

THE PERCEPTION OF STUDENTS ON ORGANIC VERSUS  
CONVENTIONAL FOODS

By

LUCIA MOSQUEIRA

---

A Thesis Submitted to The Honors College  
In Partial Fulfillment of the Bachelors degree  
With Honors in

Nutritional Sciences: Dietetics Option

THE UNIVERSITY OF ARIZONA

DECEMBER 2017

Approved by:

---

Dr. Patricia Sparks  
Department of Nutritional Sciences

## ***Abstract***

Introduction: There are several obstacles consumers face when it comes to purchasing organically processed food products. For the organic food industry to satisfy consumer needs and preferences, the barriers of buying organic foods must be evaluated.

Methods: The data in this study were collected using both an online survey and hard copy survey. It was also sent to a total of 2,300 University of Arizona students. The survey evaluated the perception of students on organic versus conventional fruits and vegetables, poultry, meat, dairy products, and processed foods regarding price, health benefits, taste, effect on environment, appearance, and quality.

Results: There was a significant association ( $P=0.001$ ) for top meaning of buying organic and buying more than 25% organic. The greatest difference was seen in “helping the environment” and “better for myself”.

Discussion: Price and acceptance could be a great influence since most organic buyers stated that “feel like wasting money” or “more expensive” were their major reasons for not purchasing organic foods. The main considerations participants named in our study when it came to organic food consumption were health and environmental factors.

## *Introduction*

### **Organic Standards and Labeling**

For a product to be certified as organic it must be produced using strict guidelines, which are verified by the United States Department of Agriculture (USDA). For this certification both crops and livestock must be raised without the use of chemicals, hormones, antibiotics, genetic engineering, and irradiation as defined in organic farming. The Organic Foods Production Act of 1990, initiated the National Organic Program (NOP). For farmers to gain the organic farm certification, they must pass a test and pay a fee. The NOP does annual inspections of organic farms to ensure they are complying with guidelines (USDA, OFPA, 1990).

The NOP has different standards for organic labeling. For produce to qualify as organic, the farm where grown must have not used any pesticides, fertilizers, or herbicides for a period of three consecutive years before the initial harvesting. Buffer zones are important components of a farm's organic plan in order to isolate fields from other adjacent lands to prevent contamination from prohibited substances. Instead of using pesticides and herbicides to prevent pests and weeds from growing, organic farmers must use biological, mechanical, or physical control systems to manage the prevention of diseases or contamination from other crops. Irradiation and genetic engineering are also prohibited.

Organic livestock must be free of antibiotic agents or growth hormones. It must also have free-range access, which means access to outdoors. Since organic farmers cannot routinely use drugs to prevent diseases and parasites, the use animal selection and management practices, such as vaccination and supplementation with minerals.

For a product to be labeled organic it must comply with the labeling requirements of the NOP. Raw, fresh, and processed products that contain organic agricultural ingredients must have

an organic certified label. The NOP labels organic foods based on the percentage of organic ingredients it is composed of. For products to have a 100% organic label, every ingredient it has must be organic except for water and salt. For a product to be labeled as “organic”, 95% of the ingredients must be organically processed, and any remaining ingredients must consist of non-agricultural substances that appear on the NOP National List of Allowed and Prohibited Substances. Processed foods with a “made with organic ingredients” label must contain at least 70% of organically produced ingredients and it must also list three of the organic ingredients or organic food groups. “These products may contain up to 30 % of allowed non-organic ingredients. All ingredients, including the 30 percent non-organic ingredients, must be produced without GMOs” (McEvoy, 2014).

### **Barriers to Buying Organic Food Products**

There are several obstacles consumers face when it comes to purchasing organically processed food products. For the organic food industry to satisfy consumer needs and preferences, the barriers of buying organic foods must be evaluated. Due to the higher cost of organic foods, financial restrictions is a critical factor to consider. Low-income individuals might face problems regarding lack of knowledge and education on the topic. Culture and lifestyles can also influence consumers’ decision on buying organic foods due to a lack of experience on eating fresh foods. People who do not prepare their own food or who do not have the opportunity to choose their own foods, such as school districts or senior centers, might not be able to make the decision upon consuming organic foods. There might be other factors such as the taste or the lack of health-consciousness that can be preventing consumers on buying organic foods. The purpose of this study is to evaluate the student’s perception on organic food consumption versus conventionally processed products. Several aspects will be analyzed, such as taste,

environmental factors, health benefits, appearance, and cost. The types of foods will also be quantified and ranked based on weekly frequency and percentage.

### **Differences between Nutritional Content of Organic versus Conventional Foods**

Research conducted to examine the health benefits of consuming organic versus conventional food, have also studied the socio-economic status and demographic characteristics of organic food consumers. The US Department of Agriculture (USDA) defines organic farming as “growing crops and raising livestock that is free from synthetic chemicals, hormones, antibiotics, genetic engineering and irradiation” (USDA, 2011). Most research that has examined the nutritional quality of organic chicken, meat, produce, milk, and eggs when compared with conventional products have found that organic products generally contain higher amounts of antioxidants and micronutrients and have less or none exposure to hormones, pesticides and other contaminants. However, evidence of the health benefits of organic foods is lacking. One reason given is that organic consumers typically have healthier lifestyles when compared with non-organic consumers (Barański, 2014; Forman & Silverstein, 2012; Kesse-Guyot, et. al, 2013).

