Food Insecurity in Universities: A Global Problem With A Local Solution

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1. Introduction

In 2018, the U.S. Government Accountability Office, GAO, published a report arguing that after reviewing 31 studies, they identified a wide range of indices of food insecurity among university students (GAO, 2018). Food insecurity is defined as a period of time, that can be temporary or not, when a person does not have continuous access to enough food to live a healthy life (Gunderson 2013). The increase in studies on food insecurity after the COVID-19 pandemic showed that, according to Baker-Smith et. al. (2021), nearly 167,000 college students from 227 institutions revealed that 39% of respondents were food insecure. This situation also impacts Florida, due to the increase in tuition, housing, and food costs, which often exceeds that of student salaries (DeBate, Rita et al., 2021).

Global food insecurity is often intertwined with other sustainability issues, exacerbating this issue oftentimes most in urban areas across the globe (Sonnino 2014). Many countries and localities have coordinated governmental and community support to design food security systems (Sonnino 2014). Urban agriculture may play a role in addressing urban food security issues, especially in dietary needs and health indicators in developing countries (Zezza and Tasciotti 2010). This has spurred a movement across the United States to connect people with fruit trees and food in their communities, most visibly exemplified with the USDA People's Garden Initiative, which has expanded to 17 urban hubs across the nation working as a collaboration between garden projects and communities (USDA Peoples Gardens). These gardens increase access to fresh fruits and vegetables, provide habitats for wildlife, conserve and beautify urban areas, and act as education and training areas for communities. Notably, Florida is not currently affiliated with this project, nor is there an initiative similar at Florida International University in urban Miami-Dade County, leading to a gap in food access for many susceptible people.

Similarly, many universities across the country have taken action to bridge this gap by establishing food forests, or areas of accessible and edible fruit trees and vegetables, on campus such as NC State University (Agroecology Education Farm), James Madison University (JMU Edible Forest Garden), and University of Minnesota's public harvest for fruits and edible nuts (Mohr, 2019).

Andres Cubillos, president of the Florida Public Interest Research Group Students chapter at Florida State University, estimated that 40 percent of students at Florida Atlantic University, Miami-Dade College and the University of South Florida experienced food insecurity (Tampa Bay Times).

Figure 1. University students protest food insecurity on September 23, 2020.

1From Bucknell University. https://bucknellian.net/100820/news/university-students-protest-food-insecurity/

This has likewise caught the attention of students at Florida International University (FIU), who are becoming increasingly conscious of their individual dietary needs and how local fresh produce plays a vital role in student health, success, and environmental awareness. However, the availability of fresh produce must be understood in how this may pose a barrier to nutritional health in Miami-Dade County. The purpose of this research is to examine any potential barriers to foods provided by fruit trees, since they incorporate a sizeable majority of all fresh produce grown in South Florida, for graduate college students at FIU.

Graduate students will only be analyzed at this time as a subset of our sample population since any sizeable quantity would require approval from IRB (Institutional Review Board). This project is not aiming to assess an in-depth analysis from the entire student body, but merely to garner some individual opinions on how this issue might influence some student's nutrition-based choices. Since FIU's Agroecology Department deals in similar subjects and has some association with the Fruit & Spice Park located in Homestead, FL, the first step would be to contact their staff and see how they can address food security on campus. The Fruit & Spice Park is a 37-acre subtropical park established in 1944 dedicated to growing and preserving edible fruits and spices from around the world (History of The Fruit and Spice Park). It is the only public garden of its kind, operated by the Miami-Dade County Parks Recreation and Open Spaces Department.

The main goal of this study is to examine the factors that influence food insecurity of FIU graduate students, as this issue is indicative and interconnected with other concerns such as rising housing prices, nationality, environmental, and socioeconomic status. Similarly, we will analyze whether initiatives such as those proposed by F&S Park are viable to mitigate the effects of food insecurity in this community. Once the results have been analyzed, we will deliver a document in a reporting format that will be made up of three parts: the statement of the problem, the analysis of the data from both the survey and the interviews, and the viability of all possible solutions.

2. Research Questions

To evaluate our sample population our study aims to understand:

1. *How does the graduate student community experience food insecurity?*
2. *Could the F&S Park (as a local entity) help mitigate the problem of food insecurity in the FIU graduate student community?*

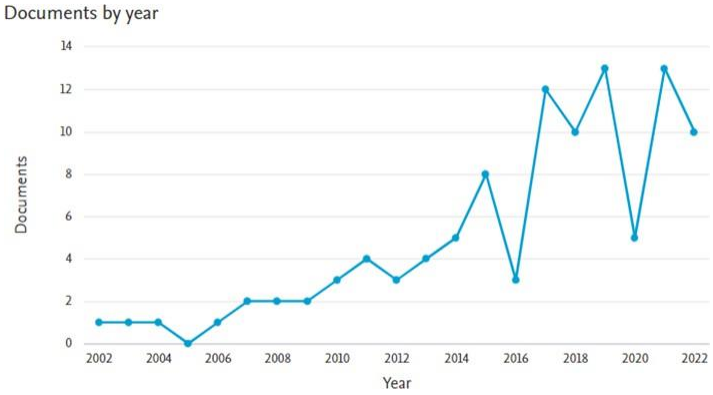
If so, we will describe the route to follow and how this initiative could become a replicable strategy in other countries where students are struggling with the same situation by reaching out to potential affiliates that would mitigate the problem through community-level collaboration. If not, we will propose another feasible solution that is more attenable to those who wish for more autonomy in the decision-making process of conflicts that directly affect them.

