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Final Report

Public Opinion of Food in Florida

Dr. Joy Rumble & Arthur Leal

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About the Authors

Joy Rumble, Ph.D. – Assistant Professor, Agricultural Education and Communication Department, UF/IFAS Center for Public Issues Education

Arthur Leal – Graduate Research Assistant, Agricultural Education and Communication Department

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Several individuals played a crucial role in the development and implementation of this survey and report. The expertise and contributions of the following individuals is greatly appreciated:

Survey Panel of Experts:

Scot Eubanks – Assistant Director Agriculture Policy and National Affairs, Florida Farm Bureau Federation

Kevin Folta, Ph.D. – Interim Chair and Associate Professor, Horticultural Sciences Department

Glenn Israel, Ph.D. – Professor, Agricultural Education & Communications

Jaime Jerrels – Assistant Director Agriculture Policy & National Affairs, Florida Farm Bureau Federation

Anna Prizzia – Farm to School Statewide Coordinator, UF/IFAS

Sonia Tighe – Executive Director, Florida Specialty Crop Foundation

Additional contributors:

Laura Bernheim – Media Specialist, UF/IFAS Center for Public Issues Education

Traci Irani, Ph.D. – Director, UF/IFAS Center for Public Issues Education

Alexa Lamm, Ph.D. – Assistant Professor, Agricultural Education and Communication Department, UF/IFAS Center for Public Issues Education

Erica Odera – Research Assistant, UF/IFAS Center for Public Issues Education

Kacie Pounds – Graduate Assistant, Agricultural Education and Communication Department

Quisto Settle – Post Doctoral Associate, UF/IFAS Center for Public Issues Education

Stephen G. Snapp, Ph.D. – Department of Sociology, Iowa State University

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Introduction

In Florida, and throughout the United States, food related issues such as food safety, food security, and use of new food technologies continue to be top concerns among consumers. Since consumers' opinions regarding food issues is important to both the sustainability of the agricultural industry and human life as we know it, the UF/IFAS Center for Public Issues Education (PIE Center) initiated a study to explore the attitudes, perceptions, and opinions of Floridians around food issues. This survey examined what Floridians think about (1) food security of adults and children in the United States, (2) their concerns regarding food security, (3) their perceptions of food safety of various food products, (4) their concerns regarding food safety, (5) their overall attitude toward food safety, (6) their perceptions of genetically modified organisms (GMOs), (7) their intent to purchase GMO products, and (8) their perception of using genetic modification to develop HLB (citrus greening) resistant Florida citrus.

Key Findings

The key findings of the study include the following

- Florida residents ranked food safety 3rd out of 15 issues, when asked to identify the importance of 15 issues. Food production practices ranked 9th and genetically modified food ranked 14th.
- Food security was identified as an issue facing U.S. adults and children.
- The majority of Florida residents have at least minimal concerns about food running out on a Global and National scale.
- Respondents were more worried about being able to afford food than having access to safe and nutritious food.
- The majority of respondents agreed or strongly agreed that fruits and vegetables were safe.
- Eggs and milk were identified by respondents as the safest animal products, followed by whole cuts of meat (steak, pork chops, chicken), and ground products (ground beef, sausage).
- Respondents were slightly more worried about the safety of growth hormones in food than the safety of bacteria in food.
- About half of respondents reported concerns with the safety of food additives and preservatives, while about half were not worried about food containing gluten.
- When asked about the safety of genetically modified foods and genetically engineered foods, 45% and 44% of respondents indicated that they were moderately or extremely worried.
- The majority of respondents were only slightly or not at all worried about the safety of organic, local, and all natural food.
- The majority of respondents were worried about the safety of pesticide and antibiotic residues in food. Slightly more participants were concerned with the safety of pesticide residues in food.
- Florida residents are more concerned about the safety of food prepared at a restaurant than prepared in their kitchen.
- The majority of respondents reported food safety could be impacted by their food preparation and they could avoid unsafe food when they were careful.

- The most respondents indicated that farmers and supermarkets were doing the best job at protecting food safety, while the least amount of respondents indicated that government agencies, consumers, and food processing corporations were doing a good job.
- The majority of respondents agreed or strongly agreed that the quality of food used to be better.
- Just under half of the respondents agreed or strongly agreed that they had purchased and/or consumed genetically modified food.
- Many participants were unsure (*Neither agree nor disagree*) regarding possible advantages to genetic modification.
- 45% agreed or strongly agreed that genetically modified food presented a greater risk for food allergies and food poisoning, while almost half of respondents (48%) were unsure if genetically modified organisms threaten the environment.
- Many respondents disagreed or strongly disagreed (42%) they would purchase meat from an animal that was fed genetically modified feed, followed by genetically modified produce (38%), and food products containing genetically modified ingredients such as cereal (37%).
- 51% of respondents agreed or strongly agreed they would purchase clothes made from genetically modified fibers.
- 52% of the respondents agreed or strongly agreed that genetic modification should be used to save citrus trees, while 42% agreed or strongly agreed they would purchase Florida grown genetically modified citrus fruit and juice.

Background

In Florida, and throughout the United States, food related issues such as food safety, food security, and genetically modified food continue to be top concerns among consumers. Food safety is a topic often covered in the media and it is an issue that consumers commonly worry about. Food is secure when all people continuously have physical, social, and economic access to sufficient supplies of safe and nutritious food (Barrett, 2010). Food security is an issue that tends to be thought about on a global scale. However, with an increasing focus on food security related problems such as food desserts within the United States, the issue has gained more attention domestically in recent years. The use of genetically modified organisms (GMOs) continues to be debated by consumers.[1] Genetically modified food, while widely not understood, leaves consumers skeptical and unsure whether they should be eating foods containing GMOs. Several states have considered GMO labeling bills throughout the last year. In Florida specifically, GMOs have been identified as a possible solution to saving Florida's citrus industry from Citrus Greening.

Examining consumers' opinions regarding food issues is important to both the sustainability of the agricultural industry and human life as we know it. The agricultural industry is based on food production, and as consumers we all must eat to live. Florida has over 9.25 million acres of farmland and a variety of agriculture commodities that contribute $7.8 billion in sales to the states economy (National Agricultural Statistic Service, 2011). Therefore, examining food issues where production and consumption intersects is essential to the future of food.

This survey specifically examined:

- The public's perceptions of food security for adults and children in the United States
- The public's level of concern regarding food security
- The public's perceptions as to safety of various food products
- The public's level of concern regarding food safety
- The public's overall attitude toward food safety
- The public's perceptions of GMOs
- The public's intent to purchase GMO products
- The public's perceptions of using genetic modification to develop HLB (citrus greening) resistant Florida citrus

Methods

In October 2013, an online survey was distributed to a representative sample of Florida residents using non-probability sampling. Qualtrics, a survey software company, distributed the survey link to 827 Florida residents, 18 or older. Of these potential respondents, 510 completed responses were recorded. To ensure that the data were representative of the Florida population, the data were weighted to balance geographic, age, gender, and race/ethnicity data with the Florida population, according to the 2010 U.S. Census data (Kalton & Flores-Cervantes, 2003). Weighting procedures are commonly used in non-probability samples to compensate for selection, exclusion, and non-participation biases (Baker et al., 2013).

[1]The FDA has suggested that genetically modified is the incorrect term as most plant varieties have been modified through breeding procedures. Genetic engineering or biotechnology are the more appropriate terms to describe products, such as Roundup® ready corn, that are commonly referred to as GMOs. However, due to the familiarity of GMOs to consumers and the discussion of GMOs in the media, the term GMO was used throughout this survey.

Public opinion research commonly utilizes non-probability samples to make population estimates (Baker, et al., 2013). According to previous literature, non-probability samples can yield results comparable and in some cases better than probability-based samples (Abate, 1998; Twyman, 2008; Vavreck & Rivers, 2008).

The survey instrument was created using both researcher-developed questions and questions replicated and adapted from previous studies. Questions addressing food safety were replicated and adapted from Sapp and Bird (2003); Redmond and Griffith (2004); and Ergönül (2013). Questions regarding food security were adapted from Carlson, Andrews, and Bickel (1999) and based on the ideas discussed by Barrett (2010). Finally, questions regarding GMOs were replicated and adapted from Bredahl (2001). The survey was reviewed by a panel of experts (listed above) for face and content validity before implementation.

Description of Respondents

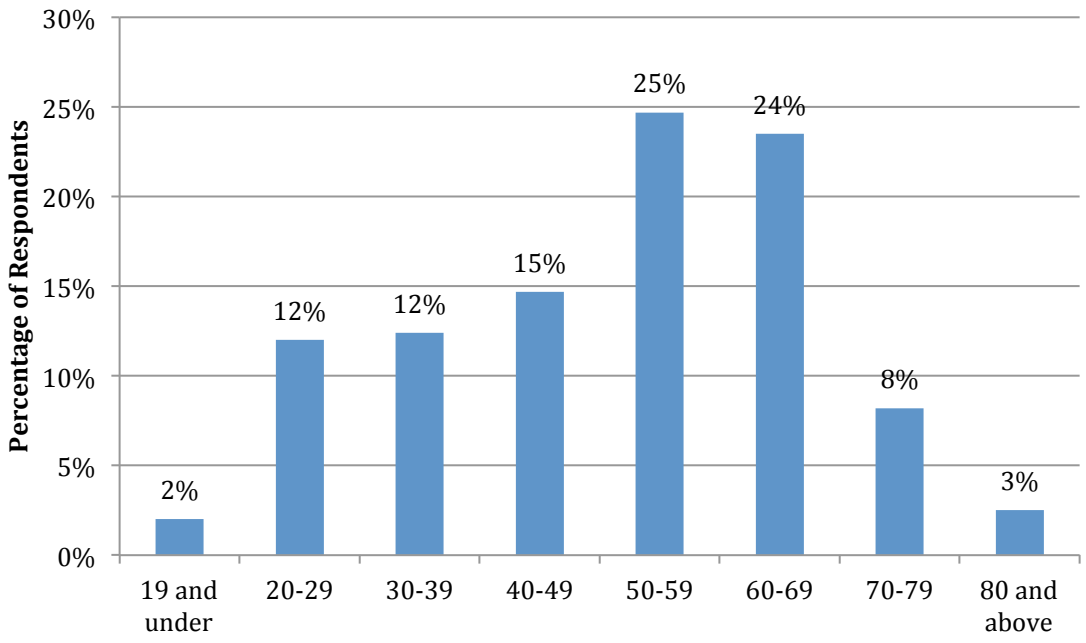
Sex

Of the respondents participating in the survey, 47% were male and 52% were female.

Age Representation

Just over of a third of the respondents (39%) were middle-aged, with ages ranging from 40-59 (Figure 1). A similar percentage of respondent were 60 and older (34%) and slightly less respondents were 39 and younger (26%).

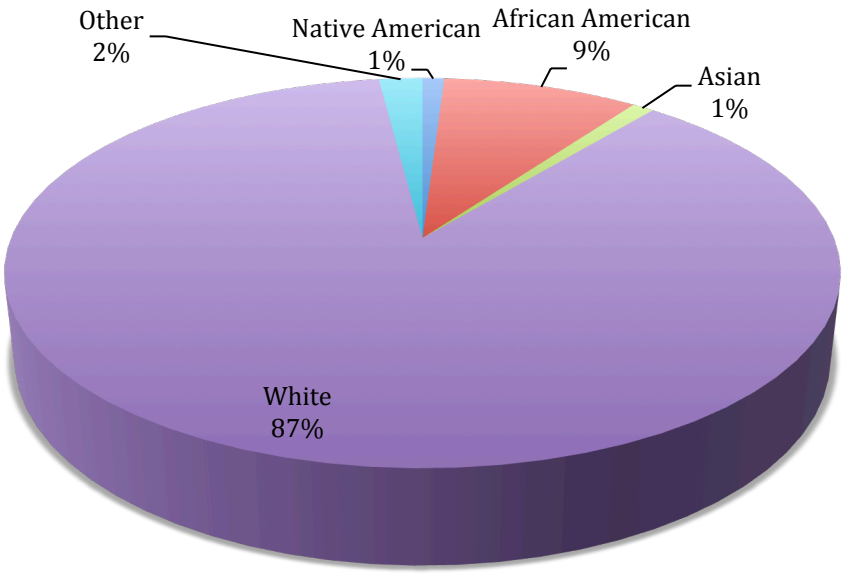
Figure 1. Age representation



Race/Ethnicity Representation

The majority of respondents identified their race as White (87%), followed by African American (9%). The Asian, Native American, and "Other" racial categories represented 4% of respondents. Hispanic ethnicity was identified by 11% of respondents.