Studies have conducted research to assess the nutrition content of non-organic and organic foods. They have looked into specific foods, such as poultry, meat, produce, and dairy products to analyze specific micro and macronutrient content. There is much controversy for determining if organic products provide more nutrients than conventional products. Seven different studies state that organic foods contain higher amounts of nutrients, such as antioxidants, fatty acids, phenolic compounds and other micronutrients. They also stated that organic foods have less pesticide and other chemicals, since they practice organic farming (Payling, 2015, Kamihiro, 2015, Forman, & Silverstein, 2012; Baranski, M. et. al., 2014; Lester, Manthey & Buslig, 2007; Raigon, Rodriguez-Burruezo, & Prohens, 2010; Hunter, 2011; Smith-Spangler, 2012).

The differences on nutritional quality and health benefits of organic versus conventional dairy products were evaluated and it has been stated that organic dairy products had positive health outcomes, specifically when it came to allergic dermatitis (Crinnion, 2010). It has been stated that the meat from summer finished cattle raised with organic farming methods showed a fat profile adhering more to recommended dietary guidelines for fatty acids than non-organic beef or steak (Kamihiro, 2015).

It has been stated that organic produce has lower nitrate content than conventional produce, which is important to note due to the correlation of nitrates with gastrointestinal cancer risk. Vitamin C concentration was higher in organic fruits, such as strawberries and red oranges, versus conventional ones. Also, organic produce was found to have higher phenols than conventional produce, which increased the antioxidant properties of these. (Forman, & Silverstein, 2012). Although further research is needed to assess a wider range of nutrients and their outcomes on health, it has been stated that there is a higher micronutrient concentration in organic versus conventional vegetables and legumes (Hunter, 2011). Organically produced eggplants have a higher accumulation of phenolic and mineral content than conventionally produced eggplants (Raigon, Rodriguez-Burruezo, & Prohens, 2010). Fruit produced organically has shown to have thinner peel, a lower nitrate concentration, and the juice was higher in ascorbic acid and sugars compared to conventionally grown produce (Lester, Manthey & Buslig, 2007). Organically produced crops, on average, have higher concentration of antioxidants, lower concentrations of Cadmium, and there is a lower incidence of pesticide residue when compared to non-organic crops (Baranski, M. et. al., 2014).

Six additional studies analyzing the nutrition content and health benefits of organic versus conventional foods found no significant differences. One study examining the fatty acid

content and profiles of meat found that there were no major differences between organic and conventional meat. (Dalzie, Kliem & Givens, 2015). Another study found no convincing evidence of a difference in the nutritional content and quality of organic versus conventional produce. (Forman, & Silverstein, 2012). A study examining organic dairy products and health outcomes in children, specifically for controlling eczema, did not find any decrease in eczema or in the risk for producing eczema. ( need a reference here) They also stated that remaining studies (by whom on what) did not show any significant difference in health outcomes when consuming organic versus conventional foods. (Dangour, Lock, Hayter, Aikenhead, Allen, & Uauy, 2010). Another study also examining organic dairy products found that organic milk had higher iodine concentration than non-organic milk (Payling, 2015). Lastly, the difference in phytochemical concentration in organic whole-wheat products versus non-organic ones, found that climate factors were better predictors for determining the phytochemical concentration than the farming method (Stracke, 2009). Overall, the published literature lacks strong evidence that organically raised or produced foods are more nutritious than conventionally produced foods. However, pesticide residue incidence and the exposure to antibiotic-resistant bacteria are lower in organic foods (Smith-Spangler, 2012).

### **Consumers' Perception on Organic Food Products**

Research has been conducted about the perspective of consumers on organic foods. There is an increased demand for understandable and decent information about organic product labeling. If the organic industry wants to satisfy consumers' needs, they first need to be knowledgeable about consumers' actual perceptions on organic foods (Schleenbecker, Hamm, 2013). It has been stated that the organic food industry has been developing significantly rapid in the past decade

(Yin, Wu, Du & Chen, 2010). Therefore, several studies aim to analyze consumers' intentions and barriers for purchasing organic food products.