3. Methods and Analysis

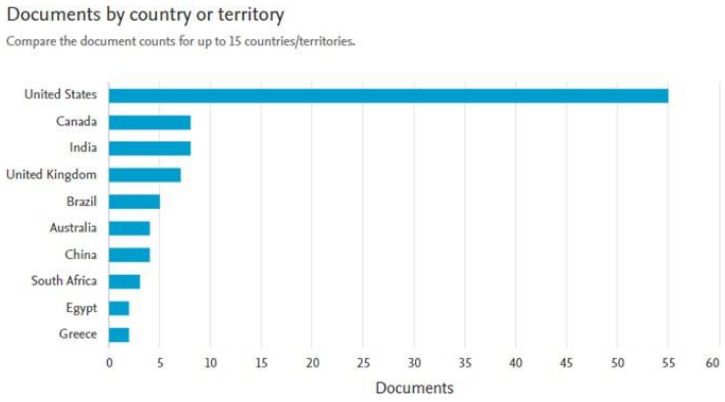
First, we conducted a literature review using the Google Scholar and Scopus search engines. We use Google Scholar for its accessibility, since it provides a greater number of results, but we decided to counteract it with Scopus, since it is a platform specialized in the search for academic articles. In general terms, it can be said that while Google Scholar gives us quantity, Scopus gives us quality.

We began the searches based on the interrelation between the 4 key concepts: food; insecurity; graduate; and students, which gave us a plethora of 1,070,000 results, an unviable result. After applying linguistic, conceptual, thematic, and date filters, we obtained a result of 103 articles (**Figure 2**) that speak academically of the relationship between food insecurity and the community of postgraduate students, between 2000 and 2022.

Figure 2. Graph of academic articles over the past 20 years relating to graduate student food insecurity.



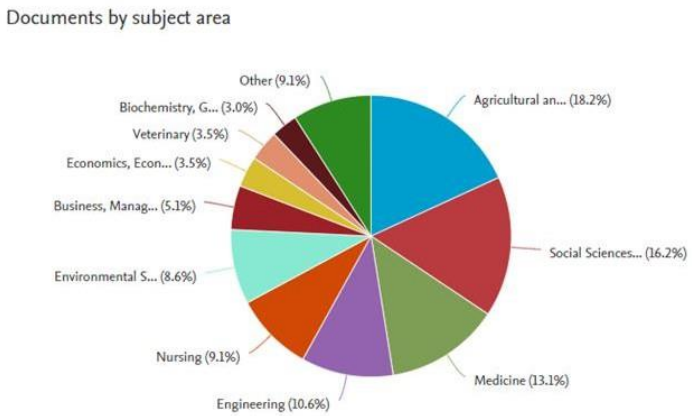
As can be seen in the graph, as of 2007, there is an increase of analytical works related to this topic, which has since remained relatively stable and increasing overall. The three countries that have written the most about this topic are: the United States, Canada, and India.



Finally, it is important to point out that one of the most interesting findings is that these documents have been produced mainly

from the agricultural sciences and biology sectors (18.2%) of the total number of publications, followed by biological science, social science (16.2%) and pharmaceutical science (13.1%) (**Figure 3**). As this analysis of academic literature has shown, it can be said that this is a problem that has been increasing over time and simultaneously has become more complex as a result of the Covid-19 pandemic. Therefore, this report will contribute not only to bringing this issue to light but also to make an invitation to generate more research that helps propose tangible solutions in this regard.

Figure 3. Articles relating to food security produced by varying academic fields, arranged by volume.



Given the above, we define food insecurity as a condition in which people do not have adequate food resources on a consistent weekly basis (United States Department of Agriculture [USDA], 2013). Signs of food insecurity can be witnessed from having to portion out food to last past one more meal, having to sacrifice other necessities for nourishment, and constantly worrying about where their next source of food will come from. Thus, the USDA promotes the measurement of food insecurity using a scale of ranges: from high to very low income and accessibility (USDA, 2013).

Food Insecurity as a Student Issue

When it comes to food-insecure college student populations, there are still very few studies (Borch & Kjaernes 2016). The most recently published study was conducted at a large public university in Alabama (the authors never say which one) and showed that 14% of students surveyed were experiencing some type of food insecurity (Gaines, Robb, Knol, & Sickler, 2014). Another recent study was conducted at a rural college in Oregon, which found that more than half of the students surveyed (59%) had experienced food insecurity (Patton- Lopez, Lopez -Cevallos, Cancel-Tirado, & Vazquez, 2014). Finally, a study conducted at the University of Hawaii at Manoa, researchers found that 21% of students considered themselves food insecure (Chaparro, Zaghloul, Holck, & Dobbs, 2009).

