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Food Insecurity Between Two Southern Louisiana Universities:
Prevalence and Qualitative Analysis of Stakeholders' Attitudes

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FOOD INSECURITY BETWEEN TWO SOUTHERN LOUISIANA UNIVERSITIES: PREVALENCE AND QUALITATIVE ANALYSIS OF STAKEHOLDERS’ ATTITUDES

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy

in

The School of Nutrition and Food Sciences

by

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B.S. McNeese State University, 2008
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December 2022
I dedicate this research to my family, especially my husband and my parents. They made it possible for me to pursue this dream and complete this research. I also dedicate this research to all the students out there who are trying to better their lives. Keep going, one step at a time.
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I want to acknowledge Dr. Denise Holston who supported me through this research process. Without her honesty and unwavering support, I would have never gotten through these past four years.
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ABBREVIATIONS

AND Academy of Nutrition and Dietetics
AFSSM Adult Food Security Survey Module
CPS-FSS Current Population Survey Food Security Supplement
CUFBA College and University Food Bank Alliance
ERS Economic Research Service
FI Food Insecurity
FNS Food and Nutrition Services
FSS Food Security Status
GAO Government Accountability Office
GPA Grade Point Average
LSU Louisiana State University
MSU McNeese State University
PSID Panel Study of Income Dynamics
SNAP Supplemental Nutrition Assistance Program
TEFAP The Emergency Food Assistance Program
US United States
USDA United States Department of Agriculture
DEFINITION OF TERMS

**College/University.** For this study, the use of the terms college and university are in reference to 4-year higher education institutions that offer a bachelor’s degree or higher. These terms are used interchangeably in this study.

**Food insecurity.** Food insecurity is defined as limited or uncertain access to nutritious food that is safe to consume. Coping mechanisms as a result of being food insecure include purchasing less expensive food that may negatively affect the variety, quality, and nutritional content of food, skipping meals, and eating a smaller quantity of food despite still being hungry. Limited resources, especially income, are the most common factors associated with being food insecure. Others include limited transportation, storage or cooking equipment, and/or negative health factors that could affect one’s ability to cook or grocery shop.

**Supplemental Nutrition Assistance Program.** The nations’ largest supplemental nutrition program that provides monthly benefits that help eligible individuals from low-income households purchase food.
ABSTRACT

Emerging research has demonstrated high food insecurity rates among college students in the United States (US). The goal of this dissertation is to expand upon the literature evaluating food insecurity on college campuses to improve relief efforts. A literature review and mixed methods were used to measure and compare food insecurity prevalence rates and institutional perceptions of this issue among two Louisiana colleges, Louisiana State University (LSU) and McNeese State University (MSU).

Students who were more likely to be food insecure were from low income households, nonwhite, first generation college students, and/or had past reliance on federal assistance. Food insecure students are more likely to struggle academically when compared to their peers who are food secure. Institutional responses vary across US campuses with little evidence demonstrating effectiveness of implemented interventions.

The second study used quantitative methods to measure and compare food insecurity rates at LSU and MSU. The results indicated that when the data were combined 42.5% of students reported being food insecure. These students at both universities more likely to rate their academic progress poorly, be a first-generation college student, and have previous reliance on federal assistance. Results of this study demonstrate similar findings from multi-institutional studies and government reports.

The third study evaluated faculty’s, staff’s, and administrations’ attitudes and perceptions towards food insecurity among college students and perceived institutional obstacles. Participants from both universities were vocal in their support for students, but some voiced hesitation in accepting students who were truly food insecure, with comments suggesting these students lack the necessary skills to care for themselves. Results highlighted the need to further
explore the obstacles food insecure college students face, and the role the university should play in helping to support these students.

Findings from the quantitative and qualitative studies, regarding food insecurity estimated rates, risk factors, and institutional barriers agree with the existing literature. The literature review and studies support the need for more research on variables associated with being a food insecure college student, how best to identify students in need, and identification and evaluation of universal interventions to address food insecurity in college.
CHAPTER 1. INTRODUCTION

Food insecurity (FI) is defined as an individual’s inability to obtain food that is safe and adequately nutritious.\textsuperscript{1} Since 1995, the United States Department of Agriculture (USDA) has annually measured FI\textsuperscript{2} using the Adult Food Security Survey Module (AFSSM) with information gathered including: (1) food access and adequacy, (2) money spent on food, and (3) what federally funded programs are they using to help supplement their meals.\textsuperscript{3} The USDA Economic Research Service (ERS) analyzes the data collected from United States’ (US) households and annually publishes their findings, which include prevalence rates, yearly trends, and rates among high risk subgroups.\textsuperscript{1,2} According to the USDA, during the year of 2020, 89.5\% of the US households had secure access to food\textsuperscript{.1} The remaining 10.5\% of the US households were found to be food insecure, with 3.9\% being categorized as very low food security.\textsuperscript{1}

Historically, the research evaluating FI has focused on households with children present and those led by single women\textsuperscript{4}, but recent studies have demonstrated the existence of high prevalence rates among US college students.\textsuperscript{4-8} One of the earliest known FI studies conducted with college students was at the University of Hawaii at Manoa (2006) with a reported estimate of 21\% among student participants.\textsuperscript{7} An increase in the number of studies completed has resulted in prevalence rates that range from 10\% to 75\% of students affected, with many results demonstrating higher rates than the national FI estimates.\textsuperscript{4-8}

A systematic review by Nazmi et al. (2019) included FI data that was collected in a ten-year span from 2006 - 2016 and included data from over 100 institutions and 52,085 students, with 4-year institutions resulting in a 42.2\% estimated rate.\textsuperscript{4} Within the studies that included 4-year institutions, the lowest FI prevalence rate reported was 21\%, with the highest prevalence being 58.8\%.\textsuperscript{4} During the 2019 fall semester, Olfert et. al. (2019) conducted a multi-institutional
study (22 institutions), with 77% from 4-year institutions, and a final student sample of over 22,000. This study reported a FI rate of 44.1%, which was much higher than the US FI rate (10.5%) for the same year (2019).

**Food Insecurity Factors**

Factors found to be significantly correlated with national FI risk include income, ethnicity and race, households with children present, single parent led households, and certain regions in the US. Results from many of the FI studies on college campuses are demonstrating similar risk factors when compared to the general population. Multiple studies have reported results that show students with children, those who identify as a non-white race, and those with limited income are more likely to experience FI. Other risk factors that are more specific to college students than the general population include being a first-generation college student, students who experienced FI as a child, receipt of free or reduced lunch in high school, history of being in foster care, and receipt of financial aid.

Income is one of the major factors that can affect food security. The USDA labels the association between income and food security as strong. Of the US households (2019) that are affected by FI, 34.9% have incomes below the federal poverty threshold, 27.6% below 185 percent of the poverty threshold, and 5.1% at or above the 185 percent of the poverty threshold. In 2016, 39% of the college student population came from households at or below 130% of the poverty line.

Food insecurity is influenced by ethnicity and race, with trends from 2001 to 2016 demonstrating that non-Hispanic black and Hispanic households were twice as likely to suffer from FI when compared to non-Hispanic white households. Food insecurity and its relationship with the minority population is complex due to multiple economic and social variables, such as
employment, differences in wages, wealth, disability, and incarceration. Nonwhite students tend to have lower incomes than white students and make up nearly 50% of total undergraduate students.

The USDA ERS (2019) reported FI rates for selected households’ characteristics with certain dwellings demonstrating higher FI risk. Households with children are more likely (13.6%) to be food insecure when compared to those without children (9.3%). Living alone significantly increased the risk of being food insecure, with rates differing between genders. Women living alone (13.0%) had a higher percentage of FI when compared to men who lived alone (12.8%).

Regionally, the prevalence of FI varies with the south having the highest FI (11.2%), followed by the Midwest (10.5%), West (10.2%), and Northeast (9.6%). To the author’s knowledge, studies evaluating FI among college campuses have not established risk based on the region in which the college is located. However, this study will focus on two colleges located in southern Louisiana, a state that has consistently outranked the national FI prevalence rate since 2004.

In 2018, the GAO was requested to produce a report to help explain why FI existed among college students despite the help of financial aid and federal assistance programs. This report includes a review of 31 studies that were completed in US colleges after the year 2007. The GAO report included that the rising cost of college has made it more expensive to attend college, with the average amount of the in-state university price almost doubling. The report highlighted that student demographics have become more diverse with an increase in enrollment among students from low income households, first generation college students, financially independent, dependents of their own, and those who identify as a nonwhite race. The
increase in the number of students from households that are at a higher FI risk has been regarded as one of the possible explanations for the high prevalence of FI among college campuses.\textsuperscript{5,6,9,19}

**Negative Health Outcomes Associated Food Insecurity**

A household identified as food secure is one where all members of that home are able to, at all times, acquire adequate food to support a healthy lifestyle.\textsuperscript{1,3,15} Food insecure households reported, at least once during the year, an occurrence of reduced intake or a disrupted eating pattern.\textsuperscript{1-3,15} This may include purposely skipping meals, not eating when hungry, inability to afford nutritious food, and/or overall decrease in caloric intake.\textsuperscript{1,11,12} With a decrease in diet quality and variety, food insecure homes have been shown to have a positive relationship with the occurrence of negative health outcomes in both adults and children.\textsuperscript{6,11,12} Food insecure adults between the ages of 18 - 65 years old experienced higher rates of chronic diseases, such as diabetes, high blood pressure, dyslipidemia, and obesity.\textsuperscript{20}

Research suggests that the effects of FI on a person are not only feelings of hunger, but also include short and long-term consequences.\textsuperscript{2,6,11} Short-term consequences include embarrassment, low self-esteem, and irregular eating patterns to help maintain food stores.\textsuperscript{11,12} Meanwhile, long-term consequences include nutritional deficiencies, poor academic performance in students, and possible mental impairment.\textsuperscript{6,11,21-23} Studies specifically examining FI and mental health consequences have found that depression and mental disorders are more prevalent among those who are food insecure due to “stress and impaired nutrition.”\textsuperscript{12,24,25}

Food insecure college students are not immune to the negative effects associated with FI.\textsuperscript{5,6,9} Bruening et. al. (2016)\textsuperscript{26} evaluated FI in 200 freshmen who lived on campus in a southwestern university. The results suggested that anxiety and depression were three times more likely in those who suffer from FI when compared to their peers.\textsuperscript{26} An initial study that explored
FI among college students stated that one of the adverse effects included “poor academic performance.” This could consist of increased absences from classes, attention deficit, decreased math and reading comprehension. Chaparro et. al. (2009) specifically looked at grade point average (GPA) among students who were food secure versus food insecure, with results demonstrating FI students were more likely to have a GPA of 2.0-2.49.

The amount of research evaluating the long-term affect FI has on academic success in a college student is limited, however research has shown the importance of food security in the performance of kindergarten through the 12th grade students. When children are in public school from kindergarten to 12th grade, the National School Lunch Program is in place to help serve those in need; however, when starting college, it’s now the students’ responsibility to be prepared to figure out how they will feed themselves.

A federal program to help meet the nutritional needs specifically for college students does not exist. The USDA’s largest nutrition supplemental program, Supplemental Nutrition Assistance Program (SNAP) served 35.7 million people per month (2019). Many college students do not qualify for SNAP, with eligibility restrictions preventing students enrolled more than half-time to receive SNAP benefits.

College and University Administrators’ Involvement in Food Insecurity

A limited amount of research exists that has investigated the perceptions and attitudes of college administrators towards students struggling with food access and adequacy. The majority of research available on FI among college students only suggests that administrations’ participation is needed. Research by Cady (2014) suggested that administration needs to be involved in the short-term and long-term planning solutions. Watson et.al. (2017) recommended that universities should offer food literacy classes to students to teach them how to
shop, budget, and prepare foods.\textsuperscript{32} Academic performance and success are negatively affected when a student is dealing with FI issues.\textsuperscript{33} Finding ways to address FI could help improve GPA levels, retention rates, and the number of students who graduate.\textsuperscript{4,5,6,9}

A qualitative study, Brown (2019), completed at Merrimack College in Massachusetts did a snowball sample of administrators to determine their perception of FI among college students.\textsuperscript{34} Three participants were interviewed and provided insight to the administration's views on dealing with FI. Participants expressed concern for students, however, there have been previous unsuccessful attempts to deal with FI on campus. Some of the issues that were listed in the study include: (1) Lack of sustainability, (2) finding a place to keep food items, (3) what to do with unwanted food items, and (4) who will be in charge of providing the service. The participants stated that there is a need for continuous donations and fundraisers to keep the project working. They also suggested that a team needs to be assembled to help create ideas and new strategies for success. The participants said that administrators needed to be a part of these teams to ensure success. This study also stated that surveying the students for FI is helpful because this can show upper administration that there is a problem that needs to be addressed.\textsuperscript{34}

\textbf{Statement of Purpose, Objectives, and Research Questions}

The purpose of this study was to increase our understanding of FI among college students, particularly in the state of Louisiana (LA). The USDA ERS reports the FI prevalence for different regions of the US with the most recent (2020) stating that those from the south have an increased risk when compared to other areas.\textsuperscript{1} In LA (2017 - 2019), FI rates were 15.3\%, and higher than the national average (11.1\%).\textsuperscript{1}

This study focused on two 4-year universities in southern Louisiana, Louisiana State University (LSU) and McNeese State University (MSU). McNeese State University is a 4-year
public university located in Southwest Louisiana in the city of Lake Charles with a student population of 6,456. Louisiana State University is Louisiana’s flagship institution and is located in Baton Rouge, with a larger student population of 31,761. Both universities have a high percentage of students who are from Louisiana, with 86.9% for MSU and 74% for LSU, and it is likely a large number of these students are struggling with food access.

During the 2019 fall semester, LSU participated in a multi-institutional study evaluating housing andFI faced by college students across 22 US college campuses. Prior to this study, there had been no known measurement of FI among LSU students. Food insecurity among MSU students has never been measured and few studies have compared FI among same-state colleges.

This study: (1) Performed a literature review to determine the gaps in literature in regards to FI among US college students, risk factors, solutions implemented, and evaluation of institutional perceptions and attitudes towards FI, (2) Measured FI prevalence among MSU students, the correlation of demographic information to FI risk among both universities, and compared MSU results to those of the 2019 LSU survey to evaluate any significant correlations, and (3) Utilized qualitative research methods to evaluate LSU and MSU administrator, faculty, and staffs’ perceptions of FI among the student population to determine attitudes and perceived obstacles towards this issue.

Objectives

1. Perform a literature review of FI among college students including reported risk factors, estimates of prevalence rate, implemented solutions, and university faculty, staff, and administrative perspectives related to FI.
1. Include literature that focuses on FI at US 4-year public institutions and studies addressing faculty, staff, and administrative perspectives of FI among college students.

2. Survey the college students of MSU using the same survey tool distributed to the LSU students (fall 2019 semester). This survey instrument was obtained from a multi-institutional study among US colleges measuring FI rate, housing security, and correlating demographics found to be associated with FI (i.e. first generation and receipt of financial aid). Data collected from each school will be:
   1. Statistically analyzed through chi square to evaluate which student demographics are significantly associated with food security status.
   2. Statistically significant demographic variables will be included into the full multivariate logistic regression model and through variable selection methods (forward and backward selection), results will include a reduced multivariate logistic regression model to demonstrate which demographic variables are significantly associated with food security status at each university.
   3. Compare the FI results from each university to identify statistically significant similarities and differences.

3. Evaluation of faculty, staff, and administrators at MSU and LSU to determine attitudes and perceptions about FI among college students.
   1. Utilize and analyze data from transcribed interviews, with participants from both universities, to identify codes and emerging themes that describe participants’ perceptions of FI among college students, perceived obstacles, and recommendations for campus solutions.
Research Questions

1. What research literature has been conducted that focuses on FI among college students including related risk factors, prevalence measurements, solutions implemented, and institutional faculty, staff, and administrative perspectives related to FI?

2. What is the prevalence of FI among students at MSU, which demographic variables are most commonly associated with food security status, and how do these results compare to those from LSU student participants from the fall 2019 survey?