After conducting surveys and interviewing organic and conventional food consumers, Baudry et. al. concluded that the main food choice motive for organic eaters was health. Organic food eaters do not take innovation or convenience into account when purchasing food. On the other hand, the food choice motive for conventional and hedonist eaters was price and taste. Conventional or hedonist eaters do not take into account the absence of contaminants when purchasing their foods (Baudry et. Al., 2017). After conducting 16 in-depth interviews, the Danish case demonstrated different consumer's considerations when purchasing organic foods, such as: health, animal welfare, environmental factors, and taste or quality of the products. It has been stated that reasons for having these considerations in mind are caused by different life events or information they might have heard about consuming conventional foods (Hjelmar, 2011). A recent study in India collected 220 responses from young consumers and assessed their results using the Theory of Planned Behavior (TBP). Results indicated moral attitude and health consciousness influenced their intention to purchased organic foods, thus partially supporting the TBP (Yadav & Pathak, 2016). After conducting 432 surveys in three cities in China to evaluate the factors affecting consumers' food motives for buying organic foods, the results indicated that the intention to purchase organic foods is greatly influenced by income, amount of certainty in organic foods, acceptance of the price, and health-consciousness. Environmental factors, age, or education are not greatly influence factors. Therefore, it has been recommended to reduce the cost through cutting down the market price and to promote organic foods (Yin, Wu, Du & Chen, 2010). It has been stated that a major determinant for willingness to purchase organic for a higher price was knowledge about organic farming. Providing consumers with information and

tools for differentiating the products influenced their liking towards organic rather than conventional cheese (Napolitano, 2010).

Apart from being informed on consumers' perception of organic versus conventional foods, another critical aspect is to study the characteristics of consumers that regularly purchase organic food products. After evaluating organic consumers' characteristics and quantifying their degree on organic consumption, results indicated that the majority of them were female, between 25-55 years, residing in urban areas, born in Australia, and fell within a healthy weight range. The types of foods they mostly purchased as organic were fruits and vegetables, while meat products were the lowest (Oates, Cohen & Braun, 2012). Organic food market and stakeholders should also be informed of consumers' awareness to satisfy their needs in the future. It has been stated that the European Union presented a new EU organic logo in order to build consumers' confidence on organic foods. After evaluating consumers' alertness on the logo, specifically on organic yogurt, results indicated that consumers preferred buying organic yogurt versus the conventional one. Consumers' preferred it for being healthy, for having better quality, and for being environmental friendly (Van Loo, Diem, Pieniak & Verbeke, 2013).

Overall, the organic food industry should be aware of consumers' perception on organic food in order to learn how to satisfy their needs and desired. Focusing on young consumer's perception would allow them to satisfy their needs and expectations for the future. Consumers' perception on organic food varies according to socio-economic factors, geographic locations, and lifestyles. However, as recent studies point out, areas to focus are to provide a clearer understanding to consumers about what organic foods are, what organic farming means, what are the benefits from buying organic versus conventional food products, and precise information about organic labelling.

The purpose of this study is to analyze the perception of students, at The University of Arizona, on organic versus conventional foods regarding price, taste, health benefits, and environmental factors. Demographic characteristics will also be analyzed and compared to the percentage of organic foods they consume and the types of food they buy organic.

## **Methodology**

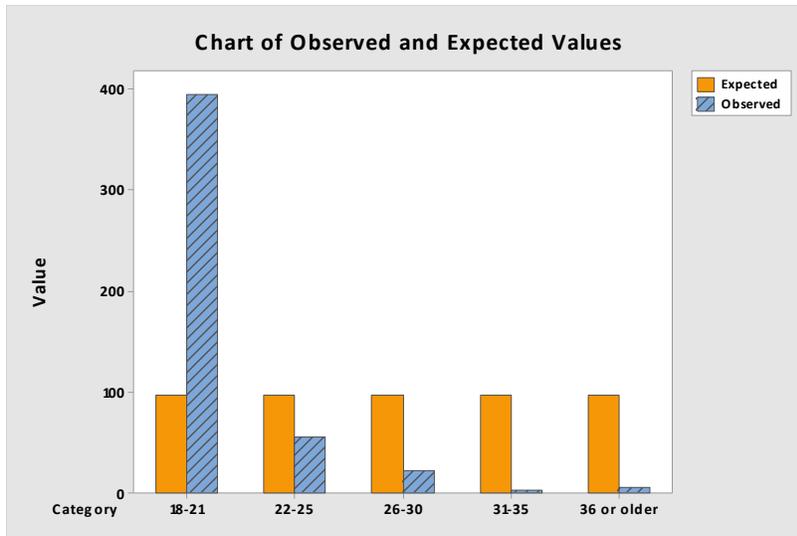
The data in this study were collected using both an online survey and hard copy survey. The online survey was distributed to University of Arizona students in four different nutritional sciences courses, which included about 100 students per course. It was also sent to undergraduate students in the department of nutritional sciences, which totaled about 2,300 students. The hard copy survey was administered to University of Arizona students from two different non-nutritional sciences courses, including General Chemistry and Anthropology, with 253 and 166 students respectively.

The survey was designed to collect demographic information such as age, gender, ethnicity, and major. Apart from that, the survey also evaluated the perception of students on organic versus conventional fruits and vegetables, poultry, meat, dairy products, and processed foods regarding price, health benefits, taste, effect on environment, appearance, and quality. In addition, the survey asked participants if they do or do not buy organic food, and what percentage of the food they buy is organic. Students ranked from most to least the type of food they purchase organic. They also ranked from most to least what buying organic food means to them. Any portion of the survey not asking for a ranking was multiple choices. There were no answer questions. The intention of the rank in order questions was to provide a more accurate statistical analysis of the results.

