

STUDENTS' PERSPECTIVES OF STRATEGIES TO
COMBAT FOOD INSECURITY ON CAMPUS

By

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STUDENTS' PERSPECTIVES OF STRATEGIES TO
COMBAT FOOD INSECURITY ON CAMPUS

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Title of Study: STUDENTS' PERSPECTIVES ON STRATEGIES TO COMBAT FOOD INSECURITY ON CAMPUS

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Abstract: As student populations diversify and enrollment numbers increase, food security among college students is becoming an issue. Dwindling financial aid and skyrocketing tuition charges have caused students to choose between paying tuition and paying for groceries. An analysis of 39 food insecurity studies on campuses revealed rates of food insecurity ranging from nine to more than 50%. While food aid in the form of SNAP, WIC, and the charitable emergency food system are available, few students participate. Maslow's Hierarchy of Needs was the conceptual framework for this study, with a focus on a student's physiological needs. Food insecure students may be unable to focus on their academic studies, placing student financial aid at risk.

The objectives were to assess food security status, describe the perceived effectiveness of strategies and potential behaviors to combat food insecurity, and determine students' awareness of food assistance resources.

A sample size of 391 was drawn from the undergraduate student population. Data was collected using a researcher devised instrument. Students used their smartphone to scan a QR code to access the instrument. Data was collected at three different locations on campus.

Nearly half of the respondents were found to be food insecure. Students believed anonymous types of aid to be the most effective strategies to fight food insecurity. While nearly 75% of respondents believed applying for SNAP benefits and accepting food from a food pantry would be **effective**, only about one-half said they would be willing to utilize these resources. Students were also generally unaware of their eligibility to receive benefits from SNAP and unaware of the local community food pantry.

Educational programming, including help in applying for SNAP benefits, and increasing awareness of a food pantry have the potential to increase the number of students using available resources and decrease food insecurity on campus.

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CHAPTER I

INTRODUCTION

Attending a college or university, once only for the elite and wealthy, is now available to an increasing number of students regardless of their socioeconomic status (Goyette, 2008; United States Government Accountability Office, 2018). College students have traditionally been financially dependent on their parents and began college immediately after finishing high school (Choy, 2002); however, students fitting this description are becoming a minority in the student population at colleges and universities (United States GAO, 2018). With more students pursuing college, education has become a commodity, driving up tuition and associated costs. (Dubick Mathews, & Cady, 2016; United States GAO, 2018; Institute of Education Services, 2018). In 2016 nearly half of all undergraduate students were considered financially independent from their parents (United States GAO, 2018), and the number of students attending college are finding financial aid options, such as Pell Grants, dwindling (El Zein, Mathews, House, & Shelnutt, 2018; United States GAO, 2018).

A diversifying student population, increases in tuition and associated fees, and decreasing financial aid in the realm of higher education has led to an increase of concern over food insecurity on college campuses (Bruenig, Argo, Payne-Sturges, & Laska, 2017; El Zein et al., 2018; Gaines et al., 2014, Knol, Robb, McKinley, & Wood, 2017; United States GAO, 2018). Despite the increasing cost of higher education, there has been a steady increase of students who come from low income homes or are part of an underserved population in the last decade (United States GAO, 2018; Payne-Sturges et al., 2018). These same students are at a higher risk for experiencing food insecurity (Cady, 2014).

When students are dealing with issues of food insecurity, their academic performance can be affected, which is important to stakeholders who have invested in students' education through grants and financial aid (Bruening, van Woerden, Todd , & Laska, 2018; Maroto, Snelling, & Linck, 2014; Payne-Sturges, Tjaden, Calderia, Vincent, & Arria, 2018). The federal government is one of those stakeholders. In fiscal year 2017 Pell Grants awarded to low-income students totaled near \$27 billion (United States GAO, 2018).

About the same amount of money that is invested in Pell Grants is spent on food aid programs to combat food insecurity. Along with the Supplemental Nutrition Assistance Program, federal funds are used to finance other programs including, Women, Infants, and Children, food banks and pantries, and school meal programs for students from Kindergarten to twelfth grade (Wilde, 2018). College students can be eligible to receive benefits from any one of these federally funded food assistance programs, but

restrictive requirements and the stigma associated with these programs, many students are not utilizing them (United States GAO, 2018).

In general, food insecure college students are missing the benefits of the food assistance programs. In 2016 nearly 2 million students across the United States were eligible to receive benefits from the Supplemental Nutrition Assistance Program but did not participate in the program (United States GAO, 2018). When students are not receiving adequate, nutritious food there are a number of negative effects on a student's physical health and academic performance. The financial aid students receive assist with tuition, but the money does not always help with purchasing the basic need of food. Federal food assistance provides benefits to help recipients cover the cost of food, and food pantries give food to recipients. When students are not receiving aid to assist with the cost of food, the funds that have been given to students to help cover the cost of tuition are at jeopardy. Students may have to choose between paying tuition or for food, going to class or working extra hours for more money, and some students even end up withdrawing from classes (United States GAO, 2018).

Conceptual Framework

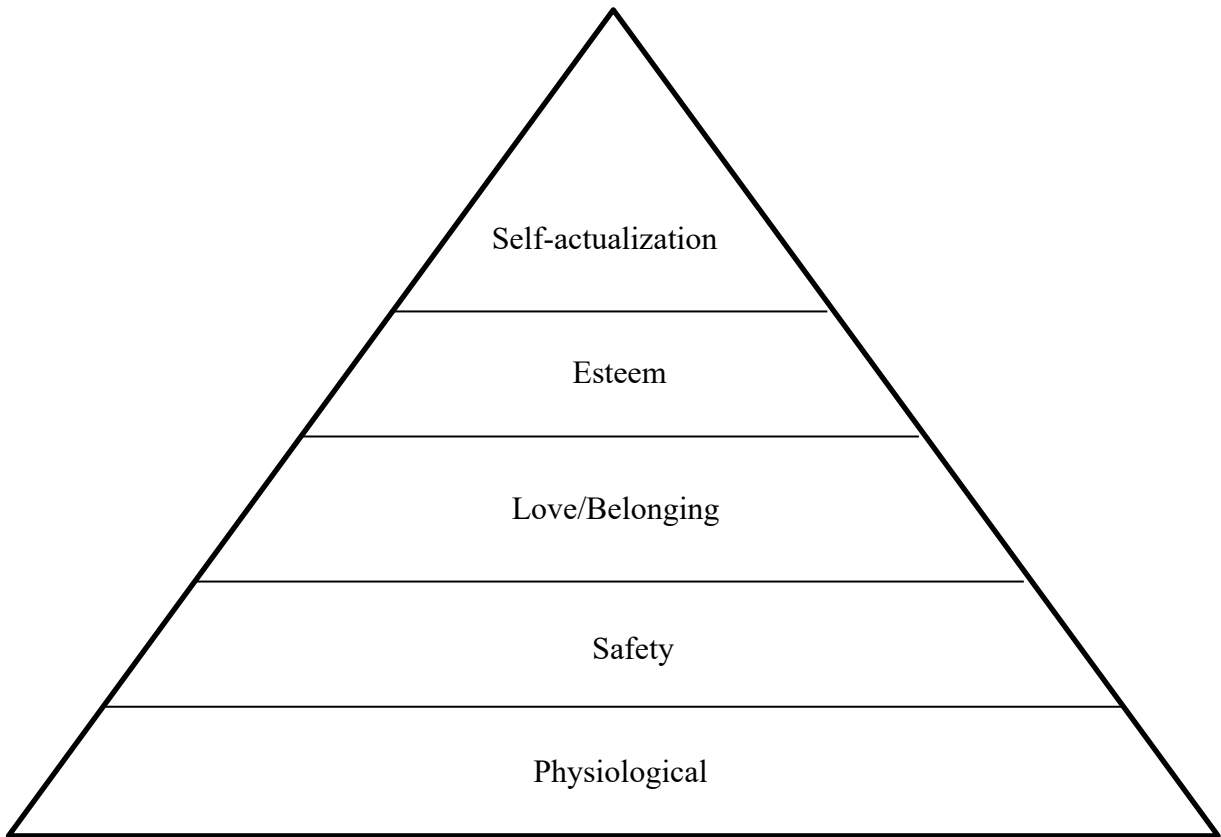
There are many types of individual needs, but Maslow suggests there are a set of basic needs that need to be met before other needs can be addressed. Maslow classified those needs as physiological, safety, esteem, and self-actualization. Of those needs, physiological needs are the ones that must be met before any other needs and having adequate access to food is a physiological need. Not having adequate access to food, also known as food insecurity, can lead to hunger, which can cause a person to seek food above all other needs (Maslow, 1943). The only thing a person lacking food can focus on

is satisfying that need (Maslow, 1943; Wahba & Bridwell, 1976). Once this physiological need is met the next need becomes the new focus of the individual, which starts the cycle of the hierarchy of needs (Wahba & Bridwell, 1976).

When students are food insecure, they may no longer be able to properly focus on their academic responsibilities (Cady, 2014). Colleges are also beginning to realize retention, completion, and other aspects of academic success cannot be addressed until the most basic needs of the student is met (United States GAO, 2018). The idea that students cannot focus until their basic needs are met is realized by legislators, and students receive free and reduced-price meals, throughout elementary and high school, but this is not carried out once students start pursuing higher education (Broton & Goldrick-Rab, 2018). When a student experiences food insecurity their academic career, health, and behavior are affected (Cady, 2014).

Figure 1.1

Pyramid of Maslow's hierarchy of needs



Problem

The literature has established that college students are increasingly food insecure. There is, however, little data to indicate students' awareness of and willingness to participate in programs designed to address this need.

Purpose

The purpose of this study is to describe students' level of awareness, and students' willingness to utilize food assistance programs available to college students.

Objectives

The objectives of this study are the following:

- Objective 1: To assess the food security status of Oklahoma State University undergraduate students.
- Objective 2: To describe the potential behaviors a student might engage if they were food insecure.
- Objective 3: Describe perceived effectiveness of strategies to help food insecure students.
- Objective 4: Describe students' awareness and knowledge of food assistance programs.

Definition of Terms

For the purpose of this study, the following terms were operationally defined:

Campus Event with Free Food: A campus event sponsored by a student or affiliated organization that provides a meal as part of programming.

Donating Meal Plans: Allowing students to donate unused dollars to the university to be distributed to students who need food assistance (King, 2017).

Dumpster Diving: Searching through dumpsters to find uneaten food.

Food Bank: A non-profit organization that collects and distributes food to hunger relief charities and acts as food storage and distribution depots to food pantries, soup kitchens, and other places that distribute meals. Food and other products are sourced from grocers, manufacturers, and retailers.

Food Insecurity: limited access to an adequate supply of nutritious food that is necessary for a healthy life.

Food Pantry: An organization or site that receives a majority of its supplies from food banks to distribute directly to clients who are at risk of hunger (Wilde, 2018).

Food Security: Access at all times to enough food for an active, healthy life; varying ranges of food security categorized as food secure or food insecure (United States Department of Agriculture Economic Research Service, 2019).

Free Community Meal: A free meal at a local church or activity center (McArthur, Ball, Danek, & Holbert, 2018). Examples of a free community meal include a meal at a community event with free food.

Hunger: Physical distress caused by not eating or having enough food.

QR Code: Machine readable optical label that contains information about an item to which it is attached. A quick response code that is scannable by a smart phone or tablet with a QR code reader that takes a person to a survey anonymously (Qualtrics Support, 2020).

Supplemental Nutrition Assistance Program: SNAP is a federally funded, but state administered program that provides needy families with benefits so they can purchase food; replaced the Food Stamps program in 2008 (Wilde, 2018). Participants are issued an Electronic Benefits Transfer (EBT) card that allows the recipient to authorize a transfer of their benefits to the store where they are buying groceries.

Women, Infants, and Children, WIC: “Provides nutrition services, referrals and a package of nutrient-dense foods to eligible women, infants, and children” (Wilde, 2018, p. 223). Mothers with infants and young children can receive this in addition to other resources.

Limitations

The limitations of this study were:

1. The sample was a convenience sample of students who were present on campus at a specific location on the three days data was collected.
2. Extrinsically motivated students may be overrepresented because they completed the questionnaire for cash.
3. The Six-Item Form of the Food Security Survey Module used in this study is considered to be less precise and less reliable than the longer measure. It does not measure the most severe levels of food insecurity and does not ask about children in households (USDA ERS, 2019).

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter is to explore the topics that influence this study. The topics addressed are defining food insecurity, resources available to help with food insecurity, food banks and pantries, costs of college and student populations, and on-campus food pantries.

Food Insecurity

The United States Department of Agriculture (USDA) Economic Research Service (ERS) (2019, para. 1) defines food security as “access by all people at all times to enough food for an active, healthy life.” When studying food security, the USDA describes varying ranges of food security: high, marginal, low, and very low (ERS 2019). When an individual or household is classified as having very low food security, or food insecurity, then they have “reports of multiple indications of disrupted eating patterns and reduced food intake” (ERS, 2019, para. 3). Very low food security can be experienced by an individual “with or without hunger” (Borre, Ertle, & Graff, 2010, p. 444). When someone experiences very low food security without hunger, it means food may be available, but the available food lacks nutritional value necessary for a healthy body and life (Borre et al., 2010). Food insecurity does not always last for long periods of time, but the effects on an individual’s diet can be long lasting due to repeated lack of financial resources (Seligman, Laraia, & Kushel, 2010).