Inequalities Within Food Insecurity

Food insecurity unequally affects the student populations that make up individual campuses. In the United States, populations such as African Americans and Latinos/as and Chicanos/as (Nord, Coleman-Jensen, Andrews, & Carlson, 2009; Coleman-Jensen & Nord, 2013); Native American (Gordon & Oddo, 2012); people with disabilities (USDA, 2013); people who identify as lesbian, gay, bisexual, transgender, or queer (Abelda, Badgett, Schneebaum, & Gates, 2009; Badget, Durso, & Schneebaum, 2013); and women, particularly single women with

children (USDA, 2012), are more likely to be food insecure than the rest of the US population.

Research Methods and Design

According to Creswell and Creswell (2018), our project will utilize mixed methods research, because it is a methodology that allows us to conduct research that involves collecting, analyzing, and integrating both quantitative and qualitative data.

- Qualitative methods will involve first and secondary data analysis. The sources will focus on available academic publications, literature on the topic, a survey created by us (tool Survey123), and interviews.
- Quantitative methods will incorporate use of Geospatial analysis (ArcGIS Online platform and Google Maps), consisting of an analysis of the fruit trees at Florida International University (FIU) Modesto A. Maidique Campus (MMC). This will encapsulate green spaces available for fruiting, even if we cannot plant new trees in empty areas.

3.1. Survey

The population utilized for the present survey was composed only of current students of ISS 6302, Interdisciplinary Methods in Social-Ecological Research, with a total of 19 participants. The survey was designed utilizing Survey123 tool on the ArcGIS Online platform, which follows the questions and answers as shown on **Appendix 2**. The survey was fully conducted anonymously and shared with the participants (classmates) as a website link on Canvas, an online learning and teaching management system utilized by FIU students and professors.

3.2. Geospatial analysis

This project contains two maps generated for our research questions on food insecurity. The first one is a result of one of the questions of the survey, which consulted our participants about which place on the Modesto Maidique campus they would like to have a food forest installed. The second map is an inventory of the existing fruits trees at MMC FIU. This second map will then be utilized in the production of an educational booklet, to help people identify and locate fruits trees within the campus.

4. Principles and indicators

PRINCIPLES	INDICATORS
Optimize processes	Definition of roles based on skills and interests of each member
Value the input of all participants	Capacity of respectful communication between the group members
Collaborate our ways of thinking	Mindset adaptability to avoid obstacles

Based on the principles and indicators listed above, each member has their role defined with these goals in mind. B.K. is regarded as the expert in agroecology and local agriculture, whose responsibility includes constructing the instructional pamphlet and advising on the best trees to plant on campus given their demands and environmental conditions. E.R.G. similarly acts as an advisory role towards favorable fruit trees along with determining the best areas to plant on campus but is also tasked with developing all ArcGIS maps. T.S. is responsible for developing the theoretical basis on which the project's plans can be set into motion. These theoretical methods are derived from literature reviews that draw from the previous experience of other universities tackling food insecurity. D.P. acts as the team's communications liaison, who reaches out to actors affiliated with FIU that could aid the project towards its goal of providing fresh fruit to students on campus.

Given each respective role, weekly meetings were set to tackle multiple objectives. Some were geared towards schoolwork and discussions, while others were focused on the project. The results of each previous meeting were recapped to catch everyone up to speed as a precedent for why the current meeting is being held. Portions of the meeting were then broken up for each objective and what each teammate would accomplish in their own time, then a deadline was set for each task. Since meetings were only conducted for an hour, the intent was to spread out the workload and reduce time-crunch. As such, teammates were also instructed to notify the group of when their portion of the work was completed so that all sections could be looked over once more for approval and the group could move on.

Complications that arose within the group mainly revolved around time management. For starters, trying to conduct weekly meetings on consistent days is a challenge in itself, which is made even more difficult with each person's graduate academic responsibilities. As our demands constantly shifted, defining a consistent day was impossible and had to be reinstated each week depending on the availability of all involved. This also affected our abilities to complete our tasks, as the system we put in place (detailed above) would not have been necessary if we met on a regular basis.

4.1. Positionality Statement

The group is composed of four people. Three of us were born and raised in a different place than South Florida (Tennessee, Brazil, and Colombia), which gives us a wealth of perspectives and allows us to ask different questions and opinions. Our different upbringings also assist in reaching out to students who speak a different language, as this expands our accessibility to three languages. Despite the differences, we share an interest in researching issues on the relationship between nature and society, such as the case of food insecurity. For this reason, we want to understand the reasons why the student population suffers from food insecurity, approach the problem using a community lens, and to the extent of our capabilities, propose solutions.