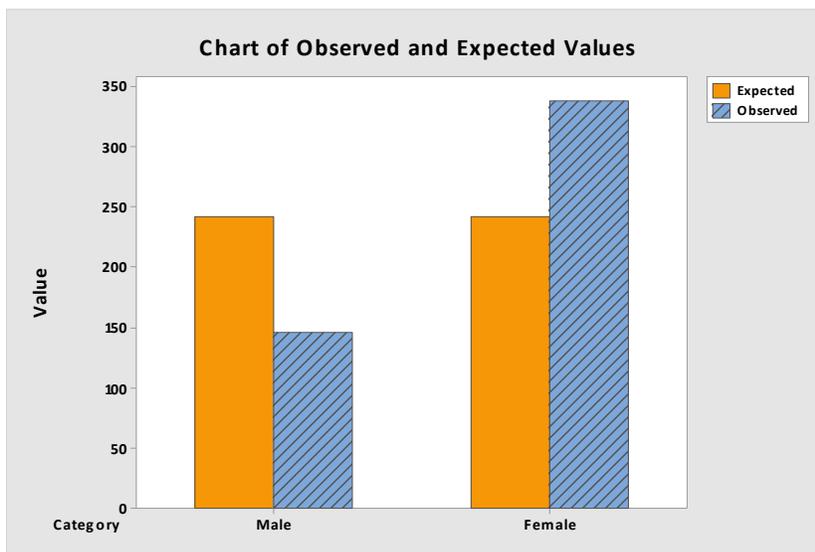
After collecting the results from all the surveys, both online and hard copy version, the results were analyzed in MiniTab 18. The Chi-Square Goodness of Fit-Test was used to determine whether the proportion of participants in each category, such as age, gender, ethnicity, and major, was significantly different from equal proportions. The Chi-Square Test for Association was used to determine whether two categorical variables were significantly associated. For instance, it was used to test the association between the amount of organic apples an individual buys (less or more than 25%) and their top feeling associated with buying organic apples. The test for association was also used for the rest of the categories, such as buying organic and having certain gender, age, ethnicity or major. It was also used for testing the association between buying organic foods and having certain perception or feeling towards organic foods. Also, for non-organic buyers, the test for association was used to determine if there was a significant association between their top reason for not buy organic and their age group, as well as the association between the price difference that would make them buy organic and their age group.

## **Results**

The Goodness of Fit-Test showed a significant difference ( $P < 0.0001$ ) in the proportion of participants for age groups. The highest observed count was seen in the <21 years old category. The observed count was 395 and the expected count was 96.8. The lowest observed count was seen in the 31-35 years old category. The observed count was 4 and the expected count was 96.8.

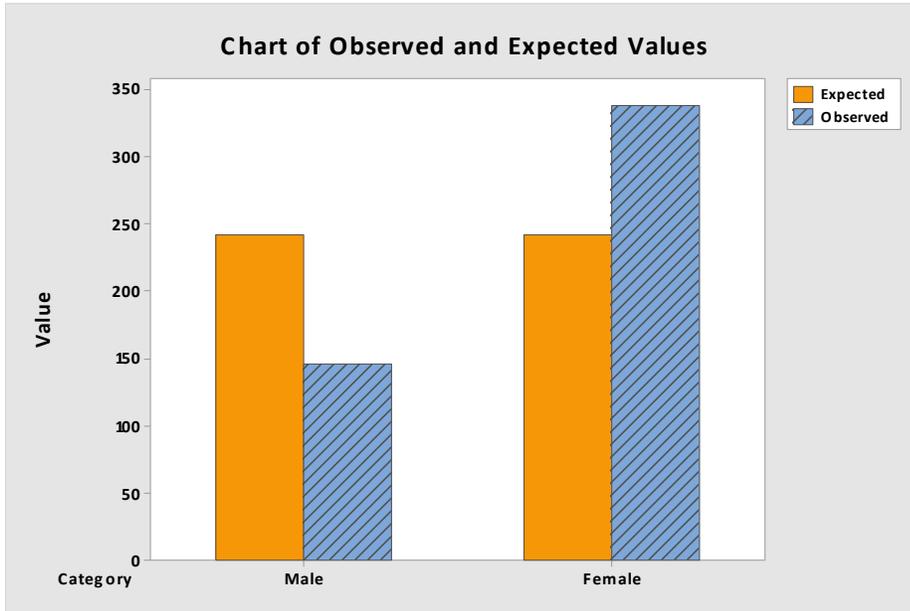


For the gender category, there was a significant difference ( $P < 0.0001$ ) in the proportion of participants. The highest observed count was seen in the female category. The observed count was 338 and the expected count was 242. The lowest observed count was seen in the male category. The observed count was 146 and the expected count was 242.