Strategies to Combat Food Insecurity

Food Stamps and the Supplemental Nutrition Assistance Program

After World War I during the Great Depression, the federal government began distributing agricultural surplus commodities to needy families. Congress created the Agricultural Adjustment Administration in 1933 to help with price support and production control programs. A Federal Surplus Relief Corporation was created to obtain commodities that were not under a support program and then commodities were distributed to families in immediate need (Kerr, 1988). This program was created to benefit farmers by reducing surpluses and boost prices. However, with products being given or sold to families at extremely low prices, grocers and wholesalers were losing business. In May 1939, the city of Rochester, New York piloted a “food stamp” program. Individuals bought orange “food stamps” that could be used at participating grocery stores in Rochester. For every \$1 in orange stamps bought, 50 cents in blue stamps were given to the individual that could be used to purchase surplus agriculture commodities. These food stamps provided recipients with some choice in what they ate (Klein, 2019).

Daponte and Bade (2006) report that the commodity surplus program was not extremely effective because it was not appropriately managed, did not provide enough food to those in need and was not available in all parts of the country. However, when World War II began, the distribution of surplus commodities ended as agricultural surpluses ended and unemployment plummeted. When President John F. Kennedy took office one of his first acts was to revive a pilot program of food stamps. In 1964 President Johnson signed the Food Stamp Act into law, which made the Food Stamp Program permanent (Klein, 2019). Even though the Food Stamp Act approved for the program to

be offered nationwide, individual states and counties could decide whether or not to offer the program (Daponte & Bade, 2006). For the first few years of the Food Stamps Program, participants were required to purchase food stamps at a discounted price with their own income much like the pilot program in Rochester, New York. The program grew fivefold after Presidential hopeful Senator Robert F. Kennedy traveled to the Mississippi Delta and Appalachia and exposed the hunger and poverty in these areas (Klein, 2019). Combating hunger and food insecurity in America did not become a serious focus of the federal government until the late 1960s. Kennedy advocated for changes that would allow people in need to receive food quickly. To draw attention to the true needs of Americans, Kennedy made unplanned stops while he toured Mississippi, Native American reservations, Kentucky, and California (Schechtman, 2018).

The 1968 CBS News documentary *Hunger in America* brought hunger and food insecurity to the forefront of America's mind. The documentary exposed the following poverty areas across America: African American sharecroppers in Alabama, Navajos in Arizona, Mexican - Americans in San Antonio, and tenant farmers in Virginia. In each state the documentary focused on how the children were being affected by hunger, including a baby dying from starvation in San Antonio. Politicians in the documentary expressed anger at the interviewers and were generally in denial of the true situations of their constituents. The documentary spun public outrage and caused some politicians to begin taking action the next day to investigate hunger in the United States (Davies, 2018). From 1968 on, the lack of food and hunger was a constant issue in politics leading to several different strategies to help people receive the amount of food needed to live a healthy life (Wilde, 2018).

The program evolved further with the Food Stamp Act of 1977. Recipients were no longer required to purchase discounted food stamps. Instead of paper vouchers, benefits were distributed through electronic benefit transfer (EBT) cards starting in the 1990s (Wilde, 2018). Changing to EBT cards further reduced fraud, as recipients were now unable to sell stamps instead of using the stamps to purchase food (Klein, 2019).

In 2008 the Food Stamp Program's name was changed to Supplemental Nutrition Assistance Program (Wilde, 2018). The Supplemental Nutrition Assistance Program or SNAP is a federally funded, but state administered program, that provides needy families with benefits so they can purchase food. SNAP is a mandatory program, which means that the government is responsible for supplying all funds needed to provide benefits to participants. There are also specific rules concerning eligibility. Low income is the first criterion that must be met for an individual or household to receive SNAP benefits (Wilde, 2018). To receive SNAP benefits, families or an individual must meet the requirements established by the state where they live. Households must meet the gross and net income limits based off the size of a household. The gross income limit is determined at 130% of the poverty line, and the net income limit is determined at 100% of the poverty line. For a family of four in 2020, the gross monthly income limit is \$2,790 and the net monthly income is \$2,146 nationally. Work requirements include applying for work, not quitting a job or reducing hours, accepting a job if offered, and participating in employment and training programs if assigned. If an adult does not have a dependent, they are required to work at least 20 hours per week to receive benefits for more than three months in a three-year period (Food and Nutrition Service, 2019).

Supplemental Nutrition Program for Women, Infants, and Children

In addition to SNAP, women, infants, and children can be eligible for the special supplemental nutrition program. During the 1960s legislators became concerned with the nutrition status of pregnant women, infants, and young children. Piloted in 1972, WIC became permanent in 1974. To receive benefits the income eligibility rule must be met and applicants must be determined to be nutritionally at risk, the income standard varies by state, but must be between 100% and 185% of the poverty level. Similar to SNAP, participants receive EBT benefits or vouchers, but purchases are limited to certain foods such as fruits, vegetables, and whole grains or pick up food packages from WIC offices (Wilde, 2018). The goal of WIC is to safeguard the health of pregnant, postpartum, and breastfeeding women, infants, and children five years old or younger through nutritious foods, information on healthy eating, and health care referrals (Food and Nutrition Service, 2013).

Charitable Emergency Food System

The charitable emergency food system provides services to individuals and families in need in addition to SNAP benefits (Wilde, 2018, p. 209). This system is made up of nonprofit organizations that are part of one of these categories: food banks, food pantries, soup kitchens, and emergency shelters (Mabli, Cohen, Potter, & Zhao, 2010). When an unexpected food need arises, the charitable food system provides resources to meet that food emergency need (Wilde, 2018).

In the 1960s, John van Hengel conceptualized the idea of food banking in Arizona (Feeding America: U.S. Food Bank Network, n.d.). From there, the idea grew. In a decade 18 cities across the United States had established food banks (Feeding America, n.d.). An organization of food banks formed and is now known as Feeding America, that

is made up of 200 food banks and over 60,000 food pantries across the United States (Feeding America: U.S. Food Bank Network, n.d., para. 5). Food banks provide food resources to organizations such as soup kitchens, food pantries, shelters, community centers, and childcare centers (Wie & Giebler, 2013). The services provided by the food banks and pantries play a crucial role in reducing the effects of food insecurity (Bazerghi, McKay, & Dunn, 2016). Services provided to those in need may differ based on the community and what is available in that area (Daponte & Bade, 2006). However, food pantries are consistently criticized for being inefficient, have operational limitations and for not addressing what truly causes food insecurity (Dodd & Nelson, 2018).

Child Meal Programs

Federal nutrition programs strive to increase food security, prevent hunger, and promote nutrition and health (Wilde, 2018). The largest of the federal child meal programs is the National School Lunch Program (Ralston, Coleman-Jensen, & Guthrie, 2017), with nearly 60% of schoolchildren participating across America (Wilde, 2018). During the 1960s the School Breakfast Program began and became permanent in 1975 (Wilde, 2018).

In the late 19th century people began to express concern over children being hungry or not having enough to eat while at school, and this concern led to meals being provided at public schools (Gunderson, 1971). Child meal programs (Hopkins & Gunther, 2015) began as the work of private groups interested in the welfare and education of children (Gunderson, 1971). Lunches being provided at school began because children were coming to school hungry and without meals, or the meals were innutritious. Children's quality of education should be questioned when they are not

receiving nutritious food or is hungry (Bryant, 1913). With food stamps, agricultural commodity surpluses were used to help feed children at school (Guthrie, Newman, & Ralston, 2009). However, when World War II began the surplus commodities were sent overseas affecting the supply chain for school lunch programs (Hopkins & Gunther, 2015). In 1946 the National School Lunch Act was passed by Congress (Rutledge, 2015). The Act is now known as the National School Lunch Program (Hopkins & Gunther, 2015).

In 1952 the first amendment to the National School Lunch Act was made concerning the amount of school funds in specific states and territories. However, there was still financial strain on communities that were lower in socioeconomic status. Ten years later, more amendments were made to the Act to provide funds based on State participation rate and assistance need rate for the State (Gunderson, 1971). National School Lunch Program gives participating schools cash subsidies and donated food for each meal served to students. Students can qualify for free or reduced-priced meals based on the income levels of their household, and if they participate in other food assistance programs. School Breakfast Programs provided breakfast to 14 million children in 2015. The eligibility requirements for School Breakfast Program are the same as for National School Lunch Program (Ralston, Coleman-Jensen, & Guthrie, 2017).

Food Insecurity Among College Students

Bruening, Argo, Payne-Sturges, and Laska (2017) examined a total of 59 studies in a systematic review of literature on food insecurity among college students. The majority of these studies were conducted at public, 4-year institutions in urban settings, mainly in the United States. Researchers found the average rate of food insecurity to be

42 %. The studies exclusive to the United States found an average food security rate of 32.9 % among postsecondary students. No studies examined ongoing interventions such as food pantries, so it is not clear if these strategies are effective (Bruening, Argo, Payne-Sturges, & Laska, 2017).

Researchers at University of Hawaii at Mānoa studying food insecurity among college students found 45% of respondents to be food insecure or at risk of being food insecure. Students living with parents or relatives, were less likely to be food insecure than students who lived on-campus or off-campus. Ethnicity was found to be related to a student's food security status, specifically among multiethnic students. Researchers recommended further research across the nation to gauge food insecurity among college students and to create effective strategies to combat food insecurity (Chaparro, Zaghoul, Holck, & Dobbs, 2009).

Blagg, Gundersen, Schanzenbach, and Ziliak (2017) found that food insecurity among college students differs based on race, age, and if an individual is currently employed. Black students and/or multiethnic students have been found to be more likely to experience food insecurity (Martinez, Webb, Frongillo, & Ritchie, 2017; Wood & Harris, 2018). However, the requirements are strict making it hard for full-time students to qualify for government assistance (Blagg et al., 2017; Broton & Goldrick-Rab, 2018). College students may not be able to purchase nutritionally adequate food because of lack of resources or the inability to store and prepare nutritional food. Researchers also found that having a meal plan through their college or university did not prevent a student from experiencing food insecurity (Martinez et al., 2017).

Factors linked to food insecurity among college students include: first generation status, debt, financial responsibility for others, and where a student lives (Morris, Smith, Davis, & Null, 2016; Philips, McDaniel, & Croft, 2018; Rule & Jack, 2018). Specifically, off campus students have been found more likely to be food insecure (Hagedorn & Olfert, 2018; Martinez et al., 2017). Experiencing food insecurity as a child was found to be another risk factor for food insecurity among college students (Martinez et al., 2017), as in receiving financial aid that requires repayment (Morris et al., 2016).

Using four survey studies conducted by the Wisconsin HOPE Lab research team, Broton and Goldrick-Rab (2018) examined food insecurity among college students at two- and four-year college students throughout 26 states. Over half of the students in all four studies reported they had experienced some form of food insecurity, such as not having enough food to reducing the amount of food they consumed. Nearly 30% of respondents' families had received assistance in acquiring food through programs such as SNAP. Based on responses, the researchers recommend more research be conducted, but also identified a need for solutions to meet the needs of students so they can focus on their education (Broton & Goldrick-Rab, 2018).

A 2018 University of Texas at Austin study found that nearly 24% of the respondents reported food insecurity, with Hispanic students experiencing food insecurity at a much higher rate than other students. Among the participants only 4% reported having experienced food insecurity before attending college, which indicated transitioning to college is a susceptible time for students. There were 31% of students who reported hunger and 12.5% of those students reported they experienced hunger and food insecurity. Researchers recommend that food should be made more available to

students, such as pantries or campus gardens, finding a way for student health services to screen for food insecurity, and for further research on consequences of food insecurity (Forman, Mangini, Dong, Hernandez, & Fingerman, 2018).

Using data from the Community College Success Measure, Wood and Harris (2018) sought to describe food insecurity by ethnicity and predictors of food insecurity. Researchers found that food insecurity was more prevalent among multiethnic and African American students. The greatest predictors of food insecurity were housing insecurity, legal affairs, and health issues. Recommendations from this study include encouraging campuses to provide students better access to healthy food sources and to find holistic approaches to help students in need (Wood & Harris, 2018).

Researchers in Illinois surveyed students at four universities in different regions across Illinois to describe food insecurity among college students and found 35% of respondents to be food insecure. Living arrangements were possible factors that effected students' food security status. A student's ethnicity was found to be associated with their food security status, and there was a relationship found between food insecurity and academic performance. Students who had lower GPAs experienced food insecurity at increased rates when compared to students with higher GPAs. The final predictor of food insecurity was a student's financial status and where they received money to pay for tuition and associated costs. If a student received funding from a source that requires repayment, that student was more likely to be found food insecure (Morris, Smith, Davis, & Null, 2016).

Using data from the Current Population Survey, researchers found that 11.2% of students enrolled at four-year universities, and 13.5% of students enrolled in vocational

education programs were food insecure. If a student was employed full time and enrolled in college, two- or four-year school, then they were more likely to be found insecure than someone who was just worked full-time. Based on their findings, researchers recommend policymakers reevaluate SNAP eligibility requirements for college students, specifically the number of hours one must work off-campus to be eligible (Urban Institute, 2017).

Food insecurity among college students is not a problem just in America, as researchers in Australia found that over 70% of students at Griffith University were food insecure. Factors that predict food insecurity for Australian students are similar to those for American students, low-income, young, and high living expenses that are coupled with college. Strategies to battle food insecurity that students reported engaging in were asking for money or food from family or friends, receiving food from food pantries, and some students reported selling items to purchase food. Students reported sacrificing academic success to work many hours a week. Researchers state that the students appear to be at risk to be food insecurity due to societal pressure to pursue higher education despite lack of financial aid and other forms of support for students (Hughes, Serebryanikova, Donaldson, & Leveritt, 2011).

A 2016 University of Alabama Study found that 37.6% of students who live off-campus were food insecure. This study excluded students who were pregnant, living with a parent/guardian, living on campus, under 19 years old, or following a strict diet due to food allergies or intolerances. Their findings supported other studies that students who live off campus are more likely to be food insecure. Researchers also found that food insecurity was related to poor self-rated health (Knol, Robb, McKinley, & Wood, 2017).

