets. In order to understand the

connection between the price and quality of typical grocery items offered at different types of stores in Cleveland, I utilized both quantitative and qualitative assessments of 10 stores. Initially, I had chosen fifteen stores that were located within the city of Cleveland within a wide array of different neighborhoods by what I classified as full-service supermarkets, convenience stores, and corner stores.

Map 1: Locations of stores visited within the City of Cleveland



Map Key

Blue Star denotes convenience store
Orange Star denotes full service supermarket

Map Legend

1. Convenient Food Mart 5910 Detroit Ave, Cleveland Ohio
2. Dairy Mart 4757 Lorain Ave, Cleveland Ohio
3. Constantino's Market 1278 W. 9th St, Cleveland Ohio
4. Dave's Supermarket 2500 E 40th St, Cleveland Ohio
5. United Convenient Mart 6206 Broadway Ave, Cleveland Ohio
6. Walgreens 6410 Broadway Ave, Cleveland Ohio
7. Giant Eagle 11501 Buckeye Rd, Cleveland Ohio
8. Aldi 7500 Euclid Ave, Cleveland Ohio
9. CVS Pharmacy 8000 Euclid Ave, Cleveland Ohio
10. Marcs 1833 Coventry Rd, Cleveland Heights Ohio

After further research, I found that past studies generally classify these stores as either *full service supermarkets* or *convenience stores*. Therefore, sites were re-categorized to give me 5 convenience stores and five full service supermarkets. For the quantitative data, a sample grocery list (see appendix) was utilized to record information on price, quality, if the item was on sale, and so on.

The qualitative data were observations I made regarding attributes of the stores that I visited to gain a better understanding of the store structure and its ease of access for customers (see appendix). In addition, map 1 shows the locations of the stores that I visited in the city of Cleveland.

Quantitative Measures

I chose 10 stores in the city of Cleveland that I classified as either a convenience store or a full service supermarket. This classification was done by looking at the stores size and availability of various goods. A convenience store is defined as a small store that stocks a range of everyday items such as groceries, snack foods, candy, toiletries, soft drinks, tobacco products, and newspapers (NACS, 2013). Larger supermarkets offer a full range of grocery items and also sell large amounts of non-food products such as household items and clothing (Galvez et al. 2014). By using these definitions, it was easy to delineate which category each store that I visited fell under. While visiting these stores, I used a sample grocery list with 38 typical grocery items and recorded the price of the item and also what unit it is being sold in. For instance, if chicken breast was being sold at $3.00 per pound I recorded $3.00 as the price and the unit was 1 pound. I also recorded if there was a store brand available for purchase and if the product was on sale or at normal price. Lastly, I recorded whether or not the food or beverage was past its expiration date. The 38 items, listed in table 2, were broken into categories that include meats, dairy,

produce (fruits and vegetables), frozen foods, grains, and other to make it easier for me as I walked through the store. These foods were chosen based on a typical family of four's consumption patterns. In future studies, some of my grocery items may be omitted or new items can be added to get a better feel for the range of products offered at these types of stores. These data are used to determine what these stores have to offer and how the prices vary depending on which category of store it falls under.

Table 2: Items included on study grocery list

Meats	Fresh Fruits	Frozen Foods	Fresh Vegetables
• Chicken Breast (bone in skin on) • Chicken Breast (boneless skinless) • Ground beef • 12 Eggs • White Fish • Hot Dogs (all beef)	• Red delicious apples • Oranges (navel) • Bananas • Strawberries (pint) • Canned Peaches	• Strawberries • Mixed berries • Carrots • Peas • Green Beans • Frozen Large Cheese Pizza	• Romaine Lettuce • Kale • Celery • Carrots • Broccoli

Dairy	Grain	Other Foods
• Gallon of Milk (2%) • Cheddar Cheese • Yoplait Yogurt (low fat) • Butter • Ice cream (Pint)	• Whole Grain Bread • White Bread • Brown Rice • Oatmeal (packets) • Whole Wheat Pasta	• Almonds • Peanut Butter • Flaming Hot Cheetos • Arizona Iced Tea • Jar of Pasta Sauce • Quinoa

To collect my data, I walked around each of the stores with my sample grocery list and looked for all of the items on my list. I then recorded the price, unit, expiration date, and if there was a store brand present. After the data were collected, the data was compiled into the two store categories so that I could draw conclusions and make comparisons between the larger supermarkets and the smaller convenience stores. The data sheet that I used will give me enough information to draw conclusions between these two styles of stores in the city of Cleveland. Because of the large amount of grocery items on my list, I only choose a few items from each

category to draw conclusions between the different types of stores. Attached in the appendix is the sample grocery list that I used to collect data at the stores.