3. What are the faculty, staff, and administrators’ perceptions and attitudes toward students’ FI?
   1. What are the similarities and differences between the participants’ perceptions and attitudes towards FI among students at MSU and LSU?

Goal of the Research

The goal of this research project is to learn more about college students who are experiencing difficulty with food access, institutional perceptions of the issue, and help determine which are the appropriate steps forward that are needed to help combat FI among college students. Without the support and understanding of the faculty, staff, and administrators within the college campus, change is unlikely to be initiated or sustained. Surveying the students could provide tangible evidence that there are a significant number of students who are struggling with food access.\textsuperscript{34} In addition to estimated prevalence, the data collected can provide detailed information on the most common demographics associated with FI to help focus relief efforts towards those students most in need. Understanding more about the students and the issues that they are facing can help improve current efforts to reduce FI on college campuses.
CHAPTER 2. FOOD INSECURITY AMONG US COLLEGE STUDENTS: A LITERATURE REVIEW

Introduction

Food insecurity (FI) is defined as having limited or uncertain access to food.\(^1\) The disruption of household food availability is influenced by many factors, especially limited income and employment status.\(^{11,12}\) Food security is measured annually using the United States Department of Agriculture (USDA) food security survey modules,\(^3\) with data utilized by federal assistance agencies to focus on the population groups most at-risk and in higher need of supplemental food assistance.\(^1\) Survey questions were designed to measure access and adequacy of food within the household, but also inquire about money spent on groceries and participation in US federal food assistance programs.\(^{37-40}\) The USDA survey measures FI at household levels, typically with one individual answering for all members in the home.\(^{15}\) Different versions of the USDA food security module exist so that it can be used in many different settings and contexts to improve response rate and measurement reliability.\(^{15,37,38}\) The development of the FI measurement tool was achieved through extensive quantitative and qualitative research analysis, demonstrating its reliability and validity to accurately capture limited food access.\(^2,15,41\) Because of this, the USDA food security survey module has been utilized in settings other than at the household level.\(^{5,6}\) Each survey instrument is able to categorize a household into one of three food security statuses: food secure, low food security, or very low food security.\(^{1,2,37}\)

A growing number of studies have used the USDA FI survey to measure food access among young adults attending college in the United States (US).\(^{4-6,9}\) Chaparro (2009) conducted a study at the University of Hawaii at Mānoa, in 2008, with a reported FI prevalence of 21\(^%\)\(^7\) among its student sample, higher than both the national FI average (14.6\%) and Hawaii’s state
average (9.1%) during that same year. \textsuperscript{42} Since then, studies measuring FI among college campuses have reported rates ranging from 10\% to 75\%. \textsuperscript{5,6,8,9}

Attending college and earning a degree can be considered an investment in a young adult’s future. \textsuperscript{13,43,44} The US Census Bureau shows that the median household income is nearly double for individuals who have earned a bachelor’s degree, compared to those who did not attend college. \textsuperscript{45} Higher income improves access to resources such as health-care, insurance, housing, and reduces the likelihood of poor health and living in poverty. \textsuperscript{11,13,43,44} Young adults may see FI as a minor inconvenience when compared to the long-term benefits of earning a college degree. \textsuperscript{46} However, if a student is struggling with their basic needs, especially food and nutrients that fuel the body, attainment of a degree may be more difficult, and possibly out of reach. \textsuperscript{9,13}

Maslow’s Hierarchy of Needs places the importance of individual physiological needs and security above self-actualization. \textsuperscript{47} In other words, a person cannot achieve maximum potential if their basic needs are not being met. Research has established the importance of providing free or reduced-price school meals to children in kindergarten through 12\textsuperscript{th} grade, and the strong correlation between participation and improved academic performance. \textsuperscript{27,48,49} However, once in college, this assistance is no longer available, \textsuperscript{4,5} leaving the question of “how are college students from limited income/resource households expected to succeed with uncertain food access?”

Some US college campuses have implemented a variety of solutions to address FI among the student population, \textsuperscript{5,6} but limited research exist demonstrating their effectiveness. \textsuperscript{4-6} The Academy of Nutrition and Dietetics (AND) has stated that federal and state policy changes are warranted to yield a wide-reaching intervention that serves all college students. \textsuperscript{6} One of the first
steps to developing policy change is to identify a need; however, producing an accurate prevalence rate of FI among college students has proven difficult. The USDA Economic Research Service (ERS) is responsible for producing the annual US household FI reports, which detail the percentage of US households affected by FI, households and demographics most at risk for FI, and any significant changes from previous years. These reports have aided in the development of policies to help improve food access to specific subgroups who are most at risk. These reports rely on the data collected by the US Census Bureau, through the administration of the Current Population Survey (CPS) Food Security Supplement (FSS), which is distributed to around 50,000 US households. Sampling methods include systematic mapping of dwellings that are intended to accurately represent the entire US population. Trained staff members are responsible for going to households and collecting this data.

College students make up 27.1% of the US population, yet a national FI prevalence rate for the college student population is nonexistent. Two issues exist that limit college students representation in this national measurement. First, though group dwellings, such as campus dormitories or sororities, are not excluded in the sample selection method, these types of units represent less than 3% of CPS. Group dwellings are also not strictly limited to just college campuses, with nursing or retirement homes also included in this category. Second, annual measurements of FI are administered at a household level, meaning one participant will answer for all household members. In the event that one of the household members is a college student and lives away from home for part of the year, the survey will not capture this individual’s food access status when they are away at school. With a lack of representation
within the US FI measurements,\textsuperscript{6,8} prevalence rates for college students have been obtained from independent studies completed on college campuses.\textsuperscript{4-9} Limitations from past studies include variation in the methodology, and sample sizes, and the use of convenience samples,\textsuperscript{5,6,8,51,52} making generalization to all college campuses difficult, and possibly explaining the large variation in prevalence rates mentioned above (10\%-75\%).\textsuperscript{6,8,51,52}

Many of the FI studies on college campuses are of cross-sectional design utilizing a survey as the measuring tool, which only provides a one-time measurement and is subject to response bias.\textsuperscript{51,53} Only recently (2021) a longitudinal cohort study by Wolfson et al. was published and to our knowledge, no other exists prior to this publication.\textsuperscript{13} This study used data collected from the Panel Study of Income Dynamics (PSID),\textsuperscript{56} 1999-2003, an ongoing nationally representative household study that began in 1968 but only began measuring FI in 1999. The PSID measured FI from 1999 to 2013, and did not measure it again till 2015.\textsuperscript{13,56} This study identified the PSID participants (n=1574) who attended college in the years 1999 to 2003 and reported 14.9\% of these college students experienced FI.\textsuperscript{13}

Few studies have been conducted on more than one campus location.\textsuperscript{5,6,8,51,52} Of late, there has been an increase in studies evaluating more than one campus,\textsuperscript{9,14,57,58} with a recent study conducted at 22 college campuses across the US.\textsuperscript{9} During the 2019 fall semester, with a student sample of over 22,000, the FI rate was 44.1\%,\textsuperscript{9} and this rate was much higher than the US FI rate (10.5\%)\textsuperscript{10} for the same year (2019). This is the largest study to date, but only represents 0.5\% of US colleges, and the sample demographics were not representative of the national US college student demographics because the majority of sample participants identified as female and white.\textsuperscript{9}
One of the main areas, where many of the studies differed, was the version of the USDA FI survey used in the studies.\textsuperscript{6,8,51,52} There are three versions of the USDA FI survey and the main difference between them is the number of questions.\textsuperscript{3,38-40} The full questionnaire (18-item), the US Household Food Security Survey Module, consists of 18 questions.\textsuperscript{40} The survey measures food security status among all household members, including children, for the past 12 months, as well as 30 days.\textsuperscript{37,40,41} The US Adult Food Security Survey Module (10-item) has the same set of questions as the full version, but excludes the section about children, with it being intended for households with no children present.\textsuperscript{15,38} A shorter version (6-item) of the survey, with only 6 questions, is meant to reduce the burden on the participant answering the questionnaire.\textsuperscript{39} The USDA recommends the 18-item or the 10-item versions, if possible, but the shorter version has been proven acceptable for measuring FI.\textsuperscript{3,15} Each version of the USDA FI surveys includes screening questions (two-item screener) meant to reduce respondent burden,\textsuperscript{59} so that if the household member’s answers demonstrate adequate food access, the remaining questionnaire is not required to be completed.\textsuperscript{3,41}

In addition, many of the FI studies on college campuses differ from the methodology used for the US population.\textsuperscript{3,5,6,8,41,51,52} First, the surveys are not administered in the same manner used for the US population,\textsuperscript{5,41,59} which rely on a trained individual to interview household members.\textsuperscript{8,15,41} Instead, the most common method for survey distribution among college students is through the use of online survey platforms delivering a link or QR code through school emails.\textsuperscript{4,5-9} As a result, studies tend to have convenience samples that are small and non-representative of the college student population.\textsuperscript{5,6,8,13} Second, because of the survey being distributed online, if the study uses the two-item screener\textsuperscript{59}, participants with adequate food access will not be opted out of completing the remainder of the survey.\textsuperscript{3,8,51,52,59}
Nikolaus et al. (2019) compared the performance of the different USDA FI surveys to evaluate level of accuracy and concurrence of the prevalence rate in relation to known FI risk factors among college students.\textsuperscript{8,51} The 10-item survey with the 2-item screener yielded the most accuracy, however, the authors concluded that further quantitative and qualitative research was needed.\textsuperscript{51} At this time, the use of the USDA FI surveys is still deemed the most appropriate measuring tool\textsuperscript{6} given the extensive research validating its use and its allowance for comparison to national, state, and local FI levels.\textsuperscript{6,8} Variations in the methodology used have raised concern over the accuracy of prevalence rates documented in previous college FI studies;\textsuperscript{6,8,51,52} however, in recent years, there have been several reviews of past literature in an attempt to produce an accurate estimate.\textsuperscript{4,8,26,51,52}

A scoping review, by Nikolaus et al., published in 2020, addressed the issues with measuring FI prevalence rate and aimed to produce a weighted estimated prevalence from previous FI studies administered on US college campuses.\textsuperscript{8} Three systematic reviews were completed prior to the scoping review,\textsuperscript{8} two with reported aggregated prevalence rates;\textsuperscript{4,26} however, Nikolaus et al. addressed limitations within those studies.\textsuperscript{8} In 2017, one such study, a systematic review by Breuning et al., reported FI affected 33\% of US college students,\textsuperscript{26} but sample imbalances were not taken into account, resulting in an unweighted estimate.\textsuperscript{8}

Next, a 2017 systematic review by Nazmi et al. reported that an estimated 47.2\% of US college students experienced FI.\textsuperscript{4} This study did provide a weighted estimate, and its inclusion criteria incorporated studies completed exclusively on US college campuses.\textsuperscript{4,8} Regardless of these strengths, Nikolaus et al. states that the review did not analyze the quality of the studies used, and included fewer studies than Breuning et al., despite being completed at a later date.\textsuperscript{8} The search protocol for Nazmi et al. included the use of the search engines Google and Google
scholar, which are not library databases and do not use expert cataloging with quality inclusion criteria. Data entered into Google Scholar is not standardized or tagged for content, which could result in limited search results. With fewer studies used and a lack of quality analysis, the estimate provided by the Nazmi et al. review could underestimate FI on college campuses, which is something that Nazmi et al. addressed within its own limitations. Finally, the Nazmi et al. review overlooked studies that should have been included, given the later date of publication.

The next scoping review by Nikolaus et al. was completed by the GAO at the request of four US senators seeking an explanation for why FI existed on US college campuses, despite over $122 billion being dispersed, through loans, grants, and other funds, to aid underprivileged students to attend college. The GAO did not give an estimate of FI prevalence from the studies that were included in the review, nor was the search strategy described in detail. The GAO review did, however, highlight the lack of a national FI measurement among college students, and the limitations of FI estimates from previous studies.

Once Nikolaus et al. addressed limitations from previous reviews, extracted data, applied inclusion and exclusion criteria, and analyzed review quality, the scoping review reported a weighted estimate of 36% of college students at 4-year institutions experience FI. The author recommended using this weighted estimate with caution, given the heterogeneity among the studies included in the final review, and the variation in estimates based on the type of USDA FI survey used and reference period mentioned. Prevalence estimates were higher for the shorter versions of the USDA FI survey, with 13% for the 18-item, 40% for the 10-item, and 50% for the 6-item. A reference period of 12 months produced a FI estimate of 31%, with a larger estimate of 47% reported for a period of 9-months or shorter. Differences in the estimates
are attributed\textsuperscript{8,51,52} to possible survey fatigue, discriminating power,\textsuperscript{61} or recall bias.\textsuperscript{62} College students’ interpretation of the FI survey verbiage and the accuracy of their responses have been questioned.\textsuperscript{5,8,51,52} Questions that ask about financial situations and household members\textsuperscript{8,51,52} may present decreased discriminating power,\textsuperscript{61} or limited ability of the USDA FI survey to accurately distinguish between food secure and food insecure college students. The variability of financial support for college students could affect responses to questions with terms such as “able to afford” and “enough money.”\textsuperscript{3,6,8,37,51,52} College students may interpret “household” to mean their primary home with their parents, or question if “household members” includes their roommates.\textsuperscript{52} Reference periods, 9-months or 12-months, could be affected by recall bias\textsuperscript{62} with participants having difficulty remembering a year’s worth of food availability.\textsuperscript{8} It was recommended that qualitative studies were needed to help determine how students interpret the USDA FI survey terms and justify any changes that may be needed.\textsuperscript{8,51,52}

This scoping review and other studies have questioned the reliability of using the USDA FI survey tool among college students, given the lack of research evaluating its use.\textsuperscript{6,8,51,52} Matters in question include financial resource differences between students,\textsuperscript{5} differing food resources on US campuses,\textsuperscript{5,8,9} and the effects of these factors on student FI.\textsuperscript{4-9} College students have uniquely different financial experiences and living arrangements that complicate the ability to capture why the lack of food access exists on campuses.\textsuperscript{8,51} Ellison et al.\textsuperscript{(2021)} recently published a report focusing on what was needed to produce a reliable measurement tool, which included qualitative research, extensive piloting of new survey tools, and quantitative studies to establish validity and reliability.\textsuperscript{52}
FI Negative Outcomes

The difficulties of obtaining an accurate prevalence rate measurement have not discredited the issue that there is a growing public health concern among US college campuses. Research within US households has shown that those with FI rely on coping mechanisms, such as a reduction in food quality and variety, that do not necessarily include a reduction of energy or calories. Food insecurity negatively impacts the quality and variety of food purchased, resulting in a higher intake of sodium, fat, sugar, and salt, and a lower intake of fruit, vegetables, dairy, and protein. These differences in dietary intake put food insecure individuals at higher risk for obesity, cardiovascular disease, and diabetes. In addition, children who are from food insecure homes are more likely to demonstrate developmental issues, while also showing a higher prevalence of negative mental health. Those with a more severe level of FI, or very low food security, will report more consistent disruptions in food access that result in reduced food intake.

Studies have shown that FI college students are not immune to these negative health outcomes, with reported consumption of lower quality diets, and higher rates of obesity, depression, anxiety, and stress. Academic success is also negatively affected, with food insecure students reporting lower grade point averages (GPA), greater difficulty concentrating in class, and an overall decrease in academic progress. Food secure students have a higher probability of finishing their degree compared to FI students. FI students were more likely to earn an associate’s degree, while less likely to earn a bachelor’s or graduate degree.