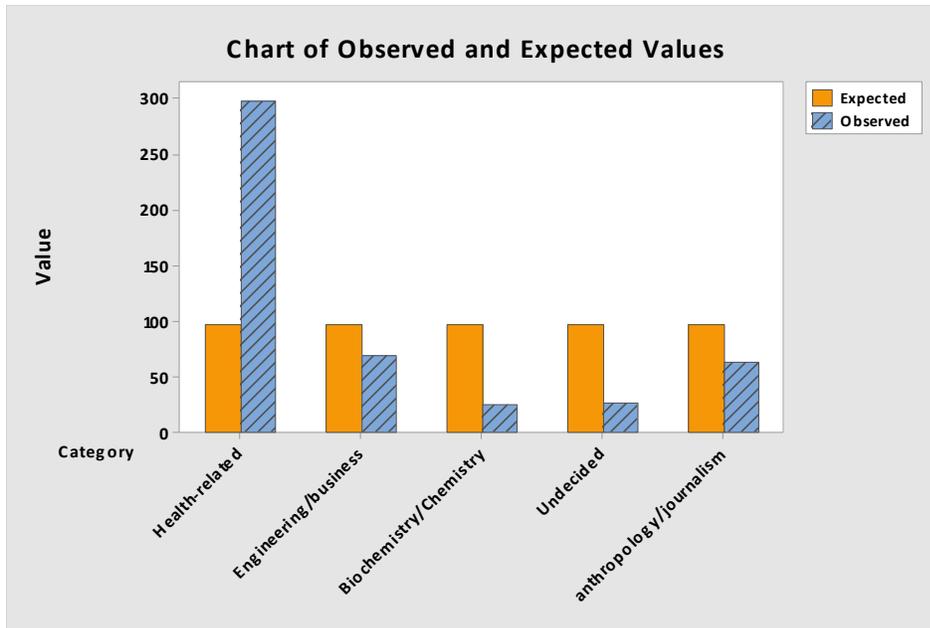


For the ethnicity category there was a significant difference ( $P < 0.0001$ ) in the proportion of participants. The highest observed count was seen in the White category. The observed count was 269 and the expected count was 161.33. The lowest observed count was the “Other”

category, which encompassed any ethnicity that was not White or Hispanic. The observed count was 86 and the expected count was 161.33.



For the major category there was a significant difference ( $P < 0.0001$ ) in the proportion of participants. The highest observed count was seen in the health-related major category. The observed count was 298 and the expected count was 96.8. The lowest observed count was seen in the chemistry/biochemistry major. The observed count was 25 and the expected count was 96.8.



The test for association showed a significant association ( $P < 0.0001$ ) between gender and buying more or less than 25% organic foods. The observed count for females (230) buying more than 25% was higher than the expected count (196.24). The observed count (51) for males buying organic was lower than the expected count (84.76). There was a significant association ( $P < 0.01$ ) between age and buying more or less than 25% organic. For the 18-21 age group category the observed count (219) was lower than the expected count (229.33) for buying more than 25% organic. For the rest of the categories, the observed count was higher than the expected count for buying more than 25% organic. For ethnicity, the greatest difference between the observed and the expected count was seen in the White category. The observed count was 196 and the expected count was 156.18.

There was not a significant association ( $P = 0.246$ ) between the top perception for buying organic apples and buying more than 25% organic. The only category that showed an observed count higher than the expected count was “free from chemicals”. There was no significant

association ( $P=0.90$ ) between the top perception for buying organic meat/poultry/dairy and buying more than 25% organic. The greatest difference between the observed and expected count was seen in the “free from antibiotics” and “more expensive” category. The observed count was 87 and 137, respectively, and the expected count was 81.6 and 134.7. There was a significant association ( $P<0.0001$ ) between the top feeling for buying organic apples and buying more than 25% organic. The greatest difference was seen in the “feel like I am eating healthier category”, where the observed count (173) was higher than the expected count (140.1). There was a significant association ( $P<0.0001$ ) between the top feeling for buying organic meat/poultry/dairy and buying more than 25% organic. The greatest difference was seen in the “feel like I am eating healthier” category, where the observed count (145) was higher than the expected count (128.46). There was a significant association ( $P<0.0001$ ) between the top influences for buying organic and buying more than 25% organic. The greatest difference was seen in “health benefits” and “contains no GMO’s”. The observed count was 97 and 32, respectively, and the expected count was 76.9 and 28.17. There was a significant association ( $P=0.001$ ) for top meaning of buying organic and buying more than 25% organic. The greatest difference was seen in “helping the environment” and “better for myself”. The observed count was 52 and 152, respectively, and the expected count was 48.45 and 146.1.