As graduate students, we are directly affected by this issue which gives us firsthand experience in the dilemma our participants face. We are also, therefore, more aware of alternatives graduate students turn to for accessibility and financial leeway regarding obtaining fresh produce, if at all. We share the concerns faced by other financially burdened and international students, allowing us insight and connectivity with this issue.

5. Limitations

This is a project that is part of a class, so the time dedicated to it is very limited and ephemeral. In addition, we know that the survey population is a sample that has its own limitations, but due to time and feasibility constraints, served as our introductory sub- sample population. Due to the above, we consider that our main limitations are time and resources, to reach a deeper analysis and continuation of this topic. In addition, our disparate upbringings, on the other hand, make it difficult for us to evaluate local flora and agriculture in Miami's ecosystem as only one of our members is familiar with this landscape. As such, we must consult with the advisory expertise of this group member to understand the plant species endemic to this region.

We should also note that as academic students, we are not directly involved in agricultural pursuits, policymaking decisions, facilities and land management, or university administration. As such, our suggestions are not definitive and do not affect these entities since we hold no jurisdiction over their decisions. At best, we act as an advisory role through trials and tribulations we have experienced prior, whereas at other times we acted more as guinea pigs for untested strategies.

6. Stakeholder developments

To approach a sweeping solution that could affect the whole campus, it was imperative to reach out to potential stakeholders that were willing to use their own resources to alleviate food insecurity. This first began with the Fruit & Spice Park manager, who stated that the park could only provide donations weekly via a volunteer provided by FIU who would have to pick them before the park opens. The other option was to provide cuttings that could eventually sprout into trees. Unfortunately, these cuttings would take an average of 4- 5 years to even blossom, let alone develop fruit.

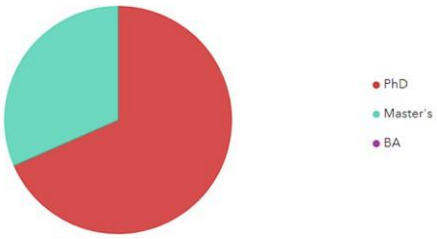
We believed this to be greatly inefficient, so she suggested two other stakeholders from the UF IFAS Miami-Dade County extension. The most that they could provide were educational materials, which will be used in our almanac, and cuttings. We instead turned to FIU's Office of Sustainability, who could then determine which areas we could plant in. This led us to discover that not only were many of our options gated off for future projects, but also that there were preexisting fruit trees on campus that were either unmarked or were not being harvested. The office suggested that we turn our attention to preexisting trees and meet with the facilities department to develop a plan that would maximize the harvest. This would never come to pass, as we never heard a response from the department and the trail went cold.

7. Results of survey

The survey aimed to characterize the population, understand if they experience the problem of food insecurity and consult them for possible mitigations of this problem.

- **Question 1: You are a student.**

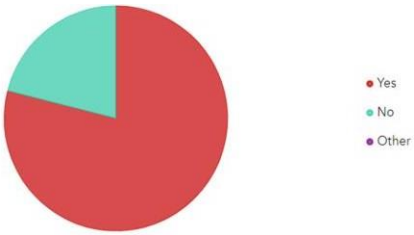
Most of our population is composed of PhD students, totalizing 68.42%.



Answers	Count	Percentage
PhD	13	68.42%
Master's	6	31.58%
BA	0	0%

- **Question 2: Do you receive stipend or scholarship?**

  Most of our population is currently receiving stipends or scholarships (78.95%).



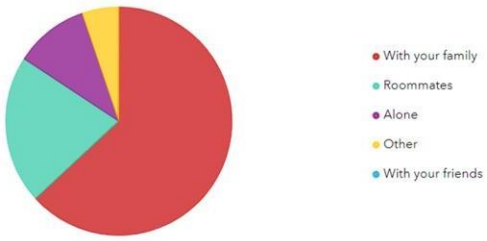
Answers	Count	Percentage
Yes	15	78.95%
No	4	21.05%
Other	0	0%

- **Question 3: Where were you born?**

  Our population is very diverse in terms of place of birth, totalizing 8 countries. We can expect that these different backgrounds experience food in different ways, consuming different fruits and vegetables, or in different ways (fresh, dried, cooked, frozen, in juices). We can also expect that people that were not born in the United States are more likely to miss fruits and vegetables that are common in there countries and that are not available here.

- **Question 4: You live .**

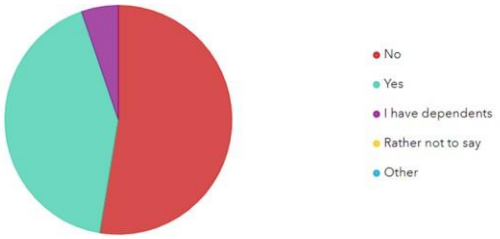
The majority of the population of our survey lives with their families (63.16%), which can represent a support or a dependence for them.



