Spring 2018

Conscious Consumption at the Grocery Store : Are Consumers Buying for More Than Just Price?

Blair Hendricks
Elizabethtown College, hendricksb@etown.edu

CONSCIOUS CONSUMPTION AT THE GROCERY STORE:

Are consumers buying for more than just price?

Department Chair: _____
Dr. Cristina Ciocirlan

Primary Advisor: _____
Dr. Hossein Varamini

Secondary Advisor: _____
Dr. Bryan Greenberg

This thesis is submitted in partial fulfillment of the requirements for Honors in the Discipline in English and the Elizabethtown College Honors Program

Blair Hendricks

Table of Contents

Contents

Special Thanks

I would like to thank my primary and secondary advisors, Dr. Hossein Varamini and Dr. Bryan Greenberg, who have guided me through the entirety of the research process. I would also like to thank the Elizabethtown College Department of Business for allowing me to have the opportunity to take on this research project.

Abstract

Ethical consumption and organic food consumption behaviors have not yet been thoroughly studied in the business world. While recorded instances of conscious consumption can be traced back to the 1800s, news outlets and magazines have remarked on the recent increased interest from consumers for sustainable and ethically-sourced products. This exploratory study aims intends to analyze some of the present-day trends in organic food consumption and ethical by examining marketing data and using a statistical analysis of organic and non-organic food prices. Though the study cannot make conclusions about the true reasons underlying consumer behavior, the findings can provide some support for possible explanations of consumer buying habits

I. Introduction

In today's fast-paced, information-driven business environment, consumers expect more and more from businesses to not only deliver quality products at reasonable prices, but also conform to ethical standards that may have been unknown or unenforceable in the past. Technology and the internet has made information more available to consumers that allows them to learn about both the positive and negative impacts the companies they buy from have on the environment, their employees, and local communities. This has contributed to a rise in corporate social responsibility (CSR) and ethical consumerism.

CSR is the business/producer side in sustainable business, where a company adopts policies that serve the Triple Bottom Line: people, profit, and planet. Some examples of practices might include using recyclable materials in packaging, locally sourcing materials, paying fair wages and maintaining high standards of workplace safety, avoiding pollution, and trying to empower disadvantaged populations, beyond what is required by governmental regulation. These policies are thought to save businesses money in the long run since they often highlight efficiency and waste reduction, and will garner extra sales by appealing to causes that consumers care about.

On the buyers' side, ethical consumerism is when consumers base their buying decisions on ethics, often relating to environmental concerns, workers' rights, and supporting local communities and disadvantaged groups. These consumers will seek out products that align with their beliefs and support causes they care about, and will avoid buying products that use practices they find ethically or morally questionable, even if the "ethical" product choice is more expensive than other products available. When done on the aggregate level, the majority of

consumers patronizing only ethical business practices will make these practices more profitable, and will financially induce companies to continue using them, while pressuring companies that do not use these practices to change their methods.

Though there have been studies done that indicate that consumers, especially younger consumers, are seeking out more green and fair trade products, many of these studies ignore price changes over time and draw unfounded conclusions about the reasons consumers are buying higher-priced "ethical" goods in higher quantities; for example, a survey that shows that the amount of fair trade coffee consumed will conclude that consumers care more about fair trade products, when in reality the consumers may be increasing their consumption of fair trade coffee because they perceive it to be higher quality or trendy. This presents a challenge to those who want to analyze the effectiveness of ethical consumption and CSR as tools to advocate for causes.

The purpose of this study is exploratory in nature, and the study is intended to analyze trends in organic food prices and consumption trends and attempt to statistically check for correlations between price changes and increased consumption of organic food products. Though ethical consumerism is applicable to any buying decision, organic food has been chosen as a cross-section of products to represent consumption trends because consumers cannot forego consuming food, and the amount of brands and variation that exist in grocery stores represents the possibility for substitution. Basically, food is inelastic and must be consumed, but within this category there is possibility for consumers to make conscious choices to buy products for reasons other than price.

Organic foods are usually more expensive than non-organic substitutes, so a customer's repeated or occasionally choosing of the more expensive product when a cheaper substitute is

available may also suggest something about why consumers buy products that are generally thought of as more ethical. If organic food prices were found to be statistically higher than their non-organic counterpart, then it suggests that customers are choosing to buy a product that is significantly more expensive despite cheaper available alternatives. If consumers are choosing products that are significantly more expensive than acceptable alternative options, then it may be likely that they are buying for reasons other than price, such as reasons that may coincide with ethical consumption behaviors, such as environmental, health, and safety reasons. While it is impossible to draw firm conclusions about the reasons behind why consumers choose expensive organic options or whether or not they may be engaging in ethical consumption habits, these analyses may shed some light on consumer behaviors and suggest that these behaviors may possibly be present.

II. Review of Literature

As previously mentioned, there has been some research done on organic food consumption and ethical consumption trends. Despite this previous research, much of it focuses on fair trade coffee and organic food, and has been largely under-studied (Johnston 2007, 232). This may be partially attributable to the exhaustive nature of studying the impacts of every industry and every buying decision of every consumer. While research on this topic is still in its infancy, current research on the historic and current state of ethical consumption and CSR can help give greater understanding to the importance of ethical consumption today and possibly in the future.

A. Ethical Consumption Principles & History

Ethical consumerism is the idea that buying decisions send messages to producers, who impact the environment that gives the natural resources used to make products, and the welfare

of those assembling the products or providing services. In its basic sense, it is "voting with dollars for the business practices that consumers find acceptable, and is becoming a favored and convenient means for consumers to get politically active (Johnston 2007, 230-231). The convenience lies in the way that buying for oneself to satisfy personal wants and needs also allows for contribution to the greater social good, which are usually opposing ideas instead of complimentary ones (Johnston 2007, 232).

Some research has been conducted previously on driving factors of conscious consumption, but current research is still not adequate in analyzing how many consumers are engaging in ethical consumption nor how frequently they may engage (Best et al, 2011, 1115). Still, some of the driving factors provide some insight. A survey conducted by Best, Hertel, Jeffords, and Scruggs in 2011 suggested that consumers were more likely to engage in ethical consumption when they felt personally connected to social issues and felt that their actions would contribute to a solution (Best et al, 2011, 1115). The survey also suggested that conscious consumption is also more likely to occur among groups who have access to informational about companies' business practices and greater social group involvement (Best et al, 2011, 1115).

Though trade and politics have been connected for a long time, the connection has become more apparent over the last 50 years, through boycotts, protesting of certain industries or firms, and protesting of certain practices, such as sweatshop labor (Carrier 2007, 1) The history of ethical consumerism can be traced back to Ireland in 1878, when the first recorded boycott took place (Johnston 2007, 236). Workers refused to harvest oats for Captain Boycott until they were given higher wages and better working conditions (Johnston 2007, 236).

Ethical consumerism was further shaped in the 1960s by Naderism; "Naderism" gave rise to the idea of the effectiveness of ethical consumerism, and worked to show that unregulated

business was dangerous to consumers, citing the unsafe Chevrolet Corvair (Johnston 2007, 237). One of the general ideas behind ethical consumption is the idea that consumer demand for ethical practices in the businesses that produce their goods and services strong-arm companies into compliance, even if the ethical standards are stricter than what is required by official regulation; eventually, businesses will have to respond to the demands of consumers to remain profitable, even if the ethical practices cost more than less ethical practices. Therefore, the connections between Naderism of the 1960s and modern ethical consumption are apparent.

B. Effectiveness of Ethical Consumption

One of the biggest criticisms of ethical consumerism today is its effectiveness (Carrier 2007, 1). While an admirable idea on the part of consumers, businesses have traditionally found ways to circumvent consumer pressures to change their practices via superficial changes, such as name changes, and other greenwashing mechanisms that turn real consumer concerns into mere niche marketing opportunities (Johnston 2007, 240). These circumnavigations are supported by the fact that many consumers misunderstand labels on products, assuming they are regulated and stricter than they actually are.