Researchers at Portland State University studied food insecurity among social work students and found that 43% of respondents were food insecure according to the USDA 15 question food insecurity questionnaire. These students were more likely to be a first-generation college student, a female, and enrolled in classes full-time. Strategies students reported using to deal with their food insecurity include sharing food with others, attending events that have free food, asking friends and family for food, working extra hours, selling possession, and not paying bills on time. Researchers recommend that administrators should work with faculty and staff to create an environment that is not stigmatized to help students obtain the help they need to combat food insecurity and other needs (Miles, McBeath, Brockett, & Sorenson, 2017).

With the transition from high school to college moving away from home, researchers at Arizona State University found that 37% of freshmen living on campus had experienced food insecurity in the three months they had been at college. Among the food insecure students, there were higher likelihoods of mental health issues, unhealthy eating, and alcohol use despite the personnel and programming that is in place to help students during their transition to college (Bruening, Brennhofer, van Woerden, Todd, & Laska, 2016).

Researchers at a rural university in Oregon found 59% of respondents were food insecure. Students reported working an average of 18 hours a week. The students who worked were twice as likely to report food insecurity, which reveals the economic struggles of students. Academic performance was also found to be affected by food insecurity as students who were food insecure were less likely to have a grade point average about 3.1 (Patton-López, López-Cevallos, Cancel-Tirado, & Vasquez, 2014).

A 2018 University of Maryland study found that 15% of respondents were food insecure and an additional 16% of students were at risk of experiencing food insecurity. If a student was receiving multiple forms of financial aid, they were more likely to be food insecure or be at risk of food insecurity. Food insecure students self-reported higher rates of physical and mental health issues. Researchers encourage academic institutions to have educational outreaches aimed at addressing financial aid, specifically for minority and first-generation college students, and to include discuss nutrition, grocery shopping, and preparing food (Payne-Sturges et al., 2018).

Wisconsin HOPE Lab studied 43,000 students at 66 colleges and universities and found 36% of students were food insecure in the month leading up to the study. Insecurities, such as food insecurity and housing insecurity, affects marginalized students at a greater rate than other students. The majority of the respondents were female and white. Researchers found that there is a greater prevalence of food insecurity among students who live off-campus. These findings support that success in education is being limited because basic needs, according to Maslow, are not being met (Goldrick-Rab, Richardson, Schneider, Hernandez, & Cady, 2018).

A 2017 Kent State University study analyzed the prevalence of food insecurity and factors that ease or hinder the use of food assistance resources. Of the participants, 35.7% were found to be food insecure and food insecure students were also unaware of food assistance resources on campus or of a food pantry. The most common way to receive food assistance reported by students were informal resources, such as going to an event with free food and asking others for help (King, 2017).

Costs of College

Tuition and costs associated with college have increased steadily over the years (Dubick et al., 2016; Martinez et al., 2017; Rule & Jack, 2018; Twill, Bergdahl, & Fensler, 2016). Need-based financial aid programs are shrinking, as well as other government funding options available to students (Broton & Goldrick-Rab, 2018; El Zein et al., 2018; Farahbakhsh, Mahitab, Farmer, Maximova, & Willows, 2017). To help pay for college, more and more students are using credit cards and loans driving up the amount of student debt (Gaines et al., 2014). When a student experiences food insecurity it is typically a symptom of extreme financial duress (Dubick et al., 2016), which can come from managing their own finances for the first time and are not prepared to manage their resources (Martinez et al., 2017). Due to financial strain students also have limited or no emergency funds which could increase the chances of experiencing food insecurity (Gaines et al., 2014). When students are financially independent, they are having to split their focus between school and food resources (Meza, Altman, Martinez, & Leung, 2018). Education is likened to a tool to help someone better themselves and their futures, but students are not getting the financial assistance needed to perform well to be successful (Patton-López et al., 2014). Not only is the expense of college causing issues for students, but also the cost and stress of finding a place to live adds to the pressures of college (Silva, Kleinert, Sheppard, Cantrell, Freeman-Coppadge, Tsoy, Roberts, & Pearrow, 2017).

According to the Government Accountability Office, the U.S. Federal Government spent over \$122 billion in fiscal year 2017 on student aid in the forms of grants, loans and work study, an enormous investment in higher education. Aid comes in the form of grants and loans from the federal government, but many students still struggle

to make ends meet, especially when it comes to buying food, causing some students to choose between eating and paying the bills. In less than 20 years the number of students receiving Pell Grants increased 30%, but this grant does not cover all of the expenses a student has while attending college (Chavez, 2017). Federal aid helps; however, aid does not cover all the costs associated with attending college especially for low-income students (United States GAO, 2018).

Student Populations

In the past 50 years the traditional college students has changed (Goyette, 2008). The traditional college student started college immediately following high school graduation, was middle to upper class, single, and financially dependent on their parents (Choy, 2002). Today that traditional college student is a minority among student populations at many colleges and universities (United States GAO, 2018). A more diverse group of students are now pursuing higher education with an increasing number who are from low socioeconomic status homes, who are financially independent of their parents and represent a wider range of ethnicities. With the increase of individuals applying for college, higher education has been turned into a commodity to be consumed by all with rising tuition and associated costs (Dubick, Mathews, & Cady, 2016; United States GAO, 2018; Institute of Education Services, 2018). Diversifying student populations, increases in tuition and associated fees, and decreasing financial aid has led to an increase of concern over food insecurity on college campuses (Bruenig, Argo, Payne-Sturges, & Laska, 2017; El Zein, Mathews, House, & Shelnutt, 2018; Gaines, Robb, Knol, & Sickler, 2014; Knol, Robb, McKinley, & Wood, 2017; United States GAO, 2018). Despite the increasing cost of higher education, there has been a steady

increase of students who come from low income homes or are part of an underserved population in the last decade (United States GAO, 2018; Payne-Sturges, Tjaden, Caldeira, Vincent, & Arria, 2018), and these same students are at a higher risk for experiencing food insecurity (Cady, 2014).

Predictors of Food Insecurity Among College Students

Studies are being conducted to determine if college students are food insecure, but there has not been much research on risk factors that could increase the likelihood of students experiencing food insecurity. Researchers in California found that 40% of students enrolled in California's public university system in the past year had experienced food insecurity, with Hispanic students having the highest rate of food insecurity. Past food insecurity, specifically during childhood, was the largest risk factor for food insecurity during college. Researchers also found that Hispanic and African American students were at greater risk for food insecurity than white students. The final risk factor for food insecurity researchers found was living off-campus (Martinez, Webb, Frongillo, & Ritchie, 2017).

A 2019 University of Alabama study examined the relationships between food insecurity status and confidence in ability to cook and found 38.3% of respondents were food insecure. Researchers found students who never cooked, felt less confident in their ability to shop and prepare a nutritious meal, and following a recipe were more likely to experience food insecurity (Knol, Robb, McKinley, & Wood, 2019).

Effects of Food Insecurity on College Students

There are numerous effects on a person's mental and physical health when they experience low and very low food insecurity (Hagedorn & Olfert, 2018). In severe cases

of food insecurity, individuals may experience hunger (Martinez et al., 2017), but it is important to realize that food insecurity and hunger are not the same things (Rule & Jack, 2018). No matter a person's age, food insecurity can negatively affect them physically, cognitively, and emotionally (Hagedorn & Olfert, 2018). For students who are experiencing food insecurity there is greater concern for the impact food insecurity has on academic performance and mental and physical health (Forman, Mangini, Dong, Hernandez, & Fingerman, 2018).

Nearly 26% of individuals between the ages of 18 – 25 are diagnosed with a mental illness, which is the highest out of all adults (National Institute of Mental Health, n.d.). Food security has been shown to impact an individual's mental health (Martin, Maddocks, Chen, Gilman, & Colman, 2015). The relationship between food insecurity and mental illness led researchers at an Appalachian college to study the relationship between these things at their campus. While there were some differences, food insecurity was found to be a cause for anxiety and depression among men and women. Along with these findings, researchers also found that individuals enrolled at this college face food security at a higher rate than the national average (Wattick, Hagedorn, & Olfert, 2018). At a university in Arizona researchers found that freshmen experiencing food insecurity were two time more likely to experience stress and depression (Bruening, van Woerden, Todd, & Laska, 2018).

Researchers at the University of Alberta studied students who visit the campus food pantry by food security status by looking at their physical health, diet, and effects on academic performance. Nearly 90% of the clients were found to be food insecure despite efforts through the campus food pantry. Students also reported feeling socially isolated,

which could have impacted their health and well-being. To potentially save money, food insecure students were consuming less fruits, vegetables, and dairy than other students. The majority of students self-reported their food insecurity had negatively impact their academic performance, some to the extent of not being able to focus or withdrawing from a course. These findings led researchers to recommend policy changes to help create programs to target root causes of food insecurity (Farahbakhsh et al., 2017).

Food insecurity not only affects health but also the academic performance of students (Dubick et al., 2016). Researchers at West Virginia University studied levels of food insecurity and how food insecurity impacts a student academically, how they cope, and spending habits among undergraduate and graduate students. Nearly 40% of respondents were found to be food insecure, with higher rates among those who live off campus, in their sophomore or junior years, and those who reported health issues. Using the academic progress scale (APS) students reported their progress, which included graduation date, attendance, being able to focus in class, and comprehension of what is being taught. Students who were determined to be food insecure typically received a lower APS score and GPA (Hagedorn & Olfert, 2018).

At The Ohio State University researchers examined levels of food insecurity among undergraduate students and how food insecurity is connected to academic performance. To determine food insecurity, the researchers used the six-item food security instrument from the USDA. Researchers found that food insecurity was more frequent among students based on ethnicity, first generation status, financial status, and if the student had children. Students who were food insecure and in debt also had trouble academically (Phillips, McDaniel, & Croft, 2018).

Many studies focus on students at four-year universities, so researchers in Maryland studied the prevalence of food insecurity and how food insecurity impacts GPA for community college students. The researchers found that 56% of the respondents were food insecure and that White students were less likely to be food insecure than African American, Hispanic, and Asian students. While food insecurity cannot be directly related to academic performance, this study does strengthen the relationship between the two and recommends for more research to be done on the relationship (Maroto, Snelling, & Linck, 2014).

A qualitative study was conducted among 25 undergraduate students at University of California, Berkley who utilized the campus food pantry. Interviews were conducted with each participant by trained interviewers that lasted 20 to 25 minutes. The students discussed the social and mental impacts of food insecurity and how these impacts affect their academic studies. Food insecurity added stress to students' social life as they experienced jealousy of financially stable students, embarrassment of having other students offer to pay for food, and hopelessness as they attempt to balance work and academic studies. All of the participants brought up how food insecurity effects them physically and how that impacts their academic performance. They lacked the energy needed to perform well and thought about changing majors or dropping out of school. Some students worked extra hours to earn extra income, but this resulted in less time for them to study. One coping strategy was to sleep for extended amounts of time because of hunger or because they were tired from not having sufficient meals, which led to a cycle of constant tiredness. Researchers encourage a holistic approach to solutions on college

campuses for students experiencing food insecurity (Meza, Altman, Martinez, & Leung, 2018).

Researchers at the University of Massachusetts Boston studied housing and food needs of students and how these needs affect the students' academic success. Students who had experienced homelessness and food insecurity were overwhelmingly at academic risk than those who have not dealt with these challenges. If a student had experienced extreme food insecurity, they were more likely to have failed courses and withdraw from courses. Recommendations from the researchers include qualitative studies and to build partnerships with community organizations (Silva, Kleinert, Sheppard, Cantrell, Freeman-Coppadge, Tsoy, Roberts, & Pearrow, 2017).

Cady (2014) reviewed literature concerning food insecurity among college students and used research focusing on the effects of food insecurity on children to discuss potential outcomes during college. Administrators should respond to the issue of food insecurity because it is a barrier to student well-being and success. Cady (2014) recommends that solutions should be short- and long-term to address food insecurity. Further research is needed to understand the entire scope of food insecurity among college students and how to effectively help students proactively and retroactively (Cady, 2014).

Resources Available to Food Insecure College Students

Colleges and universities are responding to food insecurity among college students in a variety of ways that can be placed under one of the following categories: 1) educating faculty, staff, and students, 2) providing students with free food and emergency assistance, and 3) creating a centralized student services office that includes applying for

federal and state benefits, such as SNAP (United States GAO, 2018). Campuses are campaigning to educate members of the campus community of available resources on and off campus. In the last decade the number of campus food pantries has increased, varying in size and location (Bruening, Arto, Payne-Sturges, & Laska, 2017; United States GAO, 2018). As of January 2020, nearly 800 food pantries have been established at colleges and universities across the nation according to the College and University Food Bank Alliance. The total number of campus food pantries could be much higher as this number does not include food pantries at schools that are not members of the Alliance (College & University Food Bank Alliance, n.d.).

There are barriers to getting students to access resources such as a food pantry or applying for SNAP benefits. Barriers to receiving assistance from a food pantry could include location relative to campus, information about how a food pantry works, requirements such as proof of permanent residence, and the social stigma (El Zein, Mathews, House, & Shelnett, 2018). The barriers to applying for SNAP also include the inability to meet work or income requirements, stigma or embarrassment of receiving benefits, and knowledge of the system (Twill, Bergdahl, & Fensler, 2016). To streamline service, some colleges and universities have strategically located financial aid, academic counseling, food pantry, veterans' services, and more in or near the student union or center. Still other colleges and universities are helping students by providing emergency cash through gift cards, loans, or grants (United States GAO, 2018).

With food insecurity among college students becoming more prevalent, student services offices at colleges and universities are expanding to help address food insecurity (Woods & Harris, 2018). McArthur, Ball, Danek, and Holbert (2018) make the following

suggestions on how colleges and universities could help food insecure students: using an array of people to create teams to meet needs of student populations through food pantries, cooking classes, personal finance courses, discounts at on-campus markets, and donated dining dollars from other students. Health services on campus at colleges and universities could begin screening for food insecurity among students (Forman et al., 2018).