There was a significant association ( $P=0.015$ ) between least perception for buying organic apples and buying more than 25% organic. The greatest difference was seen in the “more expensive apples” and “better tasting”. The observed count was 41 and 15, respectively, and the expected count was 37.05 and 11.88. There was no significant association ( $P=0.637$ ) between the least perception for buying organic meat/poultry/dairy and buying more than 25% organic. The greatest difference was seen in the “more expensive” category. The observed count was 47 and

the expected count was 42.6. There was a significant association ( $P=0.015$ ) between the least feeling for buying organic apples and buying more than 25% organic. The greatest difference was seen in the “makes no difference” category. The observed count was 94 and the expected count was 83.21. There was a significant association ( $P<0.0001$ ) between least feeling for buying organic meat/poultry/dairy and buying more than 25% organic. The greatest difference was seen in “feel like wasting money”. The observed count was 145 and the expected count was 115.9. There was a significant association ( $P<0.0001$ ) between least influences for buying organic and buying more than 25% organic. The greatest difference was seen in “promotes sustainable agriculture”. The observed count was 114 and the expected count was 96.36. There was a significant association ( $P<0.0001$ ) between the least meanings of buying organic and buying more than 25% organic. The greatest difference was seen in the “buying more flavorful food” category. The observed count was 149 and the expected count was 127.26.

For non-organic food buyers there was a significant association ( $P<0.0001$ ) between the age group and the price difference that would make them start buying organic. The greatest difference was seen in the 18-21 year old group and the “negligible” category. The observed count was 30 and the expected count was 21.8. There was a significant association ( $P<0.0001$ ) between the top reason for not buying organic and being within the 18-21 age group. The greatest difference was seen in the “price” category. The observed count was 53 and the expected count was 46.58.

## **Discussion**

The study showed that participants were not equally distributed regarding their demographics. The majority of them were white female participants between 18-21 years old. The results demonstrate that there was an association between being 18 to 21 years old and

buying less than 25% organic foods. White participants were the ones buying less organic foods when compared to other ethnic groups. Most of the participants buying more than 25% organic foods ranked “feel like I am eating healthier” as their top feeling for buying apples or meat/poultry/dairy. The results demonstrated the main reasons why people buy organic foods instead of conventionally produced foods were “contains no GMO’s” and “health benefits”. Organic buyers define buying organic as “helping the environment” and doing something “better for themselves”. From these results the conclusion can be drawn that participants buying more than 25% organic think organic products have increased health benefits because they contain no GMO’s. Therefore, they are helping the environment and/or benefitting themselves by consuming organic products.

More expensive and better tasting ranked as the least perceptions for organic apples according to participants who buy more than 25% organic. Consequently, taste and cost are not main reasons why organic buyers prefer organic rather than conventionally grown apples. However, there was no significant association between the least perception of buying organic meat/poultry/dairy and buying more than 25% organic. The least response for buying organic apples was “makes no difference”. Therefore, organic buyers think that there is a difference between buying organic apples rather than conventionally grown. The least response for buying organic meat/poultry/dairy was “feels like wasting money” meaning that organic buyers think that paying more for organic meat/poultry/dairy is worth it. The study demonstrated that promoting sustainable agriculture ranked as the lowest reason why participants buy organic. Additionally, organic buyers ranked buying more flavorful food as the least reason for buying organic foods.

The results in this study show that those participants who do not buy organic and that fell within the 18 to 21 years old would start buying organic if the price difference was negligible or smaller than \$0.15 per pound. At the same time participants between 18 and 21 years old who did not buy organic selected their main barrier for buying organic foods was price.

As Baudry et al. have stated the main food choice motivated motivation for purchasing organic over conventional was price and taste. This study confirms that price was the main barrier for participants who buy less than 25% organic. However, organic buyers selected “more expensive” and “feel like wasting money” as their least perception about organic foods. In summary, price is a barrier for having access to organic foods for most participants in our study. At the same time, the perception ranking to lowest about organic foods for participants that have access to organic foods was “wasting money” or “more expensive”. Additionally, Braudry et al. stated that environmental factors or the absence of contaminants were not taken into consideration when buying organic foods (2017). On the contrary, this study demonstrated that organic buyers feel they are helping the environment and they are avoiding GMO’s when buying organic foods. These findings are in concert with the Danish case (2016), which had similar results, finding that the main considerations consumers take when buying organic foods are health, environmental factors, animal welfare, and taste and quality of products. The main considerations participants named in our study when it came to organic food consumption were health and environmental factors.

A study (Van Loo, et al., 2013) reported that the amount knowledge people had on organic foods, the price, the acceptance, and health-consciousness were all factors that determined if a person bought organic or not. On the other hand, environmental factors, education level, and age were not factors of great influence. We can conclude, from our study,

that price acceptance could be a great influence since most organic buyers stated that “feel like wasting money” or “more expensive” were their major reasons for not purchasing organic foods. Education level and age could not be determined from our study since most participants were in the same age group and education level. Another study, examining consumer perceptions of organic versus conventional yogurt, showed that their top perceptions were healthy, environmental friendly and having better quality. Therefore, results were similar to our study since health and environmental factors were also participant’s top perceptions about organic foods.

This study has limitations, such as participants being mostly students within the same education level, age group, and most of them being enrolled in a health-related major. This could have lead to some bias since many of the students were nutrition majors and had some knowledge of organic versus conventional foods. In addition, the age group sampled have less disposable income and therefore many of them did not buy organic because of price. Students might not have access to organic foods due to living in the dorms, not having transportation, or having a very low-income. However, there were some study strengths: large sample size, variety in ethnic groups (Hispanic and White students), and using ranking questions, which allowed us to analyze not only their top feeling, perception and influence, but also their least one. Future studies are needed in order to confirm if price is a barrier for not buying organic foods, at least among this particular demographic.