Qualitative research completed with food insecure college students demonstrated a greater understanding of their struggle. Meza et al. reported that students experienced daily stress in finding food resources, fear of disappointing family, feeling of hopelessness, and trying
to push away feelings of hunger to focus on studying.\textsuperscript{64} Coping strategies were highlighted in another qualitative study, which included buying cheaper food items (e.g. ramen noodles) to be able to pay the electricity bill, meal prepping with the same food week after week, not purchasing textbooks or other school supplies, selling personal items, using a credit card for food purchases, or working multiple jobs that could affect their time to devote to studying.\textsuperscript{65,66} Henry (2017) reported that, despite FI issues, students maintained a strong motivation for finishing their degree, with future plans of securing a well-paying job as means to improve their quality of life.\textsuperscript{46}

**Risk Factors**

The annual measurement of FI among the US population has helped to determine which population groups are most at risk.\textsuperscript{1,3,15} In 2020, 10.5\% of US households experienced FI.\textsuperscript{1} The prevalence of FI was considerably higher for certain household types, including the following groups: those with children present (especially children under the age of six), headed by single woman or single man, households led by non-Hispanic black, and Hispanic members, and those with incomes below 185 percent of the poverty threshold.\textsuperscript{1}

Multiple studies have demonstrated similar risk factors within the college student population, reporting students with children, those who identify as a non-white race, and those with limited income are more likely to experience FI.\textsuperscript{5,6,9,14,18} Other risk factors that are more specific to college students than the general population include first generation college students,\textsuperscript{6,13} students who experienced FI as a child, receiving free or reduced lunch in high school, history of being in foster care, and receipt of financial aid.\textsuperscript{5,6,9,14} In the past 15 years, college student demographics have shifted,\textsuperscript{17} with an increased enrollment in students from lower income households, those who have dependents of their own, those who are financially
independent from their parents, and those who identify as a non-white race, such as black, Hispanic, or Latino.\textsuperscript{5,6,9,17} The 2019 Postsecondary Undergraduate Population reported by the Congressional Research Service, showed that the majority of students enrolled in higher education institutions had incomes below 200\% of the poverty guidelines.\textsuperscript{17} In 2016, 39\% of the college student population came from households at or below 130\% of the poverty line.\textsuperscript{5}

Nonwhite students tend to have lower incomes than white students and make up nearly 50\% of total undergraduate students.\textsuperscript{14,18} The GAO reported that limited income was the most common risk factor for FI among college students\textsuperscript{5}; however, most students present with one additional risk factor, such as being first generation or a single parent.\textsuperscript{5}

The increase in the number of students from households that are at a higher FI risk has been regarded as one of the possible explanations for the high prevalence of FI among college campuses.\textsuperscript{5,6,9,14} Title IV of the Higher Education Act is the federal policy that authorizes federal student aid programs (Pell Grant, Federal Work Study Program) to students with limited financial support/resources to afford college.\textsuperscript{18} To receive federal aid to attend college, students must complete the Free Application for Federal Student Aid, with eligibility and the amount of money issued based on each institution's estimated cost of attendance, expected family contribution, and aid award rules (annual loan limits).\textsuperscript{18} Over the past ten years, total federal grant aid has decreased by 32\%, with the cost of a 4-year public university tuition increasing by 13\%.\textsuperscript{67,68} The financial burden is now more likely to fall on the student, which could have a greater FI effect on those who come from households with limited resources or income.\textsuperscript{5,6,9}

The largest federal assistance program in place to increase food access among the high-risk US population is the Supplemental Nutrition Assistance Program (SNAP)\textsuperscript{28}; however, the GAO report pointed out the restrictions that are applied to college students.\textsuperscript{5} The “college SNAP
rule is the term that describes the non-financial restriction that is applied to students who are enrolled in an institution of higher education more than part-time, deeming them ineligible to receive these benefits unless they meet specific exemptions requirements.\cite{5,6,69,70}

This restriction was part of a 1980 law meant to prevent college students from receiving SNAP benefits\cite{18}, based on the idea that these students were not a typical low-income participant because they also had the financial support of their parents.\cite{5,6} This law is based on a traditional college student who is enrolled full-time, financially dependent on their parents, and does not work more than part-time.\cite{5} The term “non-traditional college student” has been used to describe the shift in diversity among modern students who are financially independent from their parents, employed, and possibly have children of their own.\cite{5,6,14} These non-traditional students would benefit from the receipt of SNAP, but being a college student enrolled more than part-time in college, makes them ineligible.\cite{5,6,18} The GAO also reported that 57\% of students (2016) were discovered to be eligible for SNAP but did not participate.\cite{5} Applying for access to SNAP has been described as confusing, based on the lengthy college student restrictions, which deters those students who are eligible from applying.\cite{5,6} Finally, college officials and state SNAP offices reported that FNS fails to share information that could be helpful in improving the application process for students.\cite{5}

SNAP restrictions for college students were temporarily halted during the COVID-19 pandemic.\cite{18,30} SNAP access was granted to students who had an expected family contribution of $0, and/or those who would have been eligible for a full Pell grant,\cite{18} which is federal aid for college students who demonstrate an extraordinary need to attend college.\cite{71} The GAO report made two recommendations for the USDA Food and Nutrition Service (FNS), the entity responsible for establishing eligibility requirements for SNAP,\cite{28} which included:(1) improve
information on their website regarding college student eligibility to help simplify understanding and improve accessibility; (2) FNS administrators should work with their regional offices to better understand what eligibility requirements have been adjusted at state levels to help improve access for college students, and share this information with all state offices.5

Solutions

Increasing accessibility to SNAP benefits is one of the many solutions that have been suggested to combat FI among college students.5,6,18 A variety of solutions have been implemented on US college campuses,4-6 but there is a lack of rigorous evaluation to help determine which is of greatest effectiveness.4-6,58,72 Many college institutions have implemented food pantries on their campuses to help increase food access for those students in need.5,6,18 One of the first campus food pantries started was in 1993 at Michigan State University.18 Since then, there has been an increase in the number of food pantries implemented on college campuses,5,6,18 and the initiation of the College & University Food Bank Alliance (CUFBA).18 The CUFBA is a membership organization that reports data on all its organizations, with the majority of its food banks being student-led. Member organizations are reliant on volunteers for labor, and, as of 2019, CUFBA has more than 700 members.18

Campus food pantries vary in size and resources allotted for their function.5,6,18 Determining the scope of reach among the student population has also been limited,58 with most food pantries not asking participants for personal information, other than proof of student status, which is usually a student identification card.6,18 Some food banks have reported a variety of different services offered to students that include direct food distribution to students, food boxes for quick pickups, referral for other resources, nutrition education, and assistance filling out SNAP applications.5,6,18 Campus departments most commonly associated with food pantries are
Food donations can vary in quality and quantity, limiting the resources, and their consistency, available for students. Universities differ in size and amount of funds available, which could put those campuses with limited resources at a greater disadvantage. The AND position paper recommends that those with limited resources should partner with local food banks to increase food procurement and distribution. Campus food pantries could benefit from federal support, specifically The Emergency Food Assistance Program (TEFAP), which provides aid to tax-exempt institutions that deliver food to those in need. Data showing the number and types of institutions that utilize TEFAP does not exist, so it’s unclear which campuses, if any, participate in this program. Other federal assistance could be in the form of tax incentives and/or protection from liability. At a state level, California implemented a law that will provide funds, allotted for campus food pantries and other specific college hunger relief efforts, through the state’s Emergency Food Assistance Program. In 2019, New Jersey enacted the Hunger-Free Campus Act that consists of $1 million in grant funds for public universities with active food pantries, and additional initiatives to aid FI students.

Meal vouchers are another solution that has been reported to be used on college campuses, which allows students with meal plans to donate unused or leftover meals to students in need. Campuses that utilize this program vary in the number of meals that can be donated, systems used to distribute meals to students in need, and the time periods that the donated meal can be used. This system is meant to provide supplemental meals to students in need, but is not intended to cover all nutritional needs during a school term.
Other solutions include schools distributing small loans or grants with the purpose of being intended for food purchases.\textsuperscript{18} Campus garden programs and food literacy education are among some of the other solutions found in the literature.\textsuperscript{5,6,18,21,32} In addition, some colleges have hired case managers to help students access available resources, such as applying for SNAP benefits or Medicare.\textsuperscript{5,73} Two non-profit organizations, Single Stop USA and the Center for Working Families, have set up sites on campuses in the US.\textsuperscript{73} Single Stop USA\textsuperscript{74} helps college students apply for public benefits, in addition to providing support for tax preparation and financial education.\textsuperscript{73,74} The Center for Working Families\textsuperscript{75} focuses on financial independence guidance, with topics such as career development, income and asset building, and employment.\textsuperscript{73}

Food insecurity is an issue that is affected by many different factors and situations, and, because of this, should be addressed with more than a single solution to ensure a wider reach among a diverse student population.\textsuperscript{6,72} The AND position paper addressing FI among college students and other studies, have reported the need for longitudinal cohort studies to not only improve measurements of FI on college campuses, but also increase data collection to help develop and improve current interventions.\textsuperscript{6} The AND stated federal legislation and policies were needed to help improve FI relief efforts and ensure that all US college campuses implement needed solutions.\textsuperscript{6} Many studies have recommended that campuses act to help alleviate FI among their student bodies;\textsuperscript{4-9,18, 21,26} however, the GAO interviewed college administrators and leadership and found that many were surprised the issue even existed among their students.\textsuperscript{5} Therefore, increasing awareness is seen as a major step in improving the response to FI on college campuses.\textsuperscript{5,6,9}

Strengthening this barrier to FI relief efforts, implementing a food pantry would require a location on campus, which can be an issue for some smaller institutes with limited space.\textsuperscript{5,6,18}
Administrators may not see the need to grant resources for an issue they do not even know exists.\textsuperscript{5,73} Other solutions that would require approval or support from campus administrators or leadership, include screening incoming students for known risk factors, such as first-generation college students, Pell grant recipients, and/or those students from low income families.\textsuperscript{5,6,18} Students that are found to be high FI risk, could be automatically provided additional information, services, and/or resources (food pantry information, work study program, or automatic enrollment into meal voucher programs).\textsuperscript{5,6,9,18}

**University or College Administrators and Leadership Attitudes**

Few studies have evaluated college or university leaderships’ views towards FI among college students.\textsuperscript{5,34,72,73} Understanding the perceptions and attitudes of university leadership is needed to identify infrastructure obstacles that could stagnate alleviation efforts. Having the support of university leadership is described as essential to developing a successful FI initiative on college campuses.\textsuperscript{76}

The GAO report is one of few studies that have reached out to campus officials to ask about their efforts to address FI among students and evaluate any barriers to improving food access.\textsuperscript{5} Some of the facilities that were contacted shared that their attempts to alleviate FI among students was an attempt to, not only increase food access, but also improve student outcomes, such as retention and graduation rates.\textsuperscript{5} Educating the campus community is important because many members of faculty and administration are unaware the issue even exists, which could thwart FI relief efforts.\textsuperscript{5} Compounding the problem, campuses can have many different departments, making it difficult or confusing for faculty and/or staff to know exactly where to refer a student in need. Centralizing and coordinating relief efforts, possibly
through campus student services or health services, can help to address FI through a systematic approach that can simplify locating campus resources for students in need.\textsuperscript{5}

Brown’s (2019) qualitative study evaluated administrative perspectives with three participants, including the Dean of Students, and two Assistant Dean of Students.\textsuperscript{34} The limitations of this study include the small sample size, the fact that it was completed at a single location, and the fact that all participants were within the same department that is typically responsible for addressing student needs on campus.\textsuperscript{5,8,18} Results of the study addressed the need to partner with campus and non-campus members. Upper administration (campus members) buy-in is needed in order to facilitate and implement solutions, as well as partnerships with local food banks (non-campus members) to help sustain a food pantry on campus. The lack of awareness of FI among college students makes it difficult to influence change, with the participants stating that lack of data showing FI existed on campus made it difficult to demonstrate to university leadership that there is a need.\textsuperscript{5,6,14} Another study, looking to improve dissemination of FI information on campuses, reported participants’ felt administrative support was needed to expand services for students and gain resources needed.\textsuperscript{72}

Faculty and staff from higher education institutions were also interviewed to evaluate their views regarding FI and housing insecurity among college students.\textsuperscript{73} The study included both 2-year and 4-year institutions, with participants from the 4-year colleges including financial aid directors.\textsuperscript{73} Results showed that participants shared three conflicting views regarding students who struggled to meet their basic needs while attending college.\textsuperscript{73} First, some participants showed full support for these students who faced economic struggles and felt college was the optimal setting for these students to grow and develop into competent adults. Second, in stark contrast to the first opinion, other participants voiced their opposition to students who struggled
to meet their needs, suggesting this should be a prerequisite to attending college. Among participants who held that view, it was felt that these students were ill-prepared to succeed and not deserving of enrollment. The third view exhibited support for these students, but struggled to see their part in being able to help. This study demonstrates that administrators and leadership support cannot be assumed and may even, in some institutions, be a barrier to implementing changes to help support these students.73

**Future Directions**

Education has been established as an important determinant of health11, with data showing those who earn a college degree have higher lifetime wages and improved quality of life.11,13,43,44 The link between nutritional intake and educational attainment for students in kindergarten through twelfth grade has been well established in past literature27,48,49, and strengthened the need for the National School Lunch Program28,29,31. Studies have shown that FI college students have lower GPAs and a higher likelihood of not finishing their degree5,6,9,13, which appears to support that adequate nutrition’s impact on educational success does not cease after high school. Future research is needed to help improve the measurement of FI rate among US college students8, qualitative research to evaluate the food insecure students’ perceptions of the struggles they face51,52, and the effectiveness of current campus solutions.5,6,72

Research to improve FI measurements should include collecting samples that are representative of students from a variety of US colleges6,8,44, developing a survey tool that has been validated within this population group through quantitative and qualitative studies, and extensive pilot studies.51,52 Across many college campuses, a variety of solutions are in place to help FI college students5,6, but little is known on the success and efficiency of these programs.4,6,9,72 More research evaluating implemented solutions is needed to identify programs’
capability and determine if the outreach is extensive enough to assist students in need.\textsuperscript{6,72} Other studies have detailed the need for qualitative research that includes FI college students, which will help better understand their perception of financial obstacles, academic issues, and how they cope with FI while trying to attend school.\textsuperscript{5,6,8,51,52}

Many studies have suggested US college administration and leadership should address the issue of FI on their campuses \textsuperscript{4-9,31-34} but few studies have suggested qualitative research that includes evaluating their perceptions of FI among college students, institutional obstacles, and their attitudes towards this issue.\textsuperscript{76} Many studies highlighted that awareness is a key step to addressing FI on college campuses\textsuperscript{5,6,9,76}, and this should also include those who are responsible for making key decisions at these institutes. The Feeding America network reported that “bureaucratic red tape” exists within college institutions and should be anticipated when developing campus solutions.\textsuperscript{76} Future qualitative research should be completed that includes evaluation of US college administrators’, stakeholders’, leaderships’, faculty’, and staffs’ perceptions of FI among the student population.
CHAPTER 3. QUANTITATIVE ANALYSIS OF FOOD INSECURITY AMONG TWO SOUTHERN LOUISIANA UNIVERSITIES

Introduction

Food Insecurity

Food insecurity (FI) is a complex issue that is associated with the disruption of food access due to limited resources.¹ Measuring FI among the United States (US) population has been conducted since 1995 and has allowed governmental agencies to use the data to focus intervention efforts towards populations most at risk.³ The US Department of Agriculture (USDA) Economic Research Service (ERS) annual Household Food Security in the US report (2020) stated that 10.5% of US households and 14.8% of households with children were food insecure at some point during the year.¹ Estimates of FI among US college campuses have been reported in percentages ranging from 10-75%⁴,⁵,⁶,⁸, with the most recent scoping review reporting a weighted estimate of 36% among 4 year higher education institutions.⁸

One of the first published FI studies on college students was conducted at the University of Hawaii at Mānoa in 2008 with reported a prevalence rate of 21%.⁷ The study called for further research to determine the prevalence of FI on college campuses.⁷ Since then, there has been an increase in the number of studies done on college campuses looking at FI among the students.⁵,⁶,⁸ Many of the studies have cross-sectional designs, with convenience samples conducted at a single location.⁸ In recent years, there has been an increase in multi-institutional studies that are showing similarly high rates of FI across college campuses.⁴,⁵,²⁶,⁵⁷,⁵⁸

The Academy of Nutrition and Dietetics (AND) released a position paper in 2017 addressing FI in the US, which stated causes were multifaceted and related to limited resources, such as limited income or poverty, underemployment, unemployment, high housing cost, inflation, and significant life events that affect the household (e.g. losing a job, gaining a
Food insecure homes are likely to face difficult decisions due to a limited amount of income, choosing between paying for medical expenses, paying rent, or buying food. According to the USDA ERS 2020, households most likely to struggle with FI include those with income near or below the federal poverty line (including those below 185% of the poverty line), all households with children, households with a single parent, living alone, black- and Hispanic-headed households, and those living in rural areas or densely populated urban cities.