For example, consumers often misunderstand what is really meant by the "Natural" and "Organic" labels on food products. Though a survey from Consumer Reports in 2016 showed that nearly 73 percent of consumers sought out the "Natural" label on food products and 58 percent sought out the "Organic" label, few consumers truly knew what was actually guaranteed by these labels (Consumer Reports, 2016) According to the survey, "Natural" was generally interpreted by consumers to mean "free from artificial ingredients or processing agents, toxic pesticides and genetically modified organisms (GMOs)" and nearly half of consumers thought the label to be verified by independent organizations (Consumer Reports, 2016). Even though the "Organic" label does contain strict guidelines set by the FDA, many consumers did not know

what the guidelines exactly were, and even fewer knew that the "Natural" label has no set guidelines and is not regulated by the FDA at all (Consumer Reports, 2016). While the fact that 73 percent and 58 percent of consumers are seeking out "Natural" and "Organic" foods might indicate the presence of conscious consumption, the confusion regarding the labels shows that producers can take advantage of customers' misunderstandings and use vague labels to sell more products perceived to be higher quality and sometimes more ethical by consumers.

Foods sporting the "USDA Organic" label must follow specific federal guidelines. Certified foods must be grown in soil that contains no prohibited substances, such as synthetic fertilizers and synthetic pesticides, and animals raised for meat must be raised in living conditions that accommodate natural behaviors like grazing (McEovy, 2012). According to the United States Department of Agriculture, multi-ingredient processed foods must also follow specific guidelines, such as avoiding artificial flavors, colorings or preservatives, with the exception of some approved ingredients like pectin in jams and enzymes in yogurt (McEvoy, 2012). Consumers who are unaware of the specific guidelines for labels may fall prey to niche marketing tactics and greenwashing.

Additionally, ethical consumption requires that consumers act as a whole, which requires cooperation and coordination on the part of millions. Mass coordination such as that is hard to establish and maintain overtime, which may render conscious consumption a noble effort but ultimately ineffective. However, there are a couple of recent notable cases that may demonstrate the potential effectiveness of conscious consumption. According to the British Broadcasting Corporation, McDonalds announced in January 2018 their intention to transition to fully recycled packaging by the year 2025 (BBC, 2018).

Still, in cases where mass coordination among consumers may be too difficult, corporate social responsibility policies may help to align consumer interests. For example, a 5p charge on plastic bags dramatically reduced their usage among consumers (Morelle, 2016). The charge was established in Wales in 2011, Northern Ireland in 2013, and Scotland in 2014, and the countries saw decreases in plastic bag usage of 76 percent, 71 percent, 80 percent respectively, in the following year (Morelle, 2016). Corporate social responsibility policies can be beneficial to corporations as well as consumers by increasing efficiency and reducing operating costs, increase customer and brand loyalty, facilitate relations with the community, and reduce the burden of regulatory oversight (International Institute for Sustainable Development, 2013).

While ethical consumption may not be a new concept and its effectiveness may be doubted, it is still impossible to know extent consumers engage in conscious consumption. There are certain cases that may suggest that conscious consumption can be an effective form of activism, but other studies may hint at the difficulty of the mass coordination needed for effective ethical consumption efforts; consumers without access to technology and information to learn about labels and company practices may deviate from the overall mass effort to consume ethically by ignorance and falling prey to greenwashing. Consumers without personal connections to issues may not feel the need to cooperate with others who are buying or boycotting certain products. Even though there are still a lot of unknown factors regarding conscious consumption, every analysis can help to provide some possible explanations about consumer choices and values.

III. Data Analysis

As previously noted, there has been relatively little research done on ethical consumerism. The purpose of this study is exploratory in nature, and is intended to gauge the likelihood of ethical consumption buying behaviors being present in consumers making regular

food purchases via analysis of the correlations between price changes and organic food consumption trends, current marketing research as it relates to organic food consumption, and consumer response to organic and other "ethical" labels on food products.

A. Methodology

Marketing research and analysis of consumer behavior requires a well-rounded approach to truly understand current trends and possible changes in consumer preferences and buying habits. For this study, three different methods were chosen to explore the possibility of ethical consumerism in everyday buying habits of consumers.

The first method used is an analysis of a report titled *The Natural/Organic Shopper* that examines consumer buying behaviors regarding organic foods. This method was chosen because the firm has a larger scope that includes a sample of consumers from across the country, different age groups, and other various socio-economic groupings. This type of sampling is often difficult to get for studies, so it is worthwhile to examine the primary source data of a firm that is able to obtain large and representative samples. The report also contains both qualitative focus group quotes and comments from actual consumers, and quantitative data surveys about food consumptions and attitudes towards buying organic foods. It is possible for analysis of qualitative or quantitative data alone to leave out essential aspects of overall trends and consumer behavior, therefore a report that presents both data forms gives a more complete picture of true trends in the organic food industry.

The second method chosen is regression and statistical analysis of organic food consumption data, organic food price data, and consumer income data. Price and income often have very significant impacts on consumer buying decisions, whether for food, clothing, cars, or luxury products. While the increased consumption of organic food products in recent years is undeniable and has been commented on by newspapers and other business publications.

However, the increased consumption quantities themselves are not indicative of changing consumer preferences and values.

A statistical analysis that measures the increased consumption quantities of organic food against changes in the prices of organic food and consumers' disposable income will produce a more accurate analysis of consumer buying habits. The regression analysis that accounts for consumption quantities, price, and income will produce a value that shows how strongly the three variables might be correlated. However, it is important to note that correlation is not the same as causation; the statistical analysis, even if it shows a very high or very low correlation between price and income and consumption quantities, cannot prove nor disprove that increased consumption quantities are the direct results of price and income changes. However, strong positive or negative correlations could support the notion that price and income changes play a role (or do not play a role) in the consumer buying habits regarding organic food. If price and income changes are shown by the model to not have a statistically significant impact on the changes in consumption quantities of organic food over time, the data will suggest that factors other than price and income (such as health or environmentalist concerns, among a host of others) may be playing more major roles in consumer buying decisions regarding organic food products.

B. Difficulties in this Study

Before analyzing it is important to note some of the difficulties present in analyzing marketing research and consumer behaviors, since they affect the interpretations of any findings.

One of the first difficulties in a study of this nature is representation. Ethical consumerism is a phenomenon that can be found in all types of consumers all over the world, therefore it can be difficult for any sample population to be truly representative of the entire global population. Even representation among products consumed can pose issues; in many national price indexes

for organic food and databases that track its consumption quantities, products such as "produce," "dairy," or "meat" are left without breakdowns that show the true organic consumption trends; for example, perhaps quantity of "organic produce" is shown by one study to have increased over time, but fails to take into account the increase of non-organic processed and frozen foods for sale that include produce as a component, which might indicate an increase in the amount of organic *fresh* produce consumed, but a general decline in the amount of organic *produce* consumed overall. Therefore, while data found can give some indication of overall trends, it is important to know that true consumption patterns and buying behaviors may vary between these surface-level trends.