Rule and Jack (2018) reported a food service provider that serves more than 100 higher-education clients partnered with a Harvard University professor to examine food insecurity in higher education and identified various ways colleges and universities are fighting food insecurity on their campuses. The most common strategy was to set up a food pantry on campus, some that give out unprepared food and some pantries that provide meals. Several universities have created programs that allow students to share their meal plan funds with other students who are food insecure. Researchers recommend that solutions should focus on short- and long-term goals and engage a variety of stakeholders and funders.

Supplemental Nutrition Assistance Program and WIC for College Students

To be eligible for SNAP benefits, college students must work at least 20 hours per week, participate in a college work-study program, have a disability, be a parent of a young child, or be a single parent with a child younger than 12 (Food and Nutrition Service, 2019). In addition to SNAP, the Special Supplement Nutrition Program for Women, Infants, and Children (WIC) is available to eligible college students who are pregnant or post-partum with children up to the age of five. Recipients' must be determined to be a nutritional risk and have a gross income below 185% of the U.S.

Poverty Income Guideline (Food and Nutrition Service, 2013). While SNAP recipients can purchase most any item from a store that sells groceries, WIC recipients receive vouchers or benefit cards for specific foods each month such as infant cereal, juice, eggs, milk, cheese, and peanut butter. In 2016 it was estimated that 2 million college students who were eligible, did not receive SNAP benefits (United States GAO, 2018).

Local Food Banks and Pantries

In Stillwater, Oklahoma, the community food pantry, Our Daily Bread Food and Resource Center, provides food items and other resources for people in need. Established in 2017, Our Daily Bread Food and Resource Center began as a consolidation of local food pantries. Our Daily Bread Food and Resource Center is a client choice pantry meaning guests are able to choose what they like and want instead of receiving a box or bag of food (Our Daily Bread Food & Resource Center, n.d.). Local pantries may not be able to serve college students without proof of permanent residence in the area (Twill, Bergdahl, & Fensler, 2016).

On-Campus Food Pantries

On-campus food pantries were established because students are not able to utilize other resources due to different barriers (Twill, Bergdahl, & Fensler, 2016). Today there are over 700 campus food pantries (College and University Food Bank Alliance, n.d.). An on-campus pantry may be beneficial because some students may not have transportation to the community pantry (Bacon & Baker, 2017). It is important that logistical information concerning an on-campus pantry is readily available for students, faculty, and staff. However, there is no national data that has been collected that focuses on student food

insecurity and on-campus food pantries (El Zein, Mathews, House, & Shelnett 2018; Philips, McDaniel, & Croft, 2018).

Specialized Office for Food Insecure Students

To help create a healthy campus offering services that focus on resources and programs that address food insecurity may be in order (Morris et al., 2016). Food insecure students have expressed interest in wanting to know whom to contact on campus for help when they do not have enough food (Martinez et al., 2017). The United States GAO (2018) reported that many of the college officials contacted for their study discussed how they have centralized student services and financial aid services, so they are able to efficiently and holistically meet the needs of their students. In these offices, students may be given a caseworker to help the student find and apply for the benefits they are eligible for on-campus, within the community, and at the state and federal level. Within the centralized offices, several colleges have created a coordinated benefits access program that screens students for eligibility for and helps enroll them in benefit programs, such as SNAP, WIC, and Medicaid (United States GAO, 2018).

Recommendations to Combat Food Insecurity Among College Students

Researchers studied the rate of food insecurity at a university in North Carolina and made several recommendations for how to help food insecure students. Based off participants' answers educational programs focusing on budgeting, grocery shopping, and nutritious meal planning. Another recommendation is for policies to be created to help students have proper access to food. Specifically, for college and university campuses, researchers recommend on-campus pantries, on-campus gardens, using unspent meal plan money for students in need whose meal plan is depleted or could not afford one. Their

final recommendation for community assistance is to offer coupons at local grocery stores and inviting students to meal programs at churches or community centers (McArthur, Ball, Danek, & Holbert, 2018).

The Government Accountability Office (2018) reviewed 31 studies that focused on food insecurity at colleges and universities but did not provide national estimates of food insecurity among college students. This analysis found the most common risk factor for food insecurity among college students was having a low income. The United States GAO contacted 14 colleges that were already addressing food insecurity in a variety of ways. All 14 had on-campus pantries and a majority were providing emergency funds to students for expenses that could force the students to choose between buying food and staying in school. Out of the 14 colleges, at nine of them college officials and students reported they were unfamiliar with or did not understand the eligibility rules of SNAP for students. The United States GAO (2018) reported that despite the federal spending in higher education, the cost of college has risen higher the federal and state grant aid leading to students and families having to pay more of the cost. Along with more of college costs being carried by students, there has been an increase of students enrolling in college from low-income students. Students can receive federal financial aid for college expenses as well as federal aid to help purchase food through SNAP.

In the review of the 31 studies, the United States GAO (2018) found prevalence food insecurity among college students range from 9% to over 50%. Across all studies and in interviews, having a low income was consistently acknowledged as a risk factor for food insecurity. The other risk factors found by the United States GAO included: being a first-generation college student, receiving SNAP, being a single parent, being

disabled, homelessness or at risk of homelessness, and being a former foster youth. Out of these risk factors in low-income students, the three most common risk factors were being a first-generation college student, receiving SNAP, and being a single parent. When looking at potentially eligible students, 57% of students reported they did not receive SNAP benefits.

The 14 colleges contacted were addressing food insecurity in three main ways: education campaigns, providing free food and emergency assistance, and centralizing student services to help students apply for benefits. Administration at all of the colleges discussed how addressing food insecurity is part of improving student outcomes, such as retention and completion (United States GAO, 2018).

Food Insecurity at Oklahoma State University

In a 2018 Oklahoma State University study, Balsiger found that 42% of participants were food insecure. The majority of the respondents in this study were female, white, lived off-campus, and were undergraduate students. More than half of the respondents self-reported receiving financial support for their education from one of the following sources: family, employment, scholarships, fellowships, financial aid, grants, or student loans. Nearly 60% of participants worked at least part-time. Over 60% of participants were unaware of a local food pantry, Our Daily Bread Food and Resource Center in Stillwater, Oklahoma. Food insecure students were less aware of Our Daily Bread Food and Resource Center than food secure students. The majority of respondents also indicated they did not think receiving food from a food pantry would help them if they were food insecure. Of the students who indicated they had a meal plan; more than half said they would not be willing to donate meal plan money to students in need.

Summary

Food insecurity means an individual does not have adequate access to nutritious foods (USDA ERS, 2019). The fight against food insecurity began in the 1930s and has evolved over time to better serve the citizens of the United States. Strategies used to fight food insecurity include the Supplemental Nutrition Assistance Program, the Supplemental Nutrition Assistance Program for Women, Infants, and Children, the Charitable Emergency Food System, and school meal programs (Wilde, 2018). At the postsecondary level, food insecurity is becoming more prevalent due to the changing student population, increase in college tuition and associated costs, and decreasing financial aid (United States GAO, 2018).

CHAPTER III

METHODOLOGY

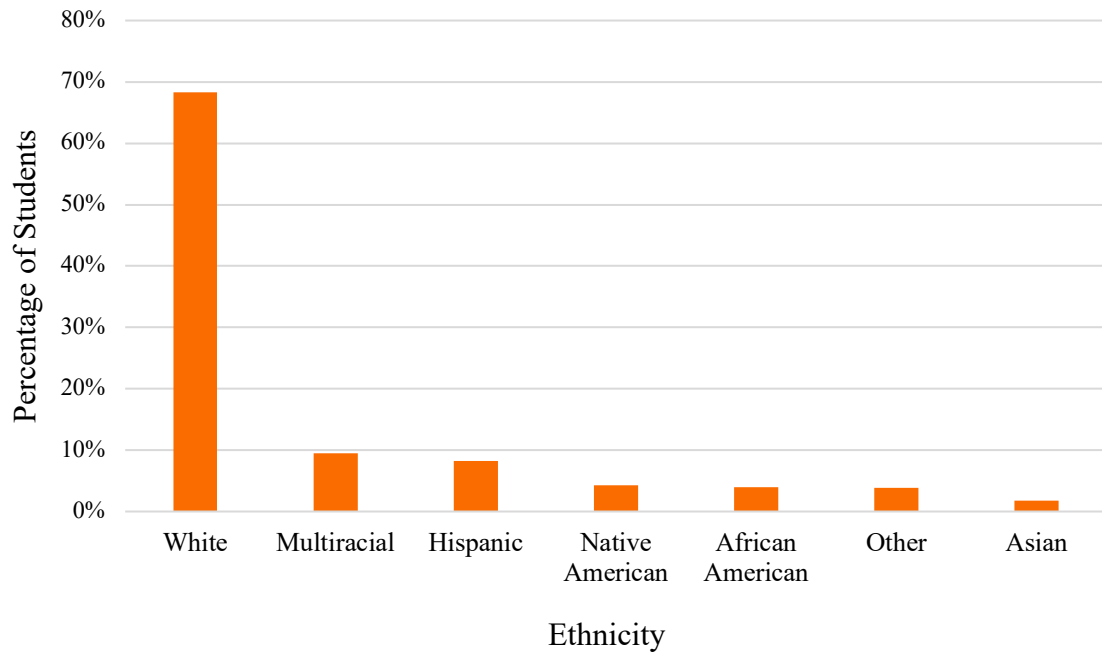
This chapter will describe the procedures and methods used to develop and conduct this study. The purpose of this study was to describe students' awareness of, and willingness to utilize food assistance programs, and to describe the food insecurity status of undergraduate students.

Target Population

Oklahoma State University's undergraduate student body was the target population, with 18,513 undergraduates enrolled in the fall 2019 semester. According to data provided by Oklahoma State University Institutional Research and Information Management (2019), the undergraduate student body was split almost evenly between male (50.6%), and female (49.4%) students. When looking at the student body by ethnicity, 68.3% of undergraduate students were White, 4.0% were Black or African American, 8.2% were Hispanic, 1.8% were Asian, 4.3% were American Indian or Native American, 0.09% were Native Hawaiian, 9.5% were multiracial, 3.7% were nonresident alien, and 0.09% were unknown.

Figure 3.1

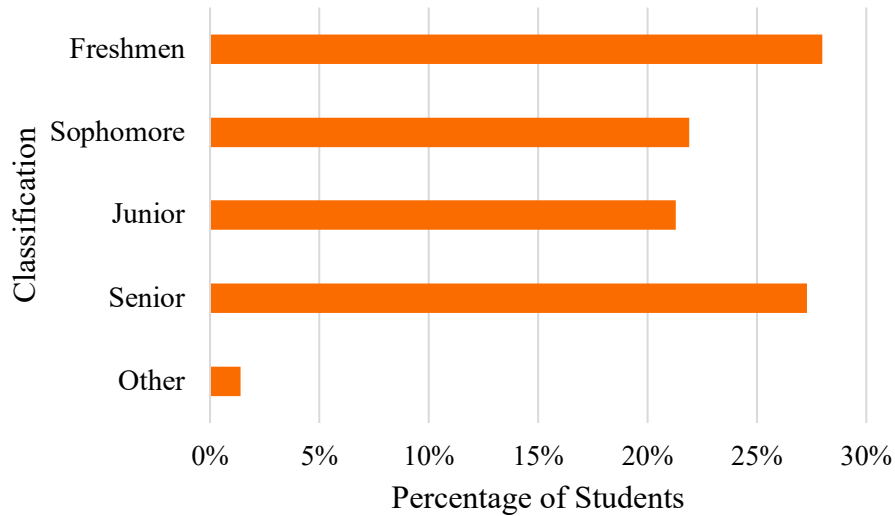
Oklahoma State University Undergraduate Student Population Ethnicity



As of the fall 2019 semester, the largest class in the undergraduate student body were freshmen with 5,201 students, or 28.0%. Seniors were the next largest class with 5,056 students, 27.3% of the student body. With 4,501 students, sophomores represented 21.9% of undergraduate students. There are 3,946 students that are classified as juniors, which is 21.3% of the student body. The remaining 1.4%, 259 individuals, of undergraduate students are classified as special undergraduates, which are non-degree seeking or concurrent students.

Figure 3.2

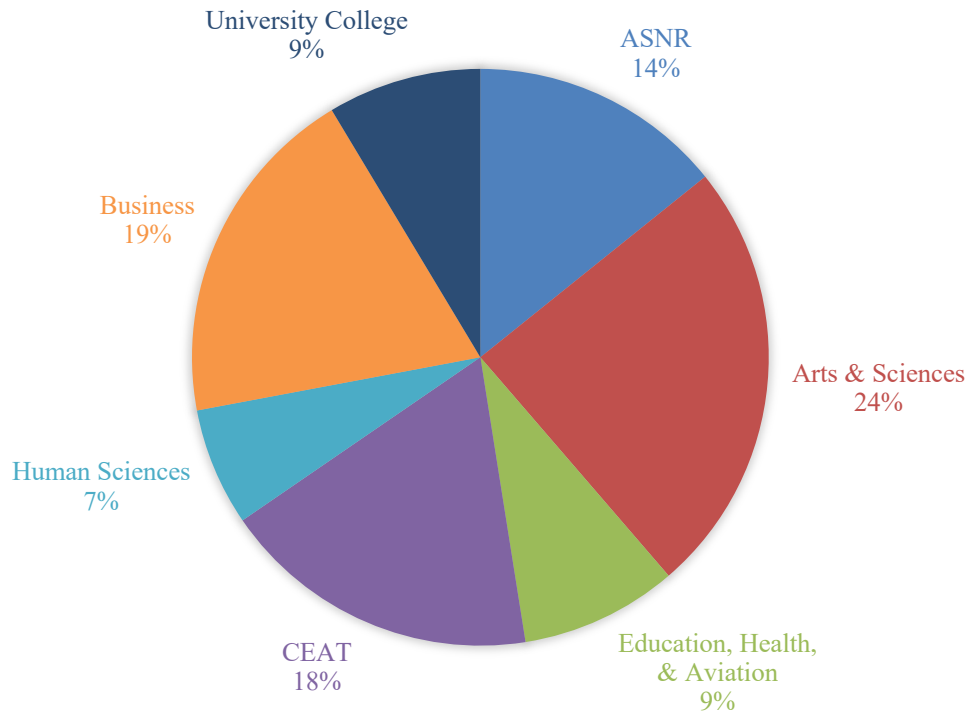
Oklahoma State University Undergraduate Students by Classification Fall 2019



The largest college on campus was the College of Arts and Sciences with 4,512, or 24.4% of the, undergraduate students. Making up 19.3% of the undergraduate student body, Spears School of Business had 3,572 students. With 3,321 students, the College of Engineering, Architecture, and Technology represented 17.9% of the undergraduate student body. The College of Agricultural Sciences and Natural Resources housed 2,635 undergraduate students, representing 14.2% of the student body. Representing 8.8% of the student body, the College of Education, Health and Aviation had 1,634 students. Next in size or enrollment was the University College with 1,586 students, 8.6% of the student body, which were students that had not declared a major. The smallest college was Human Sciences with 1,253 students, 6.8% of the student body.