Appendix A. Survey distributed to UA students to test their frequency, perception, and feeling for buying organic foods.

1. Are you
  - a) 18-21years of age
  - b) 21-25 years of age
  - c) 26-30 years of age
  - d) 30-35 years of age
  - e) 36 years of age or older
  
2. Are you
  - a) male
  - b) female
  
3. Are you
  - a) White
  - b) Black/African American
  - c) Asian
  - d) Native American/Pacific Islander
  - e) Hispanic/Latino
  - f) American Indian
  
4. Which of the following organic items do you purchase?)  
Select all that apply.
  - a) Fruits and vegetables
  - b) Meat
  - c) Poultry
  - d) Processed foods
  - e) Dairy products
  - f) All of the above
  - g) None of the above, I don't buy organic.

\*If you answered g), go to question \_\_\_ (fill in the question number)

5. Approximately, what percentage of your food intake throughout a regular week is organic?
  - a) <25%
  - b) 25-50%
  - c) 50-75%
  - d) 75-100%
  - e) 100%
  
6. In your opinion, buying organic apples instead of conventional ones would mean:
  - a) More expensive apples
  - b) Apples free from chemicals such as herbicides, pesticides, fertilizers, additives, or residues.

- c) Healthier apples
- d) Better tasting apples
- e) Better looking apples
- f) Helping the environment
- g) More natural apples
- h) That I can trust how they have been produced

7. Buying organic apples instead of conventional ones would...

- Feel like the morally right thing
- Make me feel like I'm eating healthier
- Make no difference
- Feel like wasting money
- Other:

8. In your opinion, buying organic meat/poultry instead of conventional ones would mean:

- More expensive meat/poultry
- Meat/poultry free from antibiotics, hormones, and pesticides.
- Healthier meat/poultry
- Better tasting meat/poultry
- Better looking meat/poultry
- Helping the environment
- More natural meat/poultry
- That I can trust how they have been produced

9. Buying organic meat/poultry instead of conventional would...

- Feel like the morally right thing
- Make me feel like I'm eating healthier
- Make no difference
- Feel like wasting money
- Other:

10. What influences your decision to buy organic for some items and not others?

- a) Price
- b) Availability
- c) Health benefits
- d) Contains no GMOs
- e) Promotes sustainable agriculture

11. You would purchase organic if the price difference were

- a) Negligible (less than \$0.05 difference)
- b) Less than \$0.15/pound
- c) Less than \$0.25/pound
- d) Less than \$0.50/pound
- e) Would purchase organic at any price
- f) Wouldn't purchase regardless of price

12. In your opinion buying organic means:

- Helping the environment.
- Better for myself.
- Buying more flavorful food.
- Spending money.
- I don't know

13. Why don't you buy organic?

- a) Price
- b) Smaller size
- c) More defects
- d) Taste
- e) No perceived health benefits
- f) Government regulations require all products to maintain certain standards

## References

1. Baranski, M., Srednicka-Tober, D., Volakakis, N., Seal, C., Sanderson, R., Stewart, G. B., . . . Leifert, C. (2014). Higher antioxidant and lower cadmium concentrations and lower incidence of pesticide residues in organically grown crops: a systematic literature review and meta-analyses. *Br J Nutr*, 112(5), 794-811. doi:10.1017/s0007114514001366
2. Baudry, J., Peneau, S., Alles, B., Touvier, M., Hercberg, S., Galan, P., . . . Kesse-Guyot, E. (2017). Food Choice Motives When Purchasing in Organic and Conventional Consumer Clusters: Focus on Sustainable Concerns (The NutriNet-Sante Cohort Study). *Nutrients*, 9(2). doi:10.3390/nu9020088
3. Crinnion, W. J. (2010). Organic foods contain higher levels of certain nutrients, lower levels of pesticides, and may provide health benefits for the consumer. *Altern Med Rev*, 15(1), 4-12.
4. Dalziel, C. J., Kliem, K. E., & Givens, D. I. (2015). Fat and fatty acid composition of cooked meat from UK retail chickens labelled as from organic and non-organic production systems. *Food Chem*, 179, 103-108. doi:10.1016/j.foodchem.2015.01.118
5. Dangour, A. D., Lock, K., Hayter, A., Aikenhead, A., Allen, E., & Uauy, R. (2010). Nutrition-related health effects of organic foods: a systematic review. *Am J Clin Nutr*, 92(1), 203-210. doi:10.3945/ajcn.2010.29269
6. Forman, J., & Silverstein, J. (2012). Organic foods: health and environmental advantages and disadvantages. *Pediatrics*, 130(5), e1406-1415. doi:10.1542/peds.2012-2579
7. Hjelmar, U. (2011). Consumers' purchase of organic food products. A matter of convenience and reflexive practices. *Appetite*, 56(2), 336-344. doi:10.1016/j.appet.2010.12.019
8. Hunter, D., Foster, M., McArthur, J. O., Ojha, R., Petocz, P., & Samman, S. (2011). Evaluation of the micronutrient composition of plant foods produced by organic and conventional agricultural methods. *Crit Rev Food Sci Nutr*, 51(6), 571-582. doi:10.1080/10408391003721701
9. Kamihiro, S., Stergiadis, S., Leifert, C., Eyre, M. D., & Butler, G. (2015). Meat quality and health implications of organic and conventional beef production. *Meat Sci*, 100, 306-318. doi:10.1016/j.meatsci.2014.10.015
10. Kesse-Guyot, E., Péneau, S., Méjean, C., Szabo de Edelenyi, F., Galan, P., Hercberg, S., & Lairon, D. (2013). Profiles of Organic Food Consumers in a Large Sample of French Adults: Results from the Nutrinet-Santé Cohort Study. *PLoS ONE*, 8(10), e76998. <http://doi.org/10.1371/journal.pone.0076998>