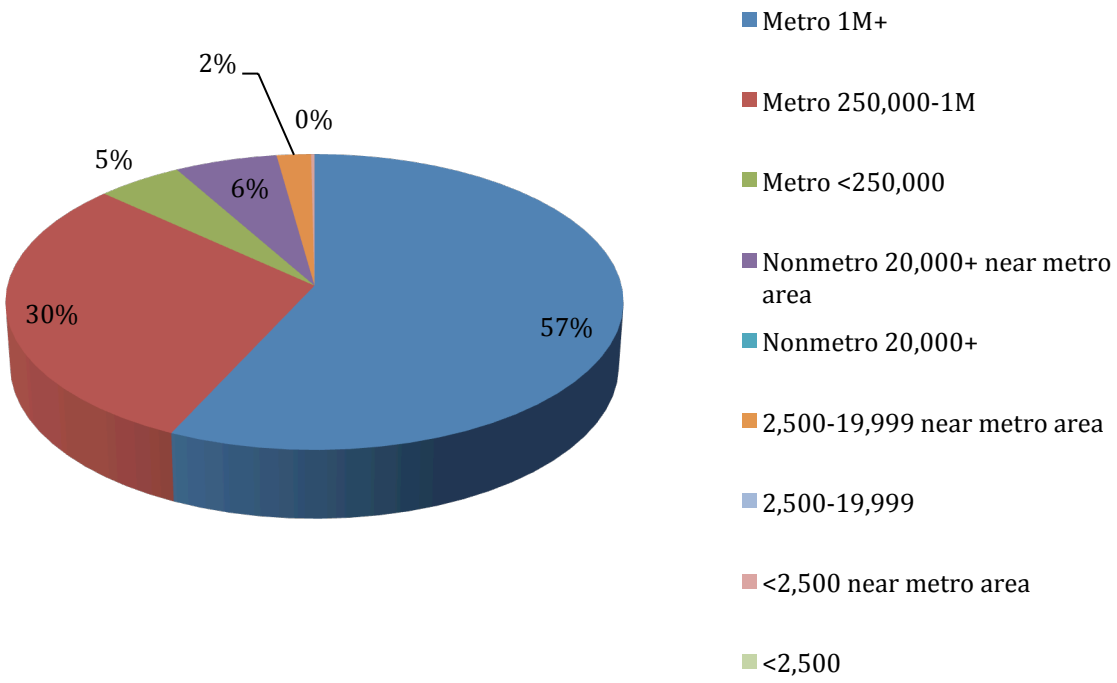
Figure 2. Racial representation



Metro/Non-Metro Representation

Respondents were classified into their rural or urban codes by comparing their ZIP codes to the national rural-urban codes. The majority of respondents (57%) lived in a metro area with a population of one million or more (Figure 3). Less than a tenth of the respondents (8%) lived in a non-metro area.

Figure 3. Rural-urban continuum



Geographic Representation in the State of Florida

The majority of respondents lived in the Central Florida (51%), followed by Southern Florida (29%) (Figure 4).

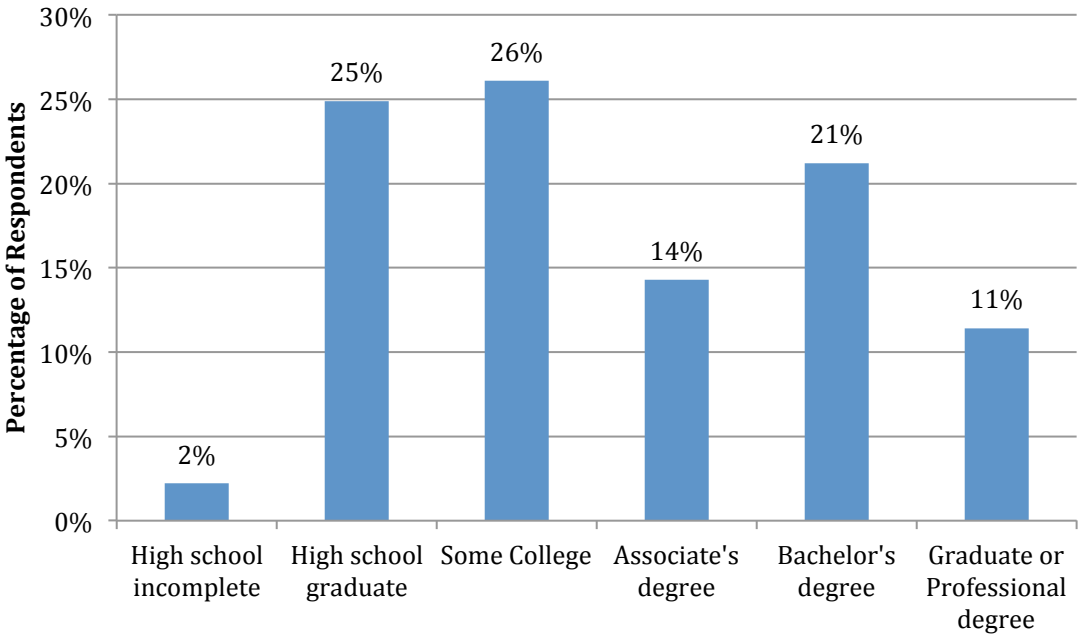
Figure 4. Geographic residence

Region of Florida	% of Respondents
Panhandle	5
Northern	15
Central	51
Southern	29

Educational Status

Of the respondents, 26% reported having some college education and 46% reported having a college degree (Figure 5). Twenty-five percent of respondent were high school graduates, but did not report having any college education.

Figure 5. Educational Status



Political Beliefs and Affiliation

A Democratic political affiliation was reported by 31% of respondents, followed closely by Republican affiliation (27%), and Independent affiliation (25%) (Figure 6). Additionally, 45% of respondents reported moderate political ideologies (Figure 7).

Figure 6. Political Affiliation

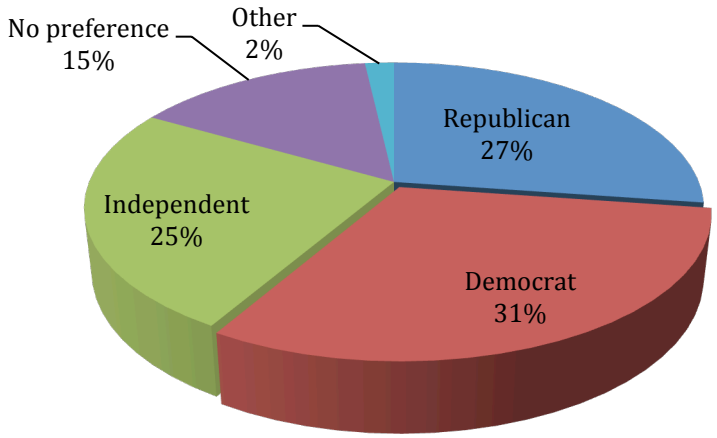
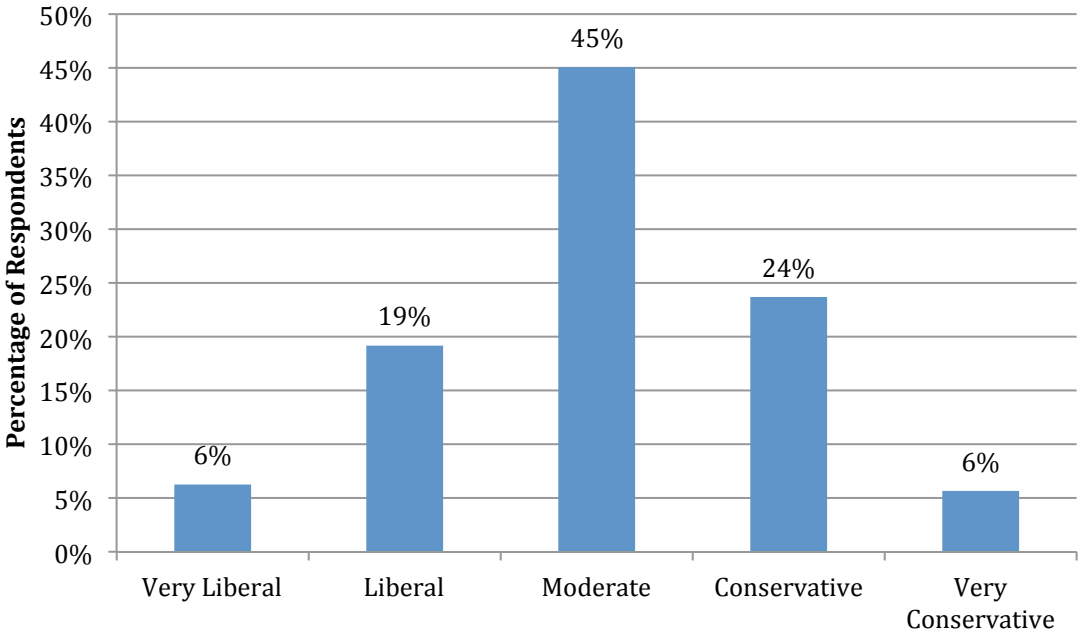


Figure 7. Political ideological leaning



Results

Importance of Food Issues

Respondents were asked to rate the level of importance they associated with 15 specific issues on a five-point scale (1 = *Not at all important,* 2 = *Slightly important,* 3 = *Fairly important,* 4 = *Highly important,* 5 = *Extremely important*). Respondents could also indicate that they were *Unsure* of the importance they associated with an issue. Table 1 details the percent of respondents who rated each issue as *Highly important* or *Extremely important.* Respondents identified the economy and healthcare as the most important issues, at 91% and 88% respectively. Food safety was also identified with high importance at 85%. Food production practices rated 9th out of 15 issues at 74%, while genetically modified food rated 14th at 57%.

Table 1. Importance level of issues

Issue	% of respondents rating the issue extremely or highly important
The economy	91%
Health care	88%
Food safety	85%
Water quality	84%
Water supply	84%
Taxes	78%
Government budget	76%
Air quality	75%
Food production practices	74%
Housing and foreclosures	68%
Public K-12 education	65%
Public higher education	59%
Immigration	59%
Genetically modified foods	57%
Endangered species	55%

Information Seeking and Sharing

Respondents were asked to indicate their information seeking and sharing behaviors when preparing to vote on policy that impacts agriculture and natural resources. Respondents rated their level of agreement regarding five statements on a five-point scale (1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neither agree nor disagree*, 4 = *Agree*, 5 = *Strongly agree*). Table 2 details the percent of respondents who *Agreed* or *Strongly agreed* to each statement. Respondents most strongly agreed they would consider both positive and negative implications that could result from the policy when preparing to vote (89%), followed by seeking to fully understand policy (85%), and seeking factual information from multiple sources (84%).