Another difficulty is the interpretation of consumers' intent in buying choices. Some studies may merely comment on an increased quantity of goods with a particular "ethical label," such as "Organic," "Fair Trade," "Rainforest Alliance Certified," and assume that it must mean that consumers are consuming more of these goods because they care about environmental and social issues (B. Greenberg, personal communication, Feb. 13, 2018). Even if consumers respond in surveys that their intent is the furthering of environmental and social justice causes, there may still be biases present; consumers may justify their choices to be logical to themselves or the surveyor, rather than reporting their true intent (B. Greenberg, personal communication, Feb. 13, 2018). Consumers may falsely report their level of concern for such causes or their actions, such as falsely reporting that regularly consume only fair-trade coffee when in fact they only buy fair trade coffee once in a while or when on sale. Additionally, they may falsely report that the reason they do not consume "ethical" products is because they cannot afford the higher price when in fact they *can* afford to pay more for a certain product, but choose not to because they do not *want* to pay the higher price. Consumers may even be unaware of their true reasoning behind

buying choices; even though they may care about social issues and regularly choose fair trade coffee over non-fair trade coffee, the true reasoning could be a subconscious perception of higher quality or peer pressure, rather than genuine concern. Likewise, a consumer that is truly concerned with environmental and social issues may be unable to buy the "ethical" product variant, but their buying choice does not negate their true concern for issues. This type of interpretation behind consumer buying decisions is especially complicated when it comes to food products, since a myriad of other important factors, such as perceived quality, healthfulness, safety, and due date proximity substantially impact buying decisions as much if not more than ethical concerns (Grunert, Hieke, & Wills, 2014, 177). Therefore, in interpreting self-reported answers in marketing research surveys, it is important to keep these biases in mind and not jump to hasty conclusions about true consumer behavior and motivation.

IV. Marketing Analysis

The following data analysis comes from various sources, including marketing research reports such as *The Natural/Organic Shopper* and MRI data. The data describes consumer attitudes and consumption trends of organic foods, which give an indication of the general attitude of consumers towards organic foods and the reasons why they purchase them. However, it's important to note the difficulties with this type marketing data. While difficulties in the study make it impossible to draw certain conclusions, they do not completely negate findings either.

A. Analysis of *The Natural/Organic Shopper*

The research from *The Natural/Organic Shopper* gives some indication of current market trends and attitudes regarding organic foods. Some of the current trends reflect trends and social commentary in articles: about 71 percent of consumers buy some organic products (Mintel

Group Ltd., 2017, 17). According to the report, 34 percent of consumers are buying more organic foods than they were a year ago (*The Natural/Organic Shopper*, 2017, 17). This trend has been noted by newspaper articles and consumer reports, however this data shows that the increase in organic food purchases is far from being universal. However, an increase in organic purchase in one-third of consumers still suggests a shift in consumer buying trends. Additionally, 57 percent of consumers report that they are buying the same amount of organic foods a year ago (Mintel Group Ltd., 2017, 17); while this percentage does not represent an increase in the amount of organic food in comparison from a year ago, but it does suggest steady buying patterns of organic foods in over half of consumers.

The research from *The Natural/Organic Shopper* suggests that consumers who mostly buy organic foods (about 32 percent of consumers surveyed), buy mostly for reasons of health and nutrition, since the research also shows that consumers who buy mostly organic are also more likely to read ingredient labels (Mintel Group Ltd., 2017, 17). This suggestion also highlights the previously mentioned fact that consumer food purchasing decisions are usually influenced by a variety factors such, as health; however research in *The Natural/Organic Shopper* also shows that habitual organic food purchasers are also motivated by environmental and fair labor concerns (Mintel Group Ltd., 2017, 18).

Cited as one of the most significant discouragements from buying organic food products is the price (Mintel Group Ltd., 2017, 16). Price as a major deterring factor is logical given that the research also suggests that income is a major factor in organic consumption habits. For example, one-third of lower-income consumers do not purchase any organic products at all, while about 28 percent of those who make $50,000 a year or more are likely to buy about half or more of their foods in the organic version (Mintel Group Ltd., 2017, 19). Price even seems to be a deterring

factor to “organic loyalists,” or those who buy 50 percent or more of their food products as organic (Mintel Group Ltd., 2017, 28, 32).

62 percent of consumers stated that they would buy more organic products if they were less expensive, outpacing environmental concerns such as organic brands showing a commitment to the environment (12%), organic foods packed in recyclable packaging (11%), or organic food brands providing more information about their production process (22%) (Mintel Group Ltd., 2017, 32). While this information does not support the idea that most consumers are choosing organic products for environmental or sustainability reasons, it does show that environmentalist concerns are in the minds of consumers. Additionally, of all the 2,000 consumers surveyed by *The Natural/Organic Shopper* for this particular study, 38 percent of them would increase their organic food consumption for reasons other than price, and about 45 percent of consumers surveyed would increase their purchase of organic foods for sustainability reasons.

However, there are others who find that the higher prices of organic food products are worth it. Among these groups that tend to accept the higher prices are organic loyalists, households with children, and younger consumers (Mintel Group Ltd., 2017, 28-29). Of the consumers surveyed who found organic foods to be worth higher prices, 39 percent of them buy at least half of their total food purchases as organic, and 21 percent of consumers who found organic food prices to be justified buy all of their food as organic (Mintel Group Ltd., 2017, 28).

B. Analysis of MRI Data

MRI data is important marketing data; it comes from a large group that can be generalized to approximate the population, so any differences present are indicative of a difference in preferences or behaviors of the population since the group generating the data is large enough (B. Greenberg, personal communication, Feb. 13, 2018). Of course percentage differences in answers between groups can be used to illustrate differences in the population and between

different groups, but indexes can also give indication of surprising or noteworthy differences. An index of 100 means that differences between groups are not larger or smaller than what would be expected if every person's consumption habits in the groups were assumed to be the same (B. Greenberg, personal communication, Feb. 13, 2018). High or low index numbers can illustrate differences that are greater than what would be expected when assuming consumption habits were the same between two groups.

Several pieces of MRI data were analyzed, cross-referencing self-reported regular organic buying habits with other factors, such as income, other statements of values and buying preferences, and psychographic segmentations. As previously mentioned, the difficulties present in this study are still applicable; the data is self-reported, meaning that there is no way to verify reported habits with actual habits, and lack of specificity with regard to words like "regularly." However, these caveats do not render any differences or trends revealed in the data to be completely invalid.

Before looking at organic food consumption trends and cross-referencing them with other factors such as beliefs about ethics in shopping or income, some context should be given: out of the total 48,646,000 respondents, 40.9 percent said that regularly consumed organic foods, and 59.1 percent said that they did not (GfK Mediamark Research & Intelligence, 2017). Though the gap between organic and non-organic eaters could be closing, it is still evident that the majority of consumers do not regularly consume organic foods.

First, an analysis of the connections between self-reported organic food consumption habits and income factors was conducted. Organic food prices are generally higher than their non-organic counterparts, so one might expect that income would play a major role in determining

how many organic products one could consume; additionally, according to the marketing research in the previous section, 62 percent of survey participants reported that they would be more likely to increase their organic food purchases if the price of organic products decreased (Mintel Group Ltd., 2017, 32).

The MRI data is found to be fairly consistent with the survey respondents, suggesting that income might be a factor when deciding whether or not to purchase organic foods. In the income categories, the highest percentage of those who agreed that they regularly consumed organic foods within each income category was the percentage for those making $100,000 a year or more (GfK Mediamark Research & Intelligence, 2017). Of those making $100,000 a year or more, 45.7 percent reported that they regularly consumed organic foods, and the index value for this category was 112 (GfK Mediamark Research & Intelligence, 2017).

However, there are two interesting trends to note regarding income. Even in the highest income-level category, the percentage of those who responded that they regularly consumed organic foods was not above 50 percent, and all of the subsequent lower-income did not show more than 45 percent of respondents reporting regular consumption of organic foods either (GfK Mediamark Research & Intelligence, 2017). On the aggregate level, this almost-majority of consumers' regular consumption of organic products might add up, but still less than the majority at each income level are choosing to regularly consume organic products, suggesting that the regular consumption of organic products is not quite the new norm.

Though the percentages of those reporting regular consumption of organic products never breached over 50 percent for any of the income level categories, it should also be noted that the index values for each categories was in fact above 100 for each income level category (GfK Mediamark Research & Intelligence, 2017). Even for the group making under $10,000 a year,

the index value for those reporting regular consumption of organic products was 101, indicating that the tendency to regularly consume organic products in this group is slightly higher than what one might expect if buying habits within the population were homogenous (GfK Mediamark Research & Intelligence, 2017). Although the highest index value for regular consumption of organic consumption is found in the highest income level category, the above-100 index values found within each income level category for regular organic food consumption suggests that the tendency to regularly consume organic food is higher than what one might expect for every level of income. Thus, while income might still be a factor in the decision to consume organic food, the high index levels might indicate that organic buying tendencies are starting to become stronger across all income categories.