Qualitative Measures

In addition to the quantitative measures, I also recorded various qualitative observations in each of these stores to get a more holistic understanding of each of the types of stores. A separate data sheet was used to record this information. I recorded information including the name of the store, the type of store, and its address. I also described both the layout of the store and the lighting of the store to understand the overall atmosphere and the shopping experience. The quality of the products being sold and particular examples of good quality or poor quality products was also recorded on this data sheet. Another item on this data sheet that was recorded was the overall accessibility of the store. Some of the factors that I noted under the accessibility section included the size of the parking lot, proximity to RTA bus routes, the location of the store as it relates to other stores nearby (ie. strip mall or by itself). I would also sometimes include traffic patterns near the store if I felt that it was useful or important for that particular store location. Additionally, I added another separate section for any other significant observations that I deemed important for a particular location.

Data Analysis

Because of the immense amount of data with recording prices and other information for 38 grocery items at 10 stores, I had to find a simple but effective way to analyze a portion of this data but still identify trends between full-service supermarkets and convenience stores. To do this, I went through my grocery lists for the ten stores and picked out a single item from each

category that was prevalent in the majority of the ten stores. These items include, chicken breast (boneless, skinless), red delicious apples, frozen mixed berries, carrots, one gallon of 2% milk, whole wheat pasta, and peanut butter. These items were found to be the most prevalent in the stores in each of their respective categories. After identifying these items, I then calculated the mean cost of the grocery item within its store category. Additionally, I recorded which store had the highest and lowest price for each item within the given category (full-service supermarket or convenience store). I also recorded the range for the item for the five full-service supermarkets and the five convenience stores. These simple statistics will not only allow me to compare the different stores within each category, but also compare the overall price trends between full-service supermarkets and convenience stores.

Further Studies

There are a few areas that could be improved upon in future studies on this topic. The first is the amount of data that is collected. If I had unlimited time for this project, I would have visited many more stores in order to have a larger sample size of data to develop conclusions on the difference in the price and quality of typical grocery items in convenience stores and full-service supermarkets. Additionally, I would try to develop more concrete ways to assess quality as opposed to more subjective methods of observing the food and its expiration date. I also think that future studies may be able to look into transportation and how it relates to a resident of the city of Cleveland's ability to access healthy food from their neighborhood using public transportation.

Results

Quantitative Data

In order to analyze the vast amount of data that I collected, I decided to choose one grocery item from category on my grocery list that was well represented in most of the stores that I visited. These items include, chicken breast (boneless, skinless), red delicious apples, frozen mixed berries, carrots, one gallon of 2% milk, whole wheat pasta, and peanut butter. Within the full-service supermarket category, I calculated the mean price and the range for the five stores that I visited. I then did the same calculations for the convenience stores. This way I can not only compare the stores to one another within a particular category of store, but I can also compare full-service grocery stores to convenience stores across the board. This data for the full-service grocery stores can be found in Figure 1. In order to draw attention to high and low price points, for each given item, the store(s) with the highest price is italicized and the lowest priced store(s) are underlined.

As you can see from figure 1, Constantino's Market had the highest price for four out of the seven products that I chose to examine. This is followed closely by Dave's Supermarket who had the highest price for three out of the seven products that I chose to study. On the other hand, Aldi's had the lowest price or tied for the lowest price for six out of the seven products. The next closest store was Marc's who had or shared the lowest price for 2 out of the 7 stores.

For the convenience stores, there was often less of a selection and some of the stores did not have the products that I chose to examine. The same data is shown for convenience stores in figure 2. If a particular item was not present at a store, I will denote that where the price would go with a double dashed line (--).

Figure 1: Mean and range values for selected full-service grocery store items. The underlined store indicates the store with lowest price for the particular good. The (*) store indicates the store with highest price for the particular good.