Table 2. Information seeking and sharing behaviors when preparing to vote

Behavior	% of respondents who agreed or strongly agreed
Consider both positive and negative implications that could result	89%
Seek to fully understand policy	85%
Seek factual information from multiple sources	84%
Discuss my opinion with others	65%
Ask others what their opinion was	62%

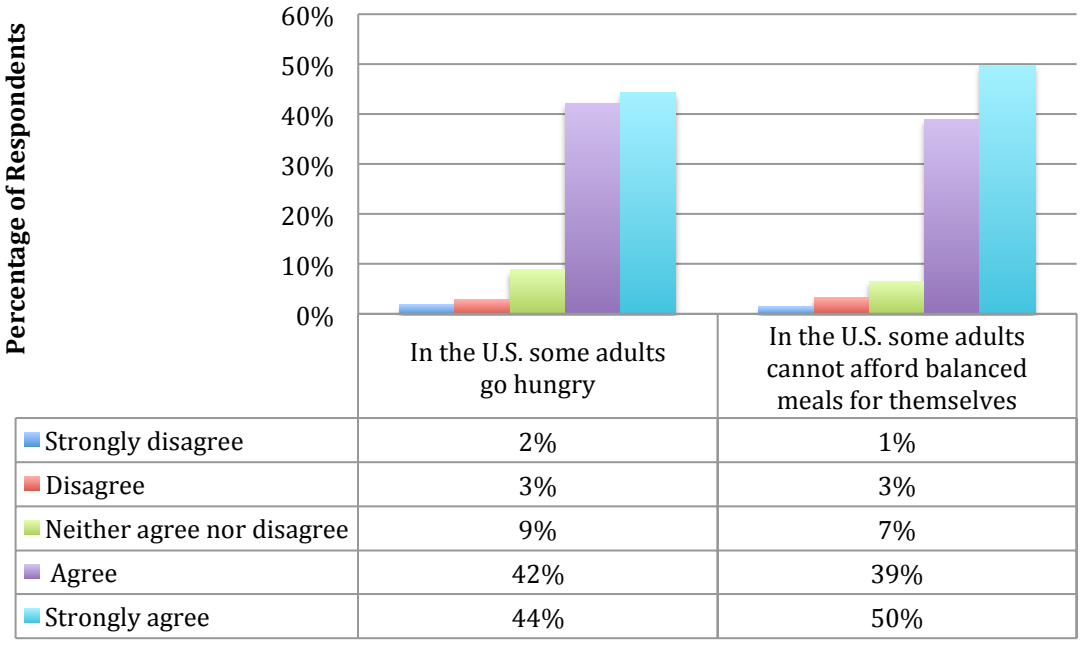
Perceptions of Food Security

Respondents were asked a series of questions about food security of both adults and children in the United States. Questions about overall food security and sufficient access to food were asked. These questions asked respondents to rate their level of agreement with statements on a five-point scale (1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neither agree nor disagree*, 4 = *Agree*, 5 = *Strongly agree*).

Overall Perceptions of Food Security - Adult

Respondents indicated they agreed or strongly agreed that some adults in the U.S. go hungry (86%) and that some U.S. adults cannot afford balanced meals for themselves (89%) (Figure 8).

Figure 8. Overall perceptions of food security - Adult

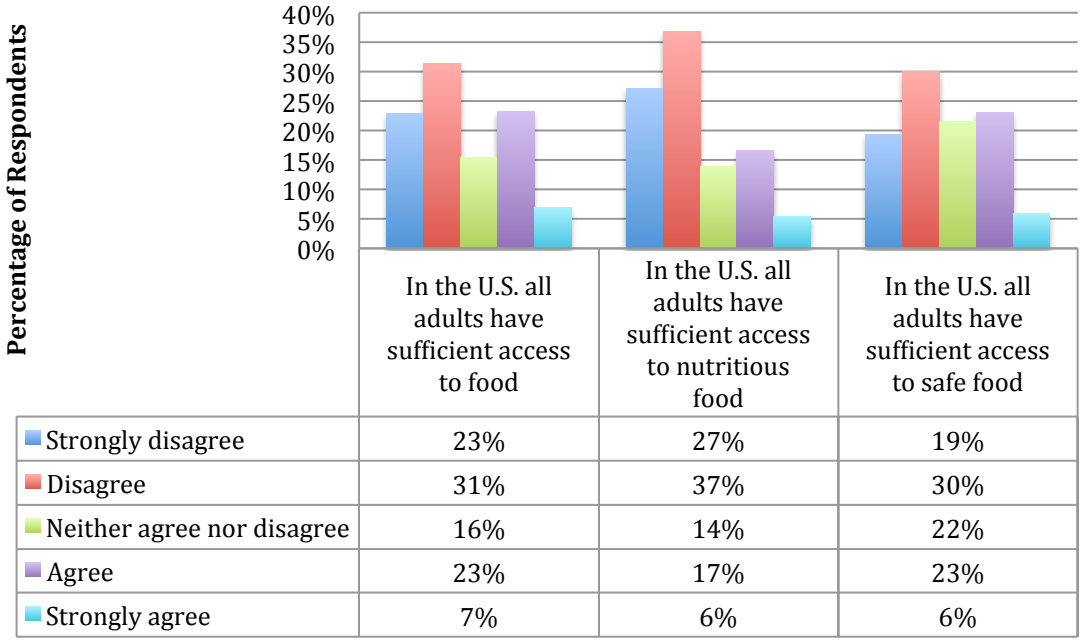


	In the U.S. some adults go hungry	In the U.S. some adults cannot afford balanced meals for themselves
Strongly disagree	2%	1%
Disagree	3%	3%
Neither agree nor disagree	9%	7%
Agree	42%	39%
Strongly agree	44%	50%

Perceptions of Sufficient Access to Food – Adult

Respondents reported the highest level of disagreement with the statement that all adults in the U.S. have sufficient access to nutritious food (64%) (Figure 9), followed by sufficient access to food in general (54%), and then sufficient access to safe food (49%). Respectively, 30% of respondents agreed or strongly agreed that U.S. adults have sufficient access to food, while 29% agreed or strongly agreed that U.S. adults have sufficient access to safe food.

Figure 9. Perceptions of sufficient access to food – Adult

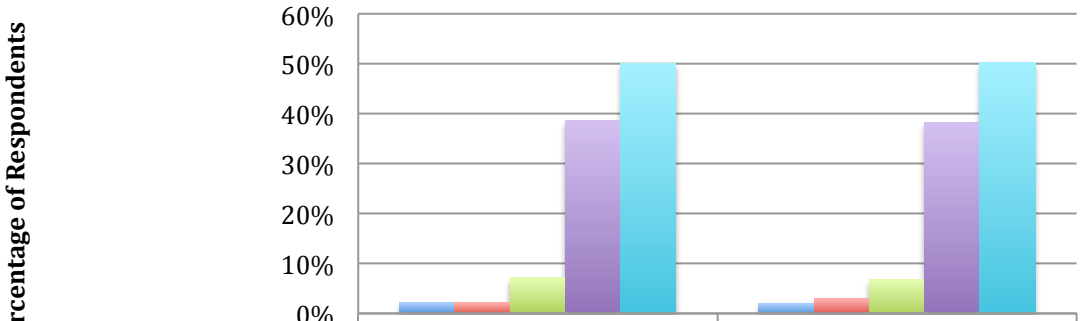


	In the U.S. all adults have sufficient access to food	In the U.S. all adults have sufficient access to nutritious food	In the U.S. all adults have sufficient access to safe food
Strongly disagree	23%	27%	19%
Disagree	31%	37%	30%
Neither agree nor disagree	16%	14%	22%
Agree	23%	17%	23%
Strongly agree	7%	6%	6%

Overall Perceptions of Food Security - Children

Respondents indicated they agreed or strongly agreed that some children in the U.S. go hungry (89%) and that some U.S. adults cannot afford balanced meals for their children (88%) (Figure 10).

Figure 10. Overall perceptions of food security - Children

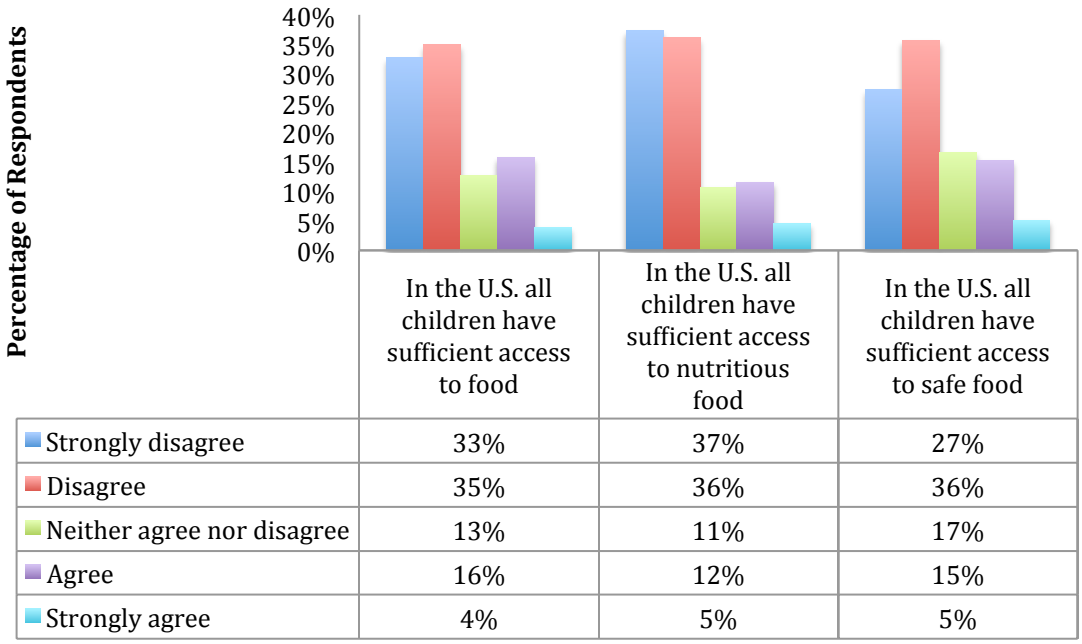


	In the U.S. some children go hungry	In the U.S. some adults cannot afford balanced meals for their children
Strongly disagree	2%	2%
Disagree	2%	3%
Neither agree nor disagree	7%	7%
Agree	39%	38%
Strongly agree	50%	50%

Perceptions of Sufficient Access to Food – Children

Respondents reported the highest level of disagreement with the statement that children in the U.S. have sufficient access to nutritious food (73%) (Figure 11), followed by sufficient access to food in general (68%), and sufficient access to safe food (63%). Level of disagreement regarding children having sufficient access to food was higher for all statements than it was for the same statements about adults.

Figure 11. Perceptions of sufficient access to food – Children



	In the U.S. all children have sufficient access to food	In the U.S. all children have sufficient access to nutritious food	In the U.S. all children have sufficient access to safe food
Strongly disagree	33%	37%	27%
Disagree	35%	36%	36%
Neither agree nor disagree	13%	11%	17%
Agree	16%	12%	15%
Strongly agree	4%	5%	5%

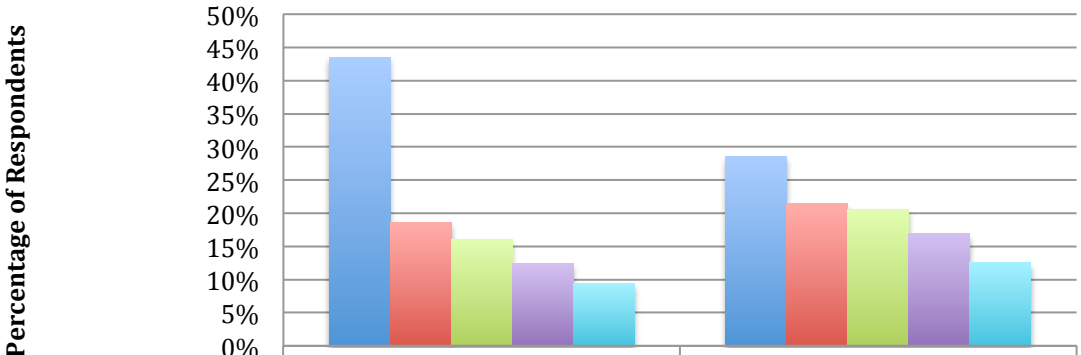
Food Security Concerns

Respondents were asked a series of questions about the level of concern they associate with national and global food security, as well as personal access to food. These questions asked respondents to rate their level of being worried on a five-point scale (1 = *Not worried*, 2 = *Slightly worried*, 3 = *Somewhat worried*, 4 = *Moderately worried*, 5 = *Extremely worried*).