Risk factors among college students have been shown to be similar to those of the national population, with the exception of college specific risk factors that include: being a first-generation college student, single parent, or former foster child, being lesbian, gay, bisexual, transgender, or queer (LGBTQ), being disabled, or of a non-white race, being housing insecure or having the risk of homelessness, having one or more part time jobs, receiving financial aid, being enrolled in the US Supplemental Nutrition Assistance Program (SNAP), receiving free or reduced lunch in high school, or experiencing FI as a child. Most students who suffer from FI have multiple risk factors, with low income status being the most common.

**Food Insecurity Survey**

The USDA developed the FI measuring tool that includes questions meant to measure food access and adequacy, food spending, and sources of food assistance among all household members. Different versions of the USDA food security module exist so that it can be used in many different settings and situations to improve response rate and measurement reliability. Despite which version is used, each tool is able to categorize a household into one of three food security statuses: food secure, low food security, or very low food security.

The full questionnaire (18-item), the US Household Food Security Survey Module,
consists of 18 questions, asking about food access, to determine food security status among household members, including children, for the past 12 months, as well as 30 days.\textsuperscript{2,15,37} The US Adult Food Security Module (AFSM)\textsuperscript{38}, or 10-item instrument, has the same set of questions as the full version but excludes the section about children in the household. This version is meant for households with no children present.\textsuperscript{15} A shorter version (six-item)\textsuperscript{39} of the survey with only six questions is meant to reduce the burden on the participant answering the questionnaire. The USDA recommends the 18-item or the 10-item versions if possible but the short version has been proven acceptable for measuring FI.\textsuperscript{15,41} Each version of the USDA FI survey includes screening questions (two-item screener)\textsuperscript{59} meant to reduce respondent burden so that if the household member’s answers demonstrate food security, the remaining questionnaire is not required to be completed.\textsuperscript{3,8,15,51}

The type of USDA FI module used among college students has varied among studies, making comparison of FI prevalence estimates across college campuses difficult.\textsuperscript{6,8,52} A recent study compared the food security modules used among college students, with results showing the 10-item survey, with the two-item screener, provided the most accurate estimate due to its ability to predict FI based on known and well-established risk factors.\textsuperscript{51} Unlike the US national FI survey, the students’ answers to the two-item screener, whether suggestive of food security or not, did not prevent them from answering the remaining FI survey questions.\textsuperscript{51} Better understanding of why college students respond at much higher rates than the general population is warranted for future research, however the AND reported that the use of the USDA FI survey modules may still be the most appropriate measurement tools to use due to it allowing for comparison to national rates.\textsuperscript{6,8,52}
Louisiana Food Insecurity

Limited income is one of the main risk factors for FI; therefore, households at or below 185% of the poverty line are more likely to experience FI compared to others. The poverty rate in Louisiana is ranked second highest in the nation, with FI trends following suit. Since 2004, the average rate of FI for Louisiana has consistently outranked the national rate. The USDA ERS reports for the years 2019 and 2020 demonstrate that the prevalence of FI in Louisiana (15.3%, 14.8%) is ranked higher than the national average (10.5%). Feeding Louisiana, a food bank organization that serves all 64 parishes, reported that one in four children live in food insecure households, within rural areas, this increases to one in three children. Greater than 16.1% of Louisiana’s population participated in the federal nutrition assistance program SNAP.

Louisiana Colleges and Food Insecurity

McNeese State University (MSU) and Louisiana State University (LSU) are both 4-year public institutions located in southern Louisiana, with roughly 126 miles between the two universities. McNeese State University is located in the southwest region, in the city of Lake Charles, with a student population of 6,456. Louisiana State University is located in Baton Rouge, with a larger student population of 31,761. Both universities have a high percentage of students who are from Louisiana, with 86.9% for MSU and 74% for LSU. Table 3.1 illustrates the demographics for both schools during the respective year and semester the survey was completed.

During the 2019 fall semester, LSU participated in a multi-institutional study evaluating housing and food insecurity faced by college students across 22 US college campuses. Prior to this study, there was no known measurement of FI among LSU students. Food insecurity among MSU students has never been measured and few studies have compared FI among same-state
Table 3.1. MSU and LSU Student Demographics

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<tr>
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<th>MSU Student Demographics</th>
<th>LSU Student Demographics</th>
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<td>Fall 2019 Semester</td>
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<td>Total Student Population</td>
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<tr>
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<td>Senior</td>
<td>1,763 (27.3%)</td>
<td>6,379 (20%)</td>
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<tr>
<td>Graduate Student</td>
<td>574 (8.9%)</td>
<td>5,841 (18.3%)</td>
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<tr>
<td>Gender</td>
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<tr>
<td>Male</td>
<td>2,415 (37.4%)</td>
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<tr>
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<tr>
<td>Other</td>
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<td>1,411 (4.56%)</td>
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</table>

Purpose of the Study

This study had two primary objectives. The first was to measure FI prevalence among MSU students, and the second was to measure the correlation between demographic information to FI risk at each university. Lastly, we compared MSU results to that of the 2019 LSU survey to evaluate any significant commonalities.

Methods

Study Design and Sampling Method

This study had a cross-sectional design, and used data collected during the fall 2021 semester, August to November, at MSU. The survey used was from the multi-institutional study that included a sample of LSU students in the fall 2019 semester. The data collected from the LSU students is included in this study for comparison to MSU students only.

The survey was built into Qualtrics and the link, or QR code, was shared by the lead
researcher with campus instructors, administrators, and student organizations, asking them to distribute it to their students. To increase participation numbers, a gift card raffle incentive was used, as well as extra credit given by some instructors for students in enrolled courses. Study participants were current MSU students and at least 18 years of age. Online consent was completed prior to starting the survey. This study was approved by the MSU Institutional Review Board committee (#10034).

**Survey Design**

The study conducted at LSU during the fall 2019 semester included a 122-question survey that collected variables including FI status, housing insecurity status, academic progress, money spending behaviors, coping mechanisms, campus resource awareness and usage, and other student-specific demographic information [year in college, financial aid usage and type]. For the MSU study, the survey length was reduced to 56 questions in an effort to reduce survey fatigue and increase the percentage of participants who completed 100% of the survey. The order of the questions was rearranged to improve response bias by putting the most important questions first [FI] and the easiest to answer at the end of the survey [demographic information]. The removal of questions was based not only on concern about length of the survey, but also their lack of contribution to the focus of this study, which is to compare food security prevalence and related demographic variables among two same-state universities. Dr. Melissa Olfert, the principal investigator from the multi-institute study, gave permission for the survey to be used for other campus FI studies.

**Survey Measure**

The final 56-question survey administered to the MSU student body included questions developed to assess food security status, housing security, financial resources, student specific
questions (year in college, attendance in class, academic progress), demographic information (marital status, veteran, international, dependents, employment status) and general questions about food (cooking confidence, resources used for food, SNAP usage).

The USDA AFSM, or 10-item screener, is designed to code participants’ responses as affirmative (1) or non-affirmative (0), depending on their answer to the question. After completion of the survey, the number of affirmative or non-affirmative responses are totaled to determine the participant’s level of food security: high food security (0 affirmatives), marginal food security (1-2 affirmative), low food security (3-5 affirmative), and very low food security (6-10 affirmative). Based on the sum of affirmative answers, participants will be categorized into one of two groups: food secure (0-2 affirmatives) or food insecure (3-10 affirmatives).

Following the USDA FI survey, participants were asked two additional questions to measure whether or not they suffered FI in high school. These questions also used the same affirmative and non-affirmative method as the USDA AFSM. An affirmative to either question would indicate that the participant experienced FI as a child, prior to coming to college.

Housing insecurity was assessed using six questions that asked students if, since starting college, they had experienced issues paying rent, living beyond capacity in the home, moving multiple times, or underpaying utility bills. If a student answered affirmatively to any of these six questions, they would be considered housing insecure. This section of the survey also included an extra question regarding whether the student ever experienced being homeless since starting college. These survey questions were developed by the Wisconsin Hope Lab, who adapted them from the national Survey of Income and Program Participation Adult Well-Being Module.

Students were asked to rate their academic performance based on class attendance, attention, and understanding of concepts taught in class, and whether they felt they would
graduate on time. Other variables collected included information about students’ age, ethnicity, race, gender, employment status, income, financial support/aid, family support, use of the federal food assistant program (SNAP), self-rated health, confidence in varying food preparation skills, marital status, dependents, being a first-generation college student, living on/off campus, veteran status, and international status.\textsuperscript{5,9}

**Statistical Analysis**

Data analysis was completed using Microsoft Excel\textsuperscript{81} and SAS version 9.4 software.\textsuperscript{82} Significance was established \textit{a priori} at \(p<0.05\). Descriptive statistics were used to describe the sample populations’ demographic information. A two-proportion \(z\)-test was applied to observe if the sample of students that report FI at LSU was similar to that of MSU. A chi square test of independence was calculated to compare FI status and the two universities.

To evaluate FI against the various variables, analysis of participant responses from LSU and MSU were kept separate. Keeping results separate allowed for comparison of significant differences, or similarities, through chi square and multivariate logistic regression models. Pearson chi square analysis was used to determine bivariate associations between food insecure and food secure students with different demographic and social variables. Variables found to be statistically significant through chi square analysis were included in the full model for evaluation through logistic regression. Statistical analysis of the LSU data only included the variables that were incorporated into the MSU study. The multivariate logistic regression measured which demographic variables had the most significant effect on FI status for each university.

**Results**

Sample demographics are demonstrated in Table 3.2. Survey results for both universities are demonstrated in two separate tables. First, Table 3.3. shows the comparison between LSU
and MSU with results for FI levels, prevalence rate, two proportion z-test, and chi-square test of independence for FI rate between both schools. Next, Table 3.4., provides the survey results sorted by university and students’ food security status (food secure vs food insecure).

Table 3.2. Sample Demographics for MSU and LSU

<table>
<thead>
<tr>
<th></th>
<th>MSU Survey Sample Demographics</th>
<th>LSU Survey Sample Demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Student Sample</strong></td>
<td>408 (97.79%)</td>
<td>519 (98.07%)</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>399 (97.79%)</td>
<td>509 (98.07%)</td>
</tr>
<tr>
<td>Graduate</td>
<td>9 (2.21%)</td>
<td>10 (1.93%)</td>
</tr>
<tr>
<td><strong>Year in College</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshmen</td>
<td>114 (27.94%)</td>
<td>136 (26.25%)</td>
</tr>
<tr>
<td>Sophomore</td>
<td>104 (25.49%)</td>
<td>138 (26.64%)</td>
</tr>
<tr>
<td>Junior</td>
<td>92 (22.55%)</td>
<td>112 (21.62%)</td>
</tr>
<tr>
<td>Senior</td>
<td>89 (21.81%)</td>
<td>122 (23.55%)</td>
</tr>
<tr>
<td>Graduate Student</td>
<td>9 (2.21%)</td>
<td>10 (1.93%)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>126 (31%)</td>
<td>125 (24.08%)</td>
</tr>
<tr>
<td>Female</td>
<td>282 (69%)</td>
<td>394 (75.92%)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>330 (80.88%)</td>
<td>364 (70.27%)</td>
</tr>
<tr>
<td>Black</td>
<td>45 (11.03%)</td>
<td>105 (20.27%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>15 (3.68%)</td>
<td>26 (5.1%)</td>
</tr>
<tr>
<td>Nonresident Alien</td>
<td>22 (5.39%)</td>
<td>21 (4.05%)</td>
</tr>
<tr>
<td>Asian</td>
<td>8 (1.96%)</td>
<td>28 (5.41%)</td>
</tr>
<tr>
<td>Other</td>
<td>25 (6.13%)</td>
<td>21 (4.07%)</td>
</tr>
</tbody>
</table>

**McNeese State University**

A total of 467 MSU students, after removal of duplicates and non-consents, completed the FI portion of the survey. A total of 408 (87%) students completed 100% of the survey. The remaining 59 (12.6%) participants completed between 18-65% of the survey.

Of the 467 students who completed the FI survey, 41.3% students reported experiencing FI. Out of the total participants, 22% were classified as experiencing very low food security, and 19% classified as low food security. The remaining participants, 58.6%, were categorized as food secure. Evaluation of the relationship between food security status and all the demographic variables was done through chi square analysis, with participants grouped into one of two categories, food secure (0) or food insecure (1).
Of the 430 students who completed the housing insecurity portion of the survey, 66.74% were found to have experienced housing insecurity since starting college. When asked about experiencing homeless, 7% reported that since starting college, they have been homeless at some point. For housing security status, participants were grouped into one of two categories, housing secure (0) or housing insecure (1), for analysis through chi square.

The relationship between the students’ responses, demographic information, and food security status was analyzed through chi square. For each analysis, the null hypothesis was that the two variables (food security status and selected variable) would be found independent, with the alternative hypothesis stating that they would not be found independent. The variables that produced a significant p value include: employment status, type of financial aid received, participation in SNAP, receipt of family financial support, expectation of graduating on time, attendance in class, understanding of concepts taught in class, rate of current health, confidence in cooking nutritious meals, confidence in cooking healthy meals without a lot of money, confidence in cooking a quick meal, use of campus resources, race, first generation college student, online or residential degree, living on or off campus, living distance from campus, having dependents, orphan/foster care, participation in free/reduced lunch program when in high school, international student status, experiencing FI as a kid, housing insecurity, and homelessness.

For the multivariate logistic regression analysis, the previously mentioned variables that produced a significant p value were included in the full model, using forward and backward variable selection to find the reduced model. Both forward and backward selections produced the same results with the following variables to be included in the reduced model: employment status (ES), progress of graduating on time (GR), confidence in cooking a quick meal (CC), race
(R), online or residential degree (DP), living on or off campus (LC), having dependents (D), FI as a child (FIC), and housing insecurity (HI). The reduced model for food security status (FSS) can be described as follows with ‘a’ being interception and ‘e’ being the error term:

\[ FSS = a + b_1 ES + b_2 GR + b_3 CC + b_4 R + b_5 DP + b_6 LC + b_7 D + b_8 FIC + b_9 HI + e \]

**Louisiana State University**

Louisiana State University surveyed 519 students in the 2019 fall semester. Of the 519 students who were surveyed, 495 (95%) completed the full survey. The other 24 students (5%) completed between 18% - 65% of the survey.

Of the 519 students who completed the FI portion of the survey, 43% were categorized as food insecure. The level of food security results showed 20% were low food security, 23% very low food security, and 56.8% were food secure. To complete the chi square analysis for the LSU students, food security was broken into the same two categories as the MSU statistical analysis, food secure (0) and food insecure (1).

Of the 515 students who completed the housing insecurity portion of the survey, 49% reported experiencing housing insecurity since starting college. When asked if they experienced homelessness, 2.14% answered ‘yes’ to this question. Of those who reported experiencing housing insecurity, 55% of them also reported experiencing FI.

Variables found to have significant p values (<0.05) when compared to food security status were the following: employment status, understanding of personal finance, SNAP participation, expectation of graduating on time, class attendance ranking, understanding of concepts taught in class, attention span in class, current health rating, cooking confidence when preparing a nutritious meal without a lot of money, ethnicity, race (white or nonwhite), first generation college student, online vs. residential degree, living on or off campus, school year,
disability, orphan/foster care, participation in free or reduced meals when in high school, experiencing FI as a child, housing insecurity, and homelessness.