Figure 3.3

Oklahoma State University Undergraduate Population by College Fall 2019



To be a full-time undergraduate student, an individual must be enrolled in at least 12 credit hours. Among the undergraduate student body, 87.62% of students were full time and 12.38% of students are part time in the fall 2019 term.

Oklahoma State University Institutional Review Board

Prior to data collection, the instrument, recruitment material, and study procedures were submitted to and approved by the Oklahoma State University Institutional Review Board. The application number is AG – 19 – 48. The consent letter was formatted according to the IRB and can be found in Appendix B.

Instrumentation

For this study I adapted a questionnaire used by King (2017) in her dissertation *Food Insecurity Among College Students – Exploring the Predictors of Food Assistance Resource Use*. King’s study addressed knowledge of college students’ eligibility for the Supplemental Nutrition Assistance Program, what students would be willing to do to acquire food, how effective certain programs would be for food insecure students, what they think the university should do to help food insecure students. Also included in the instrument was the United States Department of Agriculture’s (USDA) *Adult Food Security Survey Modules* six-item short form food security survey, which has been used by multiple studies on college campuses (Martinez et al., 2017; Patton-Lopez, Lopez-Cevallos, Cancel-Tirado, & Vasquez, 2014) concerning food insecurity (ERS, 2019). To assess student food insecurity status, I added questions asking if students have ever or currently received benefits through a food assistance program. Questions about what students would be willing to do and what they thought would be effective were formatted as a Likert – scale with four options. Students were also asked to rank various strategies that could be implemented by Oklahoma State University to help food insecure students. Along with the USDA’s survey, the questions concerning received benefits from food assistance programs asked if the student ever qualified for or received free or reduced-price meals at school, if the student or their family has ever received SNAP benefits, and if the student currently receives SNAP benefits.

Additional questions sought to determine students’ awareness of the local food pantry, Our Daily Bread Food and Resource Center, located in Stillwater and if they had they ever used it. If the students indicated they had used the food pantry, they were

directed to an additional question asking how many times a semester they had received food from Our Daily Bread Food and Resource Center. Demographics included questions about age, gender, classification, enrolled college, living arrangements, employment, and number of enrolled credit hours. The final instrument can be found in Appendix A.

The instrument was reviewed by a panel of three experts at Oklahoma State University for content validity. The experts included the Director of Leadership and Campus Life, a professor of nutrition registered and licensed dietician who specializes in community nutrition education, and an agricultural economist professor who specializes in food insecurity issues. Experts were asked to provide feedback they thought would improve the content of the instrument. The experts were advised that the target population would be the undergraduate student population at the university. Feedback included recommendations to increase clarity on the question about qualifying for free or reduced-priced breakfast or lunch, proper wording for answer choices when asking students how many credit hours they are enrolled in, and the addition of the answer choice “in a fraternity or sorority house” to the list of housing options. I revised the wording for the questions: college students’ eligibility for SNAP benefits, potential behaviors if a student had trouble acquiring adequate amounts of food, past and current reception of SNAP, and answer choices for living arrangement question were also recommended.

Pilot Test

After the instrument was developed and reviewed by the of experts, a class of Agricultural Leadership undergraduate students studying food insecurity at Oklahoma

State University were used to pilot the instrument. Students in the pilot were asked to take the questionnaire to determine face validity.

A sociology class and nutrition class, at Northern Oklahoma Community College were also used to pilot the study. These classes were chosen because they were similar to the target population in age and classification. Student panel members were asked whether the format and utility of the questionnaire was easy to answer, meaningful, and understandable. The pilot group of 31 students who viewed the instrument found it to be acceptable. Average time to complete the questionnaire in the pilot study was six minutes. In the pilot study, items were presented online using Qualtrics Survey Software. None of the questions included in the questionnaire would reveal the identity of the respondent.

Data Collection

To obtain a representative sample from the population the Qualtrics Sample Size Calculator recommended 377 responses. This calculation is based on the Krejcie and Morgan formula for determining sample size (Johnson & Shoulders, 2019). The population was slightly oversampled to ensure adequate responses were collected. To collect responses, three high trafficked areas on Oklahoma State University's campus were chosen. The locations were the lobby of Edmon Low Library on October 29, 2019 from 2:00 p.m. to 3:30 p.m., the lobby of Agriculture Hall on October 30, 2019 from 9:30 a.m. to 12:00 p.m., and near the east entrance of the Student Union on October 31, 2019 from 10:00 a.m. to 1:00 p.m. A large general education classroom is near the lobby of Agriculture Hall and during the time I was in the lobby collecting responses the following classes met in that classroom: Abnormal Psychology, Survey of Biochemistry, Structural

Analysis, and Advanced Microbiology. To collect data in the lobby of the library I scheduled a time and reserved a table through the Dean of Libraries. When I collected data in the library, twelve undergraduate students enrolled in AGLE 3333 helped recruit participants. In the Student Union I reserved a location to set up a table designated through Student Union Meeting & Conference Services.

Participants were recruited with the slogan “5 minutes for \$5.” Dillman, Smyth, and Christian (2014) suggests that offering an incentive, especially cash, is an important way to get individuals to respond to a questionnaire. Funding for the incentive was provided by the Department of Agricultural Economics and the Agricultural Leadership program, each providing \$1,000. Photographs of data collection in two locations are included in Appendix C.

Large standing posters with the slogan were printed and placed near the tables where I stood with receipts, money, quick response (QR) codes, and iPads. Once a student indicated they were interested in taking the questionnaire, they were asked if they had a smart phone and were given a QR code to scan. If an individual did not have a smart phone, iPads were available for their use. The QR code directed the participant to the questionnaire, which began with a consent form. The questionnaire was created and administered through Qualtrics. The QR code was generated by Qualtrics and allowed respondents to be completely anonymous. Once a participant completed the questionnaire, they signed a receipt form and were given a \$5 bill.

Data Analysis

Over three days, 416 students completed the questionnaire. Twelve responses were deleted because their responses were incomplete, and another nine responses were

deleted because of unusable data. The Institutional Review Board approved the study for students who were the age of 18 years or older, and two students who participated indicated they were under the age of 18 so their responses were deleted, reducing the total to 393 responses. The advertised time to complete the survey was five minutes. After the cleaning measures listed above were completed, I deleted any responses that had completion time of two and one-half minutes, less than half of estimated five minutes to complete the questionnaire. This decision led to two more responses being deleted and the total response number was 391 respondents.

Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 25. Statistical analysis included descriptive statistics and Chi-square procedures. Chi-square tests were chosen because the data were categorical and I wanted to determine if there was a relationship between the variables (Field, 2009). The food security status groups classified as “food secure” and “food insecure” were compared to each other in terms of response frequency by gender, classification, and living arrangements by the Chi-square test. Knowledge of SNAP was compared by gender and classification. Knowledge of the community food pantry was also compared using the Chi-Square test with gender and classification.

Levels of food security were determined using the coding provided by the USDA Economic Research Service (ERS) (2019). Responses that were coded as affirmative for the questions in Table 3.1 were “often”, “sometimes”, “yes, almost every month”, and “some months but not every month” (Economic Research Service, 2019).

Table 3.1*Adult Food Security Survey Questions and Responses*

Questions	Answers
“The food that I bought just didn’t last, and I didn’t have enough money to get more.” Was that often, sometimes, or never true for you in the last 12 months?	Often true* Sometimes true* Never true Not sure
“I couldn’t afford to eat balanced meals.” Was that often sometimes, or never true for you in the last 12 months?	Often true* Sometimes true* Never true Not sure
In the last 12 months, did you ever cut the size of your meals or skip meals because there wasn’t enough money for food?	Yes* No Don’t know
How often did you cut your meals – almost every month, some months but not every month, or in only 1 or 2 months?	Almost every month* Some months, not every month* Only 1 or 2 months Not sure
In the last 12 months did you ever eat less than you felt you should because there wasn’t enough money for food?	Yes* No Not sure
In the last 12 months, were you ever hungry didn’t eat because there wasn’t enough money for food?	Yes* No Not sure

*Response is categorized as ‘affirmative’ an indicative of food insecurity.

To determine food insecurity levels, the number of affirmative responses I tallied responses and computed scores from zero to six as seen in Table 3.1 (ERS, 2019). For practical purposes, affirmation scores of zero and one described an individual who was food secure, affirmation scores of two, three, four, five or six described an individual who was food insecure (ERS, 2019).

Table 3.2*Coding of USDA Food Security Survey Questions*

Affirmatives	Food Security Level	Status
Zero	High food security	Food Secure
One	Marginal food security	
Two	Low food security	Food Insecure
Three	Low food security	
Four	Low food security	
Five	Very low food security	
Six	Very low food security	

CHAPTER IV

FINDINGS

The purpose of this study was to describe the food security status of the undergraduate students at Oklahoma State University, their likely behaviors if experiencing food insecurity, and perceived effectiveness of strategies to combat food security. A total of 416 Oklahoma State University undergraduate students responded to the questionnaire, and after cleaning measures were completed, the sample population of 391 respondents was achieved. Table 4.1 describes demographic data on the respondents including ethnicity, gender, classification, college, housing, and employment.

Table 4.1*Demographics of Sample Population (n=391)*

	<i>f</i>	%
Ethnicity		
White Non-Hispanic	288	73.7
American Indian or Alaska Native	33	8.4
Hispanic	29	7.4
African American or Black	15	3.8
Multi-racial	11	2.8
Asian	9	2.3
Gender		
Female	211	54.0
Male	174	44.5
Student Classification		
Freshman	115	29.4
Sophomore	67	17.1
Junior	108	27.6
Senior	93	23.8
Other	8	2.0
Oklahoma State University Colleges		
Agricultural Sciences & Natural Resources	132	33.8
Business	60	25.3
Arts & Sciences	84	21.5
Engineering, Architecture, & Technology	60	15.3
Education, Health, & Aviation	22	5.6
Human Sciences	22	5.6
University College	5	1.3
Housing		
On Campus – Residence hall or Greek	160	40.9
Off Campus – alone, family, or roommates	222	57.0
Employment		
Not working	156	39.9
< 20 hours/week	132	33.8
>20 hours/week	96	24.6

Over 95% of the respondents were full-time students, enrolled in at least 12 credit hours in the fall 2019 semester, and nearly 95% were between the traditional college

student ages of 18 - 23. Two of the four courses meeting in the classroom near the lobby of Agriculture Hall, Biochemistry and Microbiology, are courses in the College of Agricultural Sciences and Natural Resources, this could explain why College of Agricultural Sciences and Natural Resource students were overrepresented, representing about 24% in the student body, but 38% in this study. When compared to the rest of the student population by age and classification, the College of Agricultural Sciences and Natural Resources students were similar.

Findings Related to Objective 1

Responses were reported for all 391 respondents. The respondents who indicated they were freshmen, a total of 115, were removed and the responses were recalculated. Freshmen were removed because the questions in the food security survey focus on the last 12 months. This data was collected at the end of October, only three months after freshmen had begun college. There appeared to be little difference in food insecurity status when freshmen were removed.

Table 4.2*USDA Food Security Survey Question 1*

“The food that I bought just didn’t last, and I didn’t have enough money to get more.” Was that often, sometimes, or never true for you in the last 12 months?	<i>f</i>	%
All respondents (n=391)		
Often true	37	9.5
Sometimes true	127	32.5
Never true	207	52.9
Not sure	16	4.1
Prefer not to respond	4	1.0
Freshmen removed (n=276)		
Often true	27	9.8
Sometimes true	94	34.0
Never true	144	52.2
Not sure	8	2.9
Prefer not to respond	3	1.1

Table 4.3*USDA Food Security Survey Question 2*

“I couldn’t afford to eat balanced meals.” Was that often, sometimes, or never true for you in the last 12 months?	<i>f</i>	%
All respondents (n=391)		
Often true	54	13.8
Sometimes true	148	37.9
Never true	170	43.5
Not sure	16	4.1
Prefer not to respond	3	0.8
Freshmen removed (n=276)		
Often true	42	15.3
Sometimes true	109	39.5
Never true	116	42.0
Not sure	7	2.5
Prefer not to respond	2	0.7

Table 4.4*USDA Food Security Survey Question 3*

In the last 12 months did you ever cut the size of your meals or skip meals because there wasn't enough money for food?	<i>f</i>	%
All respondents (n=391)		
Yes	147	37.6
No	218	55.8
Don't know	18	4.6
Prefer not to respond	8	2.0
Freshmen removed (n=276)		
Yes	116	42.0
No	143	51.8
Don't know	11	4.0
Prefer not to respond	6	2.2

If students answered “Yes” to question three, then they were directed to the question depicted in the table below. Out of 391 students, 147 said they had cut the size of their meals or skipped meals because there was not enough money for food. When freshmen were removed out of the 276 remaining students, 116 said they had cut the size of their meals or skipped meals because there was not enough money for food.