Food Security Concerns – National and Global

Of the respondents, 56% expressed at least a minimal level of worry that the U.S. will run out of food (Figure 12). In addition, 72% expressed at least a minimal amount of worry that the world will run out of food with 30% either moderately or extremely worried about food running out throughout the world.

Figure 12. Food security concerns – National and Global

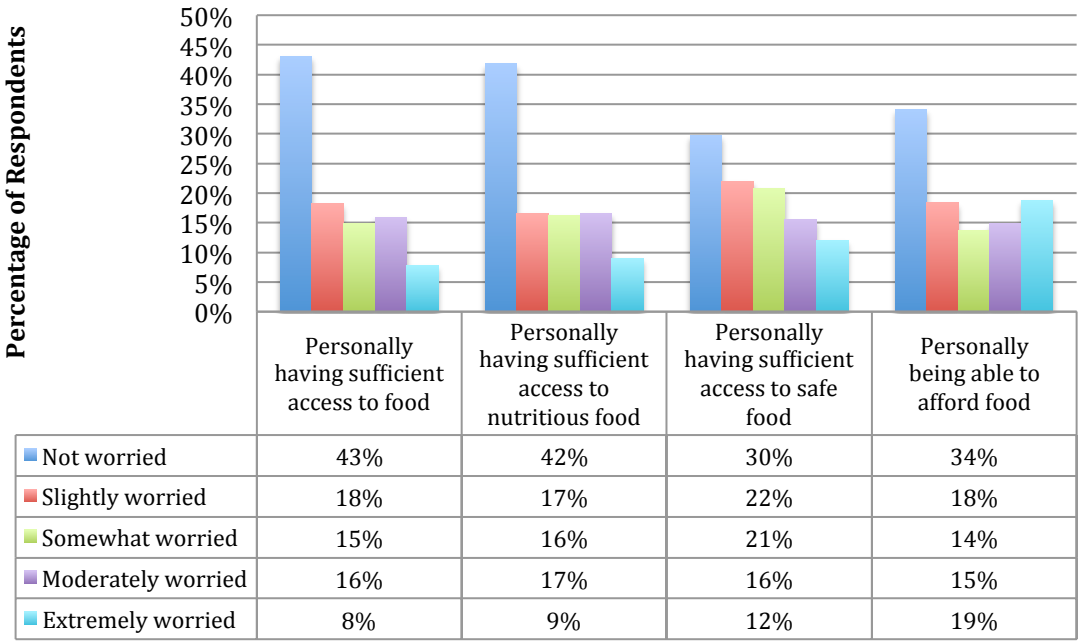


	Food running out in the U.S.	Food running out throughout the world
Not worried	44%	29%
Slightly worried	19%	21%
Somewhat worried	16%	21%
Moderately worried	12%	17%
Extremely worried	9%	13%

Food Security Concerns – Personal Access to Food

The majority of respondents reported having at least a minimal level of worry (57%) regarding their personal access to food (Figure 13). Additionally, 59% were at least slightly worried about having access to nutritious food, while 71% were at least slightly worried about having access to safe food. Having the ability to afford food was a concern on 66% of respondents, with 34% of these respondents indicating that they were moderately or extremely worried about being able to afford food.

Figure 13. Food security concerns – Personal access to food



	Personally having sufficient access to food	Personally having sufficient access to nutritious food	Personally having sufficient access to safe food	Personally being able to afford food
Not worried	43%	42%	30%	34%
Slightly worried	18%	17%	22%	18%
Somewhat worried	15%	16%	21%	14%
Moderately worried	16%	17%	16%	15%
Extremely worried	8%	9%	12%	19%

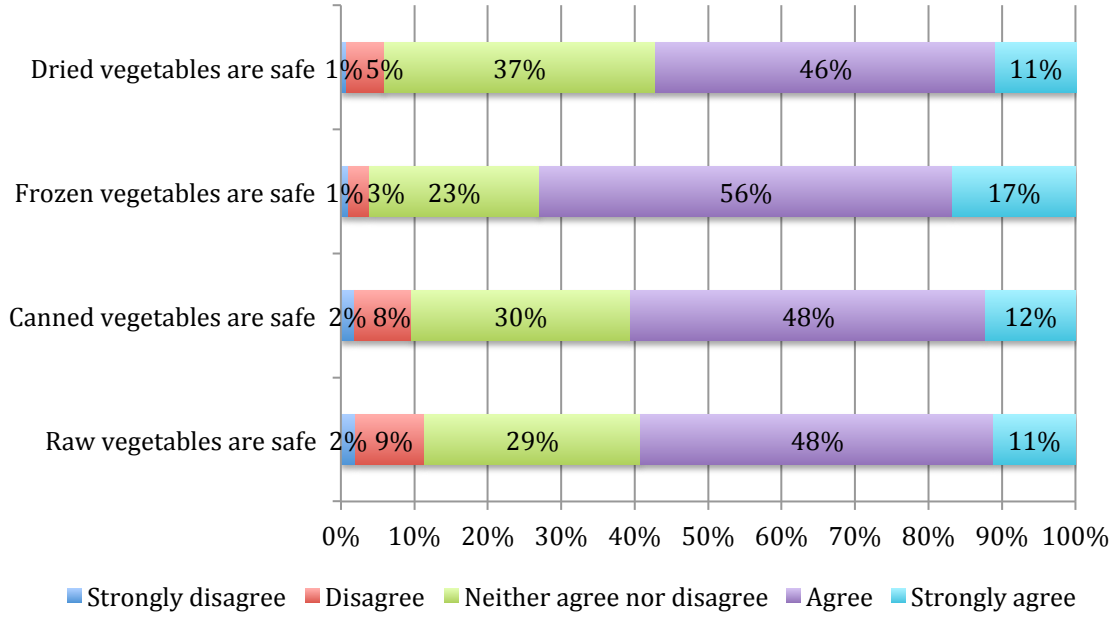
Food Safety Perceptions

Respondents were asked a series of questions about their perceptions of the safety of different food products, including the safety of vegetables, fruits, and animal-based products. These questions asked respondents to rate their level of agreement with statements on a five-point scale (1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neither agree nor disagree*, 4 = *Agree*, 5 = *Strongly agree*).

Perceived Food Safety – Vegetables

The majority of respondents agreed that vegetables were safe whether dried, frozen, canned, or raw (Figure 14). Frozen vegetables were perceived to be the most safe, as 73% of respondents agreed or strongly agreed they were safe.

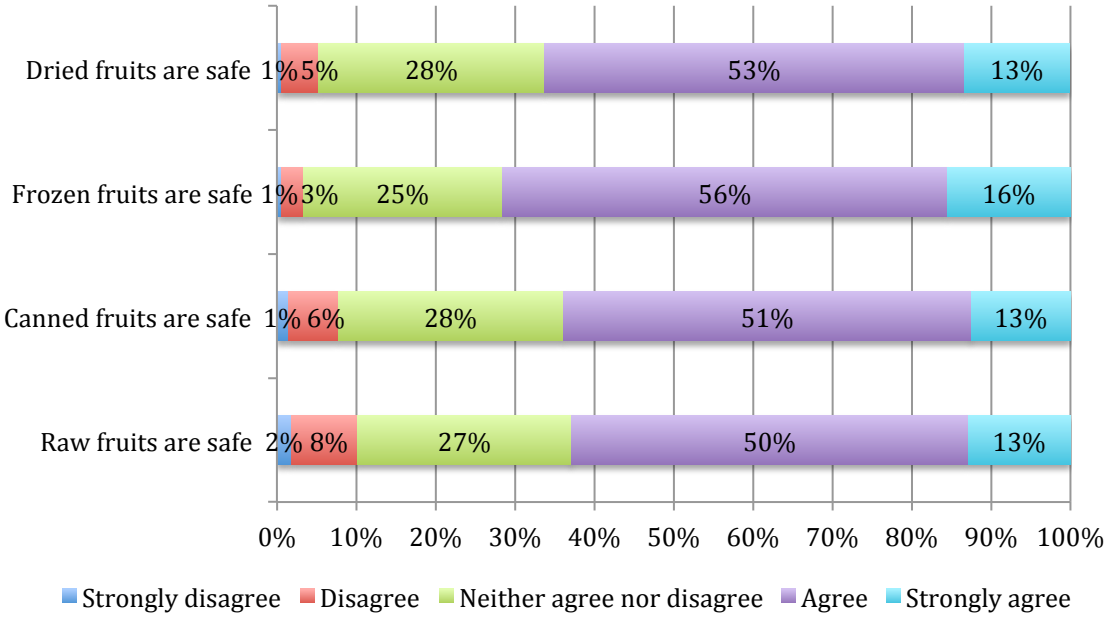
Figure 14. Perceived food safety – Vegetables



Perceived Food Safety – Fruit

The majority of respondents agreed that fruits were safe whether dried, frozen, canned, or raw (Figure 15). Frozen fruits were perceived to be the most safe, as 72% of respondents agreed or strongly agreed they were safe.

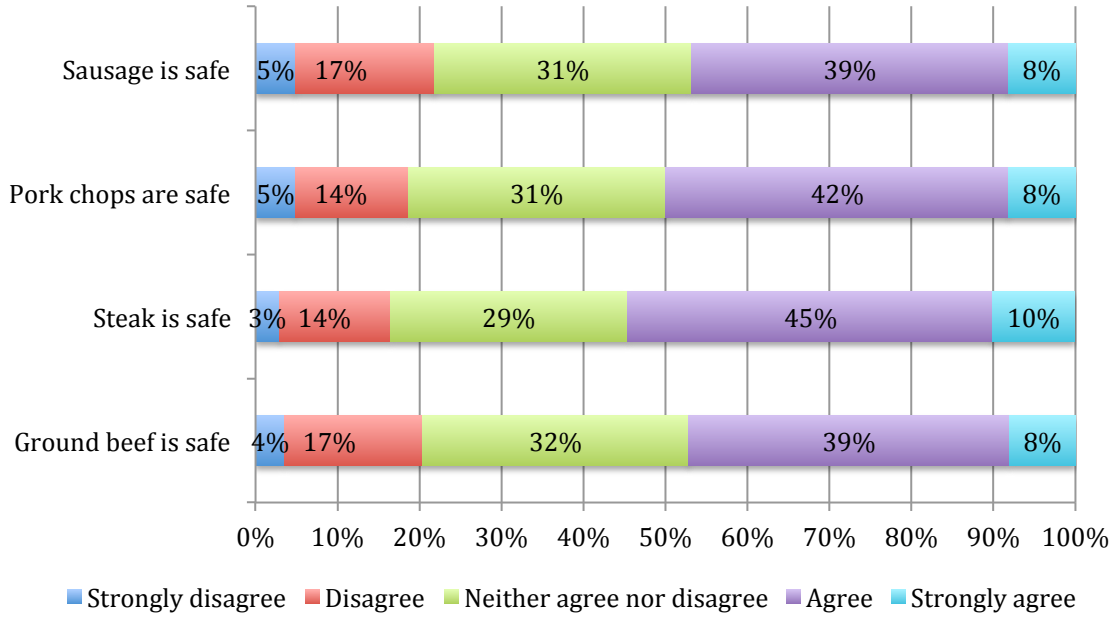
Figure 15. Perceived food safety – Fruit



Perceived Food Safety – Beef and Pork

Steak was perceived as the safest beef or pork product, with 55% of respondents stating they agreed or strongly agreed steak was safe (Figure 16). The ground products, both sausage and ground beef, had the lowest level of agreement with 47% of respondents agreeing or strongly agreeing that both products were safe.