Each of these significant variables were included in a multiple logistic regression analysis to identify which variables best predict food security status among LSU students. Both backward and forward selection were used, but unlike MSU, the different methods yielded different results. Backward selection resulted in the following variables being included in the reduced model: cooking confidence when preparing a nutritious meal without a lot of money (CM), online vs. residential degree (DP), living on or off campus (LC), participation in free or reduced meals when in high school (RL), experiencing FI as a child (FIC), and housing insecurity (HI). The forward selection method included the previously mentioned variables, with the exception of living on/off campus, and the inclusion of being in the orphan/foster care system as a child (OF), and homelessness (H). The Akaike Information Criterion (AIC) was used to estimate which reduced model is the most appropriate to use. Forward selection produced the lower AIC number, indicating this was the most appropriate selection for the reduced model. The reduced model for food security status among LSU students is as follows with ‘a’ being the interception and ‘e’ being the error term.

\[
\text{FSS} = a + b_1CM + b_2DP + b_3OF + b_4RL + b_5FIC + b_HI + b_8H + e
\]

<table>
<thead>
<tr>
<th>Food Security Level</th>
<th>MSU</th>
<th>LSU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% (n)</td>
<td>% (n)</td>
</tr>
<tr>
<td>Food Secure</td>
<td>58.6% (274)</td>
<td>56.8% (295)</td>
</tr>
<tr>
<td>Low Food Security</td>
<td>19% (90)</td>
<td>20% (105)</td>
</tr>
<tr>
<td>Very Low Food Security</td>
<td>22% (103)</td>
<td>23% (119)</td>
</tr>
<tr>
<td>Food Security Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Secure</td>
<td>58.7% (274)</td>
<td>56.8% (295)</td>
</tr>
<tr>
<td>Food Insecure</td>
<td>41.3% (193)</td>
<td>43% (224)</td>
</tr>
<tr>
<td>Total</td>
<td>467</td>
<td>519</td>
</tr>
</tbody>
</table>

Table 3.3. Comparison of Food Security Status for MSU and LSU Samples

The value of \( z \) is 0.5815. The value of \( p \) is 0.56192. The result is not significant at \( p < .05 \).

\[
\text{Interval} = [0.0017409, 0.0383591]
\]

\[
\text{Chi Square} \chi^2 = (1, N=986) = 0.3381, p = 0.5609
\]
Food Security

Food insecurity rate among students from both universities measured higher than the national (10.5%) and state (14.8%) levels.\(^1\) Breaking down the levels of FI (low food security and very low food security) showed that both schools had a slightly higher percentage of students who were categorized as ‘very low food security’. Food insecurity rate for Year in School results were different, with LSU having a higher FI rate among sophomores (30%) and seniors (26%) compared to MSU students, where freshmen (25%) and juniors (18%) were the highest.

MSU had a higher number of participants (23.95%) who reported experiencing FI as a child, when compared to LSU (10%). For both schools, the students who answered ‘yes’ to this question were still experiencing current issues with food insecurity. Of those students who dealt with food insecurity when they were young, 77.6% of MSU and 85% of LSU students were still dealing with the issue.

Participation in SNAP was higher for students at MSU than LSU. Of those students who reported receiving SNAP benefits, 75% of LSU and 68.75% MSU students still reported experiencing FI. For the food insecure group of students from both schools, 92% of LSU and 80.4% of MSU students reported not participating in the SNAP program.

MSU students reported a higher number of participants who received free/reduced lunch while in high school. A higher percentage of food secure students reported ‘no’ to this question than food insecure students from both schools. Of the students who reported ‘yes’ to receiving free/reduced lunch in high school, 61% of students from LSU and 47% of students from MSU were categorized as food insecure.

Students were questioned on their awareness of campus resources intended for those
experiencing limited food access. For LSU, out of the 481 students who answered this question, 50% of participants were aware of these types of resources. For MSU students, out of the 415 who answered this question, 12% reported being aware of resources, with the remaining 88% reporting ‘no’. A large percentage (78.6% LSU and 78.5% MSU) of students from both institutions reported not using campus resources intended for those in need of food. For students who are food insecure, 79% from LSU and 72.5% from MSU, reported not using campus resources. When asked if they were aware of resources, if ‘yes’, the student was prompted to type the name of the known resource. The LSU students who answered this question listed the food pantry/bank in the union and the presence of a registered dietitian on campus. For the MSU students who answered this same question, responses included: food pantry and local religious facilities near or on campus.

**Housing**

The results for housing insecurity and homelessness were higher for MSU students when compared to those at LSU. The rate of housing insecurity among food insecure students was higher than food secure students for both schools. Of the students who were food insecure and also answered the housing questions on the survey, 87% of MSU and 63% of LSU were also experiencing housing insecurity. Living on or off campus was reported, with 60% of LSU and 82% of MSU students living off campus. The MSU students weren’t given the option of free text to enter the distance (miles) they live from the campus, but instead were given distance ranges to choose from. The participants who lived ‘greater than 10 miles’ from campus (31%) had the highest percentage of FI when compared to other distances from MSU campus.

**Finances and Support**

Students were asked about employment (one or more part-time jobs, or working full time
vs. not employed), and both schools showed high percentages of students who reported currently being employed. When only looking at the food insecure students, high rates of employment were shown for both schools with 65% for LSU and 67.4% for MSU. A high percentage of students from both schools reported receiving financial aid for education. When only looking at the food insecure students, 74% of the LSU students and 86% of the MSU students report receiving some type of financial aid. Other than scholarships, Pell grants, and federal loans, other types of financial aid that were reported by both sets of participants include: Taylor Opportunity Program for Students (TOPS), parental student loan, COVID CARE ACT, work study employment, GI bill, Tiger band stipend, and college prep program paid by the parish.

When asked about receiving financial support from family members, out of all participants, both schools had a high number of students who reported ‘yes’ to this question. Also, for those who received family financial support, there was a higher percentage of food secure students than food insecure students for both universities. Both schools produced a high rate of students who reported having a poor to fair understanding of personal finances.

**Academic, Health, and Cooking Confidence**

Questions inquiring about the students’ academic progress (graduating on time, class attendance, attention span, and understanding of concepts taught in class) showed consistent results for both schools. A higher rate of students who answered ‘excellent/good’ when asked to rank academic progress was also found to be food secure. This was the same finding for all academic progress questions and for both institutions. In contrast to this, for the academic progress question regarding expectation to graduate on time and class attendance, a higher rate of students who answered ‘poor/fair’ were also found to be food insecure. For those students who answered ‘poor/fair’ for the other two academic progress questions, occurrence rates for both
food secure and food insecure students were similar. When asked to rank their personal health, a higher percentage of food secure students ranked their health as ‘good/excellent’ when in contrast to those who ranked their health as ‘poor/fair’ being higher food insecure students for both schools. Questions regarding the students’ confidence in cooking (cooking nutritious food, cooking a meal in a short amount of time, cook a nutritious meal without a lot of money, and ability to follow a recipe), showed that the category of those students who felt extremely confident to very confident in these skills included a higher percentage of food secure students than food insecure. This finding was the same for each of these cooking confidence questions, and also for both schools.

**Demographics**

MSU participants (35.5%) reported a higher number of students who are first generation college students, when compared to those at LSU (25%). Of those who reported ‘yes’ to being a first-generation college student, 53% of those from LSU and 44.8% of those from MSU were found to be food insecure. The MSU students (12.25%) had a higher rate than LSU students (6.74%) of those who reported having dependents. For the group of students who reported having dependents, 42.8% of those from LSU and 60% of those from MSU were food insecure. Of the 8.67% LSU students who reported ‘yes’ to having a disability, 62% were food insecure. Students from MSU reported a higher percentage of disability with 11.27%, but it was split 50/50 between both food secure and food insecure students. Participants from both schools reported a very small percentage (LSU 1.35% and MSU 1.96%) of students who were in foster care, an orphan, or a ward of the court before the age of 18 years old. However, these students who did report ‘yes’ to this question, reported a high percentage of experiencing food insecurity with 85.7% of LSU and 75% of MSU. Out of the 515 LSU participants, 4.05% were
international students with 71% being food secure and 29% food insecure. Out of the 408 MSU participants who responded to this question, 5.39% were international students, but with opposite food security results with only 27% being food secure and 73% being food insecure.
Table 3.4. McNeese State University and Louisiana State University Survey Results Based on Food Security Status

<table>
<thead>
<tr>
<th>Variable</th>
<th>MSU Food Insecure n (%)</th>
<th>MSU Food Secure n (%)</th>
<th>Chi Square P Value</th>
<th>Included in Final Logistic Model</th>
<th>LSU Food Insecure n (%)</th>
<th>LSU Food Secure n (%)</th>
<th>Chi Square P Value</th>
<th>Included in Final Logistic Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Insecure as a Child</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>80 (20.7%)</td>
<td>23 (5.35%)</td>
<td>P value &lt;0.0001</td>
<td>Yes</td>
<td>44 (8.51%)</td>
<td>8 (1.55%)</td>
<td>P value &lt;0.0001</td>
<td>Yes</td>
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<tr>
<td>No</td>
<td>89 (18.6%)</td>
<td>238 (55.35%)</td>
<td></td>
<td></td>
<td>178 (34.43%)</td>
<td>287 (55.51%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>169 (39%)</td>
<td>261 (60.7%)</td>
<td></td>
<td></td>
<td>222 (42.94%)</td>
<td>295 (57.06%)</td>
<td></td>
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<tr>
<td>Housing Insecurity</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>147 (34.19%)</td>
<td>140 (32.56%)</td>
<td>P value &lt;0.0001</td>
<td>Yes</td>
<td>138 (26.8%)</td>
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<td>No</td>
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<td></td>
<td>82 (15.92%)</td>
<td>180 (34.95%)</td>
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</tr>
<tr>
<td>Total</td>
<td>169 (39.3%)</td>
<td>261 (60.7%)</td>
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<td></td>
<td>220 (42.72%)</td>
<td>295 (57.28%)</td>
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<tr>
<td>Yes</td>
<td>21 (4.88%)</td>
<td>11 (2.56%)</td>
<td>P value 0.0015</td>
<td>No</td>
<td>10 (1.94%)</td>
<td>1 (0.19%)</td>
<td>P value 0.0011</td>
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<tr>
<td>No</td>
<td>148 (34.42%)</td>
<td>250 (58.14%)</td>
<td></td>
<td></td>
<td>210 (40.78%)</td>
<td>294 (57.09%)</td>
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<td></td>
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<tr>
<td>Total</td>
<td>169 (39.3%)</td>
<td>261 (60.7%)</td>
<td></td>
<td></td>
<td>220 (42.72%)</td>
<td>295 (57.28%)</td>
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<td>No</td>
<td>55 (12.79%)</td>
<td>60 (13.95%)</td>
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<td></td>
<td>78 (15.15%)</td>
<td>142 (27.57%)</td>
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<tr>
<td>Total</td>
<td>169 (39.3%)</td>
<td>261 (60.7%)</td>
<td></td>
<td></td>
<td>220 (42.72%)</td>
<td>295 (57.28%)</td>
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<tr>
<td>Financial Aid</td>
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<tr>
<td>Yes</td>
<td>146 (33.95%)</td>
<td>223 (51.86%)</td>
<td>P value 0.7827</td>
<td>No</td>
<td>162 (31.46%)</td>
<td>208 (40.39%)</td>
<td>P value 0.4350</td>
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</tr>
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<td>No</td>
<td>23 (5.35%)</td>
<td>38 (8.84%)</td>
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<td></td>
<td>58 (11.26%)</td>
<td>87 (16.89%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>169 (39.3%)</td>
<td>261 (60.7%)</td>
<td></td>
<td></td>
<td>220 (42.72%)</td>
<td>295 (57.28%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding of Personal Finance</td>
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Discussion

Studies measuring FI among college students on US campuses have reported results that the prevalence is higher than the national average (10.5%).\textsuperscript{4-9,52} The multi-institutional study that measured FI across 22 US college campuses reported a rate of 44.1\%\textsuperscript{9}, while a scoping review reported a weighted estimate of 36\%.\textsuperscript{8} The students at LSU and MSU are no different, with a combined average of 42.5\%. Possible reasons for the high rate of FI among these samples of students could be multifaceted, with many possible factors affecting the students at both LSU and MSU.

The majority of students from both universities are from Louisiana, which could be a risk factor of its own.\textsuperscript{1,35,36} The USDA ERS reports the FI prevalence for different regions of the US with the most recent (2020) stating that those from the south have an increased risk when compared to other areas.\textsuperscript{1} Since 2004, Louisiana residents have consistently reported a higher prevalence of FI when compared to the national rate.\textsuperscript{1,10,78} Louisiana is also at a disadvantage for FI, with 95\% of the Louisiana parishes having average incomes at or below the poverty line.\textsuperscript{77} Location alone could be a possible reason for why both schools have a high percentage of students who are categorized as food insecure.

Previous studies have reported that food insecure students are more likely to report lower grade point averages (GPA) than food secure students.\textsuperscript{21,86,87} The multi-institutional study showed students who were food secure were more likely to positively rate their academic performance and expectation to graduate on time than food insecure students.\textsuperscript{9} Students who participated in this study reported similar results at both LSU and MSU. Those who rated their academic progress as ‘good/excellent’ were more likely to be food secure. This result was consistent for all academic questions for both universities. Demonstrating that FI negatively
impacts a student’s academic performance could help educate university administration and leadership of the need to improve food access on college campuses.\textsuperscript{4,9,26} Recent studies have indicated that many university administrators were unaware students were dealing with FI.\textsuperscript{5} If administrators are made aware of FI and how it could negatively affect a student’s academic progress, they may act more expeditiously to implement interventions on their campuses.

Students who come from lower socioeconomic households with limited resources are less likely to avoid FI in college.\textsuperscript{5,9} Students who, in the past, have relied on federal assistance for food access are at an increased risk for experiencing FI.\textsuperscript{5,6,9} Students from both universities who answered ‘yes’ to experiencing FI as a child and/or the receipt of free/reduced lunch in high school still reported experiences with FI, with students who reported ‘no’ being more likely to be food secure. Food insecurity was higher among students who reported being a first-generation college student for both LSU and MSU. Students who are the first in their family to attend college, may come from lower income homes when compared to those with parents who have college degrees.\textsuperscript{5,6,9,17} Obtaining a college degree improves the probability of earning higher wages and reduces the chances of being unemployed.\textsuperscript{17,45} A program that assesses incoming freshmen may be helpful to identify those students at high risk for FI, and target available resources to these individuals.