The results of an analysis between the size of a household and regular organic food consumption might conflict with the notion of price posing a major factor to the decision of whether or not to buy organic products. If one assumes general higher prices of organic products to be a deterring factor to regularly consumption of organic products, then one might expect fewer larger households to regularly consume organic products, since it would be more expensive to feed larger numbers of people organic foods. However, the MRI data reveals this trend to be the opposite among respondents; in households containing 1-2 people, only about 38 percent reported that they regularly consumed organic foods, and had an index level of 94, suggesting weaker tendencies to regularly consume organic products in this group (GfK Mediamark Research & Intelligence, 2017). However, for households containing 3-4 people, 43.2 percent reported regularly consuming organic foods and were indexed at 106 (GfK Mediamark Research & Intelligence, 2017). For households containing 5 or more people, 43.1

percent of respondents reported regularly consuming organic products, and were indexed at 105 (GfK Mediamark Research & Intelligence, 2017).

The MRI reveals some interesting cross-trends between regular organic product consumption and other self-reported statements about values. 51 percent of those who said that they expected the brands they buy to support social causes also said that they regularly bought organic products, and 49 percent said they do not regularly buy organic products (GfK Mediamark Research & Intelligence, 2017). Though small, the difference does exist, and it does indicate that those who are habitually buying organic products are also slightly more likely to expect their brands to support social causes. Less small than the difference in the percentage and more indicative of a noticeable differences in consumer expectations and organic buying habits are the indexes for the two groups. The index for the regular organic product buyers was 125, and only 83 for those who do not regularly consume organic products (GfK Mediamark Research & Intelligence, 2017). The differences above and below 100 in the index suggest stronger tendencies for those who regularly buy organic foods to also care about corporate social responsibility (GfK Mediamark Research & Intelligence, 2017).

Similarly, 51.3 percent of consumers who reported that they buy natural products for environmental concerns also said that they regularly consumed organic foods, as compared to 48.7 percent who do not (GfK Mediamark Research & Intelligence, 2017). Again, while these figures are very close, there is a difference between them. Additionally, the index values also again indicate stronger trends: those who buy natural products for environmental reasons and regularly consumed organic products had an index of 126, while those that did not regularly consume organic products had an index of 82 (GfK Mediamark Research & Intelligence, 2017).

These indexes are fairly far from the normal index level of 100, which suggests stronger tendencies of those who shop with environmental reasons in mind to also buy organic products.

Some consumers also reported that they would be willing to give up convenience in order to be environmentally conscious when making buying decisions. Of the respondents who reported that they would sacrifice convenience for the environment, 49.7 percent said that they regularly buy organic products as opposed to 50.3 percent of respondents who do not regularly buy organic products (GfK Mediamark Research & Intelligence, 2017). The index values again indicate stronger trends at 122 for the regular organic consumers and 85 for the non-organic consumers.

This data suggests the presence of ethical consumerism in consumer buying habits. Although the differences between the groups are not very large, the sample is large enough and weighted to approximate the population, rendering any differences between groups significant, even when they are small. Since groceries are a consumption habit that cannot be avoided, and the variety of brands and products in grocery stores present many possible substitutes for organic products, the suggestions of this data could be meaningful to companies working to produce more sustainable and ethical products, since there is indication of a regular consumer demand for such products.

Furthermore, the data could be useful to other consumers who engage in ethical consumerism as a form of activism. Since ethical consumerism is a form of collective bargaining on the aggregate level of consumers, consumers could see indication that others are acting as they are. Since one of the major criticisms of ethical consumerism is its effectiveness, the indication that larger groups of consumers are engaging in ethical consumerism could encourage them to continue, or possibly encourage doubters who still have ethical concerns to join in. Awareness

of the magnitude of ethical consumerism could expedite any aggregate changes in consumer demands, and therefore expedite producers adopting more CSR practices in order to appease consumers.

However, other pieces of MRI data indicate that organic consumption trends may be a trendy choice. Of the group of consumers that responded that price was more important than brand names, 59.8 percent of them reported that they do not regularly consume organic foods, while only 40.2 percent of consumers reported that they did (GfK Mediamark Research & Intelligence, 2017). The index values were slightly different from the normal value of 100; those who responded that price is more important than brand names and reported not regularly consuming organic foods were indexed at 101, which suggests that those who care more about price than brand are slightly less likely than one would expect to buy organic products if all consumer groups behaved the same way.

Other beliefs were indexed higher. Consumers who reported that they are influenced by what's hot and what's not and regularly consumed organic products had an index of 118, even though only 48.4 percent of consumers who reported being influenced by trends in this way also reported that they regularly consume organic products (MRI). Here, even though the percentage of consumers who seek trendy products and regularly consume organic products is less than the majority, the index level is fairly high, suggesting that the tendency might be strong in this group.

Likewise, consumers who reported being influenced by celebrity endorsements in buying decisions and also regularly consuming organic products had a high index of 130 according to MRI data (GfK Mediamark Research & Intelligence, 2017). Conversely, consumers who were

influenced by celebrity endorsements but did not report regular consumption of organic products was only indexed at 79 (GfK Mediamark Research & Intelligence, 2017). These indexes suggest strong connections between consumers who are influenced by celebrity endorsements and the tendency to consume organic food products.

The suggestions of strong connections between seeking trendy products and tendency to be influenced by celebrities indicate that the choice to consume organic products might be done out of a desire to be trendy rather than a desire to be ethical.

V. Analysis of Price Data

As shown by the MRI and *The Natural/Organic Shopper* data, prices of organic food and consumer disposable income are cited as having an effect on the consumer choice of whether to buy the organic or conventional version of a product. While prices of any similar products can vary to small degrees, it does not seem likely that a consumer would willingly expend disposable income on a product that is significantly more expensive when other less-expensive options are present without a possible underlying reason. A one-tailed test can analyze the price differential between organic and non-organic products to see if the organic products are significantly more expensive; additionally, analyzing the changes in consumer disposable income over time compared to the changes in prices of organic products can also help determine if consumer income has been increasing faster than the prices organic foods. If consumer income is growing faster than organic food prices, then it is possible that consumers' increased consumption of the organic foods may be due to their increase in buying power rather than other reasons, such as ethical consumption behaviors. Again, it is important to note that while it is not possible to draw

hard conclusions, these analyses can help support some possible explanations of consumer buying behaviors.

A. One-Tailed Test Analysis

One way to check the validity of the price concern about organic products is a one-tailed test to check the statistical significance of the means of organic produce vs. non-organic produce, or "conventional" produce. A one-tailed test will compare the mean prices of organic products against their conventional counterparts to check if the organic products are significantly higher than the less expensive non-organic substitute. A one-tailed test is more appropriate in this study than a two-tailed test because organic prices are pretty consistently higher than non-organic prices (Appendix III).

For this test, the null hypothesis is that the mean price per container of the organic product, $\bar{x}_1$, is greater than the mean price per container of the conventional product, $\bar{x}_2$, or $H_0 = \bar{x}_1 > \bar{x}_2$. The alternate hypothesis would be $\bar{x}_1 \leq \bar{x}_2$, or that the mean organic produce price is less than or equal to the mean price of the conventional version of the same produce product. Appendix I also shows that the organic produce prices tend to be higher than those of the conventional produce products, meaning that failure to reject the null hypothesis $H_0 = \bar{x}_1 > \bar{x}_2$ due to statistically significant t-scores could suggest that the significant difference between the means of the organic and conventional produce product is a significantly more expensive organic version of the product.