11. Lester, G. E., Manthey, J. A., & Buslig, B. S. (2007). Organic vs conventionally grown Rio Red whole grapefruit and juice: comparison of production inputs, market quality, consumer acceptance, and human health-bioactive compounds. *J Agric Food Chem*, 55(11), 4474-4480. doi:10.1021/jf070901s
12. McEvoy, Miles. 2014 Organic 101: Understanding the "Made with Organic\*\*\*\*" Label <https://www.usda.gov/media/blog/2014/05/16/organic-101-understanding-made-organic-label>
13. Mollenkopf, D. F., Cenera, J. K., Bryant, E. M., King, C. A., Kashoma, I., Kumar, A., . . . Wittum, T. E. (2014). Organic or antibiotic-free labeling does not impact the recovery of enteric pathogens and antimicrobial-resistant *Escherichia coli* from fresh retail chicken. *Foodborne Pathog Dis*, 11(12), 920-929. doi:10.1089/fpd.2014.1808
14. Napolitano, F., Braghieri, A., Piasentier, E., Favotto, S., Naspetti, S., & Zanolli, R. (2010). Cheese liking and consumer willingness to pay as affected by information about organic production. *J Dairy Res*, 77(3), 280-286. doi:10.1017/s0022029910000130
15. Oates, L., Cohen, M., & Braun, L. (2012). Characteristics and consumption patterns of Australian organic consumers. *J Sci Food Agric*, 92(14), 2782-2787. doi:10.1002/jsfa.5664
16. Organic Foods Production Act of 1990. Available at: [www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5060370&acct=nopgeninfo](http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5060370&acct=nopgeninfo). Accessed May 15, 2011
17. Payling, L. M., Juniper, D. T., Drake, C., Rymer, C., & Givens, D. I. (2015). Effect of milk type and processing on iodine concentration of organic and conventional winter milk at retail: implications for nutrition. *Food Chem*, 178, 327-330. doi:10.1016/j.foodchem.2015.01.091
18. Raigon, M. D., Rodriguez-Burruezo, A., & Prohens, J. (2010). Effects of organic and conventional cultivation methods on composition of eggplant fruits. *J Agric Food Chem*, 58(11), 6833-6840. doi:10.1021/jf904438n
19. Schleenbecker, R., & Hamm, U. (2013). Consumers' perception of organic product characteristics. A review. *Appetite*, 71, 420-429. doi:10.1016/j.appet.2013.08.020
20. Smith-Spangler, C., Brandeau, M. L., Hunter, G. E., Bavinger, J. C., Pearson, M., Eschbach, P. J., . . . Bravata, D. M. (2012). Are organic foods safer or healthier than conventional alternatives?: a systematic review. *Ann Intern Med*, 157(5), 348-366. doi:10.7326/0003-4819-157-5-201209040-00007
21. Stracke, B. A., Eitel, J., Watzl, B., Mader, P., & Rufer, C. E. (2009). Influence of the production method on phytochemical concentrations in whole wheat (*Triticum aestivum*

L.): a comparative study. *J Agric Food Chem*, 57(21), 10116-10121.  
doi:10.1021/jf901267z

22. US Department of Agriculture, Agricultural Marketing Service. National organic program. Available at: [www.ams.usda.gov/AMSV1.0/nop](http://www.ams.usda.gov/AMSV1.0/nop). Accessed May 15, 2011
23. Van Loo, E. J., Diem, M. N. H., Pieniak, Z., & Verbeke, W. (2013). Consumer attitudes, knowledge, and consumption of organic yogurt. *J Dairy Sci*, 96(4), 2118-2129.  
doi:10.3168/jds.2012-6262
24. Yadav, R., & Pathak, G. S. (2016). Intention to purchase organic food among young consumers: Evidences from a developing nation. *Appetite*, 96, 122-128.  
doi:10.1016/j.appet.2015.09.017
25. Yin, S., Wu, L., Du, L., & Chen, M. (2010). Consumers' purchase intention of organic food in China. *J Sci Food Agric*, 90(8), 1361-1367. doi:10.1002/jsfa.3936