Receipt of SNAP benefits are meant to improve food access and reduce FI risk, however, students who participate in this program are considered to be at a higher risk than those who do not.\textsuperscript{5,6,9,14} Out of the students who reported ‘yes’ to receiving SNAP benefits, both schools demonstrated a higher percentage of these students categorized as food insecure than food secure. The reasoning for this may be that SNAP benefits are not enough to prevent FI, and students may lack the ability to adequately utilize the benefits.\textsuperscript{9,88} The ability of the student to
budget, grocery shop, and adequately plan meals is needed so that food resources last until the next month.\textsuperscript{5,6,9}

Despite participation in SNAP benefits being a risk factor, a larger percentage of students who are food insecure reported not receiving SNAP benefits. One of the main solutions proposed for tackling FI among college students is to improve access to SNAP benefits.\textsuperscript{5,6} Eligibility SNAP requirements for college students are primarily based on the number of enrollment hours in school. Students who are full time would be required to meet other specific guidelines to be granted assistance (ex: being disabled, working more than 20 hours, having a child under 6).\textsuperscript{88,89} Despite these eligibility requirements, the GAO estimated that 2 million students would have qualified for assistance but did not apply, citing reasons such as students were not aware of eligibility, and the application process is confusing and difficult to navigate, thus making students less likely to apply for assistance.\textsuperscript{5}

The GAO was asked to produce a report to try to determine why FI existed in college students, despite the disbursement of loans, federal aid, and grants. The report and other studies have shown that the cost of attending college has gone up, while federal and state funding to higher education has decreased, pushing more of the financial responsibility onto the student.\textsuperscript{5,6,9,18} Because of this shift, students from low income families are at a disadvantage in obtaining a college degree.\textsuperscript{5,6} In recent years, a shift has occurred in the college student demographics, with an increase in enrollment among low income students and those labeled as ‘non-traditional students’.\textsuperscript{5,6,9,18} A traditional college student would be an 18-24 year old individual who has entered college right out of high school and depends on their parents for expenses until they graduate and can support themselves with a professional career.\textsuperscript{5,17} The GAO report states that in 2016, the majority of college students (71\%) were ‘non-traditional,’ with
these students being more likely to be older (>24 years), independent from their parents, be an orphan or from foster care, have children of their own, and have incomes below 200% of the poverty guidelines.\textsuperscript{5,17}

Solutions to combat FI among college students have included a wide variety of approaches, ranging from short-term solutions with the presence of a food bank/pantry being placed on campus, to long-term solutions of designating staff to help students apply for food assistance programs.\textsuperscript{6-8,10,11,24,30-34} Other solutions have also included meal donation programs, as well as food literacy classes to teach students basic nutrition skills, such as how to budget and prepare meals.\textsuperscript{11} Despite the wide variety of solutions implemented, determining which is the most effective has been inconclusive. Many studies have addressed the need for cohort prospective studies to evaluate the long term impact or success of the intervention implemented on college campuses.\textsuperscript{4-6,9,26} The recent position paper from the AND addressing FI among college students stated that a single solution on campuses would not be as successful as multiple solutions.\textsuperscript{6} Risk for FI is multi-faceted, so it makes sense that no one intervention could be applied to all students who are dealing with limited food access.\textsuperscript{5,6,18} The AND calls for solutions on a larger scale, by targeting federal and state interventions to help improve students’ access to SNAP, as well as possible legislation to improve benefits received by students to help ensure their nutritional needs are met.\textsuperscript{6}

Limitations

This was a cross-sectional study conducted during the fall semester for both universities, from the months of August to November, which relied on self-reported information from the participants. The results gave a one-time measurement of exposure to FI and related demographics, but could not establish causal relationships, as a response bias is a possibility
when using a survey as a measuring tool. Both universities included samples that were non-probability, which were over-represented in participants who were white, female undergraduates, making generalizations to each campus, not to mention all US college campuses, not possible. Despite the lack of generalization, similar findings from previous studies were corroborated in this study.

When building the survey into Qualtrics for the MSU study, one of the USDA FI questions was unintentionally omitted; “Since starting college, were you ever hungry but didn’t eat because there wasn’t enough money for food?”. This may have resulted in one less affirmative response for some MSU participants, which could have slightly underestimated their FI status or level. However, because FI estimates were so similar for both schools, this accidental omission may not have critically affected food security results for MSU students.

These surveys were distributed to each respective campus 2 years apart, with LSU students being surveyed during the 2019 fall semester and MSU during the 2021 fall semester. MSU students experienced two major events that had no effect on the LSU students during their fall 2019 semester. First, at the beginning of 2020, the World Health Organization (WHO) reported an outbreak called Coronavirus Disease 2019 (COVID-19), and on March 11, 2020, declared that COVID-19 was a pandemic. The Louisiana Governor, John Bel Edwards, issued a state of emergency preparedness proclamation that issued a stay at home order, resulting in the closure of schools and non-essential businesses (bars, gyms, restaurants, hair salons, malls, and more) to help prevent the rapid spread of the COVID-19 virus. These services were closed indefinitely, causing unemployment claims from March to April to soar in Louisiana (5.3% to 13.1%) and for the rest of the nation (4.4% to 14.7%). Changes to living situations and/or loss of employment following the onset of the COVID-19 pandemic were reported to have a high
impact on students’ food security status in a recent study.\textsuperscript{30}

The second event that the MSU students experienced was during the 2020 fall semester, when Lake Charles, LA was hit by two category 4 hurricanes (130 -156 mph), 45 days apart. Hurricane Laura made landfall on August 20, 2020 and Hurricane Delta on October 4, 2020.\textsuperscript{94,95} The majority of MSU’s student population (63.6\%) are from the local 5 parishes (Allen, Cameron, Calcasieu, Beauregard, and Jefferson Davis) in southwest Louisiana, which could explain the high rate of housing insecurity reported by the MSU participants.\textsuperscript{35}

\textbf{Recommendations}

Limitations exist in the use of the USDA AFSM among college students due to the fact the survey is meant for household measurement and not at an individual level.\textsuperscript{4,5} Various studies have addressed this issue and have recommended finding a measurement that provides consistent and comparable results.\textsuperscript{6,8,9,52} One of the suggestions is to conduct formative research with open-ended questions to evaluate the food environment on college campuses.\textsuperscript{52} One step that should be taken is to conduct focus groups with students who are at an increased risk for FI, and try to understand their perspective on what obstacles they perceive as barriers to improving food access. This could help mold the framework for each university’s specific interventions, given the diversity of students varies from one campus to the next.
CHAPTER 4. EVALUATION OF FACULTY, STAFF, AND ADMINISTRATIONS’ PERCEPTIONS OF FOOD INSECURITY AMONG THE STUDENTS AT TWO SOUTHERN LOUISIANA UNIVERSITIES

Introduction

Food insecurity (FI) is measured among United States (US) households every year with the United State Department of Agriculture (USDA) Economic Research Service (ERS) reporting prevalence rates based on household characteristics and significant trends.\(^1\)\(^2\) Food insecure households struggle to maintain adequate food access to meet nutritional needs, resulting in coping mechanisms such as skipping meals, reduction in food quality and variety, and utilization of federal assistance program.\(^2\) One US subgroup that is not represented within this national report is college students.\(^5\)\(^6\) The Academy of Nutrition and Dietetics and the Government Accountability Office have suggested that campuses take action to help alleviate FI through implementing solutions to increase students’ access to food; however, studies have suggested that many campuses administrators, faculty, and staff lack awareness of FI among its students, thus creating an institutional barrier to improving food access on campus.\(^5\)\(^6\)\(^8\)

Though 19.4 million individuals were enrolled in US colleges in the fall of 2020\(^9\)\(^6\), a nationally representative measurement of FI among college students is nonexistent, making it difficult to truly understand the magnitude of the problem.\(^8\)\(^5\)\(^1\)\(^5\)\(^2\) Chaparro et al. (2008) was one of the first to measure FI among college students, at the University of Hawaii at Mānoa, and found a reported prevalence rate of 21%.\(^7\) Since then, there has been an expansion in research measuring FI among US college students\(^5\)\(^6\)\(^8\)\(^9\), with a multi-institutional study (2019) reporting an estimated rate of 44.1%.\(^9\) Two systematic reviews and one scoping review have been completed, with rates of 32.9% (2017)\(^26\), 42.2% (2019)\(^4\), and 36% (2020)\(^8\), but these estimates have limitations due to the variation of methodology used to measure FI among college...
In short, studies have not accurately measured FI prevalence among a representative sample of US college students, and the issue is considered a growing health concern.\textsuperscript{5,6}

Food insecurity research among college campuses have indicated students struggling with limited food access vary little from the food insecure general population.\textsuperscript{5,6,9} Individuals with FI typically rely on strategies to deal with food inadequacy, such as skipping meals and purchasing less expensive food items that are lower in quality, resulting in a decreased intake of fruits, vegetables, dairy, and protein.\textsuperscript{20,63} This inadequate nutritional intake is associated with negative health outcomes, with long-term consequences that include higher risk for diabetes, obesity, cardiovascular disease, anxiety, depression, and malnutrition.\textsuperscript{1,6,11,22-24} College students have been shown to rely on similar coping mechanisms, with reports of increased anxiety, depression, and negative academic outcomes.\textsuperscript{4-6,9,26} A longitudinal study completed by Wolfson et al. (2022) showed that food insecure students were less likely to graduate than food secure students, especially in first-generation college students.\textsuperscript{13} Furthermore, food insecure students who do graduate are more likely to receive an Associate’s degree, versus a Bachelors.\textsuperscript{13}

Though national FI metrics are not available\textsuperscript{6}, many college campuses have recognized the problem and implemented solutions in an effort to increase food access for students, with the most common initiative being a food pantry on campus.\textsuperscript{5,6} Other solutions include students donating leftover meals from pre-purchased campus meal plans, emergency assistance programs, and increasing FI education among faculty and staff.\textsuperscript{,5,6,18} However, these solutions are considered short-term approaches, leaving the need for long-term systems to be considered.\textsuperscript{13,21,22} In addition, there is a need for research to determine the effectiveness of these existing
 initiatives, which could help further enhance relief efforts and determine where and how services should be directed to aid students most in need.

Some studies have recommended that college campuses implement policy changes to increase efforts to aid students struggling with FI. Solutions suggested involve the development of student support systems through increased allotment of resources, such as funding, dedicating staff to helping struggling students, implementing food scholarships, or screening students who may be high risk for FI through the registrar's office. Solutions such as these, because of the increased burden on campus resources, would require support from administrative staff and faculty, who serve as the leadership and key decision makers on campus.

To further explore solutions to address FI on college campuses, Feeding America, a nonprofit organization that operates a network of food banks across the US, interviewed food bank representatives to identify what factors were needed to ensure successful implementation of any type of on-campus solution. One of the four key factors uncovered was ‘Relationships and Partnerships,’ where they shared that it’s critical to gain the support of college leadership and administration to ensure long-term success. Similarly, a major obstacle to success is the lack of support or commitment from college leadership. To illustrate this concern, one of the interviewees described that initiatives run by “student champions” struggle to maintain successful implementation after that student has graduated. Encouragement to create partnerships with local businesses and food banks were also recommended as a way to increase resources and awareness, and improve the amount, type, and quality of food offered by the college food bank.

The other three key factors determined by Feeding America were Operations, Awareness, and Access. According to their findings, Operations should include manuals that can serve to
guide the food pantry, but also help to continue to replicate relief efforts when students graduate or new personnel are hired. *Awareness*, or lack thereof, is described as a major barrier to success. To improve *awareness*, three main tenets were identified: (1) Tailored marketing events to help spread the message of available resources and to engage students; (2) Utilizing campus events to spread awareness; and (3) Acknowledging that students who relied on the National School Lunch Program in high school may require additional assistance. *Access*, the fourth key factor, addresses reducing the stigma attached to utilizing a food bank or asking for help. Suggestions to reduce stigma include making the food pantry welcoming, allowing professors and staff to use the resource so that it does not appear to be associated with those who are low income or needy. Another piece to creating access is “navigating campus bureaucracy and red tape.” This includes real and perceived barriers, such as assuming bureaucracy will exist and that navigating departmental “politics” will require time.

Despite acknowledgement that the consideration and support of campus leaders is key to potentially lowering FI prevalence among US college students, few studies have conducted qualitative research that involves interviewing college administrators, staff, and faculty to explore their views of the FI issue among the student population. To the author’s knowledge, only four qualitative studies focusing on college administrators views of FI have been completed. These studies touch on some of the points highlighted in the interviews conducted by the Feeding America organization, and also bring light to a lack of FI awareness and understanding among campus leadership, in general.

One such study was conducted by the Hope Center for College, which implemented a national movement, #RealCollege, to address student’s not being able to meet their basic needs. In 2014, the Hope Center study conducted interviews with administrators, staff, and faculty from
2-year and 4-year institutions in the US. Finds from this study highlighted that administrators can be obstacles to implementing change. One of the three themes identified by the interviews, the “Undeserving Undergraduate,” included participants voicing their concern over students who come to college and are unable to meet their own basic needs. Needs were described by interviewees as a prerequisite that should be required to be enrolled in college.\textsuperscript{73}

Another study with campus faculty and staff focus was conducted in 2018 by the Government Accountability Office (GAO). The GAO was asked to evaluate why FI existed at such high rates, and in this study the colleges involved reported that administrators, faculty, and staff were largely unaware that this issue even existed. Increasing awareness was recommended to decrease the stigma associated with accepting help or utilizing resources the colleges had to offer, such as the food pantry. One participant stated that once the food pantry was moved to a more centralized location on campus, utilization increased simply due to an awareness of its presence. In addition to increasing the visibility of resources that are available, a coordinated effort is needed, and can be accomplished by centralizing services. Some larger campuses have services spread out among different departments, thus making it difficult for students to find resources.\textsuperscript{5}

A third study conducted by Brown (2019) included interviews of only three subjects, all within the department of Student Services. The goal of the study was to capture their perspective on the challenges to helping food insecure students. Findings from this study highlighted the importance of having data to show whether there is a need among the students. Part of this study included having students complete a FI survey and presenting this information to the three participants. This information demonstrated that, in fact, there was a prior-to unknown need. One participant queried, “we don’t know what we don’t know, and so how do we reach those
students?” The lack of a national FI prevalence rate among college students has led to some studies recommending that the colleges themselves should screen students for FI to gain more information on where to direct resources.34

Finally, Olfert and colleagues (2020) evaluated ways to best disseminate information on FI among college students. This study reported that solutions were more commonly implemented by the students themselves, and not necessarily by college leadership. A disconnect exists between administrative leaderships’ awareness and students’ needs. Part of this study indicated that one of the main solutions for FI should be to “expand student services,” which would require administrative support, including those in higher level positions such as Vice Provost and University President. Utilizing data to show there is a need was described as “essential” to increase awareness on campuses.72

These studies show that university staff and administrators, as the decision makers on campus, may not feel that a student’s lack of food access is within their scope of responsibility.34,72,73,76 However, literature reporting the correlation between students’ academic success 5,6,9,13 and FI could prompt university institutions to change their stance or modify and expand their campus’ response to the issue. Understanding the perceptions of university faculty, staff, and administration is critical to help address the problem of FI among students attending college in the US.

Purpose of the Study

The aim of this study was to determine staffs’, faculty’s, and administrators’ awareness, perceptions, and attitudes regarding FI among college students. The objective was to use interview data to examine how participants from MSU and LSU would address FI and gain their perspective on what barriers they perceived as obstacles to helping these students. Differences
and similarities between the two universities were also considered when analyzing the data collected.

To create support mechanisms for students who are struggling to obtain food on a daily basis, the buy-in of the university's leaders could be vital.\textsuperscript{72,76} The information obtained from this current investigation was critical because it had the potential to demonstrate the obstacles that may be present that could delay efforts to help these students in need. It was also imperative to evaluate the types of information needed by administrators to ensure that food insecurity could be addressed to better support students’ retention and graduation rates.

**Methodology**

**Food Insecurity in Louisiana and on its College Campuses**

According to the 2020 USDA ERS, the risk of being food insecure is higher among populations who live in the south\textsuperscript{1}, with Louisiana reinforcing these statistics with its FI prevalence exceeding the national rate since 2006.\textsuperscript{1,10} This study was conducted at two southern Louisiana colleges, Louisiana State University (LSU) and McNeese State University (MSU). Both are four-year public universities, but differ in size with a student population of 31,761 at LSU \textsuperscript{36} and 6,456 at MSU \textsuperscript{35}. A majority of students attending both universities were from Louisiana, with 86.9\% for MSU and 74\% for LSU.\textsuperscript{35,36} Given Louisiana’s poverty rate, trend of outranking the national FI prevalence rate, and the high percentage of students who are from Louisiana, it is likely a large number of these students were struggling with food access.

During the 2019 fall semester, LSU students were surveyed for FI, with a final participant sample of 519 students and a prevalence rate of 43\%.\textsuperscript{9} MSU students were given the same FI survey, but 2 years later, during the 2021 fall semester, with a participant sample of 467 students
and a prevalence rate of 41.3%. The MSU data was not available at the time the interviews for this study were conducted.

**Data Collection**

Email addresses of faculty and staff were acquired through each universities’ online personnel directory. A purposeful sampling technique was used to target employees whose job responsibilities included working with students (i.e. teaching faculty and advisors) and/or providing a voice for the students (i.e. student services, academic affairs, or administrative leader). Emails were sent out to different departments in an effort to gain multiple perspectives.

Emails contained a brief message explaining the purpose of the study and inviting them to participate in a short interview to answer questions regarding FI among college students on their campus. An attachment was included in the emails to give recipients the list of research questions that would be asked in the interview. They were also provided a copy of the IRB consent form to explain that participation was voluntary, and responses would remain confidential. Participants were required to be current employees at their respective universities and greater than 18 years of age. Those who responded to the emails were scheduled for an interview and written consent was obtained. No incentive was offered.