Answers	Count	Percentage
With your family	12	63.16%
Roommates	4	21.05%
Alone	2	10.53%
Other	1	5.26%
With your friends	0	0%

- **Question 5: Are you dependent?**

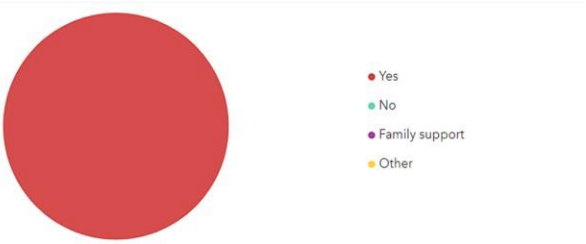
Around half of the population is not financially dependent (52.63%) and the other half is (42.11%). Only one person answered that have dependents.



Answers	Count	Percentage
No	10	52.63%
Yes	8	42.11%
I have dependents	1	5.26%
Rather not to say	0	0%
Other	0	0%

- **Question 6: Dou you have a source of income?**

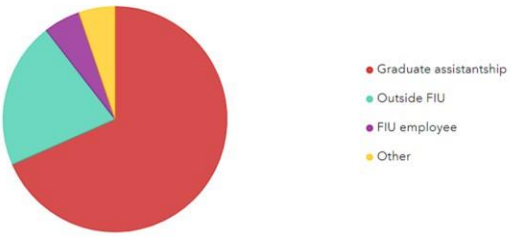
The entire population has a source of income.



Answers	Count	Percentage
Yes	19	100%
No	0	0%
Family support	0	0%
Other	0	0%

- **Question 7: If employed, it is by .**

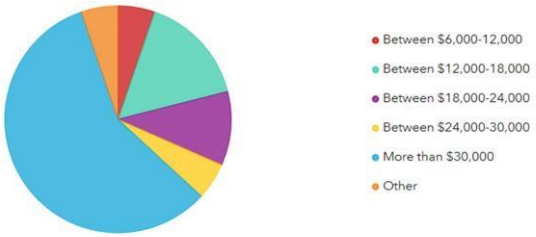
The majority of the population of this survey is currently receiving income from graducate assistantship (68.42%), while 21.05% are employed outside FIU and only 5.26 % is an FIU employee.



Answers	Count	Percentage
Graduate assistantship	13	68.42%
Outside FIU	4	21.05%
FIU employee	1	5.26%
Other	1	5.26%

- **Question 8: What is your average yearly household income?**

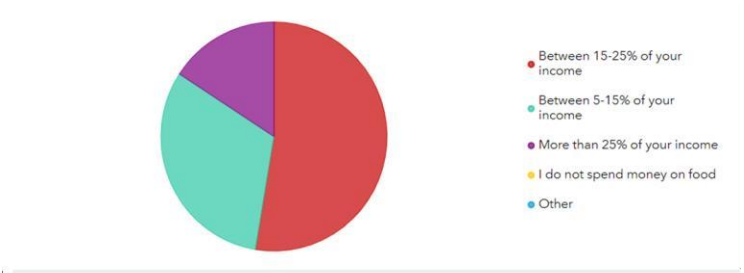
Around half the surveyed population earns more than $30,000 of average yearly household income (57.89%), followed by between $12,000 and $18,000 (15.79%). Most of the population answered in question 5 that they do not have dependents, making this income mostly used by one person - who answered the survey.



Answers	Count	Percentage
Between $6,000-12,000	1	5.26%
Between $12,000-18,000	3	15.79%
Between $18,000-24,000	2	10.53%
Between $24,000-30,000	1	5.26%
More than $30,000	11	57.89%
Other	1	5.26%

- **Question 9: What percentage of your income do you spend on buying food?**

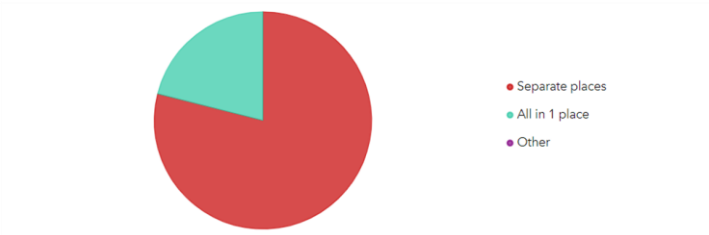
Around half of the surveyed population answered they spend between 15 and 25% of their income on buying food (52.67%), followed by 31.58% of the population who spends between 5 and 15% on food.



Answers	Count	Percentage
Between 15-25% of your income	10	52.63%
Between 5-15% of your income	6	31.58%
More than 25% of your income	3	15.79%
I do not spend money on food	0	0%

- **Question 10: Where do you buy your food, all in 1 place or in separate places?**

Most of the people answered they buy food in more than one place, totalizing 78.95%. From these, the average number of places where people buy food is 3.2 places (See Question 11).