Item	**Store and price per lb ($)**	**Mean ($)**	**Range ($)**
Chicken Breast (boneless skinless, $/lb)	Constantinos*: **5.29** Aldi: **2.79** Dave's: **2.99** Marc's: **2.79** Giant Eagle: **3.00**	**3.37**	**2.50**
Red Delicious Apples ($/lb)	Constantinos*: **1.89** Aldi: **.99** Dave's: **.99** Marc's: **1.59** Giant Eagle: **.99**	**1.29**	**0.90**
Frozen Mixed Berry Medley ($/lb)	Constantinos: **2.75** Aldi: **2.29** Dave's*: **5.99** Marc's: **3.28** Giant Eagle: **2.50**	**3.36**	**3.70**
Carrots ($/lb)	Constantinos: **0.99** Aldi: **0.60** *Dave's*: **1.69** Marc's: **0.83** Giant Eagle: **1.25**	**1.07**	**1.09**
Milk 2% (gallon)	Constantinos: **2.99** Aldi: **2.99** Dave's*: **3.49** Marc's: **3.39** Giant Eagle: **3.39**	**3.25**	**0.50**
Whole Wheat Pasta ($/lb)	Constantinos*: **2.49** Aldi: **1.29** Dave's: **1.50** Marc's: **1.50** Giant Eagle: **1.99**	**1.75**	**1.20**
Peanut Butter ($/lb)	Constantinos*: **3.95** Aldi: **3.49** Dave's: **2.49** Marc's: **2.09** Giant Eagle: **2.49**	**2.90**	**1.86**

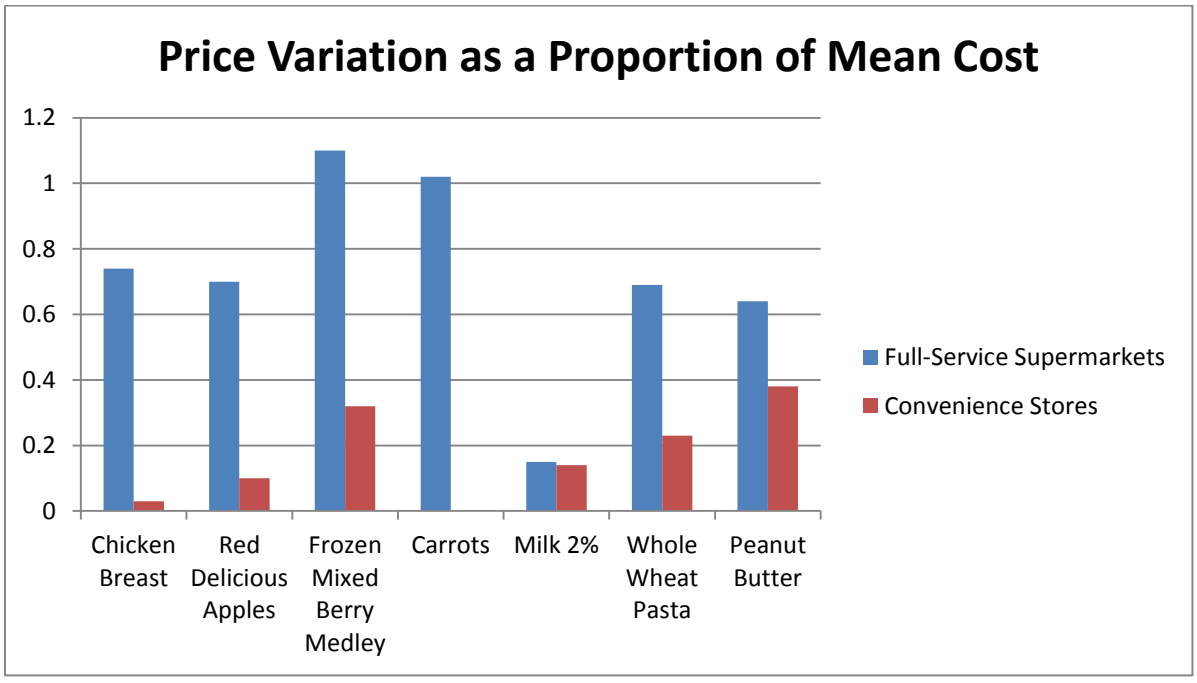
Figure 2: Mean and range values for selected convenience store items. The underlined store indicates the store with lowest price for the particular good. The store with an (*) indicates the store with the highest price for the particular good.