Interviews were semi-structured with open-ended questions to allow participants the freedom and flexibility to give their point of view and allow the researcher the opportunity to ask follow-up questions to gain further understanding or elaboration on responses. Participants were asked the same set of questions, with the same order followed for each interview. Asking the same set of questions allowed an increase in comparability of responses collected during the interviews.
Questions were formatted to allow the participants to share their experiences, knowledge, attitudes and behaviors regarding FI and the institution with whom they were affiliated. At the beginning of the interview, the first set of questions asked the participants’ their current position and knowledge of FI. Some participants asked for the definition of FI, while others could give a brief description of what they knew about the topic. Asking participants to explain their understanding of FI allowed groundwork to be laid for the next set of questions meant to access their perceptions and attitudes.

The second set of questions were developed to evaluate the participants’ experiences with FI, their awareness if the university ever dealt with FI issues, and how they would currently rate food access/availability on campus. These questions required participants to think about their own experiences where they might have dealt with FI, if they had observed a peer or student struggling with FI, or if they never witnessed it firsthand. Questions regarding the university prompted the participants to think about the campus resources available to students, and how the layout of the campus (i.e. walking distance, class schedule, location of buildings, and parking lots) might affect the students’ ability to access services, such as the food pantry.

The last set of questions allowed participants to voice their opinions and views in regards to FI. They were asked about challenges they perceived as obstacles to helping food insecure students, and the solutions they believed would be the most effective to implement on campus. This study was approved by LSU Ag Center Institutional Review Board (IRBAG-21-0095). Interview questions are listed in Table 4.1.
Table 4.1. List of Interview Questions

<table>
<thead>
<tr>
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<th>Question</th>
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<tbody>
<tr>
<td>1.</td>
<td>How many years have you worked at this University?</td>
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<tr>
<td>2.</td>
<td>How many months or years have you been in this current position?</td>
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<tr>
<td>3.</td>
<td>Can you tell me what you know about food insecurity?</td>
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<tr>
<td>4.</td>
<td>Do you have any past experiences with food insecurity (students, friends, yourself, or observational)?</td>
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<tr>
<td>5.</td>
<td>To your knowledge, has this university ever dealt with food insecurity issues?</td>
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<tr>
<td>6.</td>
<td>Would you say the current students at this university have readily available access to food? Why or why not?</td>
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<tr>
<td>7.</td>
<td>If this university were to have a high rate of food insecurity among its students, what would you recommend as a system or intervention to help these students?</td>
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<tr>
<td>8.</td>
<td>What challenges, if any, would you say this university faces in helping to improve the accessibility to food for students?</td>
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Data Analysis

Each interview was audio recorded and transcribed verbatim by the researcher or through the use of the transcription service Rev\textsuperscript{99} with each document checked for accuracy. At the beginning of the interviews, the lead researcher asked if the session could be recorded for transcription purposes and verified the recording would not be available to anyone other than the researchers. All participants agreed to the recording.

An analytical memo was kept throughout the data collection process to note observations or thoughts that may have occurred during the interviews with participants. The memo served as a resource that was only used and viewed by the lead researcher. The use of the memo helped to validate and enhance themes that emerged from interviews in the data analysis process. One of the recordings was inaudible and unable to be adequately transcribed, which required the researcher to use the notes from the analytical memo to document this participant’s responses and views.

Each of the audible transcripts were analyzed by hand using first cycle and second cycle coding techniques recommended by Saldaña (2016). The first cycle involved analysis of the transcripts to begin to summarize and aggregate the data collected to identify meaning and significance. The second cycle involved organizing and re-analyzing the first cycle codes, which
allowed the researcher to identify codes that were related to each other and might fit within one theme or theory together. The first cycle coding approaches used in this investigation included: (1) In Vivo and (2) Initial coding. Using different coding techniques for each source of data allowed diverse codes to emerge during the analysis phase. ‘Initial’ coding, provided a place to start to aggregate the data and identify meaning within the participants’ responses. The ‘In Vivo’ approach was used because it allowed the codes to be in the participants’ voices, which can verify the participants’ genuine meaning (i.e. “voguish,” “insulated bubble,” and “pain points”).

For the second cycle, the coding techniques used included: (1) Axial and (2) Theoretical. ‘Axial’ coding involved reevaluating the first cycle codes to identifying subcategories and organizing similar meanings together. For example, one participant stated that “students are not forthcoming” about their issues, with another participant declaring that “students do not want to project their issues.” These responses fit under the same theme, ‘students are not forthcoming with their issues,’ because both participants are describing, in their own words, students don’t typically open up about personal struggles.

‘Theoretical’ coding involved an additional phase of grouping themes together and identifying re-emerging patterns within the data. For instance, when resources were mentioned in the interviews, MSU participants voiced resources “were thin,” and it’s tough to get administrative support where “money is a big piece of the challenge.” These responses consisted of the participants’ perspectives that administration has reservation with allocating “limited” resources to new campus initiatives.

Constant and rigorous analysis of the transcripts was conducted in cyclic
phases through an inductive methodology to identify the participants’ responses, attitudes, and views to better understand the phenomenon. Core categories emerged from the interviews from the participants through recurrent analysis phases that resulted in identification of major themes. Interviews, data, and coding tables were reviewed and analyzed by an additional researcher to enhance quality and accuracy in the data analysis process and resulting themes.

**Results**

Interviews were conducted from February 2020 to September 2021 with a total of 25 participants (13 LSU, 12 MSU). Participants included administrative faculty, instructors, student service, or academic affairs specialists. Seven of the interviews were completed in person, with the remaining 18 conducted through an online meeting platform (Zoom) due to the COVID-19 pandemic. Interviews were conducted by the author and lasted an average of 30 minutes, with a total of 13 hours of audio recordings. The length of the interviews was dependent on how much detail each participant decided to volunteer, or if a follow-up question was needed for clarification.

In the end, there were four main themes uncovered by the interviews, all of which potentially have an effect on FI among these two student populations. They are as follows: (1) Students are not forthcoming with their issues, (2) Awareness and communication of food insecurity existence on campus, (3) Students come unprepared to take care of themselves, (4) Campus resources available to students.

**Theme #1: Students Are Not Forthcoming with Their Issues**

Participants reported that students were not forthcoming about FI or any personal issues. Asking for help was described as difficult by multiple participants, with pride, shame, stigma, and embarrassment listed as possible explanations. Students directly admitting to having
personal struggles is described as rare by many participants. “Students only pull back the veil when it’s really bad behind the scene,” “students will come to me when they are barely scraping by,” and “they are coming to me as a last resort because they need solutions” are some of the comments that describe students’ difficulty with asking for help.

One participant stated the importance of building rapport with students and commented that, in the past, they have had to rely on techniques such as self-disclosure so that the students feel more comfortable talking to them. For example, one participant stated that using their own experiences helps the student to know “this person gets me.” Similarly, some interviewees ascertained that the lack of a trusting interpersonal relationship may contribute to little or no communication from students, regarding their problems. A few participants within administrative roles mentioned they lack that one-on-one interaction with students, and, as a result, are not able to see the problem. Being in an “authoritative role” could possibly prevent the student from seeking help from these individuals. One such participant remarked, “students only come to see me for grade appeals or administrative problems.”

Multiple participants related various observations and indirect comments made by students, which led to speculation that the student may be struggling to meet their needs. The use of the term “anecdotal observation” was used by participants, as they described individuals showing up at events involving the offering of free food and appearing to only be there for the food. Students would make “incidental remarks” about struggling with finances, such as not being able to afford textbooks, rent, utility bills, and things of that nature. This led participants to suspect that FI must be a factor in those situations where money is limited, as other debt “probably pulls from their grocery budget.”
Stigma was perceived to be associated with students’ unwillingness to accept assistance or utilize resources on campus. A participant voiced that those who have never struggled with limited resources may not understand the perspective of a food insecure student and/or their perceived stigmas. This participant described these possible stigmas as “pain points,” and recommended that seeking out the perspective of food insecure students could help identify what stigmas bother them and possibly help increase utilization of resources.

One participant, who related that they struggled with FI when they were a freshman in college, admitted that they would probably not have used the food pantry if that had been available when in school. When prompted to explain further, the participant responded that they felt shame and that they wanted to “blend in” with their peers, and “stepping foot” in the food pantry would signal that they were actually different from others. Another participant addressed stigma as an obstacle to helping students, with them remarking that students don’t want to be an “outlier.”

One participant remarked that resources, especially the food pantry, should be marketed to all students, so that there is not the perception that you have to be ‘in need’ to access this service. “Academically adrift” is a term one participant used to justify expanded services to all students. They detailed that all students struggle at some point during their college career and that offering the services to all could improve retention and also decrease the stigma associated with resources offered.

**Theme #2: Awareness and Communication of Food Insecurity Existence on Campus**

Awareness and communication were identified as key components needed for campus initiatives and utilization of available resources, an idea discussed with participants from both universities. Awareness will focus on the knowledge and magnitude of the issue (i.e. FI
existence, risk factors, available resources, and impact on health), while communication will relate to the vehicle on which the message travels (i.e. emails, flyers, and syllabus), the frequency it is delivered, and how the message/resources are marketed (welcoming or stigma present). These definitions are based on the participants’ responses discussing these terms.

Awareness is the knowledge and understanding of the issues that FI students manage. “It’s important to be knowledgeable of your student population,” and realize that students are from different backgrounds. That “plays a factor into the food security piece,” conveyed a participant. Other comments that carried the same sentiment include, “we don’t have a strong understanding of the different challenges that our students face,” and “I think we all live in this insulated bubble and don’t appreciate the different situations our students come from.”

One participant addressed that some within their institution don’t understand what some of these students and their families sacrifice to get to college. This participant stated “that narrow focus is coming from their own ability to not have to want,” and “you have to be open to our students who don’t grow up like us and have the same support.” Another participant voiced similar remarks that emphasized the support systems vary from student to student and not all families can provide extra support when attending college.

Campus communication of available resources were addressed by participants from both universities. The awareness of campus issues, resources available, and how to access them can be attributed to how well the campus communicates with its students and employees. Understanding where the breakdown in communication occurs was difficult for many of the participants to pinpoint.

“Advisors and college deans should know about the food pantry,” one participant remarked, and they “should be the front lines to communicate to students about what resources
are available to them.” When addressing awareness of resources among university faculty and staff, a few participants were unaware of either campuses’ food pantry existence, its current location, or if it was present prior to the COVID-19 pandemic. The inconsistency in knowledge of available resources was described as only “visible at peak moments,” with reported increases in donations and visibility during natural disasters (floods, hurricanes), which results in strong participation. However, the “issue is everyday whether there is a storm, or not.” Another participant remarked that food drives peak in the fall semester because of the holidays, but are sparse during the spring and summer semesters.

Participants felt that the food accessibility on campus was adequate, but communication to students regarding available resources was another issue. Students, especially incoming freshmen who are new to the campus, get “inundated with so much information” that they retain nothing. Students are given a lot of information regarding services available to them when they first arrive, and then they’re on their own. Another participant stated that “all the fun activities” are highly promoted, but the resources to support students in the area of academics or health are marketed less and inconsistently.

**Theme #3: Students Come Unprepared to Take Care of Themselves**

Some participants voiced that students are learning how to be independent, manage money, and prioritize needs over wants. A participant voiced, “one thing that we have recognized is that Freshmen are showing up and don’t have life skills.” Many of the statements made that fit within the theme of ‘students come unprepared to take care of themselves,’ but also demonstrated an expression of skepticism that college students could be affected by FI.

A few participants related their personal experiences with attending college, but were not necessarily sympathetic to the idea of students struggling with FI. “I just remember that as being
a part of the ritual of learning how to be a student,” said a participant who further stated they had to learn to purchase inexpensive food items such as “macaroni and cheese.” The participant remarked that they knew if needed, they could go home for food but that would be a “mark of shame” or admitting that they “couldn’t take care of themselves.”

There were other participants who remarked that students are learning how to manage money and be responsible, but throughout the interview, it became clearer that they were not convinced that the majority of students were struggling with FI. For example, these participants’ skepticism was explicit with comments such as “it’s voguish to think of college kids rubbing two pennies together,” “you’ve been conditioned the whole time in K-12 where somebody is providing meals for them,” and questioning a student’s inability to afford food if they do “have an iPhone” or “Netflix.” One participant questioned if students “truly don’t have money, should they be in college” and followed up with “maybe they need to build their foundation first.”

Direct quotes from these participants align with the theme: (1) “I expect them to grow up and take care of themselves,” (2) “Don’t keep waiting for somebody else to take care of you,” and (3) a participant stated, “Are there students who don’t have money to buy food? Absolutely there are. Could those students potentially change the things that they were doing and have money to buy food? I would say yes.” This participant elaborated more on this point by saying, “students may be spending their money on alcohol or drugs and are not budgeting their money on the important stuff like food.”

One participant agreed that students are learning how to take care of themselves and become more independent, but seemed more empathetic to the process. They related that a lot of these students are “in transition” and that’s a “bumpy process.” The participant reported that skills like grocery shopping or managing money are tough if you have never done them before.
Theme #4: Campus Resources Available to Students

In the final theme, resources on each campus were addressed in a variety of ways. A major observation between LSU and MSU participants’ responses was the difference between the availability of resources. MSU participants’ comments included “we are drowning,” “resources are thin all over,” and “money is a big piece of the challenges to increasing accessibility of food on campus.” MSU participants stressed that there were “resources that are available to students” if they needed help securing access to food. These included local and religious-based entities that the university has used, if needed, to meet the needs of its students.

LSU participants noted that there were entities on campus that students could be referred to if they were having issues with finances or other personal difficulties that might affect their academic progress. Some of the resources listed by LSU participants included: (1) LSU Health Center has a case manager/social worker to help students apply for federal assistance such as Medicaid, SNAP, and WIC (2) LSU CARES, a Student Advocacy and Accountability initiative, is committed to assisting students with personal issues, or concerns, that could affect their wellbeing.

LSU participants did note that being a larger university had the advantages of “providing different levels of support to the students,” but also noted that support is not freely given. Demonstrating there is a need is essential to get “people on board” and “buy-in from administrators.” Seeking help from university leaders requires having a strategic plan that includes data showing there’s a “market of students” who could benefit from the proposed initiative.

When speaking of initiatives on each campus, participants from both universities used the term “champion,” but the attitude was slightly different between the two schools. Both used the
term to describe an individual or organization on campus responsible for getting initiatives started. However, LSU participants described these “champions” in an idealistic tone, while those at MSU seemed to describe these individuals as a last-ditch effort to address issues on campus.

An LSU participant described a “champion” as an individual who is passionate about a cause and is needed to “push that message forward to the key decision makers at the higher-up levels.” The LSU student government was labeled as the “champions” that helped fund the purchase of two commercial-size refrigerators and a large freezer for the food pantry. The participant stated that this donation validated the need for a larger location given the size of the new equipment would not fit in the previous location.

An MSU participant reported that a lot of faculty and staff go to administration and expect them to take on initiatives that they see as problems. The participant declared that “we are drowning” and the administration can’t take on any more problems. A participant detailed that if an individual wanted to start a new campus initiative to support MSU students, it would require a “champion,” who was described as a really hard-working employee who has the “professional fortitude to get things done.”