Answers	Count	Percentage
Separate places	15	78.95%
All in 1 place	4	21.05%
Other	0	0%

- **Question 11: In how many places do you buy food?**

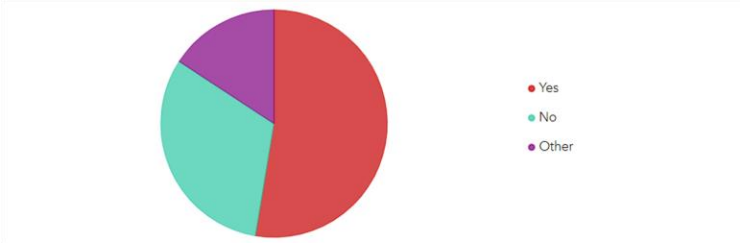
Stats	Value
Min.	2
Max.	5
Avg.	3.2

- **Question 12: What do you consider fresh quality food?**

The image below show a wordcloud with the most used word or expressions of what they consider to be fresh quality food. Words that were more cited are in bigger font sizes. “Organic” was the most cited word.

- **Question 13: Do you believe that the food you can afford is of fresh quality?**

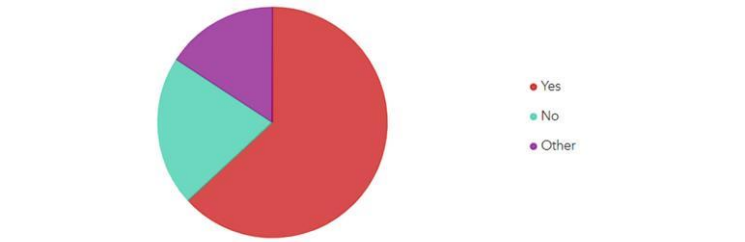
  Around half of the population believes that the food they can afford is of freah quality (52.63%).



Answers	Count	Percentage
Yes	10	52.63%
No	6	31.58%
Other	3	15.79%

- **Question 14: Are you satisfied with the quality of your food?**

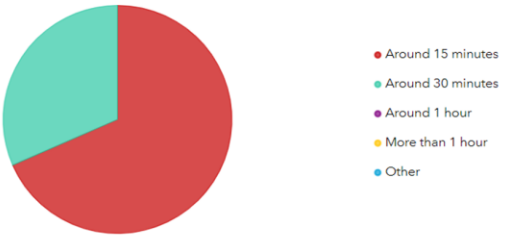
  The majority of the population answered they are satisfied with the quality of their food (63.16%).



Answers	Count	Percentage
Yes	12	63.16%
No	4	21.05%
Other	3	15.79%

- **Question 15: How long do you travel or commute to your food source?**

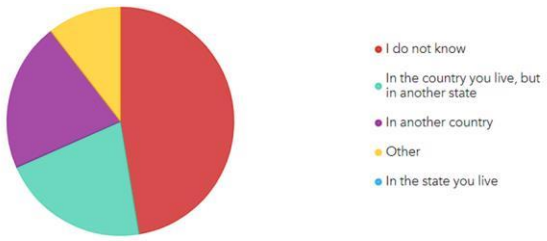
Most of the population live nearby the place(s) where they buy food, with 68.42% of them spending only around 15 minutes. The biggest time spent to commute to the food source is around 30 min (31.58%).



Answers	Count	Percentage
Around 15 minutes	13	68.42%
Around 30 minutes	6	31.58%
Around 1 hour	0	0%
More than 1 hour	0	0%
Other	0	0%

- **Question 16: Where was most of your fresh food (fruits, vegetables, roots, greens) planted?**

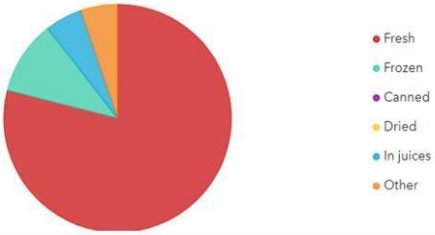
Around half of the population does not know where most of the fresh fruits they consume were planted (47.37%).



Answers	Count	Percentage
I do not know	9	47.37%
In the country you live, but in another state	4	21.05%
In another country	4	21.05%
Other	2	10.53%
In the state you live	0	0%

- **Question 17: What is your preferred form to consume fruits?**

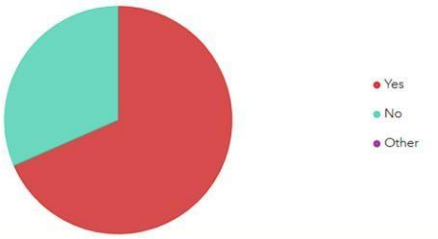
Most people preffer to consume fresh fruits (78.95%), followed by 10.53 % than prefers to consume them frozen.