The means were calculated using monthly data from the price of different types of produce from San Francisco over a period of years from 2000-2013 (Appendix I). For this study, three different produce prices were analyzed: bananas, strawberries, and Fuji apples. The prices used for this study are the wholesale fruit prices per container and the data comes from the Economic Research Service of the United States Department of Agriculture. When calculating the means

of both the organic and conventional products, a couple of months throughout the year were chosen in effort to balance out prices that might be affected by seasonal upticks and downticks. Due to a lack of observations for each month in the year, months were selected in function of available observations; if a particular month was unavailable, the next closest month that had observations for both organic product price and conventional product price was chosen instead. The calculated t-score was calculated for a confidence level of 95 percent, using the figures present in Appendix II and the equation given in Appendix IV.

Appendix IV shows that the calculated t-scores in this one-tailed test were statistically significant for all three products analyzed. The high t-scores above the absolute value of two suggest that in this study, the mean prices of the organic produce products may be significantly higher than the mean prices of the conventional produce products.

While the analysis of three produce products from San Francisco should not be used to over-generalize statements about organic food prices, it can be treated as a useful indicator to suggest that organic food prices are more expensive than their conventional counterpart.

The implication of these findings suggests that consumers who choose to buy organic prices are choosing to consume products that are significantly more expensive when a cheaper substitute product exists. Though the reasoning behind the choice to buy the more expensive organic product cannot be fully determined from this study, it does lend support to the idea that consumers could be engaging in ethical consumerism because they are buying the product for a reason other than having the best price.

These findings also lend credibility to consumers who cite that expensive organic food prices discourage them from buying them or increasing the amount of organic products that they buy. These two-tailed tests have suggested that organic produce prices can be statistically

significantly different from the prices of the conventional version of the same produce product, meaning that consumers are not incorrect in their perceptions of organic prices.

B. Organic Food Price Difference and Consumer Disposable Income: Changes over Time

It cannot be definitively determined that prices of organic and non-organic food products would be the only factors impacting the consumer's buying choice and their perception of the prices; the amount of disposable income could also be affecting the consumer's decision of whether or not to buy organic or non-organic food.

Appendix III displays the change in U.S. consumer disposable personal income (DPI) and also the changes in the wholesale price per container of certain organic and non-organic produce in San Francisco during the time period starting at the year 2000 through 2014. The similar window in time will allow for a more accurate comparison of changes in DPI against produce price changes.

It is important to note that the produce prices, while spanning the same general timeframe as the DPI chart, contain more observations since it includes monthly observations as opposed to annual observations only. Some of the fluctuations in the prices of the produce are likely due to seasonal price changes. However, the overall steepness of the line measuring the price changes is relatively flat, indicating that while produce prices may fluctuate throughout the year, the rate of change from year-to-year is more or less very small (Appendix III).

These studies suggest that these organic and non-organic produce prices have not really changed during this time period. However, it must be noted that this sample documents the prices of three produce products in San Francisco, and therefore it is impossible to conclude whether or not this trend in prices is similar or different for other food products in other cities. While it is impossible to conclude whether or not all organic and non-organic food prices have

drastically changed based on this data in this study, this data could possibly serve as a ballpark figure and suggest the possibility that other organic and non-organic food prices have not changed dramatically during this same time period.

Additionally, it is important to note that the price differences between the organic and conventional produce products has not grown or decreased steadily during this time period in this particular study (Appendix III). Again, while there are price fluctuations in both the organic and non-organic produce prices, the gaps between the organic and conventional produce prices do not appear to have grown nor decreased overall during this time period in this study. Once again, these findings cannot be assumed to be representative of all organic food products in every city in the U.S.; however, the study can serve as a suggestion that perhaps the price difference between organic and conventional versions of food products has remained relatively consistent during this time period.

A consistent difference in the organic vs. conventional price of a product would help eliminate a potential variable affecting consumer decisions; the price difference was suggested to be growing smaller over time, then it could be supposed that the increased consumption of organic products could be partly attributed to the change in prices of the products, and not an outside reason that would drive the consumer to buy the product that is more expensive. The consistent nature of the price gap in this study suggests that price gap between organic and conventional foods may mean that consumers who choose to buy organic products are not choosing to buy them due to a decrease in the price of organic products that makes them more attractive to consumers.

The chart showing the change in DPI is overall steeper than the charts measuring the changes in the produce prices, suggesting that DPI has changed more during this time period than the

produce prices (Appendix III). The chart shows that overall DPI has increased during this time period, suggesting that consumers have more money to spend (Appendix III). An increase in the overall U.S. consumer DPI means that consumers are more able to buy expensive organic products, especially since the prices of organic produce are not suggested by these studies to have changed a lot during this timeframe.

VI. Conclusion

Ethical consumption is a topic of growing interest in the business world. Though it can be traced back to the 1800s and the Civil Rights Movement, it is becoming more relevant in the age of information where consumers have the ability and technology to learn about the impacts their consumed products and services have on the world, and can demand more from global companies and spread the word about ethical and unethical company practices in the blink of an eye via social media. There is still doubt surrounding the efficacy of ethical consumption, and ways for companies to elude the demands of consumers through greenwashing and social washing. Some are skeptical of ethical consumerism and its potential to be exploited by companies as marketing opportunities in addition to its unproven ability to consistently produce tangible results, but others may be hopeful that they may have an ability to demand companies to step up, and the possibility to create real change in the world while still fulfilling their own needs.

Trends in organic food consumption and ethical consumption behaviors have not yet been fully analyzed. While some have noticed the increased concern in consumers for high-quality, safe, and ethically-sourced products (especially in the younger generations), few have analyzed the other economic variables that impact consumer choices. The studies, though exploratory in nature, have attempted to connect the buzz surrounding organic foods and ethical consumption

with other economic variables such as prices and consumer disposable income to shed some light on the possible reasoning behind consumer decisions.

There are difficulties in the study make it impossible to draw conclusions about consumer behavior. Self-reporting in surveys such as the ones in the Mintel Group Ltd. and MRI data may give inaccurate pictures of true consumer thoughts and behaviors since there is no way to verify that the consumer responses are true. Additionally, consumers may subconsciously rationalize irrational behavior, again giving inaccurate pictures of their true thoughts and preferences. Even language used in the survey (such as "regularly," "frequently," or "rarely") can be interpreted differently by survey respondents, and thus give an incomplete picture of buying trends at hand.

The lack of information about organic food consumption also make it difficult to analyze consumer preferences and behaviors. A lack of annual observations regarding the annual consumption of organic foods made it impossible to analyze the effects of other variables (such as price and income) on the actual consumption quantities. Though data on organic and conventional product prices was available, it was often limited to certain products and certain locations, and sometimes the amount of observations was still not very large.

While these difficulties make it impossible to draw hard conclusions and prove any causal relationships between economic variables, self-reported values, and organic food consumption, the data that was analyzed still can provide some insight into what buyers' reasons are for choosing to buy organic foods and possible connections between organic food consumption and ethical consumerism.

The MRI and Mintel Group Ltd. data have shown some possible connections with organic food consumptions, which both conflict and corroborate preconceived hypotheses of why consumers buy organic. Some regard organic product consumption as a fad, and certain items in

the MRI data have shown high index values for consumers who self-reported regularly consuming organic foods and their ability to be influenced by celebrity endorsements and other fads. Others who self-reported regular consumption of organic foods also self-reported ethical consumption behaviors such as checking that products are ethically sourced, and foregoing convenience in products for products that support environmentalist values.

The two-tailed tests can shed some light on the possible changes in organic and non-organic prices over time. This study had shown that for bananas, strawberries, and Fuji apples in San Francisco, the mean prices between the organic and non-organic versions were statistically significantly different from the period of 2000-2013. While the results of this study cannot be assumed to represent the changes in all organic products and non-organic products throughout all of the U.S., these results can show the trends for at least one sampling of products, and could serve as a suggestion that perhaps there are more types of organic products that follow similar trends.