Item	Store and price per lb ($)	Mean ($)	Range ($)
Chicken Breast (boneless skinless, $/lb)	Convenient Food Mart: **3.50** United Convenient Mart*: **3.62** CVS: -- Dairy Mart: -- Walgreens: --	**3.56**	**0.12**
Red Delicious Apples ($/lb)	Convenient Food Mart*: **1.40** United Convenient Mart: **1.39** CVS: -- Dairy Mart: **1.27** Walgreens: --	**1.35**	**0.13**
Frozen Mixed Berry Medley ($/lb)	Convenient Food Mart: **2.50** United Convenient Mart*: **3.50** CVS: **2.99** Dairy Mart: -- Walgreens: **3.25**	**3.06**	**1.00**
Carrots ($/lb)	Convenient Food Mart: -- United Convenient Mart: **0.99** CVS: -- Dairy Mart: -- Walgreens: --	**0.99**	--
Milk 2% (gallon)	Convenient Food Mart: **3.75** United Convenient Mart*: **3.99** CVS: **3.50** Dairy Mart: **3.49** Walgreens: **3.60**	**3.68**	**0.50**
Whole Wheat Pasta ($/lb)	Convenient Food Mart*: **2.25** United Convenient Mart: **1.79** CVS: **1.99** Dairy Mart: -- Walgreens: **1.99**	**2.00**	**0.46**
Peanut Butter ($/lb)	Convenient Food Mart: **2.50** United Convenient Mart: **2.19** CVS: **3.19** Dairy Mart: **2.75** Walgreens*: **3.25**	**2.76**	**1.06**

The convenience store data illustrates different trends than the full-service supermarkets. United Convenient Mart was the store that had the most instances of having the highest priced item of

the five stores. However, this only occurred for three out of the seven items. The next closest was Convenient Food Mart with two instances out of the seven. On the other hand, three convenience stores had two instances of having the cheapest priced good in a given category. Convenient Food Mart, United Convenient Mart, and Dairy Mart all had two instance of having the cheapest item of all of the convenience stores. This shows that there wasn't a convenience store that typically had the highest price or the lowest price for a number of goods that I studied. Additionally, the range in prices was much smaller for convenience stores across the board than the full service grocery stores. All of the ranges of prices for items in convenience stores were significantly less than the ranges of prices in full-service supermarket items. The only exception for this statement was with milk in which the range of price for milk was $0.50 for both convenience stores and full-service supermarkets.

Figure 3: Range of Variation in Price as a Proportion of Average Cost. Calculated by dividing the range as a function of average cost.



When comparing the mean prices of the grocery items between full-service grocery stores and convenience stores, convenience stores tended to be more expensive. Of the 7 items examined, 4 were more expensive to purchase on average at convenience stores (chicken breast, red delicious apples, 2% milk, and whole wheat pasta). The other three items (frozen mixed berry medley, carrots, and peanut butter) were more expensive on average at full-service grocery stores. One point of interest is that only one of the convenience stores sold carrots so the mean price for carrots is represented by the price of one convenience store. If more convenience stores were examined, we may find that the average price of carrots is different than $0.99 per pound.

The last calculation that I performed was an analysis of the range as a function of the average cost of each of my selected grocery items. As you can see in Figure 3, the variation in prices for the full-service supermarkets was much larger than the variation in prices for the smaller convenience stores. As you can see, some items such as peanut butter and 2% milk were relatively close in variation of prices as a proportion of their average cost. However, items such as chicken breast, red delicious apples and the frozen mixed berry medley had a much larger variation.

Qualitative Analysis

My qualitative assessment sheet allowed me to make some observations about full-service supermarkets and convenience stores. After visiting all of the stores, I was able to identify a few trends about both of these categories of stores based on these observations.