Answers	Count	Percentage
Fresh	15	78.95%
Frozen	2	10.53%
Canned	0	0%
Dried	0	0%
In juices	1	5.26%
Other	1	5.26%

- **Question 18: Do you feel you lack financial resources or opportunities to eat more of fruits in your preferred form?**

Although most of the population answered the are satisfied with the quality of their food in Question 14 (63.16%), and that they believe that the food they can afford is of fresh quality (52.63%), 68.42% of the population answered they lack financial resources or opportuniies to eat more of fruits in their prefered form. This answers can lead to several different interpretations, such as: they are not consuming fruits in their preffered form or they do not consume the variety or quantity of fruits they would like to.



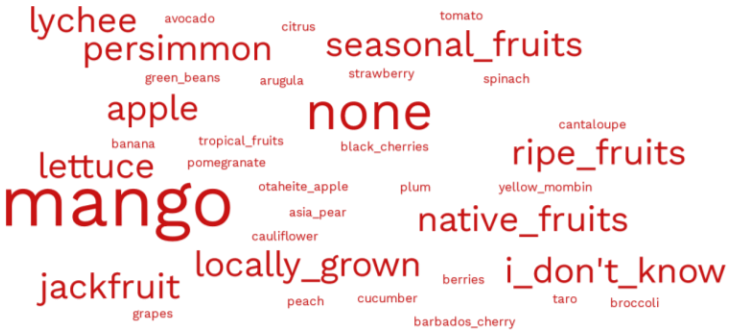
Answers	Count	Percentage
Yes	13	68.42%
No	6	31.58%
Other	0	0%

- **Question 19: What do you think is an impediment for you to eat more organic fruits?**

The image below show a wordcloud with the most used words or expressions of what they consider to be an impediment for them to eat more organic fruits. Words that were more cited are in bigger font sizes. “Price” was the most cited word.

- **Question 20: Which fruits or vegetables would you like to have more access to?**

The image below show a wordcloud with the most used words or expressions of what they fruitsm begetables or characteristics of them that they would like to have more access to. Words that were more cited are in bigger font sizes. “Mango” was the most cited word.



- **Question 21: If you could have access to fruit trees inside FIU MMC campus, where would you like them to be planted?**

The following map shows FIU MMC Campus and the places where the surveyed population suggested for fruits trees to be planted in the future. The most choosen place was between the Grahan Center and Chemistry & Physics building. Although this area could be considered as a good suggestion, since it does not compromete the structure of other buildings in case of tree fall and that it is not a natural reserve where only native species should be planted, the area is reserved for constructions in the future and can not have new trees being planted.

8. Delivery of the project

The inability for the project to approach a more comprehensive goal in regard to its geographical and demographic range can be attributed to bureaucratic apathy. Stakeholders such as the Fruit & Spice Park were eager to help, but due to policies governing the property on land they could only do so much. This left their overall actions less impactful and could only act as supplemental resources. Other entities expressed their willingness to assist, but implicit behaviors conveyed quite the opposite and in reality, had no intention of offering any substantial remedies. This led to a revolving door of meeting with potential stakeholders, relaying the news of their inability to provide, suggesting another actor to get in contact with, ad nauseum. These interactions took the brunt of the project and ultimately wasted too much time before reaching a satisfactory conclusion. As such, we had to adapt to formulate other fulfillments that still serve a purpose to students in need.

The final deliverables of this project will be threefold: a report on the state of food insecurity in graduate students of FIU MMC campus, analysis of the results of the data produced from both the survey and interviews, and the viability of all possible solutions and recommendations for the future. The result of the project would culminate towards the problematization and visibility of this phenomenon using a subset population of study. Once this data has been compiled, we will construct an almanac in both a digital and physical form, which will be distributed to interested students that wish to learn more about their local fruit trees on campus (**Appendix 1**).

The booklet contains information on all locations and names of the trees, their harvesting seasons, how to grow and prune the trees, as well as how to preserve, eat, and cook their produce. This deliverable acts as a tool to reduce food insecurity and power into students' hands and illuminate the edible plants already available to them and in need of protection. This information will be shared and housed out of the FIU Agroecology program office, as a space for students interested in learning and practicing agriculture, as well as distributed through online platforms and collaborative offices of publication, such as the school newspaper and student media Panther NOW.

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Appendix 1:

Who we are

As part of an interdisciplinary social-ecological study, this booklet was created from the collaboration of graduate students from the departments of Earth and Environment and Global and Sociocultural Studies.

We sought to help solve the lack of access to fresh produce by students from different backgrounds. This pamphlet can be used as an almanac to:

- Detail the different bearing and accessible fruit trees on the MMC campus
- Describe the fruiting seasons, special properties, and characteristics of the different species

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Florida International University

Fruit Foraging on Campus

FLORIDA INTERNATIONAL UNIVERSITY

Agroecology Program

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LOCATIONS

Mango,
Mangifera indica

Special Properties

20 different vitamins and minerals, 50% daily vitamin C, 8% Vitamin A and 8% B6. Supports immune system.

Region of Origin

Southern Asia, especially Myanmar and Assam state of India

Harvest Period

Late May- October

Location: 4 & 5

4

Wax Jambu,
Syzygium samarangense

Special Properties

May reduce the risk of stroke, boost immunity, hydrate, and improve metabolism.