The results of these studies can provide support for the idea that ethical consumption could be occurring. Some of the consumers self-reported ethical consumption behaviors in the Mintel Group Ltd. and MRI data marketing surveys, suggesting that some portion consumers are engaging in ethical consumerism. Additionally, the price studies conducted suggested that the mean organic product price is significantly different from that of the conventional product price, and the observations taken seem to indicate that the organic prices are higher than those of the non-organic prices. Consumers choosing to buy a product that is significantly different and more expensive than a viable substitute will likely have a reason other than price for doing so, and it may be the case that consumers are foregoing less-expensive substitute products in favor of a more-expensive product believed to be safer, higher-quality, and/or more ethical. However, data

from the United States Department of Agriculture has suggested that consumer disposable income has increased from 2000-2013, which could have also played a role in consumer decisions to buy the more expensive organic products.

What are the implications for businesses, consumers, and activists if ethical consumerism is found to be a widespread trend? For businesses, widespread ethical consumerism could mean a greater focus on corporate social responsibility and transparency in sourcing; it could also mean that businesses who fail to adapt to consumers' ethical standards in products and services could face boycotts or other serious losses of reputation. For consumers and activists, a common knowledge of widespread ethical consumerism could encourage consumers to buy their way to a better world; since one of the key factors of ethical consumerism is a demand for certain types of products/services and businesses practices on the aggregate level, consumers could be encouraged to participate in ethical consumption behaviors by knowing that others are engaging in similar behaviors.

Works Cited

Best, S. J., Hertel, S., Jeffords, C., Scruggs, L. (2011). Information, Choice, and Political Consumption: Human Rights in the Checkout Lane. *Human Rights Quarterly, 33*(4), 1092-1121. doi:10.1353/hrq.2011.0062

Carrier, J. G. (2007). Ethical Consumption. Anthropology Today, 23(4), 1-2. Retrieved February 12, 2018, from http://www.jstor.org/stable/4620369 Accessed: 09-01-2018 03:43 UTC

CR Consumer Reports. (2016, May 10). Consumer Reports Survey Show 73 Percent of Consumers Look for 'Natural' Labels at Grocery Stores—and Many Are Unwittingly Misled. Retrieved October 29, 2017, from https://www.consumerreports.org/media-room/press-releases/2016/05/consumer-reports-survey-show-73-percent-of-consumers-misled-by-natural-labels-at-the-grocery-store/

GfK Mediamark Research & Intelligence. (2017). Organics. Base: Adults. Retrieved from MRI database.

Green Generation: Millennials Say Sustainability Is a Shopping Priority. (2015, November 05). Retrieved September 26, 2017, from http://www.nielsen.com/us/en/insights/news/2015/green-generation-millennials-say-sustainability-is-a-shopping-priority.html

Grunert, K. G., Hieke, S., & Wills, J. (2014). Sustainability labels on food products: Consumer motivation, understanding and use. Food Policy, 44, 177-189. doi:10.1016/j.foodpol.2013.12.001

McDonald's aims for fully recycled packaging by 2025. (2018, January 16). *British Broadcasting Corporation*. Retrieved January 23, 2018, from http://www.bbc.com/news/business-42704291

McEvoy, M. (2012, March 22). Organic 101: What the USDA Organic Label Means. Retrieved February 12, 2018, from https://www.usda.gov/media/blog/2012/03/22/organic-101-what-usda-organic-label-means

Mintel Group Ltd. Group Ltd. (2017). The Natural/Organic Food Shopper (pp. 5-40, Rep.).

Morelle, R. (2016, July 30). Plastic bag use plummets in England since 5p charge. Retrieved January 12, 2018, from http://www.bbc.com/news/science-environment-36917174

Muldoon, A. (2006). Where the Green Is: Examining the Paradox of Environmentally Conscious Consumption. *Electronic Green Journal*, 1(23), 1-19. Retrieved October 29, 2017, from http://escholarship.org/content/qt00t326gx/qt00t326gx.pdf

International Institute for Sustainable Development. (2013). Corporate social responsibility (CSR). Retrieved October 10, 2017, from https://www.iisd.org/business/issues/sr.aspx

Johnston, J. (2007). The citizen-consumer hybrid: Ideological tensions and the case of Whole Foods Market. Theory and Society, 37(3), 229-270. doi:10.1007/s11186-007-9058-5

Appendix I

Data used in two-tailed tests:

Wholesale price per container of organic and non-organic (conventional) bananas in San Francisco:

Month and Year of Observation	Price Per Container: Organic	Price per Container: Conventional	Price Difference in Organic vs. Conventional
Jan-00	$ 21.55	$ 13.53	59.28%
May-00	$ 21.55	$ 13.53	59.28%
Sep-00	$ 21.55	$ 13.53	59.28%
Jan-05	$ 19.16	$ 13.28	44.28%
May-05	$ 21.33	$ 12.11	76.14%
Sep-05	$ 17.00	$ 11.54	47.31%
Jan-06	$ 21.33	$ 16.25	31.26%
May-06	$ 24.26	$ 18.71	29.66%
Sep-06	$ 19.00	$ 11.76	61.56%
Jan-07	$ 19.00	$ 13.48	40.95%
May-07	$ 20.95	$ 14.79	41.65%
Sep-07	$ 20.32	$ 13.20	53.94%
Jan-08	$ 19.38	$ 14.42	34.40%
May-08	$ 27.33	$ 24.76	10.38%
Sep-08	$ 23.00	$ 16.60	38.55%
Jan-09	$ 24.30	$ 16.55	46.83%
May-09	$ 23.00	$ 17.64	30.39%
Sep-09	$ 23.14	$ 15.17	52.54%
Jan-10	$ 22.00	$ 14.67	49.97%
May-10	$ 23.00	$ 14.69	56.57%
Sep-10	$ 23.29	$ 14.97	55.58%
Jan-11	$ 22.00	$ 16.63	32.29%
May-11	$ 25.86	$ 18.41	40.47%
Sep-11	$ 24.00	$ 15.29	56.97%
Jan-12	$ 20.58	$ 15.11	36.20%
May-12	$ 28.57	$ 16.29	75.38%
Sep-12	$ 26.36	$ 15.65	68.43%
Jan-13	$ 26.12	$ 15.91	64.17%
May-13	$ 26.35	$ 16.66	58.16%
Sep-13	$ 26.68	$ 16.30	63.68%

Wholesale price per container of organic and non-organic (conventional) strawberries in San Francisco:

Month and Year of Observation	Price per Container: Organic	Price per Container: Conventional	Price Difference in Organic vs. Conventional
Jun-07	$ 12.80	$ 10.48	22.14%
Jul-07	$ 13.20	$ 8.00	65.00%
Aug-07	$ 16.66	$ 12.63	31.91%
Sep-07	$ 16.00	$ 11.01	45.32%
Jun-08	$ 17.23	$ 9.87	74.57%
Jul-08	$ 14.86	$ 10.60	40.19%
Aug-08	$ 19.12	$ 12.94	47.76%
Sep-08	$ 19.93	$ 10.85	83.69%
Jun-09	$ 13.32	$ 7.68	73.44%
Jul-09	$ 15.22	$ 10.53	44.54%
Aug-09	$ 18.58	$ 10.53	76.45%
Sep-09	$ 22.21	$ 10.25	116.68%
Jun-10	$ 15.73	$ 10.26	53.31%
Jul-10	$ 15.71	$ 10.37	51.49%
Aug-10	$ 23.33	$ 12.14	92.17%
Sep-10	$ 21.93	$ 10.35	111.88%
Jun-11	$ 16.49	$ 8.95	84.25%
Jul-11	$ 18.11	$ 10.34	75.15%
Aug-11	$ 19.04	$ 10.67	78.44%
Sep-11	$ 27.08	$ 13.10	106.72%
Jun-12	$ 22.85	$ 9.44	142.06%
Jul-12	$ 22.05	$ 8.93	146.92%
Aug-12	$ 18.48	$ 11.02	67.70%
Sep-12	$ 27.34	$ 12.29	122.46%
Jun-13	$ 19.81	$ 11.05	79.28%
Jul-13	$ 21.21	$ 11.07	91.60%
Aug-13	$ 24.07	$ 13.39	79.76%
Sep-13	$ 23.69	$ 16.29	45.43%