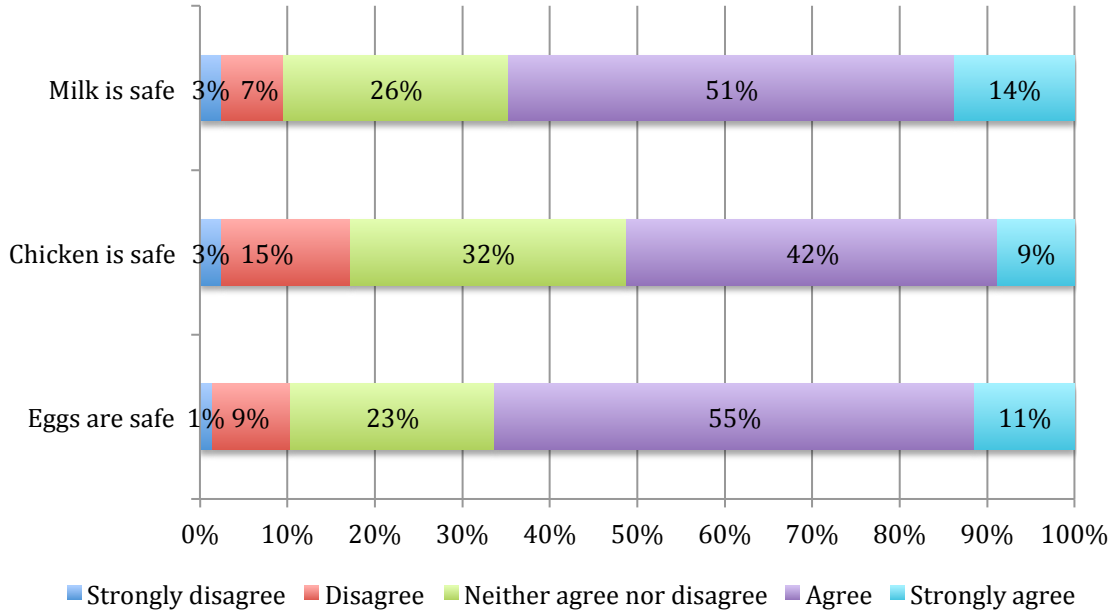
Figure 16. Perceived food safety – Beef and pork



Perceived Food Safety – Poultry and Dairy

The majority of respondents agreed that milk and eggs were safe with 65% and 66% agreeing or strongly agreeing, respectively (Figure 17). Chicken, however, was only perceived to be safe by 51% of respondents.

Figure 17. Perceived food safety – Poultry and dairy



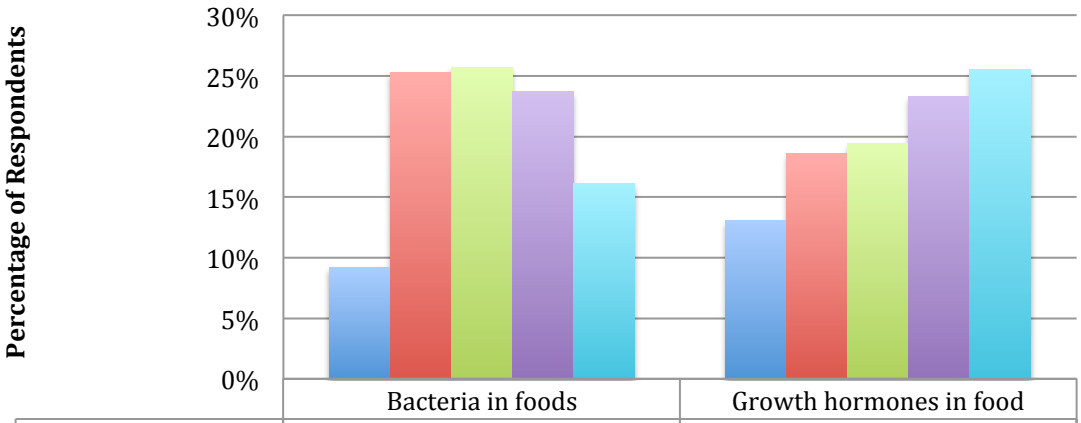
Food Safety Concerns

Respondents were asked a series of questions about the level of worry they associated with food safety. They were asked questions about the safety of naturally occurring food threats, food ingredients, food technology (including GMOs and genetically engineered food), food production, residues in food, and food preparation. These questions asked respondents to rate their level of worry on a five-point scale (1 = *Not worried*, 2 = *Slightly worried*, 3 = *Somewhat worried*, 4 = *Moderately worried*, 5 = *Extremely worried*).

Food Safety Concerns – Naturally Occurring

Respondents reported they were slightly more worried about the safety of growth hormones in food than the safety of bacteria in foods (Figure 18). Of the respondents, 49% were moderately or extremely worried about the safety of growth hormones in food, while 40% were moderately or extremely worried about the safety of bacteria in foods.

Figure 18. Food safety concerns – Naturally occurring

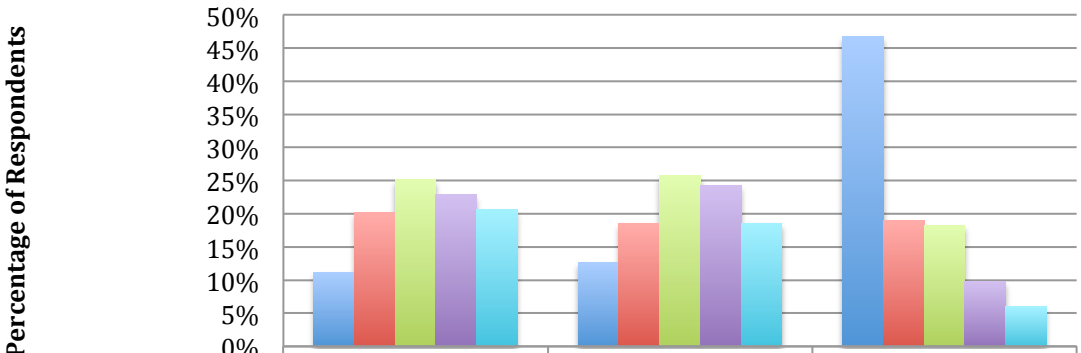


	Bacteria in foods	Growth hormones in food
Not worried	9%	13%
Slightly worried	25%	19%
Somewhat worried	26%	19%
Moderately worried	24%	23%
Extremely worried	16%	26%

Food Safety Concerns – Food Ingredients

Respondents reported they were somewhat or moderately worried about the safety of food additives and food preservatives (Figure 19). Fifty percent were somewhat or moderately worried about the safety of food preservatives, while 48% were somewhat or moderately worried about the safety of food additives. Many (47%) respondents were not worried about the safety of food containing gluten.

Figure 19. Food safety concerns – Food ingredients

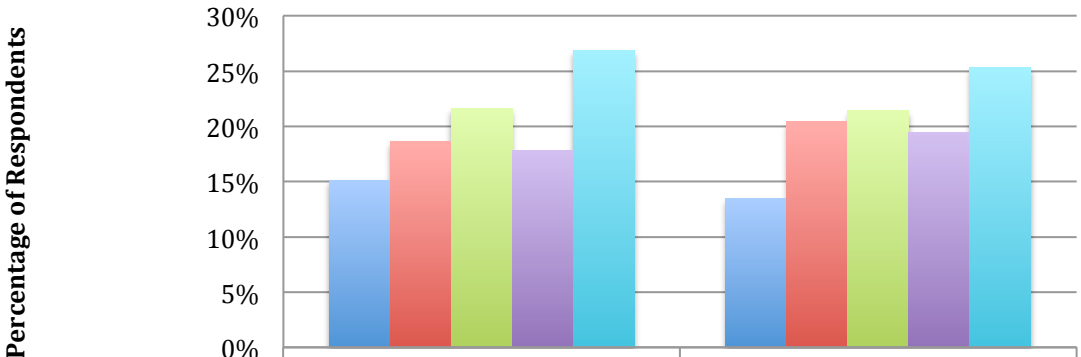


	Food additives	Food preservatives	Food containing gluten
Not worried	11%	13%	47%
Slightly worried	20%	19%	19%
Somewhat worried	25%	26%	18%
Moderately worried	23%	24%	10%
Extremely worried	21%	19%	6%

Food Safety Concerns – Technology

Throughout the media the terms genetically modified foods and genetically engineered foods are often used interchangeably and are often regarded as synonymous by consumers. Two questions were asked to identify if consumers were more concerned about the safety of foods that have been genetic modified or genetically engineered. The level of worry was similarly distributed for both the safety of genetically modified foods and genetically engineered foods (Figure 20). Of the respondents, 45% were moderately or extremely worried about the safety of genetically modified foods, while 44% were moderately or extremely worried about the safety of genetically engineered foods.

Figure 20. Food safety concerns – Technology

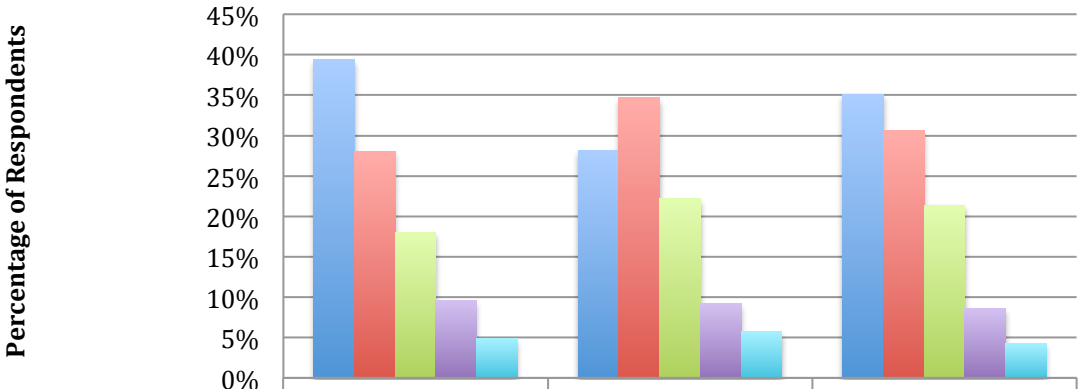


	Genetically modified foods	Genetically engineered foods
Not worried	15%	14%
Slightly worried	19%	20%
Somewhat worried	22%	21%
Moderately worried	18%	19%
Extremely worried	27%	25%

Food Safety Concerns – Production Type

The majority of respondents were not as worried about the safety of organic, local, and all natural food when compared to other questions (Figure 21). Of the respondents, 67% were either not worried or only slightly worried about the safety of organic food, followed by all natural food (66%), and local food (63%).