MSU participants’ remarks about limited resources also included the strain that this caused in the university to allocate funds to initiatives on campus. Another participant felt that initiatives addressing food access on campus were scattered, and would benefit from having a centralized program with “one champion, one place, and one entity.” A participant stated that the administration was “not going out looking for problems,” but uttered that they would “not ignore legitimate needs.”
Discussion

The participants’ responses, perspectives, and attitudes gave a deeper insight to the similarities and differences that exist among universities that differ in enrollment and faculty size and how they address issues among the student population. The analysis of data collected in the interviews resulted in the themes that emerged when focusing on the issue of FI among college students. The findings from this study align with the findings from past qualitative research with college staff, faculty and administration.\(^5,34,72,73,76\)

First, participants at both universities stressed that students are not vocalizing their issues with personal struggles, and will seek out help only when academics are involved, or in need of immediate help. Participants reported stigma as a possible explanation for students’ reluctance to seek help. The GAO report addressed that awareness of FI on college campuses was needed to help reduce the stigma associated with utilizing needed resources.\(^5\) Feeding America also reported that stigma was attached to using resources intended for lower income individuals, but suggested to market access as welcoming and open to everyone on campus.\(^76\)

The second theme, ‘Awareness and Communication of Food Insecurity Existence on Campus,’ includes responses from participants’ in this study that are similar to findings from previous research that include: (1) campuses awareness that FI exist, (2) awareness of the diversity of current students, and (3) breakdown in campus communication of resources. Awareness of FI was an issue on both campuses, with some participants being unaware that current college students could be struggling with FI. Some participants appeared genuinely surprised that the issue existed while others appeared to be unconvinced that a large majority of students could be dealing with food insecurity.
Olfert et al. (2020) addressed that many university leaders assume students’ needs are being met and that a disassociation exist between institutional awareness and students’ needs. Additionally, students lack confidence in campus leaderships’ attentiveness to their wellbeing. Lack of awareness was described by Feeding America as a major obstacle to improving campus food access.76

Communication was an issue on both campuses, with some participants unaware of the services available for students who may be struggling with FI. Improvement in communication is needed to ensure that those who meet routinely meet with students (i.e. advisors and instructors) are consistently providing information regarding available resources.72 Koorts et al. (2020) reports that spreading awareness regarding issues related to a populations’ health is difficult because the message needs to be clear and translatable for a diverse audience.101 Olfert et al. discusses that campus employees who are directly engaging with students are important agents in spreading awareness of campus resources to students, which can help make students aware that they are not alone in their struggles, and possibly more willing to seek out campus resources.72

The third theme, ‘Students Come Unprepared to Take Care of Themselves,’ describes participants’ doubts that the majority of students are FI, but instead prioritize their “wants” over “needs.” Participants remarked that they suspected the students’ lack of food access was probably linked to being irresponsible with money and lacking “life skills.” Qualitative and quantitative research among college students report that students do struggle with “life skills” and expressed the need for food and financial literacy training. The fact that some students are learning how to be more independent and take care of themselves does not dispute the fact that FI rates are shown to be high on college campuses. This theme demonstrates that participants may exist as an unintentional barrier because of preconceived notions that the
majority of food insecure students are the stereotypical immature college student who is financially irresponsible.\textsuperscript{32,76}

The third theme also highlights that awareness of the experiences faced by food insecure students is not well known. Some participants acknowledged that students from low income households were on campus, but they recalled their own experiences of living frugally because they were independent. A participant questioned if FI students should be enrolled in college if they are unable to afford food or take care of themselves. Broton et. al. (2014) reported a similar finding that included the theme, ‘Underserving Undergraduate,’ with a participant describing meeting basic needs as a prerequisite to attending college.\textsuperscript{73}

Existing literature suggest that gaining support from campus leadership and administration is key to implementing successful solutions on campus.\textsuperscript{6,72,73,76} In contrast, research also shows that a lack of commitment from campus leaders is a major obstacle to increasing food access on college campuses.\textsuperscript{72,73,76} Many solutions implemented on college campuses require “navigating campus bureaucracy” to gain resources such as space on campus and communication outlets to spread awareness. Studies have reported that the use of data (i.e. FI prevalence on campus) is useful when attempting to obtain university leadership support. Olfert et al. also reports that lacking a strategic plan for spreading awareness produces weak campus implementation efforts.\textsuperscript{72}

Finally, the last theme emphasizes that the resources available to students vary depending on the size of the university. This was clear in the difference in how participants from each university viewed a “champion.” The AND addressed that effective campus solutions require multiple approaches to be able to provide access to all food insecure college students.\textsuperscript{6} Feeding America recommended that operation manuals should be developed to help continue programs
after students graduate or employees relocate. Research supports that campuses should adopt policies and procedures to ensure that students receive the support they needs and these won’t disappear if a ‘champion’ relocates. Despite limited resources and the skepticism of FI among students, participants voiced their support for students who were struggling and that, if needed, they would address those issues to help these students. Multiple participants reported that you have to show there is a need for university leadership to allow resources to be given.

**Conclusion and Recommendations**

Going to college and graduating with a degree has proven to have long-term benefits, with statistics showing an increased likelihood of earning higher wages, improved health, and decreased likelihood of future unemployment. Having the financial capability to build wealth and establish financial security can limit exposure to economic hardships that can negatively impact the quality of life. Earning a college degree has been described as a pathway out of poverty.

The USDA ERS (2020) reported that income was strongly associated with being food insecure. Poverty measurements in the US show that the highest rates are among Hispanics and black households. In recent years, the population of US college students have become more diverse, with an increased enrollment of students from low-income backgrounds, first generation college students, and those who identify as non-Hispanic black, Hispanic, or Latino. From 1998 to 2018, there was a 15% increase in non-white students, with 45% of nonwhite students making up the total student population for 2018. The 2019 Postsecondary Undergraduate Population reported by the Congressional Research Service, showed that the majority of students enrolled in higher education institutions had incomes below 200% of the poverty guidelines.
2016, 39% of the college student population came from households at or below 130% of the poverty line.  

Current college students have been labeled as “non-traditional,” not just because of an increase in students from more racially diverse households, but also students who are older, financially independent, and have dependents of their own. In 2016, the average age of college students was 26; 22% had dependents, and 64% worked at least part-time. The shift in student demographics has been discussed in research as a possible factor in the rate of FI among college campuses.

Some study participants from both universities noted this change in demographics and spoke of the need for faculty and staff to be more understanding of the different student backgrounds, noting the need for increased awareness and education. Those participants who had past experiences with FI were more empathetic to students’ struggles. Similarly, participants who were in the departments that fit under the umbrella of student services were able to voice accounts of students admitting they were struggling. These participants seemed more aware of current student struggles, with participants acknowledging they have more students that are “non-traditional,” who “work their way through college,” and are “working three jobs.”

A few participants admitted they are lacking in their interactions with students on a personal level, whether that is due to the student being uncomfortable with talking to someone in an “authoritative role” is difficult to say. Other participants expressed doubt that FI existed amongst a large majority of students. The interviews with faculty, staff, and administration from both LSU and MSU helped to identify that awareness is needed to understand the issues students face.
Future research is needed to expand upon the issue of college students struggling with FI, and examine the role the university should play in helping to support these students. More qualitative research is needed to help understand and identify food insecure students’ perceived obstacles in obtaining a degree, and its effect on retention and GPA. Qualitative research is also needed to better understand college faculty, staff, and administration attitudes and perceptions of their role in aiding students who are struggling to meet their basic needs. Efforts should be made to reduce the stigma and increase the visibility of FI on university campuses.\textsuperscript{5,6,76} Perhaps if food insecurity were not such a sensitive topic, students would feel more comfortable sharing their struggles. If faculty had a greater understanding of signs that may suggest that students are struggling as well as the resources available, they might be able to intervene earlier. Future efforts should continue to improve the accuracy and validity of measuring FI among college students to produce data that is reliable and can help to better navigate attempts to improve solutions.

**Limitations**

It is essential to recognize the biases, values, and experiences that may affect the quality of qualitative investigations.\textsuperscript{97,100} In the current study, the lead investigator is a faculty member at MSU and is also a doctoral student at LSU. Before this faculty role, she was a registered dietitian for 8 years. Professional experiences influence views on student well-being and their nutritional intake quality. During the interview, the lead researcher had to clarify to the participants that when speaking of FI, the focus was not just on eating healthy foods but also if students lacked overall nutritional intake. The participants who were interviewed for this study did not know the researcher personally, despite the lead researcher working at the same university. Regardless of the lack of relationship with the participants, there was a power differential between the
participants and the lead researcher since they held higher ranking positions, which could have influenced how the findings are represented. Nevertheless, efforts were made to minimize this potential source of bias during the data analysis.

Despite an effort to recruit as many participants as possible from a variety of different departments, the study sample is not representative of all faculty, staff, and administrators at both LSU and MSU. In this study, the number of participants from each university only made up a small percentage of the entire faculty and staff from their respective institution. Their input during the interviews, while valuable, may not accurately represent the majority of faculty, staff, and administration at both universities.
CHAPTER 5. SUMMARY

A literature review, in addition to a quantitative and qualitative study demonstrated that MSU and LSU students have similar high rates of FI with risk factors that have been previously identified in published research. This literature review described that FI research among college students is still new and requires additional studies to develop improvements in measuring estimated prevalence rates among college students. The quantitative study’s results demonstrated that LSU and MSU students demonstrate similar rates of FI as those reported by multi-institutional studies. Qualitative research with faculty, staff, and administrators from both LSU and MSU shed light on institutional obstacles that may negatively affect relief efforts intended for food insecure students.

Despite the issues presented regarding a survey tool that has been validated among college students, the quantitative study’s results were in line with multi-institutional and systematic review findings. Students from LSU and MSU reported a high rate of FI, with those who identified as first-generation students, received financial family support, relied on the National School Lunch Program in high school, and experienced FI as a child being more likely to experience FI. Literature highlighted that many studies lacked diverse student samples that were overly represented with female students and limited within ethnic and racial participants. This study sample had similar limitations, however, the common denominator was limited resources. Screening high risk college students may help reduce the need for students to seek out needed resources, and reduce the stigma associated with their utilization.

The qualitative study presented many issues to help alleviate FI on LSU and MSU campuses. Students not vocalizing their struggles complicate being able to raise awareness that the issue exists on campus. If the universities are relying on students to vocalize this issue, it may affect campus faculty, staff, and administration awareness that the issue exists. Despite the
limitations with using the USDA FI survey tool among college students, it still is the most widely accepted FI measurement tool and is a good instrument to use to start collecting data among the student population.

Awareness of FI and its existence on the university campus is needed so that faculty and staff who communicate with students can share information about the resources available on campus. Many participants, and the existing literature\textsuperscript{72,76}, mentioned that acquiring data to demonstrate FI exist within the student population is needed, along with effective strategies to spread awareness and implement solutions. Olfert et. al. recommends that students be included as stakeholders and that they are the key to determining the most efficient routes to communicating with their peers.\textsuperscript{72} Administration involvement in campus initiatives is also recommended, as it allows campus leadership to be connected to the students and to develop a better understanding of the issues students face.\textsuperscript{72} Participants who voiced their skepticism of students struggling with FI may benefit from increased involvement with student organizations to gain a better understanding of the current student population.\textsuperscript{72,76}

Differences in availability of resources between the two schools was apparent, with MSU participants remarking that limited resources made it difficult to gain support from administration. Existing literature and participants addressed that data is important, as well as a detailed plan to layout the plan to convey what is needed. Many studies reported the need to form partnerships with community resources that may have the resources to effectively market FI issues on campus, in addition to sustaining donations.\textsuperscript{5,6,72,76}

The pursuit of a college degree includes the prospect of earning higher wages over a lifetime, and improved overall quality of life.\textsuperscript{11,43,44} The Social Determinants of Health list ‘Economic Stability’ as a key factor that affects an individual’s health and well-being. The
ability to afford health care, food at grocery stores, and housing is dependent on financial security. The increased diversity among college students could be viewed as having a societal benefit with college degree graduates earning more money, being less likely to live in poverty, and having a reduced risk for FI and developing chronic disease. Research demonstrates that FI students struggle more academically than food secure students. If universities addressed FI among the student population, and collected data about retention, GPA, graduation rates, and other academic variables it would be possible to show that meeting this need benefits the school as well as the student.
APPENDIX A. IRB APPROVALS

TO: Holston, Denise Marie  
LSUAG | Dept | Nutrition and Food Sciences

FROM: Michael Keenan  
Chair, Institutional Review Board

DATE: 09-Jul-2021

RE: IRBAG-21-0095

TITLE: New Protocol Created for Denise Marie Holston  
on 21-Jun-2021 10:17 AM Louisiana University  
Administrators and a Description of Their  
Understanding and Attitudes Towards Food  
Insecurity Among College Students

SUBMISSION TYPE: Initial Application

Review Type: Exempt

Risk Factor: Minimal

Review Date: 09-Jul-2021

Status: Approved

Approval Date: 09-Jul-2021

Approval Expiration Date: 08-Jul-2024

Re-review frequency: (three years unless otherwise stated)

Number of subjects approved: 24

LSU Proposal Number:

By: Michael Keenan, Chair

Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU’s Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
8. SPECIAL NOTE: When emailing more than one recipient, make sure you use bcc. Approvals will automatically be closed by the IRB on the expiration date unless the PI requests a continuation.

*All investigators and support staff have access to copies of the Belmont Report, LSU’s Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents.*

Mike Keenan O 225-578-1708
209 Knapp Hall
Baton Rouge, LA 70803

O 225-578-1708
F 225-578-4443
Holston, Denise Marie  
LSU AG | Dept | Nutrition and Food Sciences

Michael Keenan

Chair, Institutional Review Board

DATE:
28-Jun-2021

RE:
IRBAG-21-0094

TITLE:
New Protocol Created for Denise Marie Holston 
on 21-Jun-2021 9:43 AM Food Insecurity 
Among College Students: Prevalence of Food Insecurity at McNeese State University and its 
comparison to Louisiana State University

SUBMISSION TYPE:
Initial Application

Review Type:
Exempt

Risk Factor:
Minimal

Review Date:
28-Jun-2021

Status:
Approved

Approval Date:
28-Jun-2021

Approval Expiration Date:
27-Jun-2024

Re-review frequency:
(three years unless otherwise stated)

Number of subjects approved: 150

LSU Proposal Number:

By: 
Michael Keenan, Chair

Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the 
   Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of 
   human subjects*

2. Prior approval of a change in protocol, including revision of the consent documents or an increase in 
   the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
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Mike Keenan  Office  225-578-1708
209 Knapp Hall  Office  225-578-1708
Baton Rouge, LA 70803  FAX  225-578-4443
TO: Ms. Elizabeth Moore

DATE: July 6, 2021

SUBJECT: Research

Dear Ms. Moore,

We are pleased to inform you that the Human Subjects Institutional Review Board of McNeese State University has approved your research project, entitled "Food Insecurity Among College Students: Prevalence". Your proposal appears to be in compliance with the federal regulations concerning the use of human subjects.

Please retain this letter of approval and the proposal you submitted. If you have any questions, please contact me at (337) 475-5753.

Sincerely,

Peggy L. Wolfe, Ph.D.
Professor, College of Nursing and Health Professions
MSU IRB Co-Chairperson

PW/sal
### APPENDIX B. QUANTITATIVE SURVEY QUESTIONS

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<td>• Finances, spending behaviors, housing security questions</td>
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<td>o #32-34 (3 questions)</td>
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<td>▪ Questions about mortgage and bills</td>
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<td>▪ Resources on campus for food</td>
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APPENDIX C. QUALITATIVE INTERVIEW QUESTIONS

1. How many years have you worked at this University?
2. How many months or years have you been in this current position?
3. Can you tell me what you know about food insecurity?
4. Do you have any past experiences with food insecurity (past students, friends, yourself)?
5. To your knowledge, has this university ever dealt with food insecurity issues?
6. Would you say the current students at this university have readily available access to food?
7. If this university were to have a high rate of food insecurity among its students, what would you recommend as a system or intervention to help these students?
8. What challenges, if any, would you say this university faces in helping to improve the accessibility to food for students?
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80. SNAP Participation Rates by State, All Eligible People. US Department of Agriculture.


83. Akaike Information Criterion (AIC). Wikipedia.


VITA

Elizabeth Moore earned a Bachelor of Science degree in Dietetics from McNeese State University in May 2008. She earned her Masters of Science in Health and Human Performance and concurrently completed her coordinated dietetic internship through McNeese State University in December 2009. Elizabeth became a Registered Dietitian in June 2010 and was employed as a clinical dietitian in Lake Charles, LA till December 2017. In January 2018, she began working at McNeese State University as an instructor and director of the dietetics undergraduate program. Since June 2021, she has assumed the role of graduate program director and dietetic internship coordinator for McNeese State University.