Wholesale price per container of organic and non-organic (conventional) Fuji apples in San Francisco:

Month and Year of Observation	Price per Container: Organic	Price per Container: Conventional	Price Difference in Organic vs. Conventional
Apr-05	$ 28.50	$ 19.24	48.13%
Nov-05	$ 33.50	$ 30.00	11.67%
Dec-05	$ 34.59	$ 29.27	18.18%
Mar-06	$ 37.09	$ 27.00	37.37%
Nov-06	$ 47.89	$ 31.47	52.18%
Dec-06	$ 47.00	$ 30.50	54.10%
Apr-07	$ 49.95	$ 34.11	46.44%
Nov-07	$ 50.00	$ 30.68	62.97%
Dec-07	$ 47.89	$ 28.25	69.52%
Apr-08	$ 64.00	$ 25.50	150.98%
Oct-08	$ 69.00	$ 39.48	74.77%
Nov-08	$ 53.82	$ 36.50	47.45%
Apr-09	$ 34.07	$ 21.33	59.73%
Nov-09	$ 44.10	$ 22.49	96.09%
Dec-09	$ 37.50	$ 20.22	85.46%
Apr-10	$ 48.09	$ 33.91	41.82%
Oct-10	$ 52.27	$ 27.90	87.35%
Nov-10	$ 52.00	$ 24.37	113.38%
Apr-11	$ 44.00	$ 28.00	57.14%
Nov-11	$ 49.50	$ 28.90	71.28%
Dec-11	$ 44.00	$ 29.09	51.25%
Apr-12	$ 47.46	$ 34.36	38.13%
Jun-12	$ 48.70	$ 34.25	42.19%
Dec-12	$ 43.00	$ 27.00	59.26%
Jan-13	$ 52.00	$ 26.50	96.23%
Feb-13	$ 39.14	$ 27.68	41.40%
Dec-13	$ 57.25	$ 29.50	94.07%

Appendix II

Statistical results of two-tailed tests:

Bananas:

Organic Bananas	
Mean	22.732
Standard Error	0.517449
Median	22.5
Mode	21.55
Standard Deviation	2.834185
Sample Variance	8.032603
Kurtosis	-0.52752
Skewness	0.187688
Range	11.57
Minimum	17
Maximum	28.57
Sum	681.96
Count	30

Conventional Bananas	
Mean	15.381
Standard Error	0.462789
Median	15.14
Mode	13.53
Standard Deviation	2.5348
Sample Variance	6.425209
Kurtosis	5.476894
Skewness	1.643448
Range	13.22
Minimum	11.54
Maximum	24.76
Sum	461.43
Count	30

Strawberries:

Organic Strawberries	
Mean	19.14464
Standard Error	0.756433
Median	18.81
Mode	#N/A
Standard Deviation	4.002666
Sample Variance	16.02134
Kurtosis	-0.60756
Skewness	0.320913
Range	14.54
Minimum	12.8
Maximum	27.34
Sum	536.05
Count	28

Conventional Strawberries	
Mean	10.89393
Standard Error	0.330888
Median	10.565
Mode	10.53
Standard Deviation	1.750897
Sample Variance	3.06564
Kurtosis	2.32341
Skewness	0.922713
Range	8.61
Minimum	7.68
Maximum	16.29
Sum	305.03
Count	28

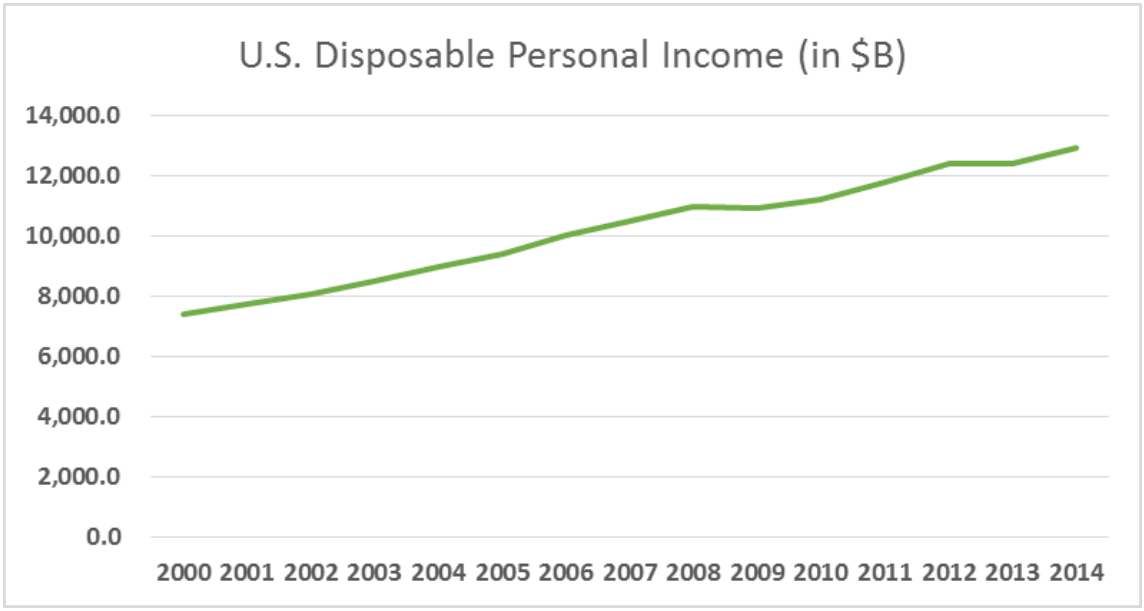
Fuji Apples:

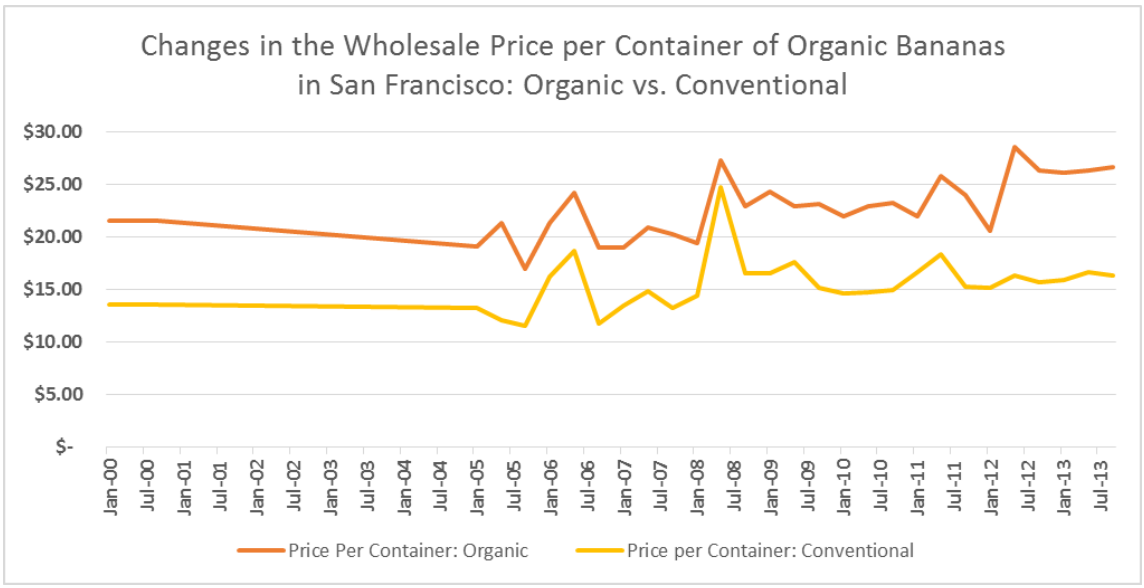
Organic Fuji Apples	
Mean	46.53
Standard Error	1.755963
Median	47.89
Mode	47.89
Standard Deviation	9.12425
Sample Variance	83.25195
Kurtosis	0.564598
Skewness	0.282101
Range	40.5
Minimum	28.5
Maximum	69
Sum	1256.31
Count	27