Figure 21. Food safety concerns – Production type

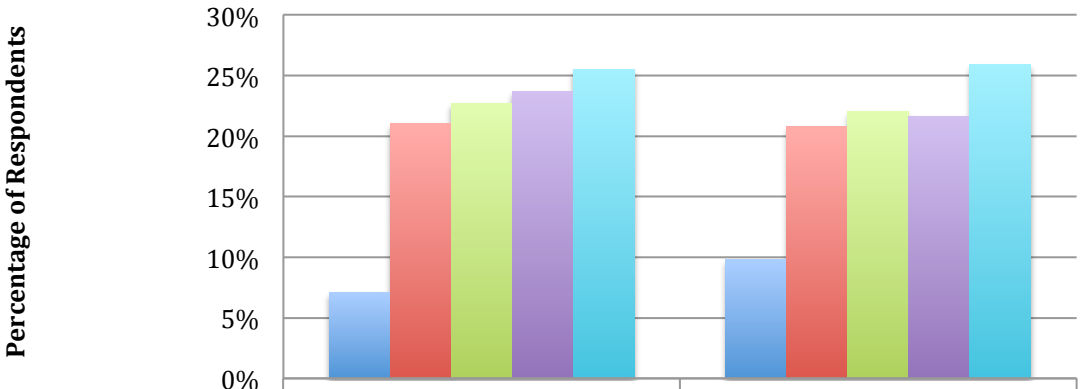


	Organic food	Local food	All natural food
Not worried	39%	28%	35%
Slightly worried	28%	35%	31%
Somewhat worried	18%	22%	21%
Moderately worried	10%	9%	9%
Extremely worried	5%	6%	4%

Food Safety Concerns – Residues

The majority of respondents indicated high levels of concern regarding the safety of pesticide and antibiotic residues in food, with slightly more concern regarding the safety of pesticide residues in food (Figure 22). Of the respondents, 94% were at least slightly worried about the safety of pesticide residues in food. Similarly, 91% of respondents were at least slightly worried about the safety of antibiotic residues.

Figure 22. Food safety concerns – Residues

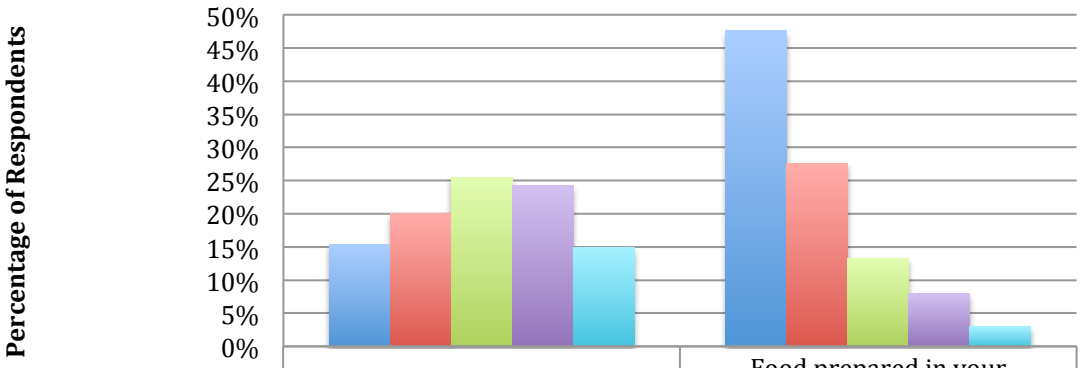


	Pesticide residues in food	Antibiotic residues in food
Not worried	7%	10%
Slightly worried	21%	21%
Somewhat worried	23%	22%
Moderately worried	24%	22%
Extremely worried	26%	26%

Food Safety Concerns – Food Preparation

Respondents were less worried about the safety of the food prepared in their kitchen than they were about the safety of food when they ate out at a restaurant (Figure 23). Of the respondents, 65% were somewhat, moderately, or extremely worried about the safety of food when they ate out. However, almost half (48%) of the respondents were not worried about the safety of food prepared in their kitchen.

Figure 23. Food safety concerns – Food preparation



	Food when you eat out	Food prepared in your kitchen
Not worried	15%	48%
Slightly worried	20%	28%
Somewhat worried	26%	13%
Moderately worried	24%	8%
Extremely worried	15%	3%

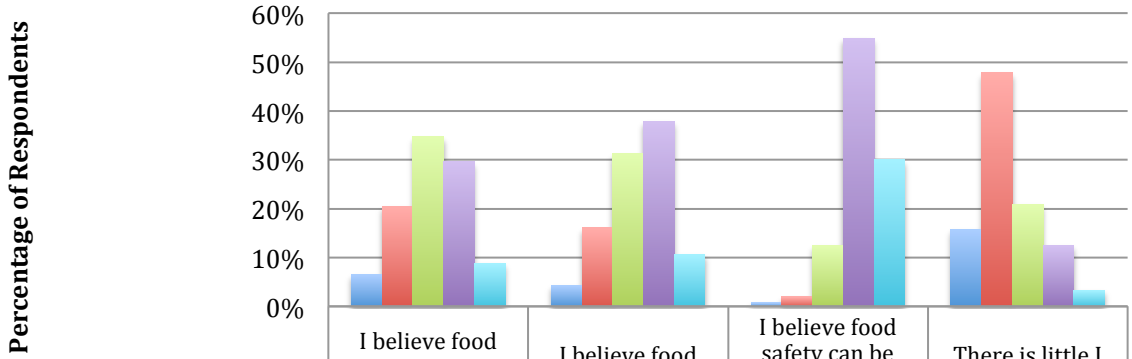
Food Safety Attitudes

Respondents were asked a series of questions about their attitude toward food safety. Attitudes about their personal control of food safety, perceived food safety risk, and food safety concerns were all collected. These questions asked respondents to rate their level of agreement with statements on a five-point scale (1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neither agree nor disagree*, 4 = *Agree*, 5 = *Strongly agree*).

Food Safety Attitudes – Personal Control

While 39% of respondents agreed or strongly agreed that they could control food safety, 35% of respondents held a neutral (*Neither agree nor disagree*) response to this same question (Figure 24). Similarly, 49% of respondents agreed or strongly agreed food safety was their responsibility, while 31% of respondents held a neutral (*Neither agree nor disagree*) response to this same question. The majority of respondents agreed or strongly agreed (85%) that food safety could be impacted by their food preparation. Many respondents disagreed or strongly disagreed that there was little they could do about food safety (64%).

Figure 24. Food Safety Attitudes – Personal control

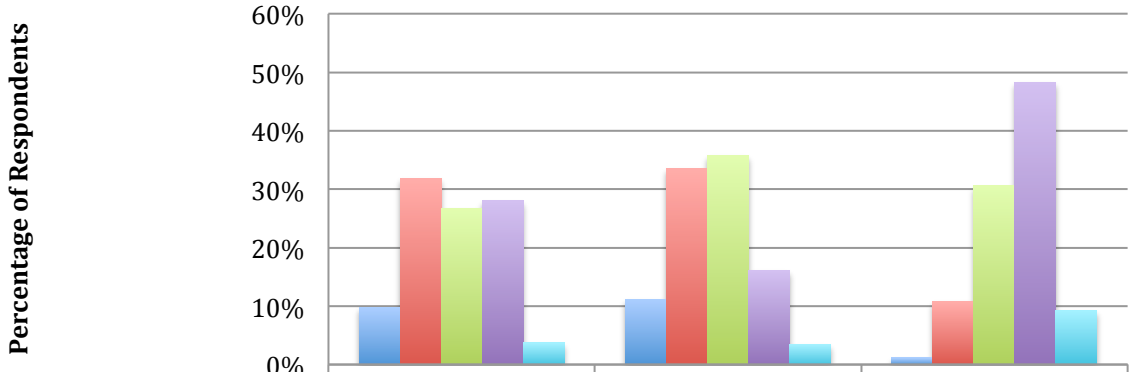


	I believe food safety can be controlled by me	I believe food safety is my responsibility	I believe food safety can be impacted by my food preparation	There is little I can do about food safety
Strongly disagree	7%	4%	1%	16%
Disagree	20%	16%	2%	48%
Neither agree nor disagree	35%	31%	12%	21%
Agree	30%	38%	55%	12%
Strongly agree	9%	11%	30%	3%

Food Safety Attitudes – Perceived Risks

Of the respondents, 42% disagreed or strongly disagreed it was impossible to avoid food safety risks (Figure 25). However, just over a quarter of the respondents felt neutral (*Neither agree nor disagree*) about avoiding food safety risks (27%) and agreed or strongly agreed (32%) that it was impossible to avoid food safety risks. Strong disagreement or disagreement was reported by 45% of the respondents regarding the statement "Everything we eat these days is dangerous," while 36% of respondents felt neutral (*Neither agree nor disagree*) about the statement. The majority (57%) of respondents agreed or strongly agreed they could avoid unsafe food when they were careful.

Figure 25. Food Safety Attitudes – Perceived risks

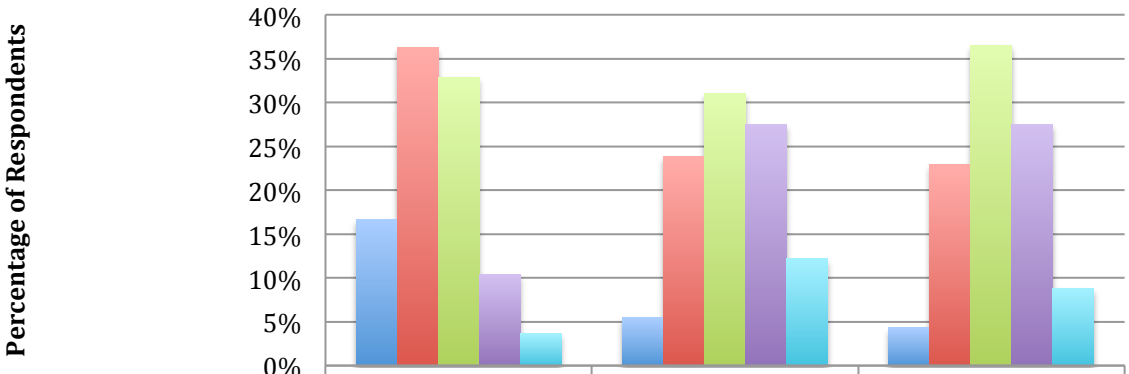


	It is impossible to avoid food safety risks	Everything we eat these days is dangerous	I can avoid unsafe food when I am careful
Strongly disagree	10%	11%	1%
Disagree	32%	34%	11%
Neither agree nor disagree	27%	36%	31%
Agree	28%	16%	48%
Strongly agree	4%	4%	9%

Food Safety Attitudes – Concerns

About a third of the respondents gave neutral (*Neither agree nor disagree*) responses for each question regarding their concerns (Figure 26). In addition, 53% of respondents disagreed or strongly disagreed that concerns about food safety were exaggerated. Slightly more respondents agreed or strongly agreed food safety was a greater concern of their own (40%) when compared to their perceived sense of the level of concern of other Americans (37%).

Figure 26. Food Safety Attitudes – Concerns



	Concerns about food safety are exaggerated	Food safety is a major concern of mine	Food safety is a major concern of Americans
Strongly disagree	17%	6%	4%
Disagree	36%	24%	23%
Neither agree nor disagree	33%	31%	37%
Agree	10%	28%	28%
Strongly agree	4%	12%	9%

Food Safety Behaviors

Respondents were asked a series of questions about their food safety behaviors. These questions asked respondents to rate their frequency of engagement in each of the identified food safety behaviors on a 5-point scale (1 = *Never*, 2 = *Rarely*, 3 = *Sometimes*, 4 = *Often,* 5 = *Always*).

Personal Food Safety Behaviors

The majority of respondents reported they always wash their hands before preparing food (77%), wash fruits and vegetables before eating (73%), and wash hands before eating (64%) (Table 3). Of the respondents, 64% reported never or rarely consuming food after the expiration date.