The full-service supermarkets seemed to have more consistency in many aspects of my observations. First, these supermarkets were generally well lit and the layout of where the grocery items were within the stores seemed to be methodical. Generally, the more common grocery items such as milk, bread, and produce lined the outer edges of the store. In the middle

of the grocery store, it was typical for there to be lines of aisles with items that are not necessarily considered staple food items. Not surprisingly, these larger supermarkets also had a much wider range of products offered than the convenience stores. Along with a wider range of products provided, they also typically offered multiple brand choices for consumers to choose from. Lastly, these larger supermarkets were consistently easy to access. For instance, most of the stores had large spacious parking lots. The stores were also often off of major roads that had bus routes which made it easier to access for people who don't have personal automobiles.

Convenience stores also had a few trends that were based off of my observations. The lighting of the convenience stores was much more sporadic. Some stores were well lit and other were dimly lit and felt somewhat uninviting to me as I walked through the store. There also didn't seem to be a pattern with the layout of these smaller convenience stores. The items in the store seemed to be randomly placed without much thought as to wear the optimal location for these items should go. Overall, there seemed to be less structure to the layout of the store than the full-service supermarkets. There were also far less options for consumers. If the item that I was looking for was even present within the convenience store, it was very rare for their to be multiple brands to choose from. Similarly, many of the items on my grocery list were not in the convenience store at all. Additionally, there were far less workers at the convenience stores. However, I found that the workers at these stores seemed to be more personable and often asked me about my study and if they could help in any way. Another trend that I noticed was that these stores were frequently more difficult to access than the full service grocery stores. Although these stores were often near major roads, the parking lots were smaller and it was less common to find bus routes that went near the store.

Discussion

The goal of my study was to determine if there were differences in the price and quality of selected grocery store items in convenience stores and full-service supermarkets within the city of Cleveland Ohio. For the price of these selected grocery store items, I found that the grocery items sold in convenience stores were consistently more expensive than the same product being sold in a full-service supermarket. Along with that, there was greater variation in prices for grocery items in full-service supermarkets which allows consumers to make purchasing choices that fit their budget. Although the quality of these items was difficult to quantify, I found that in general, the items sold in full-service supermarkets were of better quality and less likely to be expired or over-ripe. This section will delve deeper into these findings and explain possible reasons for these trends.

After examining my results, there were a few major trends that presented themselves between full-service supermarkets and convenience stores. The first major trend that I noticed was that the prices at convenience stores vary far less than prices at full-service supermarkets. Across the board, the range value for each particular grocery item was less than the same value for full-service supermarkets. This surprised me because I initially thought that larger grocery stores and chains would have less variable prices so that they could be competitive with other grocery stores. After further analysis, I realized that since convenience stores are typically buying items in less quantity than full service supermarkets, they have less purchasing power and probably pay about the same price for the same good at all convenience stores. In addition, there seemed to be a bigger discrepancy in quality with grocery items in full-service supermarkets so that may have had an influence on the differences in prices.

To delve deeper into the first trend that I noticed, I calculated the range of variation in price as a proportion of average cost for each item. This calculation takes the average cost from all five full-service supermarkets or convenience stores and relates it to the range or total variation in prices from the stores. This calculation further proved that variation in prices is much greater in full-service grocery stores than in convenience stores. As previously stated, I believe that this difference is due to smaller stores have less purchasing power so they have to pay the price that is listed without any ability to bargain. Full-service supermarkets are often price dictators because they are buying products in larger quantities. Not only does this influence the ability for convenience stores to afford various types of food, but it also has implications for the consumers. Since the convenience stores have less purchasing power, consumers who shop at these stores also have fewer choices in the aisles of the stores. If a grocery item is present in the convenience store, there is likely only one choice of brand and they are forced to decide if this higher price is worth it. Since convenience stores are much more present than full-service supermarkets in the city of Cleveland, this leaves consumers with a choice between expensive healthy food items and less expensive processed items in convenience stores. Since income levels are often lower in inner-city neighborhoods, it is no surprise that they opt for lower priced foods that have less nutritional value.

The other major trend that I noticed was that the mean prices of grocery items at convenience stores were typically more expensive than those of full-service supermarkets for the same item. Of the seven items examined, 4 out of the 7 items had a higher mean price for convenience stores than full-service supermarkets. This is consistent with research that I have done prior to my study. According to The Association for Convenience and Fuel retailing, prices at convenience stores are often more expensive than full-service supermarkets because you are

paying for the convenience of shorter lines and the proximity to one's neighborhood (NACS, 2013). As previously stated, these convenience stores are also purchasing grocery items in smaller quantities than full-service supermarkets. Therefore, they have less purchasing power and less control over the price of the goods that they buy. This extra money that the convenience store pays for the good is passed on to the consumer by way of higher prices.