Table 4.5*USDA Food Security Survey Question 3.1*

How often did you cut your meals – almost every month, some months but not every month, or in only 1 or 2 months?	<i>f</i>	%
All respondents (n=147)		
Almost every month	43	29.3
Some months but not every month	48	32.7
Only 1 or 2 months	39	26.5
Not sure	17	11.6
Freshmen removed (n=116)		
Almost every month	38	32.8
Some months but not every month	34	29.3
Only 1 or 2 months	30	25.9
Not sure	14	12.0

Table 4.6*USDA Food Security Survey Question 4*

In the last 12 months did you ever eat less that you felt you should because there wasn't enough money for food?	<i>f</i>	%
All respondents (n=391)		
Yes	140	35.8
No	231	59.1
Not Sure	15	3.8
Prefer not to respond	5	1.3
Freshmen removed (n=276)		
Yes	105	38.0
No	154	55.8
Not Sure	14	5.1
Prefer not to respond	3	1.1

Table 4.7*USDA Food Security Survey Question 5*

In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?	<i>f</i>	%
All respondents (n=391)		
Yes	110	28.1
No	262	67.0
Not Sure	13	3.3
Prefer not to respond	6	1.5
Freshmen removed (n=276)		
Yes	88	31.9
No	176	63.8
Not Sure	9	3.3
Prefer not to respond	3	1.0

The responses to the USDA Food Security Survey reported in Tables 4.2 through 4.7 were scored according to the guidelines provided by the USDA to determine food insecurity status of students. The scored responses are reported in Table 4.8 below.

Table 4.8*USDA Food Security Survey Scored Responses (n=391)*

Number of Affirmatives	Status	<i>f</i>	%
Zero – High food security	Food secure	136	34.8
One – Marginal food security		64	16.4
Two – Low food security	Food insecure	42	10.7
Three – Low food security		30	7.7
Four – Low food security		33	8.4
Five – Very low food security		38	9.7
Six – Very low food security		48	12.3

When the respondents were combined according to the scoring data in Table 3.2, 48.8% are considered to have low or very low food security. Students were categorized by low food security, which is represented by two, three, or four affirmatives. Very low food security is represented by five or six affirmatives. These four categories were combined to reach 48.8%.

Table 4.9*Food Security Status According to USDA Food Security Survey without Freshmen (n=276)*

Affirmatives	Status	<i>f</i>	%
Zero – High food security	Food secure	89	32.2
One – Marginal food security		44	15.9
Two – Low food security	Food insecure	28	10.1
Three – Low food security		22	8.0
Four – Low food security		22	8.0
Five – Very low food security		30	10.9
Six – Very low food security		41	14.9

When the number of respondents were combined, 51.8% are considered to have low or very low food security, or food insecure.

Table 4.10*Food Security Status by Gender (n=372)*

Food Security Status	Gender				(Chi-square) p value
	Male		Female		
	<i>f</i>	%	<i>f</i>	%	
Food Secure	87	23.4	104	28.0	(0.227)
Food Insecure	78	21.0	103	27.7	p = .634

Table 4.10 presents students' food security status by gender. There was no significant difference in the distribution of students' food security status by gender.

Table 4.11*Food Security Status by Classification (n=372)*

Food Security Status	Classification								(Chi-square) p value
	Freshman		Sophomore		Junior		Senior		
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
Food Secure	64	17.2	36	9.7	52	14.0	39	10.5	(6.612)
Food Insecure	45	12.1	27	7.3	56	15.1	53	14.2	p = .085

Table 4.11 presents students' food security status by classification. There was no significant difference in the distribution of students' food security status by classification.

Table 4.12*Food Security Status by Living Arrangements (n=372)*

Food Security Status	Living Arrangements				(Chi-square) p value
	On-campus		Off-campus		
	<i>f</i>	%	<i>f</i>	%	
Food Secure	95	25.5	96	25.8	(10.522)
Food Insecure	60	16.1	121	32.5	**p = .001

** $p < .01$

Table 4.12 presents students' food security status by living arrangements. There was a significant difference in the distribution of food security status. A higher

percentage of students that were food insecure lived off-campus (66.9%) than on-campus (33.1%).

Table 4.13

Federal Food Assistance Program Participation of Respondents (n=391)

Program	Yes		No		Not Sure		Prefer Not to Respond	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Free or reduced school meal when K-12 student	117	29.9	243	62.1	30	7.7	1	0.3
Previous SNAP recipient	48	12.3	282	72.1	55	14.1	2	0.5
Current SNAP recipient	8	2.0	366	93.6	16	4.1	1	0.3

When asked if they currently received benefits from SNAP, eight of the 391 students indicated that they did.

Findings Related to Objective 2

Table 4.14 displays the frequency of positive responses to a listing of possible strategies Oklahoma State University might use to address food security on campus. Students were asked, “If you had trouble acquiring adequate amounts of healthy food, rate your likelihood of utilizing the following services”. A four-point Likert scale was offered with the choices of “very likely, somewhat likely, somewhat unlikely, and very unlikely”. Accepting a gift card to buy food and attending a campus event that offered free food were the highest rated solutions. Less than 10% of the respondents thought they would look for food in a dumpster if they were hungry.

Table 4.14*Potential Behaviors of Students if They Were Food Insecure (n=391)*

Behavior	Very Likely		Somewhat Likely		Somewhat Unlikely		Very Unlikely	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
\$50 gift card	300	76.7	76	19.4	8	2.0	7	1.8
Campus event	281	71.9	87	22.3	16	4.1	7	1.8
Accept dining dollars	211	54.0	119	30.4	45	11.5	16	4.1
Ask for money from family or friends	197	50.4	127	32.4	46	11.8	21	5.4
Free community meal	151	38.6	145	37.1	61	15.6	34	8.7
Apply for SNAP	83	21.2	120	30.7	118	30.2	70	17.9
Food pantry	74	18.9	124	31.7	113	28.9	80	20.5
Campus garden	70	17.9	124	31.7	100	25.6	97	24.8
Dumpster dive	12	3.1	18	4.6	44	11.3	317	81.1

Findings Related to Objective 3

Table 4.15 presented most of the same strategies as offered in Table 4.14, but students were now asked to rate the effectiveness of those strategies. The strategy, “accept food from a campus-based pantry” was added because there is the possibility of a campus pantry being established at Oklahoma State University. Students were asked, “how effective to you think the following strategies would be to combat food insecurity?”. A four-point Likert scale was available with the choices of “extremely likely, moderately effective, moderately ineffective, and extremely ineffective.” Accepting a \$50 gift card and attending a campus event with free food were rated as the

most effective strategies. Seeking out a free community meal, using donated dining dollars, and accepting food from a campus-based pantry followed extremely closely behind.

Table 4.15

Perceived Effectiveness of Various Strategies (n=391)

Strategy	Extremely Effective		Moderately Effective		Moderately Ineffective		Extremely Ineffective	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Campus event	273	69.8	97	24.8	18	4.6	3	0.8
\$50 gift card	272	69.6	100	25.6	17	4.3	2	0.5
Free community meal	243	62.1	125	32.0	20	5.1	3	0.8
Use dining dollars	222	56.8	143	36.6	23	5.9	3	0.8
Campus-based food pantry	191	48.8	163	41.7	32	8.2	5	1.3
Community food pantry	152	38.9	193	49.4	40	10.2	6	1.5
Apply for SNAP	119	30.4	178	45.5	76	19.4	18	4.6
Ask for money from family or friends	116	29.7	185	47.3	75	19.2	15	3.8
Campus garden	90	23.0	147	37.6	110	28.1	44	11.3
Dumpster dive	9	2.3	20	5.1	54	13.8	308	78.8

The same strategies were presented to respondents again and they were asked to rank the strategies by how effective they thought the strategies would be in combating food insecurity among students.

Table 4.16*Ranking Various Strategies to Help Food Insecure Students (1 = most effective)*

Strategy	Mean	Std. Deviation
OSU provides free meal per day	3.64	2.09
Establish a campus food pantry	3.72	1.71
Offer a \$50 gift card for groceries	3.95	2.05
Donate extra dining dollars	3.96	2.05
Allow SNAP to be accepted on campus	4.13	1.80
Enroll in SNAP	4.21	1.89
Create a campus garden	4.39	2.27

The means in Table 4.16 were tightly clustered for the strategies to combat food insecurity.

Findings Related to Objective 4

Table 4.17*Awareness of SNAP Eligibility of College Students (n=391)*

Eligibility of College Students	<i>f</i>	%
Yes	168	43.0
No	32	8.2
Not sure	187	47.8
Prefer not to respond	4	1.0

Less than half of the respondents were aware that college students could receive SNAP benefits if they meet the eligibility requirements.

Table 4.18

Awareness of Supplemental Nutrition Assistance Program Eligibility of College Students by Gender (n=372)

Eligibility of Students	Gender				(Chi-square) p value
	Male		Female		
	<i>f</i>	%	<i>f</i>	%	
Yes	71	19.1	89	23.9	(0.000)
No	94	25.3	118	31.7	p = .995

Table 4.18 represents awareness of Supplemental Nutrition Assistance Program eligibility of college students by gender. There was no significant difference in the distribution of awareness by gender.

Table 4.19

Awareness of Supplemental Nutrition Assistance Program Eligibility of College Students by Classification (n=372)

Eligibility of Students	Classification								(Chi-square) p value
	Freshman		Sophomore		Junior		Senior		
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
Yes	43	11.6	31	8.3	44	11.8	42	11.3	(2.039)
No	66	17.7	32	8.6	64	17.2	50	13.4	p = .564

Table 4.19 represents awareness of Supplemental Nutrition Assistance Program eligibility of college students by classification. There was no significant difference in the distribution of awareness by classification.

Table 4.20*Student Awareness and Usage of the Community Food Pantry*

Community Food Pantry	<i>f</i>	%
Are you aware there is a community food pantry?		
Yes	182	46.5
No	206	52.7
Prefer not to respond	3	0.8
Total	391	
If yes, have you ever used it?		
Yes	28	15.4
No	154	84.6
Subtotal	182	

Nearly half of the respondents knew there was the food pantry, Our Daily Bread, in Stillwater. If respondents answered “Yes”, then they were asked if they had ever used the pantry. Out of 391 respondents, 182 indicate they knew there was a food pantry in Stillwater. When those who answered “Yes” were asked if they had used the pantry, 28 students said “Yes”.

Table 4.21*Student Awareness of Community Food Pantry by Gender (n=372)*

Are you aware?	Gender				(Chi-square)
	Male		Female		p value
	<i>f</i>	%	<i>f</i>	%	
Yes	65	17.5	113	30.4	(8.496)
No	100	26.9	94	25.3	**p = .004

***p* < .01

Table 4.21 presents student awareness of community food pantry by gender. There was a significant difference in the distribution of awareness by gender.

Table 4.22*Student Awareness of Community Food Pantry by Classification (n=372)*

Are you aware?	Classification								(Chi-square) p value
	Freshman		Sophomore		Junior		Senior		
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
Yes	33	8.9	32	8.6	59	15.9	54	14.5	(20.037)
No	76	20.4	31	8.3	49	13.2	38	10.2	**p = .000

***p* < .01

Table 4.22 presents student awareness of the community food pantry by classification. There was a significant difference in the distribution of awareness by classification. Juniors and seniors were more aware of the community food pantry than freshmen and sophomores.

Table 4.23*Usage of Community Food Pantry*

Food Pantry Usage	<i>f</i>	%
1x a semester	13	46.4
2x a semester	2	7.1
3x a semester	4	14.3
4x or more a semester	1	3.6
Prefer not to answer	8	28.6
Total	28	

A majority of the students who have used the food pantry have used it once a semester, which is consistent with data reported by Our Daily Bread Food and Resource Center.

CHAPTER V

CONCLUSION

This purpose of this study was to examine Oklahoma State University undergraduates' food security status, knowledge and awareness of food resource programs, and strategies to help students cope with food insecurity.