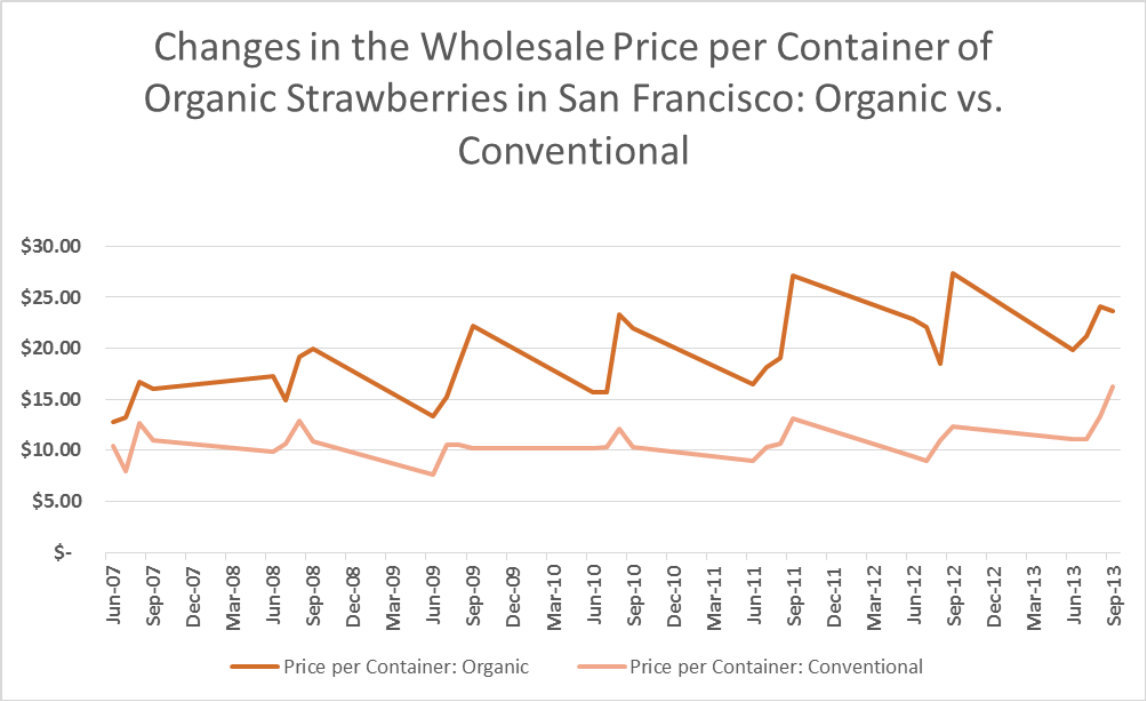
Conventional Fuji Apples	
Mean	28.7962963
Standard Error	0.93216764
Median	28.9
Mode	27
Standard Deviation	4.843685142
Sample Variance	23.46128575
Kurtosis	0.048477749
Skewness	0.003018945
Range	20.24
Minimum	19.24
Maximum	39.48
Sum	777.5
Count	27

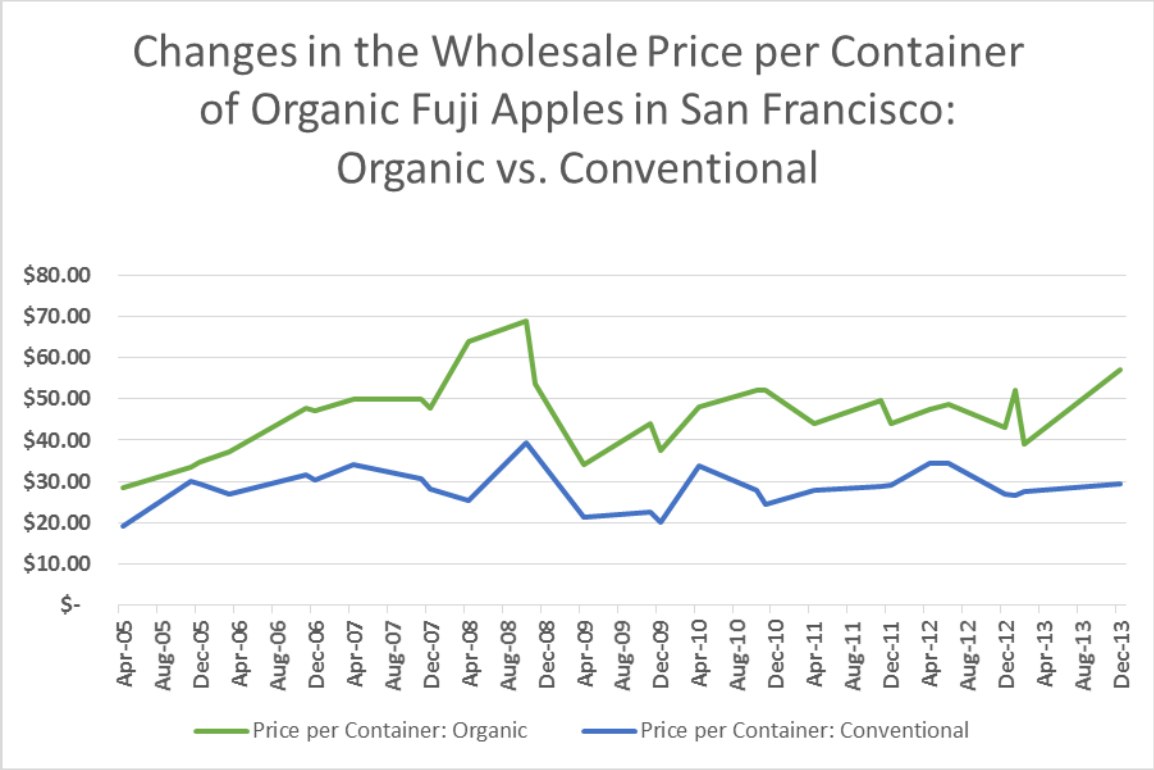
Appendix III

Trends in U.S. Personal Disposable Income and Organic and Non-Organic Produce Prices:






Changes in the Wholesale Price per Container of Organic Strawberries in San Francisco: Organic vs. Conventional
$30.00
$25.00
$20.00
$15.00
$10.00
$5.00
$-
Jun-07
Sep-07
Dec-07
Mar-08
Jun-08
Sep-08
Dec-08
Mar-09
Jun-09
Sep-09
Dec-09
Mar-10
Jun-10
Sep-10
Dec-10
Mar-11
Jun-11
Sep-11
Dec-11
Mar-12
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Price per Container: Organic
Price per Container: Conventional


Changes in the Wholesale Price per Container of Organic Fuji Apples in San Francisco: Organic vs. Conventional
$80.00
$70.00
$60.00
$50.00
$40.00
$30.00
$20.00
$10.00
$-
Apr-05
Aug-05
Dec-05
Apr-06
Aug-06
Dec-06
Apr-07
Aug-07
Dec-07
Apr-08
Aug-08
Dec-08
Apr-09
Aug-09
Dec-09
Apr-10
Aug-10
Dec-10
Apr-11
Aug-11
Dec-11
Apr-12
Aug-12
Dec-12
Apr-13
Aug-13
Dec-13
Price per Container: Organic
Price per Container: Conventional

Appendix IV

Summary of calculated t-scores and equation used to calculate them:

Summary of t-scores:

Product:	**Calculated t-score:**
Bananas	t = 57.99
Strawberries	t = 52.87
Fuji Apples	t = 46.35

Equation used to calculate t-scores:

$t = (\bar{x}_1 - \bar{x}_2)/ \sqrt{(S1/n)+(S2/n)}$