My qualitative data has also shed light on a number of aspects of my project and past research on this topic. One of the most notable trends that I noticed from my in-store observations was the organizational structure of full-service supermarkets and convenience stores. The full-service supermarkets that I visited almost all had a similar structure with staple grocery items along the outer walls of the store with rows of aisles down the middle of the store with non-essential grocery store items. On the other hand, convenience stores seemed to have little consistency in organizational structure. Each store that I visited had a different layout with a different range of products provided. Oftentimes, the convenience stores had less than half of the items that I was looking for on my sample grocery list. This shows that even if inner-city residents desired to purchase these grocery items at a convenience store, they may have to travel to the suburbs or the nearest full-service supermarket for some items. Another trend that I noticed through my observations was that convenience stores were harder to access than full-service supermarkets. The full-service supermarkets typically had spacious parking lots and were located on or directly off of main roads that had public bussing routes. The convenience stores were often tucked away off of side streets and had smaller parking lots. This shows that there is a discrepancy in ease of access of full-service supermarkets and convenience stores.

In the city of Cleveland, convenience stores vastly outnumber full-service supermarkets within city limits. This means that the majority of Cleveland residents are likely in closer

proximity to a convenience store than a full-service grocery store. Because of this fact, residents are more likely to shop at convenience stores that offer fewer health-food options and the options that they do have, are likely at higher prices than those at full-service supermarkets. This creates a discrepancy in the ability for Cleveland residents to buy affordable healthy foods. In the suburbs of Cleveland, there is a greater abundance of full-service supermarkets so it is generally easier for those who live outside the city to get affordable, healthy food. My study has reinforced the findings that those who live within the limits of larger United States cities have a harder time getting food that is affordable, healthy, and within a close proximity to where they live.

As stated previously, the content of my project is very relevant to the city of Cleveland, Ohio. On February 25, 2015 an upscale urban grocery store called Heinen's was opened in a historic building in downtown Cleveland. This is the first grocery store of its kind within the limits of the city of Cleveland. Residents within the city are excited to have a grocery store with the reputation that Heinen's does in Cleveland. It will make it easier for residents to access healthy foods from a supermarket with a reputation for quality food products. Despite the location of this store within the city of Cleveland, it seems like this grocery store caters to the more affluent members of the downtown Cleveland community. Although this is a major step in the right direction, questions about the affordability of items in a grocery store such as Heinen's for urban residents remains unknown.

Appendix 1. Data Collection Sheets

Table 4

Food Item	Price	Unit	Store Brand	Expired/over-ripe?	On Sale?
Meat					
Chicken Breast (bone in Skin)					
Chicken Breast (bnls skinlss)					
Ground Beef					
12 Eggs					
White Fish					
Hot Dogs (all beef)					
Fruits					
Red delicious Apples					
Oranges (navel)					
Bananas (large)					
Strawberries (pint)					
Canned Peaches					
Frozen Foods					
Strawberries					
Mixed Berries					
Carrots					
Peas					
Green Beans					
Frozen Large Cheese Pizza					
Vegetables					
Romaine Lettuce					
Kale					
Celery					

Carrots					
Broccoli					
Dairy					
Gallon of Milk (2%)					
Cheddar Cheese					
Yoplait Yogurt (low fat)					
Butter					
Ice Cream (Pint)					
Grains					
Whole Grain Loaf of Bread					
White Bread					
Brown Rice					
Oatmeal (packets)					
Whole Wheat Pasta					
Other Foods					
Almonds					
Peanut Butter					
Flaming Hot Cheetos					
Arizona Iced Tea					
Jar of Pasta Sauce					
Quinoa					

Qualitative Assessment of Store

Store Name:

Type of Store:

Store Address:

Describe Store Layout (flow/aisles):

Describe Store Lighting:

Overall Range of Products Provided:

Other Observations of Store (employees/ personnel):

Accessibility (parking lot, ease of access, public transportation):

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