Demographic Summary

Figure 5.1

Undergraduate Student Population Compared to Sample Population by Gender

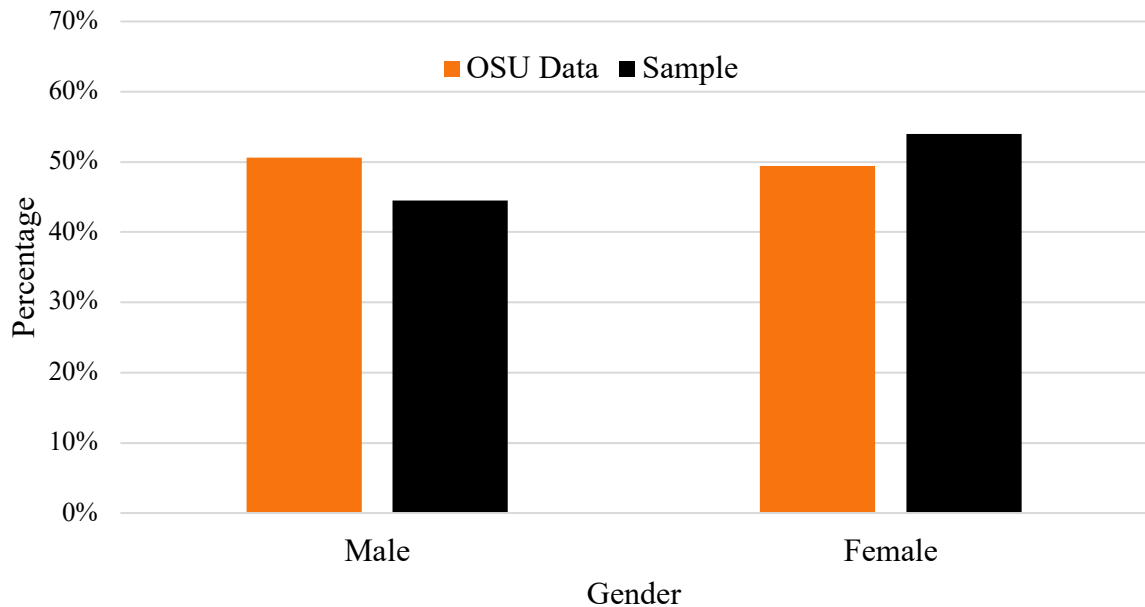
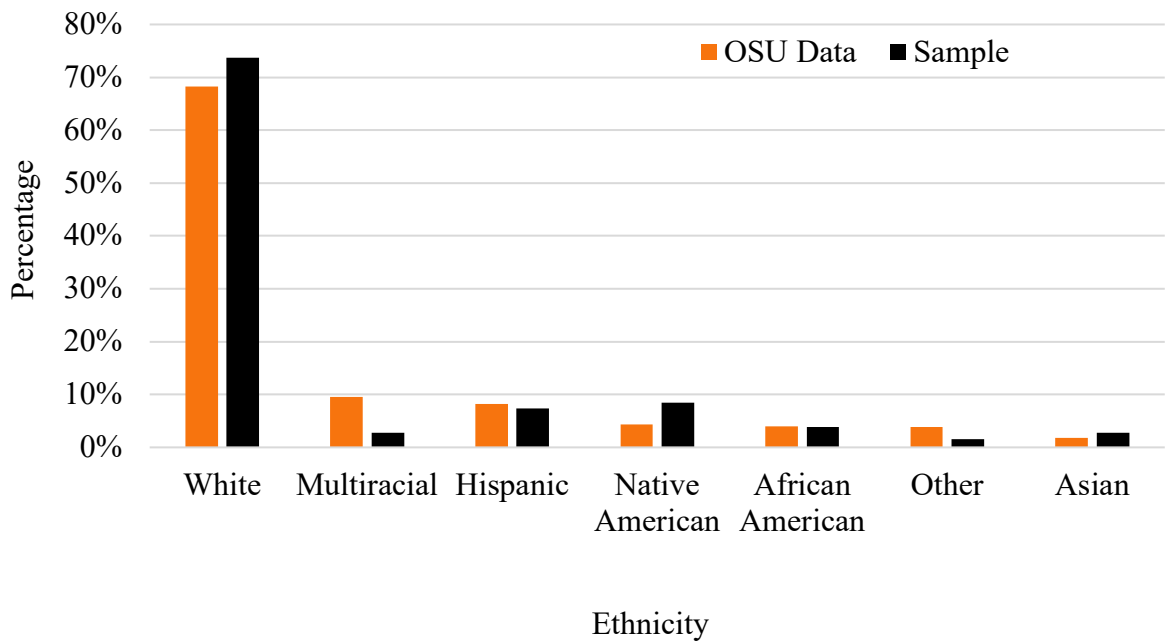


Figure 5.2

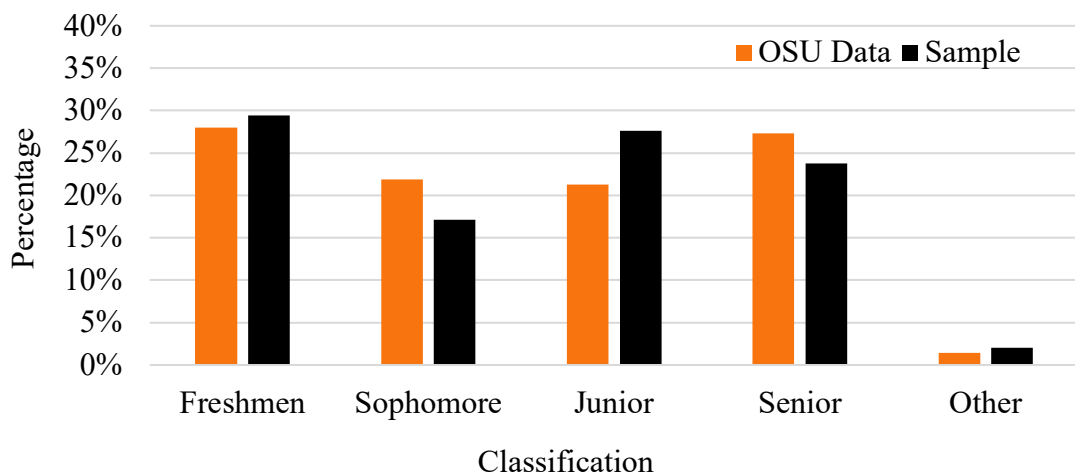
Undergraduate Student Population Compared to Sample Population by Ethnicity



The respondents' ethnicities were representative of the entire undergraduate student body at Oklahoma State University.

Figure 5.3

Undergraduate Student Population Compared to Sample Population by Classification



Juniors were slightly overrepresented in this study when compared to the student body demographics; sophomores were slightly underrepresented.

Figure 5.4

Undergraduate Student Population Compared to Sample Population by Enrollment

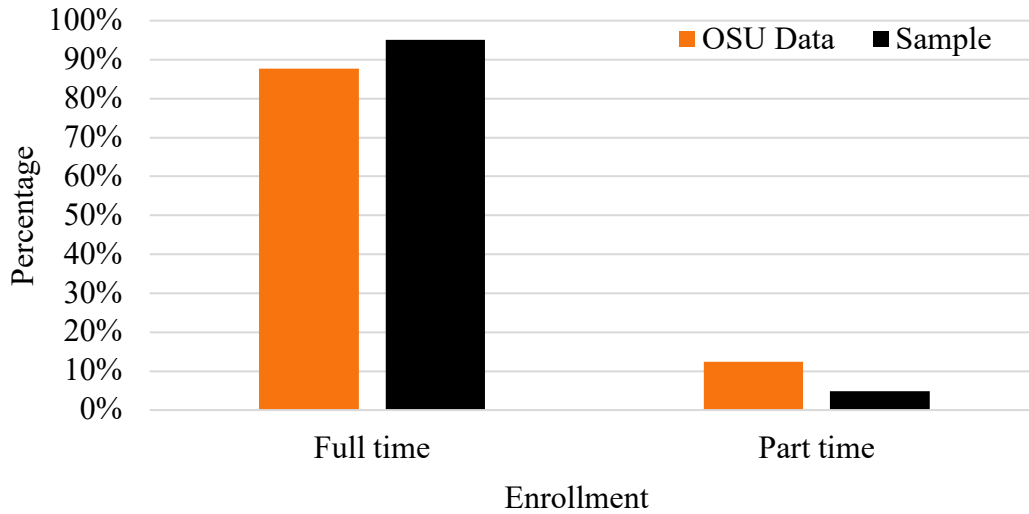
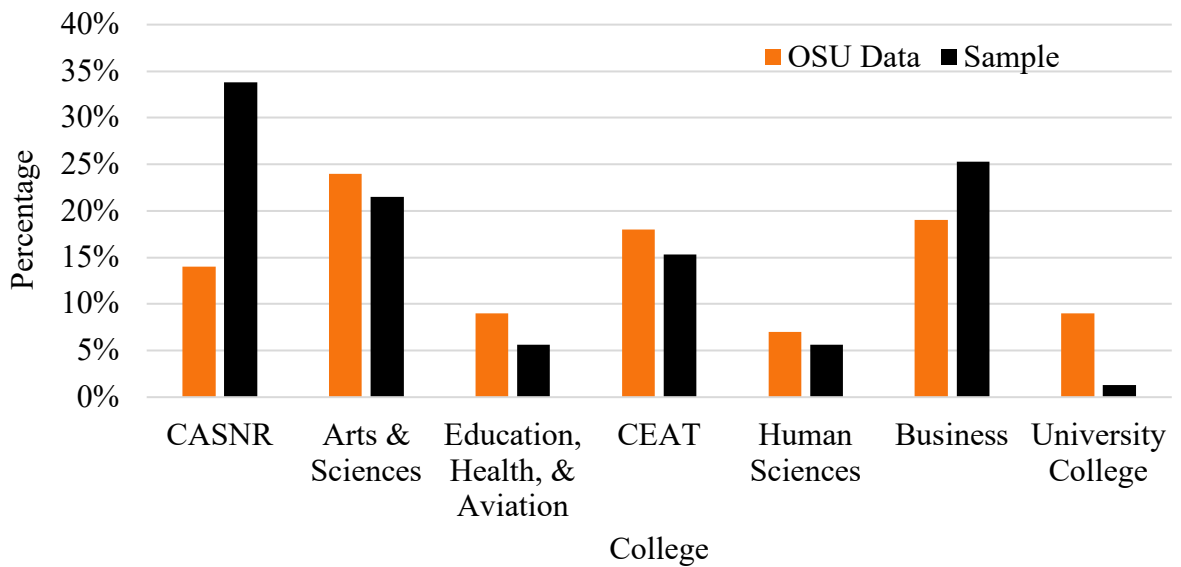


Figure 5.5

Undergraduate Student Population Compared to Sample Population by College



Conclusions Related to Objective 1

Food insecurity is a major problem at Oklahoma State University. Nearly half of participants in my study have experienced food insecurity. Balsiger (2018) found similar rates of food insecurity among students at Oklahoma State University. The food security rate of nearly 50% found in this study is slightly higher than the rate found in a systematic review of food security studies conducted at colleges and universities across the United States (Bruening, Argo, Payne-Sturges, & Laska, 2017). Experiencing low food security, also known as food insecurity without hunger, indicates little or reduced food intake, but the quality and variety of food an individual consumes is reduced (ERS, 2019). When students experience food insecurity their ability to focus on their academic endeavors is jeopardized (Phillips, McDaniel, & Croft 2018).

Table 5.1

Food Security Status According to USDA Food Security Survey (n=391)

Food Security Status	<i>f</i>	%
Food Secure	200	51.2
Food Insecure	191	48.8

Table 5.2

Food Security Status According to USDA Food Security Survey w/o Freshmen (n=276)

Food Security Status	<i>f</i>	%
Food Secure	133	48.2
Food Insecure	143	51.8

When I removed the freshmen from the data set, the percentage of students who are food insecure at Oklahoma State University increased slightly from 48.8% to 51.8%. I removed freshmen because the USDA Food Security Survey focuses on that last 12

months of a person's food consumption and purchasing habits. When the questionnaire was administered, freshmen would have only been at college for three months and the questionnaire asked about food insecurity over the last 12 months. Freshmen are thought to be less likely to experience food insecurity because they reside on campus and have a campus meal plan, but I found at Oklahoma State University freshmen to be experiencing food insecurity as much as other students. (again, stat to show this?)

In this study and Balsiger's thesis (2018), both conducted at Oklahoma State University, there was no significant relationship between food security status and gender, this contradicts Goldrick-Rab, Richardson, Schneider, Hernandez, and Cady's (2018) findings that females were more likely to be food insecure. When looking at the relationship between food security status and living arrangements there was a significant difference, food insecurity rates were higher in students who lived off-campus. This contradicts Balsiger's (2018) findings that there was no difference in food security status depending on their living arrangements.

Conclusions Related to Objective 2

Students were most interested in receiving anonymous aid if they struggled with food insecurity. These behaviors included receiving free meals and accepting money from various sources. Obtaining from a food pantry, where students might be recognized by their peers, or applying for SNAP benefits, which would require certain documentation were not as desirable. King (2017) found that students at Kent State University were also more likely to accept assistance from informal resources where students could remain anonymous. Choosing sources of help that are anonymous aligns with barrier of stigma identified by El Zein, Mathews, & Shelnett, (2018) and Twill,

Bergdahl, & Fensler, (2016). Students were unlikely to apply for SNAP benefits or receive food from a food pantry, which are resources that require identification and other identifying information to receive assistance. Reluctance to utilize these resources may come from lack of knowledge about the requirements to receive these benefits or the process to apply for these benefits may be too complicated. Of all behaviors, dumpster diving was not one students would engage in if they were struggling with food insecurity.

Table 5.3

Comparison of Students' Likely Behaviors v. Beliefs of Effectiveness if Food Insecure

Behavior/Strategy	Likely Behavior	Effectiveness
	%	%
\$50 gift card	96.1	95.2
Campus event w/ free meal	94.2	94.6
Free community meal	75.7	94.1
Accept dining dollars	84.4	93.4
Campus pantry/ Community pantry	50.6	90.5/88.3
Ask for money from family or friends	82.8	77.0
Apply for SNAP	51.9	75.9
Campus garden	49.6	60.6
Dumpster dive	7.7	7.4

Summary Table 5.3 compares behaviors students believe they would engage in and the effectiveness of the same strategies are for combating food insecurity. These percentages reveal a gap between what students would do if they were food insecure and the effectiveness of the strategies. Almost all students believe that receiving food from a food pantry would be an effective strategy but would be unwilling to seek out food from a food pantry if they were struggling with food insecurity. Likewise, students believed applying for SNAP benefits to be effective although they would be unlikely to do so.

Conclusions Related to Objective 3

Students believed accepting aid from anonymous sources, such as accepting money or gift cards or seeking out a free meal, to be extremely effective in fighting food insecurity. The university could help provide these funds or partner with local businesses to provide gift cards for students in need. Offering emergency funds is a strategy suggested by the United States GAO (2018) report to students in need, so they do not have to choose between paying for college and associated costs or buying food. Accepting food from a pantry or utilizing federal aid food program such as SNAP, which requires documentation, was thought to be effective in combating food insecurity, but only half of students would do so.