Region of Origin

Greater Sunda Islands, Malay Peninsula, and the Andaman and Nicobar Islands

Harvest Period

April-June

Location: 14

11

Canistel, *Pouteria campechiana*

Special Properties

Source of beta-carotene, phosphorous, calcium, iron and Vitamin A. Improves immune system and protection against vision loss. Used as egg substitute in vegan cooking.

Region of Origin

Southern Mexico, Belize, Guatemala, and El Salvador

Harvest Period

November and March

Location: 3, 7, 12

Java Plum, *Syzygium cumini*

Special Properties

Bark, leaves, and fruits have antibacterial properties, combats diabetes, and is anti-inflammatory.

Region of Origin

India

Harvest Period

May- July

Location: 17 & 18

Cocoplum, *Chrysobalanus icaco*

Special Properties

Ripe purple fruit has sweet flesh which can be eaten and made into jam. Almond-flavored seeds can be roasted and eaten or crushed for use in cooking. Hypoglycemic, antioxidant, antifungal and other pharmacological properties of the leaf extract.

Region of Origin

Native of Central to South Florida

Harvest Period

May- June; October- November

Location: 19

Breadfruit, *Artocarpus altilis*

Special Properties

Good source of carbohydrates, protein, dietary fiber, fatty acids, pro-vitamin A, potassium, and calcium with significant amounts of ascorbic acid, niacin, and iron.

Region of Origin

New Guinea and the Indo-Malay region

Harvest Period

June- October

Location: 21

Sapodilla, *Manilkara zapota*

Special Properties

Good source of many nutrients ranging from most B-vitamins (including folate and B6) to potassium and iron.

Region of Origin

Southern Mexico, Central America, and the Caribbean.

Harvest Period

February- June

Location: 13 & 16

Black Sapote,
Diospyros nigra

Special Properties

Antioxidants protects against cancer, heart disease, stroke. Aids absorption of non-heme iron and promotes would healing. Maintains collagen and connective tissues in the body, helps digestion, improves vision, and can aid with weight loss. Used as chocolate substitute.

Region of Origin

Eastern Mexico, the Caribbean, Central America, and into Colombia.

Harvest Period

December- March

Location: 6, 8, 9, 10, 11, and 15

Strawberry Tree, *Muntingia calabura*

Special Properties

Flowers are used as an antiseptic and to treat abdominal cramps and spasms. Relieves headaches and colds. Fruits possess antioxidant and anti-inflammatory properties.

Region of Origin

South and Central America; the Caribbean

Harvest Period

May- November

Location: 20

Loquat
Eriobotrya japonica

Special Properties

Vitamin C, Anti-inflammatory and Antioxidant benefits.

Region of Origin

Central Eastern China

Harvest Period

February- May

Location: 1 & 2

Appendix 2:

Question	Type of question	Answers					
You are a _____ student.	Single choice	BA	Master's	PhD			
Do you receive stipend or scholarship?	Single choice	Yes	No	Other			
Where were you born?	Single line text						
You live _____.	Single choice	Alone	With your friends	With your family	Roommates	Other	
Are you dependent?	Single choice	Yes	No	I have dependents	Rather not to say	Other	
How many dependents do you have?	Number						
Do you have a source of income?	Single choice	Yes	No	Family support	Other		
If employed, it is by _____.	Single choice	Graduate assistantship	FIU employe e	Outside FIU	Other		

What is your average yearly household income?	Single choice	Between $6,000 - 12,000	Between $12,000 -18,000	Between $18,000 -24,000	Between $24,000-30,000	More than $30,000	Other
What percentage of your income do you spend on buying food?	Single choice	Between 5-15% of your income	Between 15-25% of your income	More than 25% of your income	I do not spend money on food	Other	
Where do you buy your food, all in 1 place or in separate places?	Single choice	All in 1 place	Separate places	Other			
In how many places do you buy food?	Number						
What do you consider fresh quality food?	Multiline text						
Do you believe that the food you can afford is of fresh quality?	Single choice	Yes	No	Other			
Are you satisfied with the quality of your food?	Single choice	Yes	No	Other			
How long do you travel or commute to your food source?	Single choice	Around 15 minutes	Around 30 minutes _	Around 1 hour	More than 1 hour	Other	
Where was most of your fresh food (fruits, vegetables, roots, greens) planted?	Single choice	In the state you live	In the country you live, but in another state	In another country	I do not know	Other	
hat is your preferred form to consume fruits?	Single choice	Fresh	Frozen	Canned	Dried	In juices	Other
Do you feel you lack financial resources or opportunities to eat more of fruits in your preferred form?	Single choice	Yes	No	Other			

What do you think is an impediment for you to eat more organic fruits?	ltiline text	

Which fruits or vegetables would you like to have more access to?	ltiline text	
If you could have access to fruit trees inside FIU MMC Campus, where would you like them to be planted?	Map	