Table 3. Personal food safety behaviors

	Never	Rarely	Sometimes	Often	Always
Wash hands before preparing food	1%	1%	4%	17%	77%
Make sure that fresh fruits and vegetables are washed before eating	1%	1%	7%	19%	73%
Wash hands before eating	1%	2%	9%	24%	64%
Disinfect counters before preparing food	2%	7%	18%	27%	46%
Read food labels for food safety information	4%	11%	27%	27%	31%
Peel edible skins from fresh fruits and vegetables before eating	8%	26%	32%	20%	15%
Consume food after the expiration date	32%	32%	25%	5%	6%

Food Safety Protection

Respondents were asked how good of a job consumers, farmers, government agencies, consumer advocacy groups, university scientists, supermarkets, and food processing corporations were doing to protect food safety. Respondents could answer *Good, Fair, Poor,* or *Not responsible for food safety.*

Protecting Food Safety

When considering who was doing a g*ood* job protecting food safety, 35% of respondents indicated that farmers were doing a *good* job (Table 4). Only 18% of respondents indicated government agencies were doing a *good* job. Of the respondents, 37% felt government agencies were doing a poor job protecting food safety followed by food processing corporations (36%). Consumers and university scientists were not seen as responsible by 14% and 13% of the respondents.

Table 4. Protecting food safety

	Good	Fair	Poor	Not Responsible
Farmers	35%	55%	9%	1%
Supermarkets	28%	56%	14%	2%
Consumer Advocacy Groups	25%	56%	15%	6%
University Scientists	25%	51%	12%	13%
Food Processing Corporations	19%	45%	36%	0%
Consumers	19%	54%	13%	14%
Government Agencies	18%	44%	37%	1%

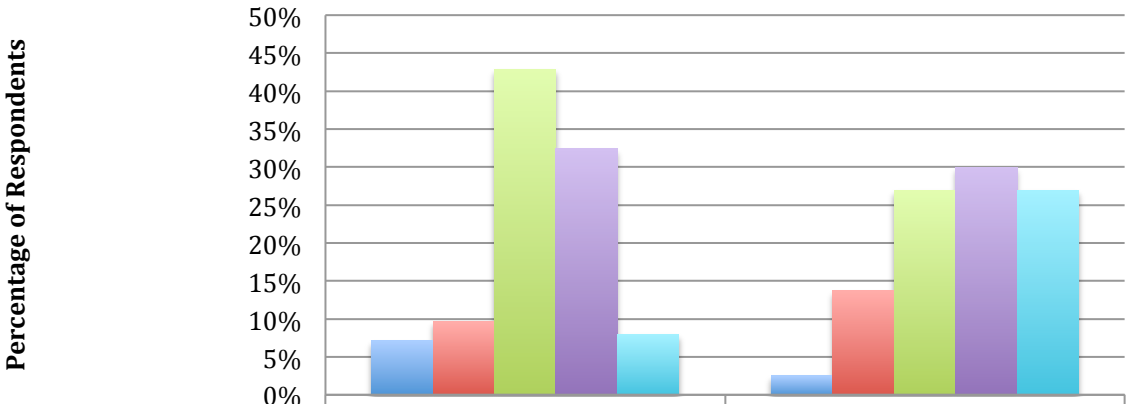
Perceptions of GMOs

Respondents were asked to indicate their beliefs about food quality and genetic modification, including their beliefs toward perceived advantages and disadvantages of genetic modification. These questions asked respondents to rate their level of agreement with statements on a five-point scale (1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neither agree nor disagree*, 4 = *Agree*, 5 = *Strongly agree*). In addition, respondents were asked to indicate their beliefs about genetically modified food. They were asked to rate their attitude on a five-point semantic differential scale using bipolar adjectives.

Food Quality

Of the respondents, 43% felt neutral about whether food technology had improved their quality of life (Figure 27). However, 40% of respondents did agreed or strongly agreed food technology had improved their quality of life. Over half of the respondents (57%) agreed or strongly agreed food quality used to be better.

Figure 27. Food quality

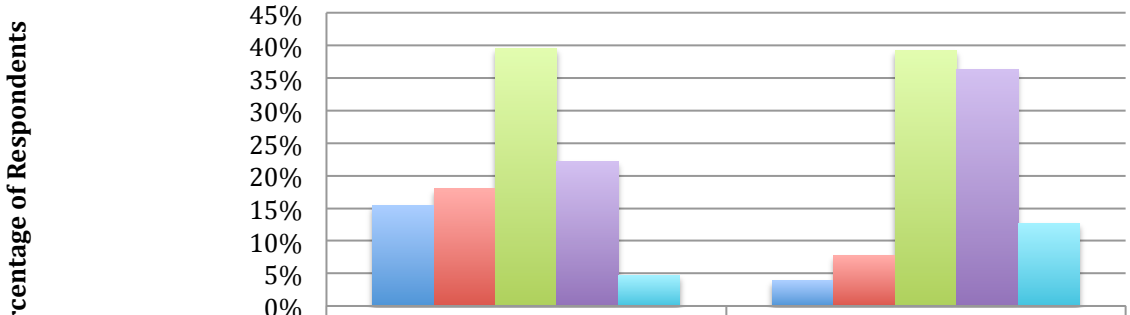


	I believe food technology has improved my quality of life	I believe food quality used to be better
Strongly disagree	7%	3%
Disagree	10%	14%
Neither agree nor disagree	43%	27%
Agree	32%	30%
Strongly agree	8%	27%

Genetic Modification Beliefs - General

Many participants (40%) were unsure (*Neither agree nor disagree*) whether scientists should develop agricultural crops that are resistant to certain diseases by modifying their genetic material (Figure 28). Just under half (49%) of the respondents agreed or strongly agreed that they had purchased and/or consumed genetically modified food, while 39% of respondents were unsure (*Neither agree nor disagree*) whether they purchased and/or consumed genetically modified food.

Figure 28. Genetic modification beliefs - General

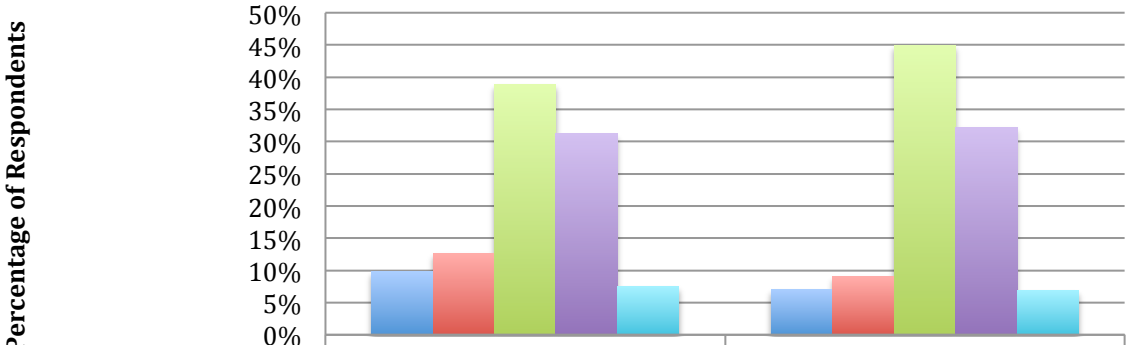


	Scientists should develop agricultural crops that are resistant to certain diseases by modifying their genetic material	I have purchased and/or consumed genetically modified food
Strongly disagree	16%	4%
Disagree	18%	8%
Neither agree nor disagree	40%	39%
Agree	22%	36%
Strongly agree	5%	13%

Genetic Modification Beliefs - Advantages

Of the respondents, 39% agreed or strongly agreed that genetically modified food was a possible solution to hunger and genetically modified organisms could provide solutions to pest and disease problems while reducing pesticide usage (Figure 29). However, many participants were unsure (*Neither agree nor disagree*) regarding these possible advantages to genetic modification, 39% and 45% respectively.

Figure 29. Genetic modification beliefs - Advantages

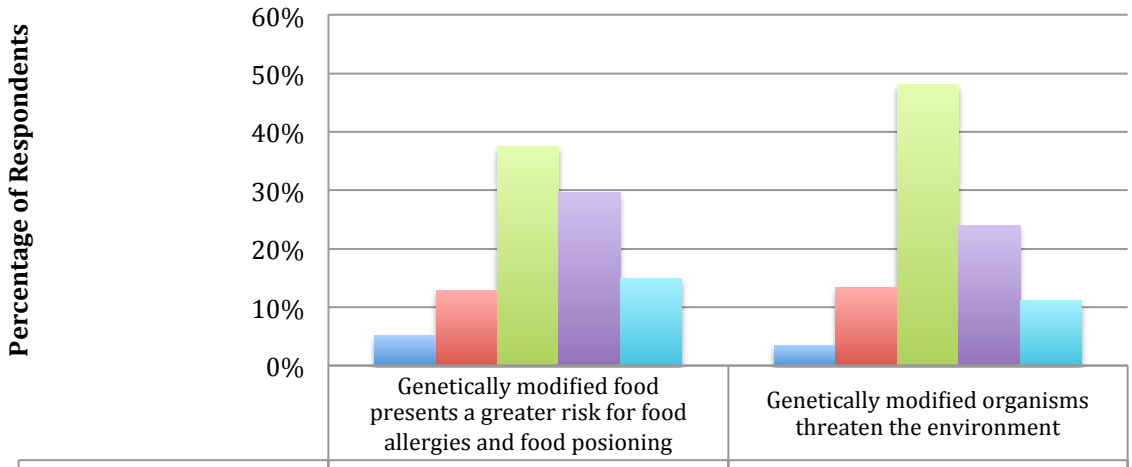


	Genetically modified food is a possible solution to world hunger	Genetically modified organisms provide solutions to pest and disease problems while reducing pesticide usage
Strongly disagree	10%	7%
Disagree	13%	9%
Neither agree nor disagree	39%	45%
Agree	31%	32%
Strongly agree	8%	7%

Genetic Modification Beliefs - Disadvantages

Of the respondents, 45% agreed or strongly agreed that genetically modified food presented a greater risk for food allergies and food poisoning (Figure 30). However, 38% were unsure (*Neither agree nor disagree*) about the risks genetically modified foods posed to food allergies and food poisoning. Almost half of respondents (48%) were unsure if genetically modified organisms threaten the environment.

Figure 30. Genetic modification beliefs - Disadvantages



	Genetically modified food presents a greater risk for food allergies and food posioning	Genetically modified organisms threaten the environment
Strongly disagree	5%	4%
Disagree	13%	13%
Neither agree nor disagree	38%	48%
Agree	30%	24%
Strongly agree	15%	11%

Genetically Modified Food Beliefs

Respondents were asked to indicate on a five point semantic differential scale which word their attitude most closely aligned with when completing the sentence "I believe genetically modified food is…" (Table 5). The respondents indicated t they felt genetically modified food was more artificial than natural with a mean of 1.92. Respondents also felt genetically modified food was more unhealthy than healthy with a mean of 2.59.

Table 5. Genetically modified food beliefs

Statement	*M*	*SD*
Natural: Artificial*	1.92	1.06
Unhealthy: Healthy	2.59	1.11

Note: Responses based on semantic differential scale from 1 = Unhealthy to 5 = Healthy.