Conclusions Related to Objective 4

Students were unaware that they can apply to receive benefits from the Supplemental Nutrition Assistance Program. Less than half were aware that they could access those benefits. Only 2% of the student population reported receiving SNAP benefits, but at least 25%, by virtue of employment alone, could qualify to receive SNAP benefits. This is significantly lower than what Balsiger found. In Balsiger's 2018 study, he reported 9% of participants indicated they received SNAP benefits in his study. The difference between the number of students who received SNAP in this study and Balsiger's (2018) study may be because of distribution methods and students receiving benefits may have been more likely to participate. My findings are in line with other studies. The United States GAO (2018) reports that at least 2 million college students across the nation meet the eligibility requirements of SNAP but have not applied to receive benefits.

Students are generally unaware of Our Daily Bread Food and Resource Center that is available to them as an emergency food source. Balsiger's (2018) study found similar results. Upperclassmen in this study were more aware of Our Daily Bread Food and Resource Center than younger students. Male students are less likely to be aware of this emergency food source.

Discussion

Maslow (1943) describes food as a basic need, and when this need goes unmet it can consume a person, making success in school less important than securing food. Receiving benefits from the Supplemental Nutrition Assistance Program or obtaining food from a food pantry are different ways to meet the need of food, but they are not the preferred ways students want to receive aid. Students may believe that applying for Supplemental Nutrition Assistance Program is ineffective because they are unaware of the eligibility requirements to receive benefits and accepting food from a pantry has its own problems.

Students in this study believed accepting aid from anonymous sources was particularly effective in combating food insecurity. Receiving or applying for SNAP benefits and receiving food from a pantry were thought to be also effective, but only about one-half of the students said they would be likely to engage in these behaviors if they were experiencing food insecurity. Despite believing federal food aid to be effective, students would not engage these sources because of the stigma associated with receiving benefits from SNAP or a food pantry.

Recommendations

Many students could qualify to receive federal food aid are not applying, possibly due to lack of knowledge or the stigma associated with this resource. Additionally, many students were unaware of an emergency food pantry available to them if they experienced a situation where they could not afford food. Oklahoma State University needs to examine different strategies to address this difference. While many universities and colleges have established pantries on their campuses, it is important to remember that pantries are emergency aid; a short-term fix to a problem of running out of food. Although there are times when students experience true emergency food situations, federal food aid programs like SNAP and WIC are designed to help food insecure individuals and should be promoted by the institution.

The United States GAO (2018) reports that several colleges and universities have created coordinated benefits access programs in a centralized office near where students congregate, such as a Student Union. A centralized office would contain offices that administer benefits programs for housing, veterans' affairs, food assistance, mental health, financial aid, and help with food insecurity. When a student visits this office, they would be matched with a caseworker who would help the student navigate the application process of appropriate benefits for each student. Such an office could enable students to meet the basic needs discussed by Maslow (1943). Standardizing these types of aid would help students understand the information required to apply for SNAP or receive food from a food pantry, as well as remove the stigma associated with each.

The most common instrument used to examine food insecurity among college students is the questionnaire provided by the USDA. While this questionnaire was tested

extensively for use among the general population, it may not be appropriate for use with college students (Nikolaus, Ellison, & Nickols-Richardson, 2019). To properly understand food insecurity among college students, I recommend that an instrument is developed to examine food insecurity specifically among college students that is unique to college. To gain a better understanding of what college students are experiencing, focus groups could be conducted. With a new type of college student becoming more prevalent on campus, not only would the student suffer, but so would their family. Food insecurity is placing the financial aid invested in students at risk (United States GAO, 2018).

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APPENDICES

APPENDIX A
Food Insecurity Questionnaire

Background Information You are invited to be in a research study of **students' willingness to participate in food assistance programs at Oklahoma State University**. We ask that you read this form and ask any questions you may have before agreeing to be in the study. Your participation in this research is voluntary. There is no penalty for refusal to participate, and you are free to withdraw your consent and participation in this project at any time. You can stop the survey at any time. **This study is being conducted by:** Cammie Grace Weaver, Graduate Student in Agricultural Education and Leadership, Oklahoma State University under the direction of William G. Weeks, Professor, Department of Agricultural Education, Communications, and Leadership, Oklahoma State University.

Procedures **If you agree to be in this study, we would ask you to do the following things:** We will ask you to complete a questionnaire on a tablet computer. **Participation in the study involves the following time commitment:** 5-8 minutes

Confidentiality The information you give will be anonymous. This means that your name will not be collected or linked to the data in any way. The researchers will not be able to remove your data from the dataset once your participation is complete. We will collect your information through a Qualtrics online questionnaire. This data will be stored on a password protected computer in 445 Agriculture Hall. The research team works to ensure confidentiality to the degree permitted by technology. It is possible, although unlikely, that unauthorized individuals could gain access to your responses because you are responding online. However, your participation in this online survey involves risks similar to a person's everyday use of the internet. If you have concerns, you should consult the survey provider privacy policy at <https://www.qualtrics.com/privacy-statement>.

Contacts and Questions the Institutional Review Board (IRB) for the protection of human research participants at Oklahoma State University has reviewed and approved this study. If you have questions about the research study itself, please contact the Principal Investigator at 405-744-5129, cammie_grace.weaver@okstate.edu. If you have questions about your rights as a research volunteer or would simply like to speak with someone other than the research team about concerns regarding this study, please contact the IRB at (405) 744-3377 or irb@okstate.edu. All reports or correspondence will be kept confidential.

Q1 Statement of Consent If you agree to participate, please click “I Agree” to continue and complete the questionnaire.

I agree (1)

I do not agree (2)

Q2 If they meet the eligibility requirements, are college students allowed to obtain benefits under the Supplemental Nutrition Assistance Program (SNAP or food stamps)?

Yes (1)

No (2)

Not sure (3)

Prefer not to respond (4)

Q3 *Food insecurity means that a person may be **without** reliable access to a sufficient quantity of affordable, nutritious food. Studies in the past ten years have revealed that between 12% and 59% of college students may be food insecure.*

On the following page are possible ways to address food insecurity on campus.

Q4 If you had trouble acquiring adequate amounts of healthy food, rate your likelihood of utilizing the following services.

	Very likely (1)	Somewhat likely (2)	Somewhat unlikely (3)	Very unlikely (4)
Request food from a community food pantry (1)				
Accept a \$50 gift card for groceries (2)				
Seek out a free community meal (3)				
Go through a dumpster (i.e. dumpster dive) (4)				
Accept donated campus dining dollars (5)				
Ask parents, family, or friends for money for food (6)				
Attend a campus event serving free food (7)				
Apply for the Supplemental Nutrition Assistance Program (food stamps) (8)				
Grow food in a campus garden (9)				

Q5 The next questions are about the food eaten in your household in the last 12 months, since September of last year and whether you were able to afford the food you need. Next you will see several statements that people have made about their food situation. For these statements, please indicate whether the statement was *often* true, *sometimes* true, or *never* true for you/your household in the last 12 months - since last September.

"The food that I bought just didn't last, and I didn't have enough money to get more."
Was that often, sometimes, or never true for you in the last 12 months?

- Often true (1)
- Sometimes true (2)
- Never true (3)
- Not sure (4)
- Prefer not to respond (5)

Q6 "I couldn't afford to eat balanced meals." Was that often, sometimes, or never true for you in the last 12 months?

- Often true (1)
- Sometimes true (2)
- Never true (3)
- Not sure (4)
- Prefer not to respond (5)

Q7 In the last 12 months did you ever cut the size of your meals or skip meals because there wasn't enough money for food?

- Yes (1)
- No (2)
- Don't know (3)
- Prefer not to respond (4)

Display This Question:

If Q7 = 1

Q8 How often did you cut your meals - almost every month, some months but not every month, or in only 1 or 2 months?

- Almost every month (1)
- Some months but not every month (2)
- Only 1 or 2 months (3)
- Not sure (4)
- Prefer not to respond (5)

Q9 In the last 12 months did you ever eat less than you felt you should because there wasn't enough money for food?

Yes (1)

No (2)

Not sure (3)

Prefer not to respond (4)

Q10 In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?

Yes (1)

No (2)

Not sure (3)

Prefer not to respond (4)

Q11 How effective do you think the following options are in helping food insecure students?

	Extremely effective (1)	Moderately effective (2)	Moderately ineffective (3)	Extremely ineffective (4)
A community food pantry (1)				
Weekly free community meal (2)				
A \$50 gift card for groceries (3)				
Dumpster Diving (3)				
Ask parents, family, or friends for money for food (4)				
Use donated campus dining dollars (5)				
A campus event serving free food (6)				
Apply for the Supplemental Nutrition Assistance Program (food stamps) (7)				
Grow food in a campus garden (8)				
A campus-based food pantry (9)				

Q12 As a K-12 student, did you ever qualify free or reduced-priced breakfast or lunch?

- Yes (1)
- No (2)
- Not sure (3)
- Prefer not to respond (4)

Q13 Have you ever benefitted from SNAP benefits acquired by you or your family?

- Yes (1)
- No (2)
- Not sure (3)
- Prefer not to respond (4)

Q14 Do you currently receive Supplemental Nutrition Assistance Program (SNAP or food stamps) benefits?

- Yes (1)
- No (2)
- Not sure (3)
- Prefer not to respond (4)

Q15 Rank the following ways OSU might help food insecure students, with one (1) being the most effective and seven (7) the least effective.

- _____ Establish a campus food pantry (1)
- _____ Offer a \$50 gift card for groceries (2)
- _____ Allow students to donate extra dining dollars (3)
- _____ OSU provides students one free meal a day (4)
- _____ Help students enroll in SNAP (5)
- _____ Allow SNAP to be accepted at campus markets (6)
- _____ Create a campus garden (7)

Q16 A food pantry is a site that distributes food and grocery items directly to people who are at risk of hunger.

Are you aware if there is a food pantry in Stillwater?

- Yes (1)
- No (2)
- Prefer not to respond (3)

Display This Question:

If Q16 = 1

Q17 Have you ever used the Stillwater food pantry, Our Daily Bread?

Yes (1)

No (2)

Prefer not to answer (3)

Display This Question:

If Q17 = 1

Q18 How many times a semester have you used Our Daily Bread?

1 time a semester (1)

2 times a semester (2)

3 times a semester (3)

4 or more times a semester (4)

Prefer not to answer (5)

Q19 **Just a couple of questions about you.**

What is your age?

Q20 What is your gender?

Male (1)

Female (2)

Prefer not to respond (3)

Other (4)

Q21 What is your ethnicity?

White Non-Hispanic (1)

American Indian or Alaska Native (2)

Hispanic (3)

Black or African American (4)

Asian American (5)

Native-Hawaiian or Pacific Islander (6)

Multiracial (7)

Nonresident (8)

Other (9)

Prefer not to respond (10)

Q22 What is your classification?

- Freshman (1)
- Sophomore (2)
- Junior (3)
- Senior (4)
- Prefer not to respond (5)

Q23 Are you an international student?

- Yes (1)
- No (2)
- Prefer not to respond (3)

Q24 How many credit hours are you enrolled in this semester?

- 11 hours or fewer (1)
- 12 hours or more (2)
- Prefer not to respond (3)

Q25 Your primary degree is in which OSU College?

- Ag Sciences and Natural Resources (1)
- Arts and Sciences (2)
- Education, Health, and Aviation (3)
- Engineering, Architecture, and Technology (4)
- Human Sciences (5)
- Business (6)
- University College (7)
- Prefer not to respond (8)

Q26 Where do you currently live?

- On campus in a residence hall (1)
- On campus in a fraternity or sorority house (2)
- Off campus alone (3)
- Off campus with roommates (4)
- Off campus with parents/relatives (5)
- Off campus with spouse/partner (6)
- Off campus with spouse/partner and child(ren) (7)
- No stable or regular housing (8)
- Prefer not to answer (9)

Q27 Are you employed this semester?

I do not work (1)

Less than 20 hours a week (2)

20-39 hours a week (3)

40+ hours a week (4)

Prefer not to respond (5)

APPENDIX B
Oklahoma State University IRB Approval



Date: 09/25/2019

Application Number: AG-19-48

Proposal Title: Undergraduate Students' Awareness of and Willingness to Participate in Food Assistance Programs

Principal Investigator: Cammie Weaver

Co-Investigator(s):

Faculty Adviser: BILL G WEEKS

Project Coordinator:

Research Assistant(s):

Processed as: Exempt

Exempt Category:

Exempt

Oklahoma State University Institutional Review Board

Status Recommended by Reviewer(s): Approved

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected,

and that the research will be conducted in a manner consistent with the IRB requirements as outlined in 45CFR46.

This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 405-744- 3377 or irb@okstate.edu.

Sincerely,
Oklahoma State University IR

APPENDIX C
Data Collection Photographs





5 minutes for \$5
Must be 18 & an OSU Undergraduate student



DEPARTMENT OF
AGRICULTURAL EDUCATION
COMMUNICATIONS AND LEADERSHIP
College of Agricultural Sciences and Natural Resources

VITA

Cammie Grace Weaver

Candidate for the Degree of

Master of Science

Thesis: STUDENTS' PERSPECTIVES ON STRATEGIES TO COMBAT FOOD
INSECURITY ON CAMPUS

Major Field: Agricultural Education

Biographical:

Education:

Completed the requirements for the Master of Science in Agricultural Education
at Oklahoma State University, Stillwater, Oklahoma in May, 2020.

Completed the requirements for the Bachelor of Science Agricultural
Communications at Auburn University, Auburn, Alabama in 2018.

Experience:

Graduate Teaching Assistant – August 2018 – May 2020
Department of Agricultural Education, Communication, and Leadership
Oklahoma State University, Stillwater, OK

Professional Memberships:

American Association of Agricultural Educators