*Reverse-coded item

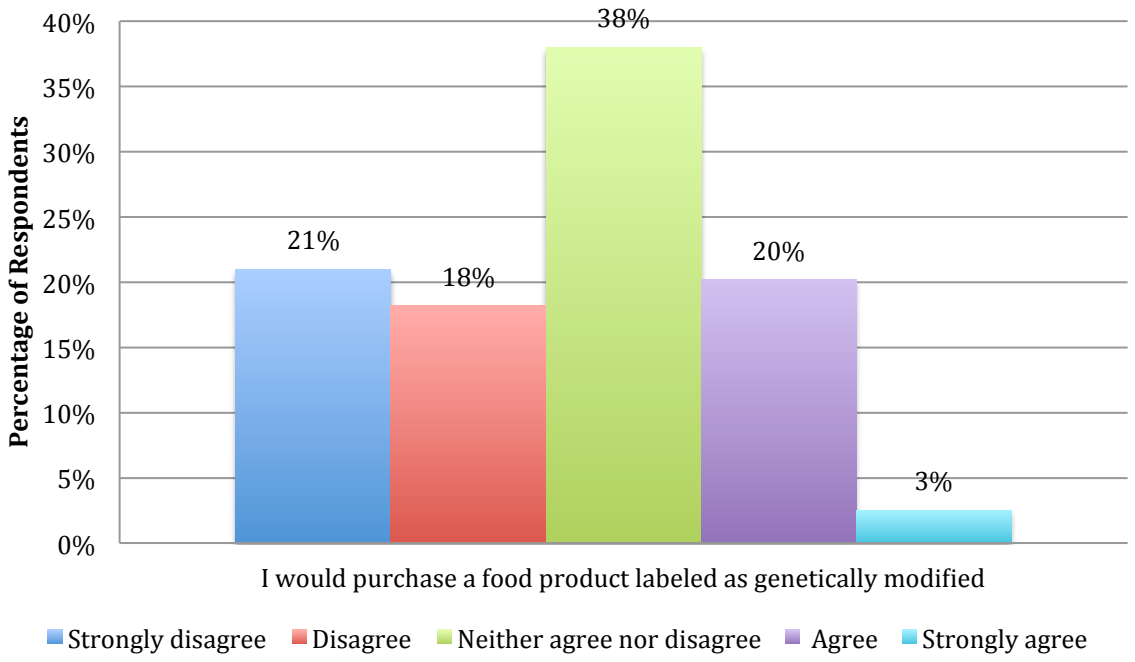
GMO Purchasing Intent

Respondents were asked a series of questions about their GMO purchasing intent. Questions included purchasing intent in general, when given a scenario, and for specific products. These questions asked respondents to rate their level of agreement with statements on a five-point scale (1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neither agree nor disagree*, 4 = *Agree*, 5 = *Strongly agree*).

Intent to Purchase – General

When asked about their intent to purchase food labeled as genetically modified, the largest percent of respondents (39%) of respondents indicated they disagreed or strongly disagreed they would purchase food labeled as genetically modified (Figure 31). In addition, 38% neither agreed nor disagreed they would purchase food products labeled as genetically modified.

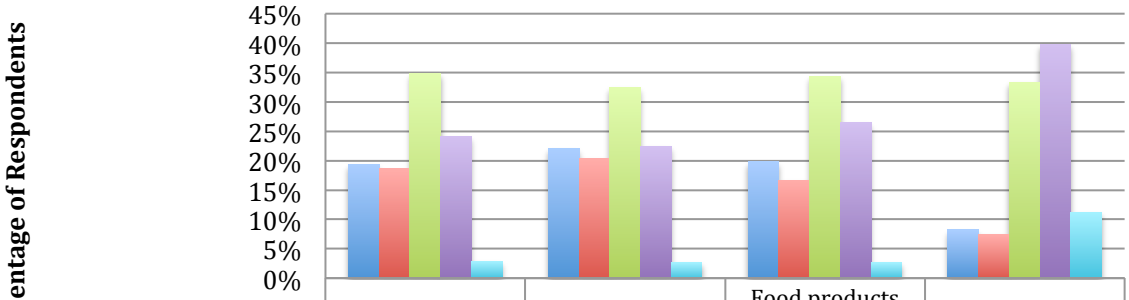
Figure 31. Intent to purchase – General



Intent to Purchase – Product Specific

Similar levels of neutrality (*Neither agree nor disagree*) were observed across the respondents' intent to purchase specific genetically modified products, with respondents indicating a neutral response 33% to 35% (Figure 32). The highest percentage of respondents disagreed or strongly disagreed (42%) they would purchase meat from an animal that was fed genetically modified feed, followed by genetically modified produce (38%), and food products containing genetically modified ingredients such as cereal (37%). However, 51% of respondents agreed or strongly agreed they would purchase clothes made from genetically modified fibers.

Figure 32. Intent to purchase – Product specific

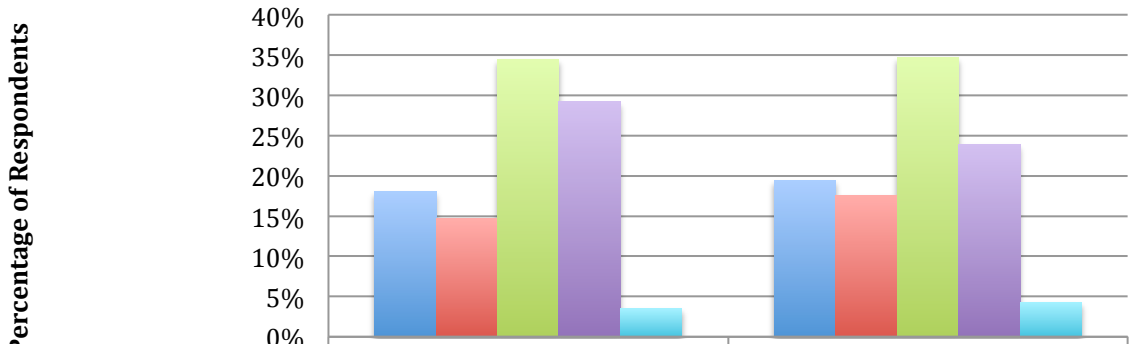


	Genetically modified produce	Meat from an animal that was fed genetically modified feed	Food products containing genetically modified ingredients, such as cereal	Clothes made from genetically modified fibers
Strongly disagree	19%	22%	20%	8%
Disagree	19%	20%	17%	8%
Neither agree nor disagree	35%	33%	34%	33%
Agree	24%	22%	27%	40%
Strongly agree	3%	3%	3%	11%

Intent to Purchase – GMO Scenario

As observed in the other intent to purchase questions, about a third (35%) of the respondents reported they neither agreed nor disagreed they would purchase their favorite food if it was only available as a GMO product or if a GMO product cost less (Figure 33). However, slightly more people agreed or strongly agreed (33%) they would purchase their favorite food if it were only available as a GMO product than if it cost less (28%).

Figure 33. Intent to purchase – GMO scenario



	If my favorite food was only available as a genetically modified food I would purchase it	I would purchase genetically modified food if it cost less
Strongly disagree	18%	19%
Disagree	15%	18%
Neither agree nor disagree	35%	35%
Agree	29%	24%
Strongly agree	4%	4%

GMOs and Florida Citrus

Due to the threat of citrus greening to the Florida citrus industry, and the potential for GMOs to be a solution to citrus greening, respondents were asked to read the following scenario.

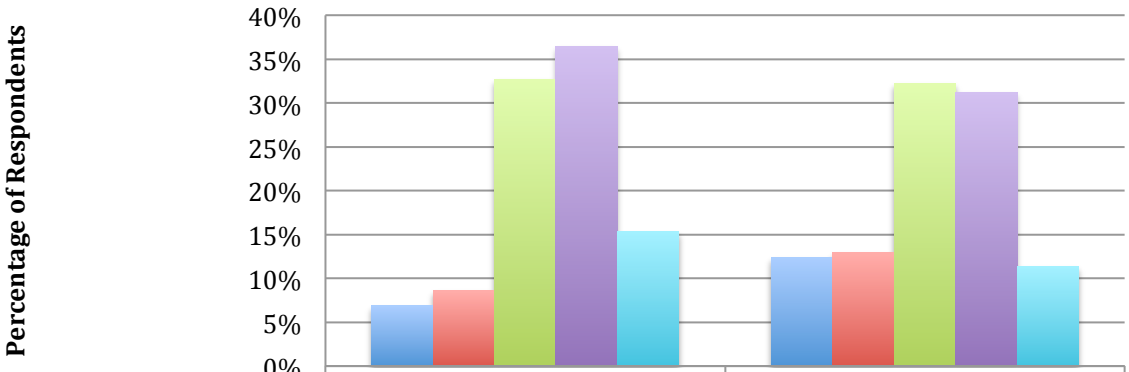
> A disease known as citrus greening is spreading quickly throughout the state of Florida. The disease affects the trees' uptake of nutrients, leaving the fruit sour and the tree malnourished. There is no cure for the disease, and pesticides have failed to stop the spread of the disease that eventually kills the tree. Research has been done to find a citrus tree resistant to the disease, but none have been found. Without a solution, this disease could lead to the demise of the Florida citrus industry. Genetic modification is a possible solution for saving the Florida citrus industry.

Respondents were asked two questions about GMO use in the Florida citrus industry. These questions asked respondents to rate their level of agreement with statements on a five-point scale (1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neither agree nor disagree*, 4 = *Agree*, 5 = *Strongly agree*).

Perceptions of GMO use in Florida Citrus

Of the respondents, 52% agreed or strongly agreed that genetic modification should be used (Figure 34). Although about a third (33%) of the respondents felt neutral (*Neither agree nor disagree*) about the use of genetic modification to save citrus trees. Similarly, 42% agreed or strongly agreed they would purchase Florida grown genetically modified citrus fruit and juice, while 32% felt neutral (*Neither agree nor disagree*) about their intent to purchase Florida grown genetically modified citrus fruit and juice.

Figure 34. Perceptions of GMO use in Florida citrus



	Genetic modification should be used to save citrus trees	I would purcahse Florida grown, genetically modified, citrus fruit and juice
Strongly disagree	7%	12%
Disagree	9%	13%
Neither agree nor disagree	33%	32%
Agree	37%	31%
Strongly agree	15%	11%

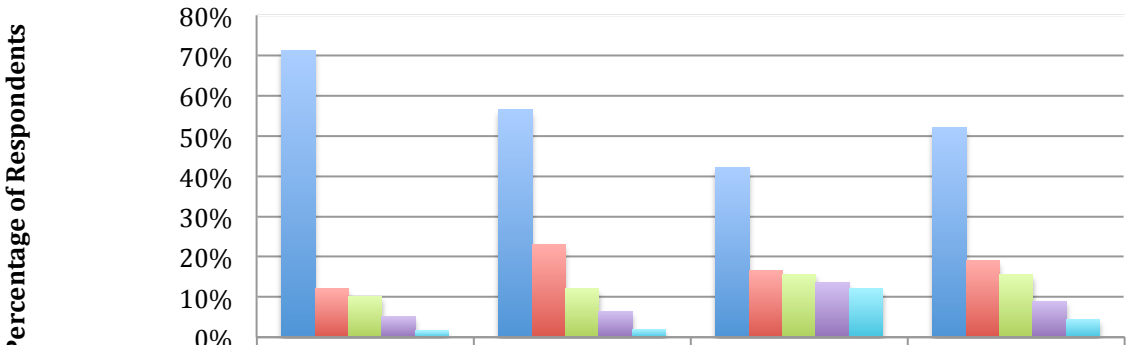
Food Policy Familiarity

Respondents were asked to rate their familiarity with four food-related policies: The Food Safety Modernization Act, the Farm Bill, the Federal Food, Drug, and Cosmetic Act, and the Supplemental Nutrition Assistance Program. These questions asked respondents to rate their level of familiarity with each policy on a five-point scale (1 = *Not at all familiar*, 2 = *Slightly familiar*, 3 = *Somewhat familiar*, 4 = *Moderately familiar*, 5 = *Extremely familiar*).

Respondents' Familiarity with Food Policy

The majority of respondents were not at all familiar or only slightly familiar with all of the food policies they were presented with (Figure 35). Of the respondents, 83% were not at all familiar or only slightly familiar with the Food Safety Modernization Act, followed by the Farm Bill (80%), Federal Food, Drug, and Cosmetic Act (71%), and Supplemental Nutrition Assistance Program (59%).

Figure 35. Respondents' familiarity with food policy



	Food Safety Modernization Act	Farm Bill	Supplemental Nutrition Assistance Program (SNAP)	Federal Food, Drug, and Cosmetic Act
Not at all familiar	71%	57%	42%	52%
Slightly familiar	12%	23%	17%	19%
Somewhat familiar	10%	12%	16%	16%
Moderately familiar	5%	7%	14%	9%
Extremely familiar	2%	2%	12%	5%

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